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RadCom

The Radio Society of Great Britain Members' Magazine

£3.95 Vol 79 No. 4 April 2003

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WATERS & STANTON

1973 WATERS & STANTON PLC 30th ANNIVERSARY 2003

PRICE MATCH

HF ANTENNAS

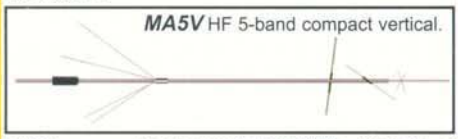
VERTICAL ANTENNAS

HUSTLER

6-BTV. HF 6-band vertical

6-BTV NEW	80-40-30-20-15-10m 1kW PEP	£239.95	C
5-BTV	80-40-20-15-10m 7.64m 1kW	£209.95	C
4-BTV	40-20-15-10m 6.52m 1kW PEP	£169.95	C

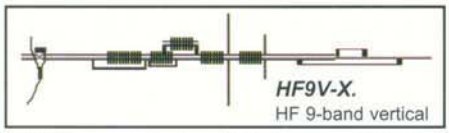
CUSHCRAFT



MA5V HF 5-band compact vertical.

MA5V	20-17-14-12-10m 250W PEP	£229.95	C
R8	40-30-20-17-15-12-10-6m 1.5kW	£529.95	C
R6000	20-17-15-12-10-6m 1.5kW PEP	£349.95	C

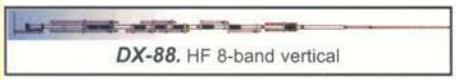
BUTTERNUT



HF9V-X. HF 9-band vertical

HF9V-X	80-6m 7.9m 1kW PEP	£365.00	C
HF6V-X	80-40-30-20-15-10m 7.9m 2kW	£315.00	C
HF2V	80-40m 9.75m (160m opt) 1kW	£230.00	C

HY-GAIN



DX-88. HF 8-band vertical

AV-640	40-6m 1.5kW, 300W 6m (PEP)	£399.95	C
AV-620	20-6m 1.5kW, 500W 6m (PEP)	£299.95	C
AV-14AVQ	40-20-15-10m 1.5kW PEP	£179.95	C
AV-12AVQ	20-15-10m 1.5kW PEP	£139.95	C
DX-88	80-10m 1.5kW, 250W 30m	£395.95	C

HORIZONTAL BEAMS & DIPOLES

CUSHCRAFT

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

X-7	20/15/10m 7 el. Yagi 2kW	£699.95	D

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

MA-5B	10-12-15-17-20m 4 el. Yagi 2kW	£349.95	D
A4-S	10-15 & 20m 4 el. Yagi 2kW	£599.95	D
A3-WS	12 & 17m 3 el. Yagi 2kW	£399.95	D
D-3	10-15-20m dipole element 2kW	£249.95	C

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

D-3W	12-17-30m dipole element 2kW	£249.95	C
D-4	10-40m dipole element 2kW	£339.95	C
D-40	40m dipole element 2kW	£299.95	C
TEN-3	10m 3 el. Yagi 2kW	£219.95	C
ASL-2010	13.5-32MHz 8 el. log periodic	£799.95	C

RADIO WORKS

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

CW-160	160-10m 76.8m long	£139.95	C
CWS-160	160-10m 40.5m long	£134.95	C
CW-80	80-10m 40.5m long	£99.95	C
CWS-80	80-10m 20,1m long	£119.95	C
CW-40	40-10m 20.1m long	£94.95	C
CW-20	20-10m 10.36m long	£84.95	C
CW-620	20-6m 9.7m (32ft) long	£94.95	C
G5RV PLUS	80-10m with balun 31m (102ft) long	£64.95	B

HF ANTENNAS

RADIO WORKS - Baluns and Isolators

T-4 Plus	Line Isolator1.8 - 54MHz 4kW	£42.95	B
T-4-500	Line Isolator1.8 - 30MHz 500W	£32.95	B

Use a line isolator to eliminate stray RF.

T-4G	Line Isolator 1.8-30MHz + gnd 4kW	£42.95	B
T-4G Plus	Line Isolator 1.8-54MHz + gnd4kW	£45.95	B

The **REM-BAL** 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.

REM-BAL	Ladder line 4:1 balun 1.8-30MHz	£49.95	B
B1-2K Plus	1:1 current balun - for inverted V 's	£28.95	B
B4-2K	4:1 voltage balun loops/folded dipoles	£42.95	B
Y1.5K Plus	1:1 current Yagi balun 1.8- 54MHz	£42.95	B

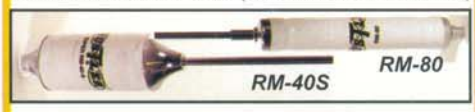
Sundries

KEVLAR	200ft 400lb strain guy line	£22.95	A
LADDER	450 Ohm ladder line - per metre	£0.90	A

MOBILE ANTENNAS

HUSTLER

Standard Resonator 400W (mast sections not included)



RM-80 RM-40S

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

Super Resonator 1kW (mast sections not included)

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

Mobile Mount Accessories

SSM-1	Ball mnt stainless steel spring&stud	£45.95	B
SSM-2	Ball mount	£28.95	A
SSM-3	Stainless steel spring & stud	£24.95	A
HOT	Trunk lip mount	£24.95	A
RSS-2	Stainless steel resonator impact spring	£10.95	A
QD-2	Quick disconnect adaptor	£19.95	A
VP-1	Multi-band adaptor	£7.95	A

PORTABLE ANTENNAS

M IZUHO

ATX-WBN	Walkabout 80-6m Whip 1.5mBNC	£49.95	B

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

ATX-WPL	Walkabout 80-6m Whip1.5mSO-239	£49.95	B
ATX-W38	Walkabout 80-6m Whip 1.5m 3/8	£49.95	B

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

AT-80	Single band 80m whip with BNC	£24.95	B
AT-40	Single band 40m whip with BNC	£24.95	B
AT-30	Single band 30m whip with BNC	£19.95	B
AT-20	Single band 20m whip with BNC	£19.95	B
AT-17	Single band 17m whip with BNC	£19.95	B
AT-15	Single band 15m whip with BNC	£19.95	B
AT-12	Single band 12m whip with BNC	£19.95	B
AT-10	Single band 10m whip with BNC	£19.95	B

ANTENNA TUNER UNITS

MFJ 989C VERSA TUNER V £379.95 C

High power tuner.*1.8-30MHz *3kW *6-way Antenna/ load switch *2 coax positions *Built-in 4:1 balun *X-needle meter *Peak & AV

MFJ 986 DIFFERENTIAL-T TUNER £349.95 C

Differential capacitor & Roller inductor.*1.8-30MHz *1.5kW *6-way Antenna/load switch *2 coax positions *Built-in 4:1 balun *X-needle meter *Peak & AV

MFJ 949E DELUXE VERSA TUNER II £159.95 B

Firm favourite with HF operators. *1.8-30MHz *300W *3-way Antenna selector *Dummy Load socket *Internal balun *X-needle meter *Peak & AV

MFJ 962D VERSA TUNER III £279.95 C

Ideal tuner for max UK legal power.*1.8-30MHz *1.5kW *6-way Antenna/ load switch *2 coax positions *Built-in 4:1 balun * X-needle meter *Peak & AV

MFJ 921 VHF DUAL BAND TUNER £74.95 B

This tuner helps you get perfect VSWR and offers some filtering as well.*144/220MHz *200W max *Power meter *Rear panel earth terminal

MFJ 906 6 METRE TUNER £89.95 B

Help match your 6m rig to your antenna.*50-54MHz *100W FM *200W SSB *X-needle meter, 0-60W & 0-300W *By-pass position for tuner

MFJ 931 ARTIFICIAL GROUND £94.95 B

Places rig near to actual ground potential.*1.8-30MHz *Ground current meter *Used where no earth ground is possible *Reduces TVI/RFI *Resonates random wire

MFJ 267 DUMMY LOAD/WATT METER NEW £129.95 B

Switch enables the dummy load to be by-passed*1.8-54MHz *300/3000W FWD *60/600W RFD *50 Ohms *3in X-needle meter VSWR/Pwr *reads PEP or AV *SO-239 x2 sockets *9-12V

MFJ 269 ANTENNA ANALYSER £349.95 B

Once you have used an antenna analiser you will wonder how you ever managed without one. The MFJ-269 covers 1.8 to 170MHz and 415 to 470MHz. The MFJ-259B 1.8 to 170MHz. Both operate as signal generators and frequency counters as well.

MFJ-259B	HF/VHF digital analyser	£269.95	B

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

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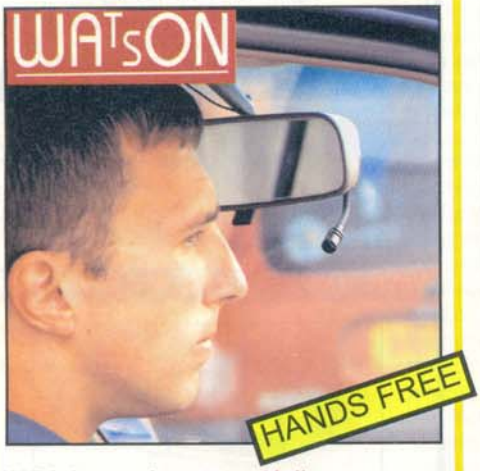
AT LAST ! !
A HANDS FREE SYSTEM THAT REALLY WORKS!

Safe-2-Way
Mobile Interface



*Widely used commercially
*Approved to Pan-European Standards
*True Hands-Free
*Noise Reducing
*Acoustic Tailored Mic
*Remote (3m) Latching PTT
*Boom mic (3m) with Velcro
*Adjustable gain
*Adjustable Time-Out
*Powered from rig mic socket
*Ready made rig leads (£14.95 extra)
*Also matches handhelds.

The **Safe-2-Way** mobile Interface is made for Watson in the UK by the same company that equips UK Police and Emergency services with similar units. Purchase the ready-made lead to match your radio and tuck the unit out of sight. The plug-in PTT and boom mic both have 3m leads for dressing around vehicle. Don't risk your Licence or people's lives! Drive with **Safe-2-Way**.

Safe-2-Way

Safe-2-Way £89.95 B

AUDIO

IR-270 £39.95 B

Mono Cordless Comms Headphones
Infrared headphones designed for mono applications. Padded headset free from trailing wires. Infra red module plugs into receiver or transceiver. Walk round the shack and keep in touch. Even lay in bed!

WATSON 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.

WATSON WEP-300B EARPIECE £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 mono jack plug.

WATSON QS-112 SPEAKER MIC £16.95 A

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

WATSON HP-100 NEW HEADPHONES £19.95 B

Excellent lightweight communication headphones with tailored response ideal for the modern tranceiver or receiver.
8 Ohms 200-9,000Hz, adjustable headband, 3.5mm stereo plug, 1/4" stereo adaptor

WATSON HP-200 HEADPHONES £22.95 B

These superb headphones have a tailored response for radio communications and are offered at an amazingly low price.
8 Ohms, 200-10,000Hz, Padded earpieces, 3.5mm stereo plug, 1/4" stereo adaptor

WATSON WSM-300 SPEAKER MIC £7 A

Designed for Motorola 2-pin Motorola Hand helds. This is a really tough unit. We have a supply of these brand new at a silly price. Stock up now!

WATSON SP-2000 SPEAKER £19.95 A

No where to place your mobile speaker then consider the SP-2000. This can be easily clipped out the way to your sun visor.
8 Ohms, 1W max, 3m lead, 3.5mm mono plug

WATSON SP-160 SPEAKER £9.95 A

Low cost mobile speaker with adjustable mobile bracket. Also useful in the shack for base rigs.
8 Ohms, 1.5W max, 3m lead, 3.5mm mono plug

AUDIO

HEIL DESK MICS

The Heil Classic studio quality microphone, exact replica of the 1930's RCA 74B type of broadcast microphone. Inside it has the benefit of modern technology. Two inserts are provided, one for broadcast studio quality and a choice of one other Heil insert. Includes base stand, soft-touch PTT back panel switch and cover for microphone. Requires CC1 adaptor.

HCL5	Classic retro-look HC-5 desk mic	£259.95	B
HCL4	Classic retro-look HC-4 desk mic	£259.95	B
HCLic	Classic retro-look IC desk mic	£259.95	B

HEIL HAND MICS

Goldline professional quality dynamic microphone. Three versions available, GM-4 with Studio & HC-4 elements, GM-5 with Studio & HC-4 elements and GM-V Vintage Goldline with Vintage Studio high impedance element, for older valve rigs such as Drake & Collins. Includes stand threaded holder.
Requires CC-1 adaptor £29.95.

GM-4	Goldline HC-4 hand mic	£129.95	B
GM-5	Goldline HC-5 hand mic	£129.95	B
GM-V	Goldline Vintage Hi-z hand mic	£159.95	B

HEIL HEADSETS & BOOM MICS

The Traveler lightweight single side headset with boom mic. Many models to choose from. Supplied with an interface cable. Choice of extra interface cables, for modular or 8-pin.

HST-817	Traveler single side headset for FT-817	£89.95	B
HST-706	Traveler single side headset for IC-706	£89.95	B
HST-IC8	Traveler single side h/set for ICOM 8-p	£89.95	B
HST-K8	Traveler single side h/set for Kenwood	£89.95	B
HST-KM	Traveler single side h/set for Kenwood	£89.95	B
HSTA-817	Extra interface cable for FT-817	£24.95	B
HSTA-706	Extra interface cable for IC-706	£24.95	B
HSTA-IC8	Extra interface cable for IC 8-pin	£24.95	B
HSTA-K-M	Extra interface cable for K mod	£24.95	B
HSTA-K-8	Extra interface cable for K 8-pin	£24.95	B

HEIL HEADPHONES & BOOM MICS

Top quality headphones with boom microphones. Choice of mic. elements, HC-5 ideal for "rag chewing" or HC-4 for DX communications. Icom models fitted with IC element. Choice of AD-1 (£16.95) interface leads for most makes of rigs.

PRO-SET-PLUS	Large H/phones with HC-4 & HC-5	£199.95	B
PRO-SET-PLUS-IC	Large H/phones with IC & HC-4	£219.95	B
PRO-SET-4	Large H/phones with HC-4 element	£129.95	B
PRO-SET-5	Large H/phones with HC-5 element	£129.95	B
PRO-SET-IC	Large H/phones with ICOM element	£149.95	B

bhi NES10-2 DSP SPEAKER £99.95 B

Combined speaker and programmable DSP unit. Offers dramatic noise reduction, even reduces annoying hetrodynes.
8 Ohms, 8 filter settings, 3.5mm plug, 12-24V DC

bhi NES-5 DSP SPEAKER £79.95 B

Combined speaker and fixed setting DSP unit. Offers same dramatic noise and hetrodyne reduction. (Formally NESCB)
8 Ohms, 3.5mm jack plug, 12-24V DC 500mA

bhi NEIM1031 NEW £129.95 B

NOISE ELIMINATING IN-LINE MODULE
** Noise attn -20dB (typical) * Noise Attn levels 8 * Audio output power 2.5W RMS max (8 Ohms) * Audio connections: Line level in/out (RCA Phono), Audio in/out 3.5mm mono jack * Line i/p impedance 10K * Line o/p impedance 100 Ohms * Line in sensitivity 300mV -2V RMS * Headphone socket 3.5mm mono jack * Power 12-24V DC 500mA*

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PRICE MATCH

DISCOUNT CUSTOMER SERVICE THE ONLY THING WE WON'T

WATSON W-25SM PSU £79.95 B

*Very popular budget switch mode power supply. *Output voltage 13.8V DC *Output current of 22A (25A peak) *Front panel output terminals *Over current & voltage protection *Quiet operation*

WATSON W-25AM PSU £89.95 C

DC power supply for the shack & esp. for use with 100W transceivers. Separate voltage and current meters. *Output voltage 0-15V DC *Output current of 25A (30A peak). *3 sets of output terminals *10A cigar socket. *Over current protection*

WATSON W-5A PSU £29.95 B

DC power supply for the shack and low power QRP transceivers. *Output voltage 13.8V DC *Output current of 5A (7A peak) *Front panel output terminals *Over current protection*

LOWE SPS-8400 PSU £99.95 C

A general purpose 3-15V DC, 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver.

MANSON EP-925 PSU £99.95 C

A general purpose 3-15V DC, 25A (30A peak) power supply able to provide the needs of the modern 100W HF transceiver. *Dual analogue meters *Over current protection *Large power terminals for rigs *Quick snap connectors for ancillaries

AVAIR AV-200 VSWR PWR METER £49.95 B

Ideal for HF and VHF operation. It features high power handling up to 400W * 1.8-180MHz * 5W, 20W, 200W, 400W * Av or PEP

AVAIR AV-400 VSWR PWR METER £49.95 B

Ideal for VHF and UHF operation. It features high power handling up to 400W * 140-525MHz * 5W, 20W, 200W, 400W * Av or PEP

AVAIR AV-600 VSWR PWR METER £69.95 B

Two sensors used for HF and VHF/UHF operation. * 1.8-160MHz, 140-525MHz * 5W, 20W, 200W, 400W * Av or PEP

WEST MOUNTAIN RIGBLASTERS

RIGblaster pro	Data interface 8-pin/mod, Cd & cables	£299.95	B
RIGblaster Plus	Data interface 8-pin/mod, Cd & cables	£139.95	B
RIGblaster M8	Data interface 8-pin, software & cables	£109.95	B
RIGblaster M4	Data interface 4-pin, software & cables	£109.95	B
Rigblaster RJ	Data interface RJ45, software & cables	£109.95	B
RIGblaster nomic8P	Data interface 8-pin, software & cables	£59.95	B
RIGblaster nomicRJ	Data interface RJ, software & cables	£59.95	B
FT100-CBL	Adapts all units to FT100 input	£12.95	A
RB-CD	Standard RIGblaster program CD	£9.95	A

FREQUENCY COUNTERS

WATSON

The FC-130 is an ideal frequency counter for the shack, mobile or portable use. Supplied complete with Ni-Cads, charger and telescopic whip.

Super Searcher	RF finder & freq. cnter 10MHz-3GHz	£99.95	B
Super Hunter	Frequency counter 10Hz-3GHz	£149.95	B
Hunter	Frequency counter 10MHz-3GHz	£59.95	B
FC-130	Frequency counter 1MHz-3GHz	£79.95	B

OPTOELECTRONICS

More than just a frequency counter, the Xplorer is a complete mini test receiver. High speed nearfield FM receiver 30MHz to 3GHz. Automatically records up to 500 frequencies in memory, built-in CI-V interface.

Xplorer	Freq. cnter / CTCSS/DTMF decode	£849.95	B
Digital-Scout	Digital Freq. counter 60MHz-2.6GHz	£529.95	C
Scout	Freq. finder 10MHz-1.4GHz	£379.95	B
Mini-Scout	Freq. finder (no memories)	£199.95	B
Micro-Counter	Micro freq. counter 10MHz-1.2GHz	£119.95	B
Cub	Mini counter 1-2.8GHz	£149.95	B

TRANSMITTING LOGBOOK NEW £4.99 A

Traditional Logbook for Radio Amateurs, spiral bound for ease of use plus updated Prefix List and room for extra notes. A logbook is a legal requirement for any radio station.

MOBILE LOGBOOK NEW £4.99 A

You've asked for one so here it is - the Radio Amateurs Mobile/Portable Logbook. Also contains relevant repeater information. A mobile logbook is not a legal requirement.

BLANK QSL CARDS NEW £7.95 A

Normal postcard size QSL cards with blank space for callsign and contact details. These cards are supplied in packets of 100.

WINRADIO G303i NEW £440.00 B

The latest WINRADIO - G303i has a glowing review in *SWM* February 2003. Its certainly a very versatile and capable receiver. Compatible with the newest Windows operating system, the control software makes this a delight to use. * 9kHz - 30MHz * All modes * SMA antenna socket (BNC converter) * Requires Pentium III or greater * 20MB hard drive * PCI slot * Soundblaster compatible

BUY WITH CONFIDENCE !!

1 Scotland & Borders
WATERS & STANTON @ JAYCEE
20 Woodside Way, Glenrothes, Fife, KY7 5DF
Tel:01592 756962 Fax:01592 610451
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2 Midlands & North
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Tel:01629 582380 Fax:01629 580020

3 South
WATERS & STANTON HEAD OFFICE
Spa House, 22 Main Rd, Hockley, Essex, SS5 4QS
Tel:01702 206835/204965
Fax:01702 205843

THE NEW RADIO SPORT COMMUNICATION & COMPUTER SHOW

Stevenage Arts & Leisure Centre, Lytton Way, Stevenage, Herts.
Saturday May 31st - Sunday June 1st 2003
Fantastic new venue with thousands of parking spaces. Easily accessable from all locations.
Visit website at *www.radiosport.co.uk* for more details.

RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

Founded in 1913 incorporated 1926.
Limited by guarantee
Member society of the
International Amateur Radio Union
Patron: HRH Prince Philip, Duke of Edinburgh, KG, KT

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

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(Morse tests, beacons, repeaters, GB calls, licensing)
IOTA.HQ@rsgb.org.uk
(Islands On The Air)
GM.Dept@rsgb.org.uk
(managerial)

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

RSGB Matters

YOUR NEW-LOOK RADCOM

...was the title of a short piece in these pages in the January 2003 issue of RadCom, at the time when we were able to introduce full colour throughout the magazine. At the same time, we took the opportunity to revise the order of features within the magazine and made minor changes to the design of the magazine. As readers will have noted, there are more changes to the look of RadCom with this issue. So what's going on?

The new look is as a result of a number of significant changes that has been made to the way that RadCom is produced. The design, layout, pre-press work, printing, and mailing of the magazine to members has been outsourced to a company called Space Matters, based in London SE1. The editorial work will continue to be carried out by the RSGB and there will be no change to the way members wishing to contribute to RadCom should send in their material.

Secondly, the RSGB has decided to employ the services of an advertising agency for all advertising in RadCom (with the exception of 'Members' Ads', to which there is no change). From now on, if you wish to take out a paid advertisement in RadCom (including a Classified Ad, such as those on pages 102/103) please contact David Thompson at Manning Publishing Ltd, The Irwin Centre, Scotland Farm, Dry Drayton, Cambridge CB3 8AR; tel: 0870 904 7377; fax: 0870 904 7378; or e-mail: adsales@rsgb.org.uk (note there is no change to the telephone number, fax number or email address).

These changes were agreed by RSGB HQ management, the RSGB Management Committee and the RSGB Board. We hope you agree with us that there has been a real improvement to the look of the magazine as a result.

RSGB AUTHOR JOHN BRANEGAN, GM4IHJ, SK

John Branegan, GM4IHJ, the author of the RSGB publication Space Radio Handbook, died on 9 February at the age of 75. The Space Radio Handbook highlights John's experimental approach to amateur radio and provides essential reading to anyone involved in space and radio communications.

John joined the Royal Navy at the age of 15. Before he took early retirement he was a communications, radar, guidance and navigations systems expert on aircraft carriers and nuclear submarines, specialising in the communications problems of Arctic radio conditions. He rose to become Commander John Branegan RN, C Eng, MIEE, but after retirement dropped his titles completely.

John Branegan, GM4IHJ, in 1986, having been presented with the GM3EHI award by the Mid-Lanark Amateur Radio Society.

John brought his remarkable understanding of complex mathematics, spherical and Keplerian trigonometry, Boolean algebra, astronomy, geography, ancient history, geology and science in general to the benefit of the amateur radio community, and in particular AMSAT. He wrote the very first advanced satellite tracking programs to run on early home computers such as the Sinclair ZX-81 and the Spectrum. All proceeds from these went to fund AMSAT. He also gave much of his personal income to provide computers and radio equipment to those in countries who had no way of obtaining such; many operators in the USSR, Eastern Europe and the third world benefited from GM4IHJ's generosity. Between 1989 and 2001 John wrote an amazing 682 weekly 'SATGEN' news/-information bulletins and distributed them world-wide by means of Packet radio and the Internet (they can be found at www.amsat.org/amsat/articles-/satgen/chron.html)

His humanist funeral on 13 February was attended by friends and colleagues. (Thanks to Pat Gowen, G3IOR, and David Anderson, GM4JJJ, for this news story.)

NEW INTERMEDIATE LICENCE EXAMS

The Radiocommunications Agency has recently released the new syllabus and tutor guide for the Intermediate licence. The full documents can be seen and printed from the RA website at www.radio.gov.uk and are also available via the Society's website www.rsgb.org

All currently-registered Novice/ Intermediate Instructors have been provided with these documents. If you are an Instructor and have not received your copy, please contact Catherine Pearson at RSGB HQ.

The new Intermediate licence syllabus is being trailed with two controlled pilot schemes, the first of which has just been completed and candidate's results look very encouraging, the total pass rate being over 90%. This figure is a little exceptional, mainly due to the students being well motivated. However, it is expected that the pass rate will adjust very quickly to between 70 and 80%, which has historically been the norm.

Following the successful completion of the second pilot course and examinations, Intermediate Licence Examinations will be provided by RSGB Registered Examination Centres (formerly known as Satellite Examination Centres). The dates for the exams are proposed to be the last Monday in the month at 6.30pm, the first being on 28 April 2003.

RSGB WORLD CALLBOOK SOON

Remember the 'Flying Horse' logo of the American 'Radio Amateur Callbook' company? The famous double telephone directory-sized callbooks were last produced in 1997 and the world callbooks on CD which replaced them were themselves dropped last year. Now, a German firm, ITfM (Informations-Technologie für Menschen or Information Technology for People) in conjunction with the RSGB and the German national amateur radio society (DARC), has purchased the rights to the Radio Amateur Callbook from its former owners. As a result, a new RSGB world callbook, with completely up-to-date European listings, is expected to be available in April or May this year. Watch this space!

TOPS CW CLUB DONATION

The Radio Communications Foundation, the Society's new trust, recently received a donation of £200 from the now defunct TOPS CW Club. The Society would like to thank Chris Hammett, G3AWR, and the former members of the club for this very generous donation.

5MHz UPDATE

The RSGB 5MHz Working Group met at the beginning of March and reports that the analysis of the initial batch of logs, covering over 500 QSOs from 188 different NoVs, is now underway. A report will be prepared for publication. The Working Group is also making good progress to improve the reporting mechanism and want more stations to try to contact each other on a regular basis, and report whether or not successful QSOs have been made. In addition there are proposals to extend the scope of the experiment by introducing a pair of beacons that will enable S/N assessment as well, it is hoped, multipath and Doppler measurement. More details can be found on the Working Group's website at www.rsgb-hfc.org.uk/5mhz.htm

AROS TALKS

The RSGB Amateur Radio Observation Service (AROS) coordinator, Barry Scarisbrick, G4ACK, is giving a talk on the work of AROS on Monday 24 March at the Edgware & DRS. For details contact Hank Kay G0FAB, tel: 020 8205 1023.

EMERGENCY COMMUNICATIONS ON RSGB WEBSITE

The RSGB has recently added a new Emergency Communications section to its website. The 27-page area, which is regularly being added to, is designed to be viewed by a wide cross-section – casual surfers, those wanting to become involved, through to Raynet members and controllers, User Services and other international amateur radio emergency communications groups. It has a number of information areas and is intended to complement other existing emergency communication websites. What we would particularly like to know is what information Raynet Groups and Members would like to see on the site that they think would be useful for their activities. Visit the site at http://www.rsgb.org/emergency or from the link the main RSGB home page.

VHF AWARD NEWS

Regular claimant Colin Fallaize, MU0FAL (GY), keeps my postman busy and hot on the heels of last month's claim another has arrived updating Colin's Squares total to 325 and a place in the league table. He also gains '60' and '70' stickers for his Countries (2-way) award for CW contacts. Lee Humphrey, G6BFP (HP), takes another step up the squares ladder to the '200' rung. Graham Badger, G3OHC (YO), gains a 'DX' certificate and sticker at the '25' country level. Finally for 50MHz, Tony Jarvis, G6TTL (PE), successfully claims a sticker for 250 squares.

I don't see many claims from /P stations so it was welcome to receive one from Geoff Plucknett, G4FKA/P, for 144MHz contacts from a number of sites. He successfully gains a certificate and stickers for 40/10, 60/15 and 80/18 Squares and Countries.

At the higher end of our spectrum there has also been activity. Perhaps our best known export to the US, Dave Robinson, WW2R, has claimed a Distance Award for 3.4GHz at no less than 1509km! This is a new North American distance record and the furthest ever by Dave in either Europe or America. Dave's equipment was an IC706 + DB6NT transverter which fed an AT&T surplus PA which developed 7W. The antenna was a 35-element at 50ft.

On home ground John Tye, G4BYV (NR), makes a number of successful claims. At 3.4GHz John makes the first claim for 25 squares and at 5.7GHz the first for 15 squares. He also gains Distance Awards on both bands. John is a great 'home-brew' enthusiast and the transverters use designs from DJ6EP and DC0DA which feed TWTs giving 10W fed to a 2m dish. On receive the pre-amps are to designs by WB5LUA. A little further up the spectrum, John Quarmby, G3XDY (IP), claims another 5 squares at 10GHz to increase his total to 15.

Congratulations to all recipients. Details on all VHF, UHF and Microwave Awards can be obtained on receipt of an A4 or A5 SASE from the Awards Manager, Tony Jarvis, G6TTL (QTHR). They are also available on the Internet at www.argonet.co.uk/users-/tonyg6ttl/awards/awards.htm Queries may also be sent by e-mail to vhf.awards@-rsgb.org.uk

Summary of Award Recipients for February

50MHz: 60 & 70 Countries (2-way) CW: MU0FAL. 200 Squares: G6BFP. 250S: G6TTL. 275: MU0FAL. 300S: MU0FAL. 325S: MU0FAL.
25Countries (DX): G3OHC.
144MHz: 40 Squares / 10 Countries: G4FKA/P. 60/15: G4FKA/P. 80/18: G4FKA/P.
Microwaves: 3.4GHz: 25Squares: G4BYV. Distance Award: G4BYV, WW2R.
5.7GHz: 15 Squares: G4BYV. Distance Award: G4BYV.
10 GHz: 15 Squares: G3XDY.

Tommy Menzies, GM1GEQ (right), being presented with the Jock Kyle award in 2001.

SCOTTISH TROPHIES

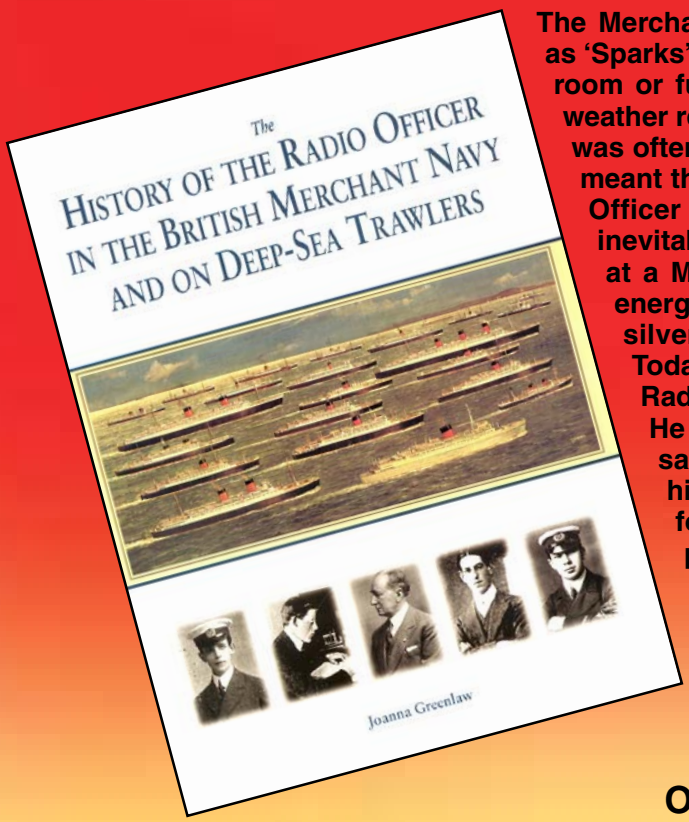
Nomination are requested from RSGB members resident in Scotland for the two RSGB Scottish Awards. The Jock Kyle award is presented to the amateur or group of amateurs best promoting VHF/UHF activities over the past year. The Jack Wylie Trophy is presented for the general promotion of amateur radio and the RSGB as its representative body.

The awards were last presented at the RSGB AGM at Hamilton in December 2001. Several nominations have already been received from members over the past year and these have been noted. The awards will be presented to the recipients at a mini-convention/rally to be held by the Mid-Lanark ARS on 15 June 2003 at Summerlee, Coatbridge. All nominations should be sent to Gordon Hunter, GM3ULP (QTHR), tel: 01698 253394 or e-mail: gm3ulp@qsl.net

YOUTH ARDF GOES GERMAN

The Fourth IARU European (Region 1) Youth ARDF Championships will be held in Bastheim, Germany, from 7 to 11 June. Any groups interested in taking part in this prestigious five-day event can find full details on the RSGB website at www.rsgb.org/-youthardf or from Geoff Foster, G8UKT, Chairman of the RSGB ARDF Committee, c/o RSGB HQ. ◆

THE HISTORY OF THE RADIO OFFICER IN THE BRITISH MERCHANT NAVY AND ON DEEP-SEA TRAWLERS



The Merchant Navy Radio Officer, known to generations of seafarers as 'Sparks', was as integral a part of life on board as the ship's engine room or funnel. He (and later, she) provided the channel for orders, weather reports and private messages, and when disaster threatened, was often the only means of attracting help. If the traditio of the sea meant that the captain was the last to leave his ship, then the Radio Officer was usually the last but one. The nickname 'Sparks' was inevitable from the time that the first Radio Officer thumped away at a Morse key, producing the raspy note and hiss of electrical energy as blue sparks and the smell of ozone radiated from the silver plated spark gap at the heart of his occult contraption. Today, the advent of satellite communication has rendered the Radio Officer with a Morse key as extinct as the Brontosaurus. He has passed into marine history like the lamp-trimmer on a sailing ship or the donkeyman on a steam tramp, along with his world of dots and dashes, SOS messages and telegram forms. And his or her contribution to life at sea in war and peace deserves to be recorded for posterity.

The foreword in this book was written by HRH Prince Philip, Duke of Edinburgh, KG, KT.

The book is profusely illustrated with considerable materialmade available by the Marconi Company Archives and individuals, much of it published for the first time.

ONLY £16.95 + p&p (non-members £19.95)

THE SECRET WIRELESS WAR VIDEO

Only in recent years have men who were specially enlisted for wireless communications during WW2, shared their experiences. They have pieced together their part in what was a very secret operation.

Beyond Bletchley Park

Explores how the WW2 secret German wireless signals were intercepted, deciphered at Bletchley Park, acted upon by our own intelligence and subsequently dispersed back into the field in occupied Europe. RSS listener Bob King, wireless operators Wilf Neal and Maurice Richardson describe their secret wartime experiences. David White tells us about spy sets and Geoffrey Pidgeon takes a ride in an authentic Packard automobile, used as a mobile transmitter/receiver unit.

Black Propaganda

Follows the development and content of the WW2 secret British black radio broadcasts against the Germans. We hear fascinating tales both from SCU 1 transmitter engineer Phil Luck and Ingram Murray, son of one of the important Foreign Office officials that shaped the operations. There are visits to the remarkable remains at Potsgrove and Milton Bryan studios. New secret papers are unearthed from the propaganda station manager's trunk.

ONLY £14.99 + p&p

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

HAVE YOU GOT UNWANTED GEAR THAT YOU WOULD LIKE TO TURN INTO READY CASH?

Click on www.LynchLine.co.uk

For years, the famous LynchLine run by ML&S has enabled thousands of fellow radio amateurs to buy and sell second-hand equipment direct. It was originally set up in 1991 as a bulletin board, then it became a fax-back service and finally it moved onto the World Wide Web.

It was a tremendous success but the hundreds of postings viewed daily slowed the system down so much that a completely new approach was required if it was to continue to be the best selling medium for 'private sale' Ham Radio equipment.

It has now been re-launched and the NEW LynchLine now incorporates the exclusive Lynch-Bay system to ensure a fast, efficient service.

It doesn't matter how old the equipment is, if it's Ham Radio and you want to sell it, try the LynchLine TODAY! In fact, if you have ANY electronic equipment that you want to sell, post it on the LynchLine right now.

ADVERTISE FREE! If you're already a customer of ML&S, your credit card won't be charged for any items placed on sale between the 1st of April and 1st of June 2003.

Here are a few of your questions answered:

Q. How do I view the items for sale on the NEW LynchLine?

A. Easy! Just click on www.LynchLine.co.uk, click 'enter' then click on LynchLine at the top of the page.

Q. What information can I see about the item for sale?

A. Lots! You can read a description of the product, the price, the person selling the item and their location, together with what value has been bid so far, or if you can 'Flash-Buy'

Q. What is 'Flash-Buy'?

A. If you simply want to sell your item and not enter it into an auction, you can tick 'Flash-Buy' which will enable the person viewing your item to buy instantly at a fixed price determained by you.

Q. How do I sell something through the LynchLine?

A. Easy! As above then click on 'Log-In' if you have already entered your details.

Q. I am a new user and haven't logged in before. Do I need to log in to view the items for sale?

A. No! At present, you only need to register if you actually want to sell an item.

Q. Does it cost me anything to view the items for sale?

A. No! Sellers pay a small charge to advertise their products (typically £3-£4) but buyers pay nothing to view items for sale.

Q. Does the LynchLine REALLY work?

A. YES! Just take a look at the lack of 'for sale' ads in magazines - most of them ditched posting off bits of paper and cheques years ago and have used the LynchLine instead.

THE NEW LYNCHLINE · THE FASTEST WAY TO TURN KIT INTO CASH!

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RadCom Contents

APRIL 2003

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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.

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

RSGB MEMBERSHIP – Annual Rates

Home Corporate	£40.50
Overseas Corporate	£40.50
Corporate (Senior Citizens) (Applications should provide proof of age at last renewal date)	£31.50
Corporate (50 years membership)	50% DISCOUNT
Corporate (60 years membership)	FREE
Family member (Must reside with existing member. Does not include RadCom)	£16.50
Student Members (Applications should include evidence of full-time student status)	£26.50
HamClub (under 18)	£16.50
Affiliated Societies (UK or Overseas)	£40.50

Subscriptions include VAT where applicable.

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

p18 - **Peter Hart reviews the HF/VHF/UHF Yaesu FT-897 transceiver**

p49 - **The full results from last year's RSGB IOTA Contest**

News and Reports

Reviews

Down To Earth – Amateur Radio From The Ground Up

Technical Features

Regulars

50th Anniversary of East Coast Floods Special Event Station

Duke of Edinburgh Meets Eagle Radio Group Members at East Coast Exhibition

THE DUKE OF EDINBURGH visited Mablethorpe, Lincolnshire, on 17 February to open an exhibition commemorating the 50th anniversary of the East Coast floods of 1953 (see 'RadCom News' February 2003 and 'Save our Souls', RadCom March 2003). Members of the Eagle Radio Group were promoting amateur radio at the exhibition with a special event station, GB0ERG, while at the same time remembering those quick-thinking amateurs who, in 1953, took over the handling of emergency shipping traffic when the coastal radio station, Humber Radio, succumbed to the flood waters.

Celia Wilson, M3IPE (left), and Sue Powell, G8JGC, operating GB0ERG from the exhibition site.

The exhibition was held at the Dunes Family Entertainment Centre on the sea front of Mablethorpe. Prince Philip toured the exhibition before officially opening it to the public. He was introduced to Nevil Brinnen, G3VDV, and chatted about the group's activities, before turning his attention to the display of radio equipment typifying each decade from the 1940s up to the present day. He then talked to the Group's Training Officer Charles Wilkie, G0CBM, about the group's Foundation Licence courses. Finally, Debbie Pollard, M3DRP, was introduced to the Duke, and she presented him with the GB0ERG QSL card specially designed by Jo Brinnen, M3FEY. He accepted this graciously and wished the group every success.

Celia Wilson, M3IPE, and Sue Powell, G8JGC, were praised for their long spells of operating GB0ERG. They made about 200 QSOs, mainly on 40m, including successful arranged contacts with Dutch stations participating in events commemorating Holland's floods of 1953. Members of the Eagle Radio Group are hoping to visit the Netherlands at the end of the year and would like to meet members of a Dutch coastal radio club.

The exhibition, which also featured the Environment Agency, Red Cross, Coast Guard, RNLI, and other emergency services, was well supported by the public, with many visitors showing interest in the special event station. Because of the Duke's presence there was good media coverage, and members of the Eagle Radio Group were interviewed by both radio and TV. It was all worth the effort as a public relations exercise to showcase this wonderful hobby! After the day's events over 30 members of the group let their hair down and enjoyed a pie and pea supper, together with some well-deserved liquid refreshment, at the group's meeting place, the Eagle Hotel.

PHOTO REPRODUCED WITH THE KIND PERMISSION OF IAN HOLMES

The Duke of Edinburgh met, from left to right, Charles Wilkie, G0CBM, Eagle Radio Group Training Officer; Debbie Pollard, M3DRP; and Nevil Brinnen, G3VDV, Group Chairman.

GB2KZ 'test card' as received in New York.

75th Anniversary of Trans-Atlantic TV

Narrow-band amateur television signals were transmitted from the UK to USA on 15m in January and February to commemorate the 75th anniversary of the first trans-Atlantic television transmissions by Baird in 1928 [see page 28 RadCom February 2003 – Ed]. The transmissions were made as GB2KZ from Amberley Working Museum near Arundel in Sussex. G2KZ was the callsign of Ben Clapp, who carried out the 1928 transmissions with Baird. They were received by Edward Gable, K2MP, curator of the Antique Wireless Association museum in New York. K2MP was the right man in the right place at the right time: he was familiar with antique TV, had amateur radio, test gear and computer facilities and was available for radio contact at the right times. A replica 30-line disc monitor, receiver detector circuit modifications and a test waveform generator were sent to him in January, by which time all the equipment was up and running at Amberley. Despite poor propagation during tests before the anniversary, good signals were received on both 8 and 9 February, the actual anniversary dates. The picture shown was transmitted during the celebration weekend and received in New York.

Many people were involved in this project but special mention must be made of the Amberley team (G4JNU, G3SDQ and G3GMZ) and K2MP who learnt how to receive NBTV in four weeks and has a groove in his thumb to prove it! Thanks to Ted Hardy of the NBTVA for this news story.

CRACA Award

The winner of the annual CRACA (Christian Radio and Computer Association) award is Harold Turner, G4YRH, of Shelf near Halifax. The award is presented in recognition of outstanding service in the world of Christian amateur radio. Harold, a retired school headmaster, has memories of radio going back to the mid 1920s and 30s. He continues to enjoy regular contacts with his many friends around the globe including members of WACRAL and CRACA. CRACA now has over 4300 members in over 40 different countries.

CDXC Windfall

CDXC (Chiltern DX Club) – the UK DX Foundation – has recently received its biggest-ever donation. An anonymous benefactor has given £1059 as a contribution to the club's fund for supporting DXpeditions. The accompanying message said, "Amateur radio has done a lot for me over the years, so it's about time I ploughed something back into it and CDXC looks the perfect opportunity." The gift is unconditional but the donor has said that he would particularly like it to be used to help fund an expedition to one of the "really rare and difficult" DXCC entities. The club looks forward to seeing the proposals!

CDXC, now approaching 600 members, is recognised as one of the leading organisations in the world committed to encouraging and supporting

Marconi Statue Unveiled in Chelmsford

Princess Elettra Marconi, daughter of radio pioneer Guglielmo Marconi, was in Chelmsford recently to unveiled a statue of her father. The statue, by sculptor Stephen Hicklin, is located in the entrance hall of the Record Office in Wharf Road, Chelmsford. The Chelmsford Amateur Radio Society (CARS) was represented at the official unveiling by club president Harry Heap, G5HF, and chairman John Bowen, G8DET.

Councillor Michael Mackrory, Leader of Chelmsford Borough Council, introduced Princess Elettra, who gave a short speech in which she said she was pleased that Chelmsford had honoured her father. CARS chairman John, G8DET, had the opportunity to have a talk with Princess Elettra and he reminded her of the Marconi centenary celebrations just over two years ago, when she transmitted a signal from Chelmsford to Cape Cod. Princess Elettra said she remembered the event with pleasure and had seen her photograph on the CARS website!

PHOTO: HARRY HEAP, G5HF

Princess Elettra and John, G8DET, with Chelmsford's new statue of Marconi.

DXing and DXpeditioning. This donation is the latest proof of that recognition. Anyone interested in adding to the support or in joining the club should contact the secretary, Shaun Jarvis, M0BJL (QTHR) or send an e-mail to: secretary@cdxc.org.uk Further information can be found on the website www.cdxc.org.uk

Oldest 'Mint' RadCom?

This unopened mint RadCom from February 1979 was found in the loft of Fred Pearce's, G3TVG, home. Fred became a silent key in 1994. He was a very active operator and member/treasurer of the Shefford & District ARS. His son, Steve, has now passed his RAE and is being encouraged to pass the Morse test and carry on where Fred left off.

Rallies Cancelled

The Bristol RSGB Group regrets to announce that it has had no alternative but to cancel the Longleat Rally scheduled to take place on 29 June. Martyn Phillips, G3RFX, goes on to say "It's such a pity. We had high hopes after Lord Bath's personal agreement to the Rally going ahead this year, albeit for the last time at Longleat but, since then, we've been unable to reach agreement on the terms and conditions." Meanwhile, the Bristol RSGB Group is currently looking for an alternative venue for 2004 and beyond.

The RATS Rally scheduled to be held on 27 July has had to be cancelled as the BP Truck Stop on the A5 outside Rugby is no longer available. The organising club will try to find another venue for 2004. For further details please contact Tony, G0OLS, e-mail: THumph3426@aol.com

From No Interest to Full Licence in 1 Year

Alison Holme, the wife of Ernie, G4YYB, has become a full licensee less than a year after swearing never to become a radio amateur! It all started when Ernie and Alison's 15-year old daughter, Louise, decided to take out a Foundation Licence. Without telling his wife, Ernie also signed Alison up for the Foundation Course at The Beacons in Frodsham, run by Kath, M1CNY, and Dave, G7OBW, Wilson. After much nagging, Alison agreed to take the course and became, appropriately, M3NAG, while Louise took out M3LMH.

The bug bit almost immediately and within a couple of days Alison had made a contact with ZL4AS using 10W. She has since made over 700 contacts all over the world – as Ernie says, "that's more than me in 18 years as a G4!" Alison passed her 5WPM Morse test and took an RAE crash course at The Beacons, passing the RAE in December. Ernie says, "No-one could be prouder than I am: she is a star." But the final word goes to Alison: "Thanks to Dave, Kath, and Dave, G1PIX, and all at The Beacons in Frodsham for everything."

Open Day in Weston-Super-Mare

QSL Communications is holding an open day on Sunday 13 April 2003 starting at 10.00am. A warm welcome will be given to all. Icom, Kenwood and Yaesu will be represented with all the latest equipment. QSL Communications can be found at Unit 6, Worle Industrial Centre, Coker Road, Worle, Weston-Super-Mare BS22 6BX, one mile from Junction 21 on the M5 (tel: 01934 512757).

Salvation Army on the Road

Mike Baker, G3SUK, the Salvation Army's Emergency Co-ordinator for Suffolk, is seen at the wheel of the Salvation Army's new purpose-built Emergency Response Unit based at Stowmarket. The unit responds to major fires and other incidents in the county, providing support and refreshments to emergency workers. Since its formation in 1979, the Stowmarket emergency group has responded to 116 call-outs, mainly working from the boots of cars. The new vehicle is completely self contained with its own generator, water boilers, microwave, fridge and hob. Mike has operated with Raynet at previous large fires and he hopes to receive sponsorship to fit an amateur radio mobile transceiver in the unit for future communications work. The reputation of the emergency response group, which is probably the most active church-based group in the country, has grown dramatically over the years.

Convictions Against Pirate Broadcasters Double

Statistics published on 19 February show an increase in convictions and a drop in the number of pirate broadcasters operating in the UK last year. The Radiocommunications Agency revealed they had prosecuted 49 people last year, with a 100% conviction rate. This more than doubled the 20 convictions of 2001, and is the highest figure since 1998. The RA carried out a total of 1046 operations against pirates, more than three raids a day. Stephen Timms, telecoms and radio minister, said: "It is clear that the tough stance we are taking with illegal broadcasters is paying off, and the tide is slowly turning against the pirates... Despite the outstanding results last year, we need to maintain pressure on illegal broadcasters. We must work together with the radio industry, police, local authorities and other organisations to convince them of the seriousness of pirate broadcasting offences."

NEWS IN BRIEF

Radio Millennium Lodge 9709

Rev R F Roeschlaub, G1NYB, has been installed as the Worshipful Master of Radio Millennium Lodge 9709. He welcomes all enquiries about membership from existing Freemasons and others interested in joining: tel: 01229 772185.

UK FM Group (Western) EGM

The UK FM Group (Western) will be holding an Emergency General Meeting on Monday 7 April at the Grappenhall Community Centre, Bellhouse Lane, Grappenhall, Warrington, Cheshire. The meeting will commence at 8.00pm to consider amendments to the Group's Constitution. Further details can be obtained from the secretary Steve Sparkes, M0DFD, tel: 01625 528462/ 07732 061049; e-mail: m0dfd@f2s.com

It's Scientriffic!

The Wrexham ARS will be back at the Wrexham Science Festival (see www.wrexhamsf.com) for its 'Scientriffic' event on 29 March. 'Scientriffic' is a day-long event at the end of the week-long science festival, and has all manner of hands-on displays and exhibits. After its great success last year, the club will again operate GB2WSF with demonstrations of HF, VHF, data and, hopefully, ATV. There are plans for more hands-on displays this year, including more than one Morse set-up, given the success of the Morse demonstrations last year. There will also be an appearance by the RSGB's mobile amateur radio demonstration vehicle, GB4FUN, and there are plans to run ATV between the two stations. For more information on GB2WSF plus pictures of the 2002 event see www.qsl.net/gb2wsf

Photo Correction

Derek Gilbert, G0NFA, points out that the photograph on page 56 of the March RadCom actually shows Jonathan, M5FUN, using his IC-251E transceiver on a VHF operation from JO00 square. The principle is the same, though: you can have a lot of fun operating with a simple station on HF or VHF!

New Distribution Deal for Nevada

BPL, India's largest radio and TV manufacturer, has appointed Nevada to distribute its range of Worldspace radios in the UK and Europe. First to be released in March was the Celeste 11 portable radio covering both Worldspace satellite and the regular AM / FM wavebands.

Pictured with the new Celeste 11 radio are (left to right) Nevada's Mike Devereux with BPL's Julian Smith (Head of European marketing) and Dale Bradley (Business manager of Worldspace UK).

Club and Regional

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.

Region 1: Scotland West & Western Isles

PAISLEY (YMCA) ARC
2, Stealth Amateur Radio. 16, Balun or Balloon?. 30, QRP Works. Jim, GM3UWX, 01505 862817.

Region 2: Scotland East & the Highlands

ABERDEEN ARS
4, Junk sale. 11, Talk on Kenwood TS-2000, R McLennan, MM5BQY. 18, Video - Space Mission Part 2. 25, On air, Morse practice. Robert, 01224 896142.
COCKENZIE & PORT SETON ARC
4, 'Normal Club Night'. 26, Visit to Fife 'Secret Bunker' (Saturday family event). Bob, GM4UYZ, 01875 811723.
LOTHIANS RS
14, The 5MHz Experiment, Peter Dick, GM4DTH. 28, DYNO+, Peter Dick, GM4DTH. Peter, 0131 446 0155.

Region 3: North West

MANCHESTER WIRELESS SOCIETY
1, 'The RSGB', Dave Wilson, M0OBW. 8, A social and on air evening. 15, On air with Hellschreiber, the digital mode. 22, AGM. 29, On air, CW practice. Kev, G0TOG, 0161 330 0914.
MID CHESHIRE ARS
2, Activity night. 9, Antenna rigging. 16, HF on air. 23, VHF on air. 30, Rally preparation. Niall, G0VOK, 01606 871413.
THORNTON CLEVELEYS ARS
7, Extraordinary General Meeting - members only. 14, Digital photography, by G4FRK. 21, 2m net. 28, On air. Jack, G4BFH, jack@jduddington.fsnet.co.uk
WIRRAL AND DARC
2, D&W at Fox & Hounds, Barnston. 9, Hilbre's radar, Dr Paul Bell, Proudman Institute.16, D&W at Hotel Victoria, Lower Heswall. 23, Wirral - before it's too late, Glyn Parry. 30, D&W at The Egremont Ferry. Tom, G4BKF, 07050 291850.

Region 4: North East

DENBY DALE ARS
2, Surplus Sale. 16, Mills Weekend organisation & contest discussion, G0BFJ. Tony, G4LLZ, 01484 318750.
GOOLE R & ES
11, Pub night. 18, Good Friday on air at Barmby Tidal Barrage. 25, Junk Sale at the Courtyard. Richard, G0GLZ, 07867 862169.
GREAT LUMLEY AR & ES
16, Measurement and Calibration, Mike Stott, G0NEE. Nancy, 0191 4770036, nancybone2001@yahoo.co.uk
GRIMSBY ARS
3, Talk TBD, Tony, G1OAC. 17, John Whitelam's construction night. Brian, G4DXB, 01472 231383.
HALIFAX & DARS
15, 'The Medallic History of the British Fighting Nation', Charles Bolt, G3NN. Tom, M0TKA, 01484 715079.
RIPON AND DARS
3, Final rally preparations. 10, Rally review. 17, Contest logging practice. 24, Video. Andy, G0HUC, 01423 507623, andy@aicuk.demon.co.uk
SHEFFIELD ARC
7, Junk sale. 14, VHF radio. 28, HF radio. Nick, G4FAL, 0114 255 2893.

Region 5: West Midlands

BROMSGROVE ARS
8, Lickey Beacon: try out that DF gear. 22, DF Hunt 1 on foot. Angus, G8DEC, 01527 875573.
CHELTENHAM ARS
4, Constructors' Exhibition. Ivan, G4BGW, 01452 731 956, ivan@g4bgw.freeserve.co.uk
GLOUCESTER AR & ES
7, Construction Contest. 14, Logbook evening - bring your old log books. 28, 'Early Computers'. Tony, 01452 618930 office hours.
KIDDERMINSTER & DARS
1, 'Developments in Packet Radio', Paula, G8PZT. Tony, G1OZB, 01299 400172.
MAXPAK PACKET RADIO CLUB
7, AGM. Miles, 01952 585447, www.maxpakgb.org.uk
MID-WARWICKSHIRE ARS
8, Club visit with Ken, G7RYO and Brian, G4DF. 22, 'Technical Topics Evening'. Bernard, M1AUK, 01926 420913.
SALOP ARS
10, Construction Competition. 20, RSGB 1st 50MHz Contest. 24, Chairman shares his birthday cake! John, G0GTN, 01743 249943.
STRATFORD UPON AVON & DRS
14, Film night. 28, AGM & surplus equipment sale, G3MXH. Geoff, G4OHJ, 01789 773286.
TELFORD & DARS
2, Open evening, on air. 9, Contest planning. 16, Purchase evening: what does our society need to buy? Mike, G3JKX, 01952 299677.

Region 6: North Wales

DRAGON ARC
7, Preparations for International Marconi Day special event stations. 21, Open forum. Stewart, GW0ETF, 01248 362229.
NORTH WALES RS
3, 10, Foundation, Morse, HF tuition. 12, 'Wafflers 6 Metre Contest', all welcome. 17, Bardsey Island planning meeting. 19, Starry night and radio night. 24, Pre-amps UHF and VHF on the cheap? Graham Ogle, GW8RAK. Ted, GW0DSJ, edward@eshipton.fsnet.co.uk

Region 7: South Wales

ABERYSTWYTH & DARS
10, North Dyfed Raynet AGM, Bryan, GW1XOT. 24, Club net S21 (call on S20) with GW7OZP. Ray, GW7AGG.

Region 8: Northern Ireland

BANGOR & DARS
2, Annual constructors contest, talk on vintage radio restoration, Norman, GI3YMY. Mike, GI4XSF, 028 4277 2383.

Region 9: London & Thames Valley

CRAY VALLEY RS
3, AGM. Bob, BRS32525, 020 8265 7735 after 8pm & weekends.
DORKING & DRS
22, Talk on Foundation Licence, John Totten, M3LWF. John, G3AEZ, 01306 631236.
EDGWARE & DARS
10, CW fun night, Bob, G4KEW. 24, Visit by Barry Scarisbrick, G4ACK - AROS Co-ordinator. Hank, G0FAB, 020 8205 1023.
MAIDENHEAD & DARC
3, Receivers behaving badly, John Ellerton, G3NCN. 15, Amateur radio software, Ray Goff, G4FON. John, G3TWG, 01628 525275.
NEWBURY & DARS
23, Brief history of Wood and Douglas and demo of current products, Alan Wood, G4EEE. Richard, G3ZGC, 01635 46241.
RADIO SOCIETY OF HARROW
4, Video. 6, GB2DHH operating day. 11, Informal. 25, Newcomers' programme: supervised HF operating session. Jim, G0AOT, 01895 476 933 or 020 7278 6421.
READING & DARC
10, 8Q7ZZ Crystal Clear Groups' DXpedition to Maldives 2002: the Youngsters DXpedition, Mark

RSGB Regional Managers as of 3 March 2003.

	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	Ray Ricketts, GW7AGG (acting)
8.	Northern Ireland	Jeff Smith, MI0AEX
9.	London & Thames Valley	Paul Berkeley, M0CJX (acting)
10.	South & South East	Ivan Rosevear, G3GKC (acting)
11.	South West & Channel Islands	Barry Scarisbrick, G4ACK
12.	East & East Anglia	Malcolm Salmon, G3XVV
13.	East Midlands	Bryn Llewellyn, G4DEZ

News

Haynes, M0DXR. Pete, G8FRC, 0118 969 5697.

SILVERTHORN RADIO CLUB
4, Club meal. David, G0KHC, 020 8504 2831.

SURREY RADIO CONTACT CLUB
5, AGM. Ray, G4FFY, 020 8644 7589.

SUTTON & CHEAM RS
17, Introduction to APRS, Martin Butler, M1MRB. John, G0BWV, 020 8644 9945.

VERULAM ARC
14, Installing Echolink. Walter, G3PMF, 01923 262180.

WIMBLEDON & DARS
11, 'Bletchley Park', Len Stuart. Jim, G4WYJ, 01737 356745.

Region 10: South & South East

ANDOVER RAC
1, HF & VHF activity night. 9, Slow Morse Class with G0HKC on 145.250MHz. 15, Raynet today, Eddie, G0EWO. Terry, G8ALR, 01980 629346.

FAREHAM & DARS
2, On air. 9, 'Morse', Mick, G4ITF. 16, Talk by Richard, G3AAT, from Horndean club, subject TBA. 23, 5-minute talks expanded: tonight Andrew, G0AMS. 30, Satellite communications. Steve, G7HEP, 01329 663673.

FARNBOROUGH & DRS
9, Satellite communication, Colin, M0FRS. 23, Marconi antennas, Derek, G3HEJ. Norman, G0VYR, 01483 835320.

HASTINGS E & RC
16, Spring auction of surplus equipment. R C Gornall, G7DME, 01424 444466.

HORNDEAN & DARC
1, Social evening. 22, Transport video presentation, Roger Newbery. Stuart, G0FYX, 023 9247 2846.

SOUTHDOWN ARS
7, Camp X, GB2PW Mills Day, Intermediate Licence, John, G3DQY. John, G3DQY, 01424 424319.

ST LEONARDS ARS
3, Planning meeting. 10, Shack night. 17, Home-brew equipment & printed circuit boards, Graeme, G4NVH. 24, Shack night. Derek, G0EYX, 01785 604904.

SWINDON & DARC
3, Global Positioning Systems, Mike Stevens, G8CUL. Den, M0ACM, 01793 822705.

TROWBRIDGE & DARC
2, Videos: 'A52A Bhutan 2000 DXpedition', 'Marconi at Poldhu'. Ian, G0GRI, 01225 864698 evenings / weekends.

WORTHING & DARC
2, Annual dinner. 9, 'Shoreham Airport'. 16, 'Public safety and communications', G8JBJ. 23, DNA testing. 30, Discussion on current topics. Roy, G4GPX, 01903 753893.

Region 11: South West & Channel Islands

BOURNEMOUTH RS
4, Brainstorming on the club programme, 'Radio gear nostalgia evening' – bring something to talk about. Chris, M5AGG, 01202 893126.

BRISTOL RSGB GROUP
28, Youngsters' DXpedition to Maldives, Mark Haynes, M0DXR. Martyn, G3RFX, 0117 9736419.

CORNISH RADIO AMATEUR CLUB
3, AGM. 14, Computer section. 25 - 27, International Marconi Day. John G4LJY, 01872 863849.

SOUTH BRISTOL ARC
2, Computer Clinic. 9, Wine & cheese tasting. 16, GB3BS repeater group presentation. 23, On air. 30, HF workshop for newcomers. Len, G4RZY, 01275 834282.

WEST SOMERSET ARC
1, AGM and construction contest. Jean, G0SZO, 01984 633060.

YEOVIL ARC
10, 57th AGM. 17, The Lister D Stationery Engine G7/M3LNJ. 24, On air. Derek, M1WOB, 01935 414452.

Region 12: East & East Anglia

BRAINTREE & DARS
7, Construction contest. 21, Power & SWR Measurement. John, M5AJB, 01787 460947.

CHELMSFORD ARS
1, PicATUne auto ATU, Paul Berkeley, M0CJX. 26, Demonstration station 10am-4pm at Sandford Mill Science and Industrial Museum. David, M0BQC, 01245 602838.

COLCHESTER RAC
10, RF Power Measurements, Dave Penney, G3PEN. 24, 'The Life of Whetstone', Richard, G7BIV. Andy, M1MOD, 01206 735122.

EAST KENT RS
7, Spring cheese and wine party. 21, On air, demos of digital techniques in amateur radio. Paul, G3VJF, 01227 365384, EKRS@paulnic.com, www.paulnic.com/ekrs

HARWICH AR INTEREST GROUP
9, '40 years thumping a key', Les Sayer. Eugene, G4FTP, 01206 826633.

LEISTON ARC
1, A look at the 2GHz band, John, G4XVE. Paul, M3MIG & Diana, M3VDT, 01728 746044, m3mig@aol.com

LOUGHTON & EPPING FOREST ARS
4, AGM. Marc, G0TOC, 07803 023501.

NORFOLK ARC
2, AGM. 9, Informal and CW Instruction. 16, The Satellite Gateway, Roger, G3LDI. 23, Informal and CW Instruction. 30, Field Day Briefing. Reg Pond, G0VDO, 01603 429269.

Region 13: East Midlands

DERBY & DARS
1, 'Foolish Junk Sale'. 15, Video show. 22, 'Radio at Sea - Life as a Ships Radio Officer', Ron, G3KTC. 29, Quiz night. Martin, G3SZJ, martin@martinshard-low.demon.co.uk

EAGLE RADIO GROUP
8, 'Insight to the workings of Hospital Radio'. G0SWS, 01507 478590.

LOUGHBOROUGH & DARC
1, Interclub Quiz. 8, Club project - DF Shifter construction. 15, 'Entertainment' in the Loughborough area. 22, Curson cinema visit, details TBA. 29, Computers old & new. Chris, G1ETZ, 01509 504319.

SHEFFORD & DARS
3, Spring junk sale. 10, Manufacture of batteries, Mike, G0BEG. 17, 1950s evening, Bryan. 24, Technical discussion. Derek, G4JLP, 01462 851722.

SOUTH NORMANTON, ALFRETON & DARC
7, AGM. Mike, M0RMJ, 01949 876523.

As part of the Foundation assessments, candidates have to carry out QSOs on both the HF and VHF / UHF bands. Chelmsford Amateur Radio Society Foundation course candidate Srinivasan Sampathkumar (Sam) is seen here operating with Martyn, G1EFL, using the club call GX0MWT.

Chelmsford's Historic Demonstration Station

The Chelmsford Amateur Radio Society will be putting on a demonstration station on Saturday 26 April at the Sandford Mill Science and Industrial Museum open day. The museum, which is only open four times a year, houses an extensive collection of early transmitters and receivers and is well worth a visit. The station will be operated from the hut that was originally used by the broadcast station 2MT (Writtle) in the 1920s.

The Chelmsford Amateur Radio Society runs Foundation evening courses every two months and an Intermediate course will be starting on 15 May.

The club meets at 7.15pm for 7.30pm on the first Tuesday of each month at the Marconi Social Club, Beehive Lane, Great Baddow, Chelmsford. A bar is available for refreshments. For further information contact the secretary David Bradley, M0BQC, tel: 01245 602838; e-mail: cars@g0mwt.org.uk or refer to the website at: www.g0mwt.org.uk

Success at Stevenage

The Stevenage and District Amateur Radio Club invited RadCom editor Steve Telenius-Lowe, G4JVG, to present the pass certificates at the end of the club's third Foundation Licence course on 9 February. After two re-sits, all 11 candidates passed, keeping the club's success rate at 100%!

The instructors were Ken, M0KPB (Lead Instructor); Dave, G4ETG; Rob, G2BKZ; Sean, M1ECY; and Les, G7THT.

The Stevenage 11: standing Paul Bliss, Barry Wolohan, Theo Theoclitou, Haydn Huckle, Sarah Jean Morris, Geoff Leeder; kneeling: Mike Roberts, Félim Doyle, Frances Nation, Alison Jackson, Richard Tyminski.

Presentation at Dragon Club

At a recent meeting of the Dragon Amateur Radio Club held in Llanfairpwllgwyngyll, the club's Chairman, Geoff Spencer, GW4DRR, presented Dewi Roberts, GW0ABL, with an inscribed plaque and certificate. This was the Chairman's Award 2002 in recognition of Dewi's outstanding service to the club over many years. Dewi was club chairman from 1986 to 1997 and editor of the club's newsletter from 1986 to date. He is also the DRRM for RSGB District 63 and is the club's Foundation and Intermediate Licence Lead Instructor. In appreciating receipt of the award Dewi said that he is always conscious of the help and support that he receives from other members and hoped that the Dragon Amateur Radio Club would continue to prosper.

Geoff Spencer, GW4DRR (right), making the presentation to Dewi Roberts, GW0ABL.

Web Design Award for Southport Club

The Southport & District Amateur Radio Club (SADARC) is proud to announce that it has been awarded a Golden Web Award by the International Association of Web Masters and Designers (IAWMD). The IAWMD issues these awards to sites whose web design, originality and content have achieved levels of excellence deserving of recognition. Derek Hughes, G7LFC, SADARC's Publicity Manager, said that the website at www.southportarc.org.uk had been up and running for around 12 months now and that it was designed to be viewed by all radio amateurs, not just those of the club. There is plenty of up-to-date club, UK and world-wide news, features written by the site's visitors, a diary of club meetings, local rallies and courses, free software to download from G7LFC Software and a comprehensive list of amateur radio and computer-related links. The club's new newsletter can also be downloaded from the website.

SADARC is also running a free e-Group which all radio amateurs are welcome to join. The e-Group is intended to be a focus for radio amateurs around the world to exchange their news and views, arrange 'skeds', share photographs of their events, list their favourite links and generally keep in touch when conditions mean that it can't be done over the radio. Everyone is welcome to join the group, which can be found at http://groups.yahoo.com/group/SADARC

SADARC meets on the third Monday of every month, other than bank holidays and at Christmas, at St Marks Church Hall, Scarisbrick, Lancashire. Further details can be found on the website or from Publicity Manager, Derek Hughes, G7LFC, tel: 01695 573870; e-mail: derek@g7lfc.co.uk.

Visit to Crail Coastguard Station

Thirteen members of the Dundee Amateur Radio Club enjoyed a visit on 11 February to the Fife Ness Coastguard Station based at Crail, where they were warmly welcomed and shown around the establishment. The main features, as far as club members were concerned, were the three Control Desks, each with a range of computer displays, which are the controls for VHF receivers and transmitters and telephone links.

The Crail Station is responsible for actions on the coast between Stonehaven and St Abbs Head and monitors all VHF shipping signals in this area to about 30 - 40 miles out to sea. There are six transmitter / receiver sites spaced along the coast which continuously monitor all shipping channels and these send received signals via fibre-optic link to Crail, the outgoing signals from Crail going back the same way. The frequencies monitored by each outstation can be changed by data control signals from Crail, using touch screen display on each Control Desk. The Desk manned by the shift controller has an additional direction finding capability. Three of the remote outstations have automatic DF equipment, the bearings being relayed to Crail and displayed for triangulation on a wall map of the station's area.

Members of the Dundee Amateur Radio Club have the operation of the Fife Ness Coastguard Station explained to them.

The communications equipment and computer operation was explained to all and warm thanks were proposed by Alec Ferguson on behalf of the members for the enjoyable visit.

Writing for RadCom

Aspiring contributors listened intently when George Brown, M5ACN, RadCom technical editor, gave a presentation, 'Writing for RadCom', to members of the Warrington Amateur Radio Club on 4 February. The club is fortunate in having members who have done just that, recent examples being the Simple Digital Power Meter by Dave Roberts, G8KBB, in 1999 and the CDG 2000 by Colin Horrabin, G3SBI, Dave Roberts, G8KBB, and George Fare, G3OGQ, in 2002.

Nevertheless, few of the other members present were aware of the meticulous care that goes into the publication of an article. The monthly arrival of RadCom will now be awaited with even greater anticipation and, who knows, perhaps one of us will spot an error that has slipped past George Brown's eagle eye?

Ready for the Full RAE?

The Manchester Wireless Society, G5MS, is now enrolling candidates for the final City & Guilds RAE course. The course is due to start in mid-April and be completed in time for the December 2003 exam. Anyone in the Manchester area wishing to sit the final C&G RAE should contact Steve on tel: 0161 330 0914; e-mail: secretary@g5ms.com or look for further details on the website at www.g5ms.com

New Chorley Amateur Radio Club Formed

The Chorley & District Amateur Radio Society is a new club that has been formed in Chorley, Lancashire. It caters for all users of amateur radio, offering instruction, talks by guest speakers and on the air facilities. It meets every Wednesday from 7.00pm at St James's Bowling Club, Eaves Lane, Chorley. All who would like are invited to join members on any club night when they will be assured of a friendly welcome. Courses for the radio exams will be run alongside normal club activities. Further details from secretary Sean Flanagan, M1SMF, tel: 07944 515045; e-mail: sean1226@hotmail.com

Courses for the Border Country

Wigtownshire Amateur Radio Club has just completed another happy Foundation Course. It will be running yet another course over the weekend of 31 May / 1 June. Students from Southern Scotland and Northern England attending the courses have written to say how much they appreciate them. Intermediate Courses are now being planned for this autumn. For further information contact Ian Macdonald, MM5WIG, tel: 01988 403364.

By Richard Constantine, G3UGF, RSGB Director of Education and Training,
The Old Exchange, Burnley Road, Mytholmroyd, Hebden Bridge, West Yorkshire HX7 5PD.

GB4FUN TARGETS TEACHERS

Carlos Eavis, G0AKI, in full flow - demonstrating satellite communications to teachers inside the GB4FUN van.

GB4FUN on site at Brentwood, outside the main activity / lecture block.

On Saturday 25 January, GB4FUN was active at the South East Regional meeting of the Association for Science in Education (ASE) at Brentwood in Essex, attended by more than 150 teachers and technicians. ASE counts amongst its members thousands of science teachers and educators right across the UK. It hosts regular meetings in each region throughout the academic year.

Following this exploratory visit, a joint RSGB / STELAR (Science and Technology through Educational Links with Amateur Radio) initiative, supported by the Radiocommunications Agency, intends to take its 'road show' to each of these conferences during the next 18 months. The aim is to showcase the valuable contribution that amateur radio can make to education, to demonstrate practical projects and applications for radio and to highlight its benefits to the science curriculum.

Anthony Vinters, G0WFG, Chair of STELAR and Richard Constantine, G3UGF, the RSGB's Director of Education and Training, aim to present interactive lectures describing the possibilities for 'Radiocommunications studies in mainstream science education'.

FREE COURSE FOR TEACHERS

STELAR offers a free residential course for teachers wishing to know more about communications and how to use amateur radio in schools. It still has a few vacancies for its next free course to be held in Yorkshire during Easter week this year. If you know of a teacher wishing to learn more about the potential for radio in schools it's still not too late to contact Anthony Vinters, G0WFG (QTHR), for more information. His e-mail address is: g0wfg@demon.co.uk. ◆

The GB4FUN Supporters' Honour Roll

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.

GB4FUN 'BIG HITTERS'
Bolton Metro, Lancs (Bolton Show)
A V Bryant, G3NVB
D J Gilham, G8THK
B M Back, RS181448

The contribution listed from the North Norfolk Amateur Radio Group was made in memory of the group's late Chairman, Dick Gallop, G0KNQ, who died in tragic circumstances in September 2002. Dick had a special interest in encouraging young people into amateur radio and will be particularly remembered by hundreds of youngsters throughout the UK as the man who gave them a 'Morse test' at the North Norfolk ARG, GB2MC, Muckleborough Collection radio display.

I T W Gibbs, 2E0AUW
C T Nock, 2E1AMT
Mrs A Cannon, 2E1DZP
J von Geisau, DH4JG
E Ludwig, F9LT
N J Sherwood, G0CMK
J R Rivers, G0GCQ
P G Broad, G0SWU
E J Baxter, G0TII
K J Allington, G0TSP
L M Ruddock, G0UHM
P Vukasinovic, G0UPA
L S Wright, G0UWQ
R J Konowicz, G0YYY
J H English, G2DZF
K F Eastty, G3LVP
R C Rand, G3MRU
A G Widdowson, G3PET
A J Stokes, G3ZRH
P Allan, G4NTA
E Brown, G4YXE
D Thomalla, G7GGM
P A Chambers, G7HIT
C F Hosegood, G7IRU
P S Cross, G7MWH
D Allen, G7OWX
D A Evans, G7RAB
J C Stephens, G7WJK
A H Wilson, G8BTE
E Edwards, G8HLJ
K Pascoe, G8ZQM
North Norfolk ARG, GB2MC
J S Wardem, GM0JZV
J G McVittie, GM0NBG
C J Wright, GM4HWO
H H Christie, GM4SNP
N Mackinnon, GW3PPQ
E D W Smith, GW4VTG
R D Walker, M0BPT
J O Farrer, M0DCZ
Trewellard R A Group, M0TRG
D N Pope, M1BRU
F C Bailey, M1EYH
A J Banks, M1EYL
E D Sigsworth, M1GJX
T Higginson, M1GXL
T Denby, M1TAD
B Cannon, M3BFC
E B Stanmore, MW3EBS
J N C Parsons, RS172499
I N Nathan, RS180015
W Waller, RS180779
H R McDonald, RS183331
A D Waring, RS183381
S Brensholm, RS183476
J Dodsworth, RS185234
M E Bazley, VK6HD
B Harper, VK6JW

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.

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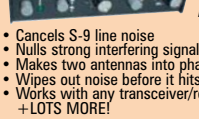

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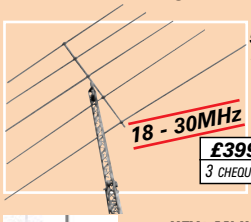

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LP 1830 5 ELEMENT HF LOG PERIODIC

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- Boom: 3 mtrs
- Power: 2 kw
- Weight: 16 kg

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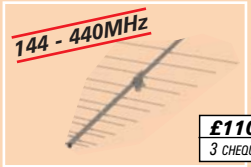

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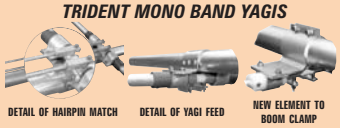

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6M5L ..... 5 element Std	10.31dBi	3.6mtr	6 Kg	£119.95
6M5LDX ..5 el Long Yagi	11.75dBi	6.0mtr	8.5Kg	£165.95
6M6L ..... 6 el Yagi	12.40	7.22mtr	n/a	£225.00
6M7LDX ..7 el Long Yagi	13.31dBi	9.6mtr	13 Kg	£249.95
4 Metre Yagis				
4M3L ..... 3 element	8.70dBi	1.48mtr		£85.00
10 Metre Yagis				
10M2L ..... 2 element	6.59	1.5	5.0Kg	£119.95
10M3L ..... 3 element Std	7.41dBi	3.0mtr	6.5Kg	£129.95
10M4LDX .4 el Long Yagi	9.42dBi	5.40mtr	11Kg	£199.95
15 Metre Yagis				
15M3L ..... 3 element Std	8.21dBi	4.40mtr	tba	£215.00
15M4-DX 4 el.Long Yagi	10.6dBi	8.20mtr	17.5Kg	£255.00
20 Metre Yagis				
20M2L ..... 2 element Yagi	6.37 dBi	3.00mtr	tba	£179.95
Log Periodic Yagis				
LP270 ..... 144 - 440 MHz	9.50dBi	1.40mtr	2.6Kg	£110.00
LP1300 ..... 105 - 1300 MHz	11-13dBi	1.50mtr	2.2Kg	£129.00
LP1830 ..... 18 - 30 MHz	7.8 dBi	3.0mtr	16Kg	£399.00

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For contesters & DX'ers who want to cut through the pile ups.
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By Peter Hart, G3SJX, The Willows, Paice Lane, Medstead, Alton, Hampshire GU34 5PR.

"It could be the only radio you ever need"

The Yaesu FT-897 HF/VHF/

This latest transceiver from Yaesu is aimed at the amateur who wants a radio that will do everything – but is small and light enough to take anywhere. It is modelled on the popular FT-817 QRP rig in terms of its radio architecture and user control yet packs a full 100W output from the built-in AC mains PSU or 20W output from internal batteries. It is the smallest 100W radio on the market with a built-in power supply but with many features found only on larger radios – and a front panel of adequate size for serious use at home, in contests or on DXpeditions. Covering all bands from 160m to 70cm, all analogue and digital modes, broadcast FM / AM and aircraft AM, it could be the only radio you ever need.

BASIC FUNCTIONS

THE FT-897 measures 200W x 80H x 262Dmm and weighs a little under 4kg without PSU or batteries. The radio can be powered in one of three ways, with an external 13.8V supply, with the internal mains PSU or with batteries. The internal PSU and batteries cannot both be fitted at the same time and it is not really intended to chop and change between them. The mains PSU bolts underneath in place of the bottom cover and adds 15mm to the overall height and 1.6kg to the weight. It is a well-shielded switched mode design delivering 22A maximum, quite small and light considering its power rating. The batteries fit under the standard bottom cover and there is room to fit two. Each comprises a 4.5AH 13.2V Ni-MH pack fitted with a charging socket and each weighs about 800g. Only one battery is used at a time and a switch on the top of the radio switches between the batteries. A special charger is required (CD-24) which takes its supply from either a 12V or 24V source and will fully charge each battery separately in about four hours. So a suitable supply is also required, even if you operate solely on batteries. One battery will power the radio for up to four hours mainly on receive, but considerably less with heavy transmit usage.

The receiver in the FT-897 tunes from 100kHz to 56MHz, 76 to 108MHz (wideband FM mode only), 118 to 164MHz and 420 to 470MHz. The transmitter is enabled only within the exact amateur allocations with variants for different regions. Up / down keys scroll through the various amateur bands, general coverage and broadcast bands, and another pair of up / down keys scrolls through the modes – LSB, USB, CW, CW-R, AM, FM, Digital and Packet. Digital mode uses AFSK on SSB modes and is intended for RTTY, PSK31, SSTV etc. Packet mode uses FM and has settings for both 1200 and 9600 baud operation.

The transmit power output is 100W maximum on HF / 6m, 50W on 2m and 20W on 70cm. On internal batteries, the power output is limited to 20W (10W on 70cm). The radio is very ruggedly constructed on a diecast aluminium chassis with two internal cooling fans and a rather small 55mm diameter speaker in the case top. Two antenna sockets are provided, an SO239 for HF / 6m and a type N for 2m / 70cm. Other connectors on the rear panel provide DC power input, external speaker and key jacks, and two mini DIN connectors for data input and control. The single 8-pin control connector may be set via the menu system to provide control from a PC via an external level converter, control of the Yaesu range of auto ATUs, or control of the VL-1000 linear amplifier. Unfortunately, with just one socket this has to be dedicated to one function only. The radio does not contain a built-in auto ATU but a matching accessory, the FC-30, clamps to the side and provides matching for antenna VSWRs of up to 3:1 on HF or 2:1 on 6m. This unit uses relay switched capacitors and inductors and has 100 frequency stores but is a bit noisy.

Electrically, the radio uses a double conversion superhet receiver with IFs of 68.33MHz and 455kHz. DSP audio processing is used for extra filtering and noise reduction. The transmitter driver signal path and receiver front-

Left: The FC-30 ATU with covers removed.

YAESU FT-897 MEASURED PERFORMANCE

Receiver measurements

	SENSITIVITY SSB 10dBs+n:n		INPUT FOR S9	
FREQUENCY	PREAMP IN	IPO	PREAMP IN	IPO
1.8MHz	0.18µV (-122dBm)	0.4µV (-115dBm)	8µV	22µV
3.5MHz	0.16µV (-123dBm)	0.35µV (-116dBm)	8µV	22µV
7MHz	0.16µV (-123dBm)	0.35µV (-116dBm)	8µV	20µV
10MHz	0.16µV (-123dBm)	0.35µV (-116dBm)	7µV	20µV
14MHz	0.14µV (-124dBm)	0.32µV (-117dBm)	5.6µV	16µV
18MHz	0.14µV (-124dBm)	0.32µV (-117dBm)	5.6µV	14µV
21MHz	0.25µV (-119dBm)	0.35µV (-116dBm)	5.6µV	16µV
24MHz	0.22µV (-120dBm)	0.35µV (-116dBm)	5.6µV	16µV
28MHz	0.18µV (-122dBm)	0.32µV (-117dBm)	5.6µV	16µV
50MHz	0.1µV (-127dBm)	0.18µV (-122dBm)	2.5µV	7µV
144MHz	0.13µV (-125dBm)	–	2.8µV	–
432MHz	0.16µV (-123dBm)	–	2.8µV	–

AM sensitivity (28MHz): 0.9µV for 10dBs+n:n at 30% mod depth. **FM sensitivity** (144MHz): 0.18µV for 12dB SINAD 3kHz pk deviation. **AGC threshold:** 1.3µV. **100dB above** AGC threshold for +1.5dB audio output. **AGC attack time:** 1-3ms. **AGC decay time:** 30-200ms (fast), 0.3-3s (slow). **Max audio before clipping**: 8Ω 1.9W, 4Ω 3W at 2% distortion.

S-READING	INPUT LEVEL SSB	
(7MHz)	Preamp in	IPO
S1	1.8µV	4.5µV
S3	2.2µV	5.6µV
S5	3.2µV	8µV
S7	5µV	13µV
S9	8µV	20µV
S9+	120µV	220µV
S9++	1.5mV	4mV

MODE	IF BANDWIDTH		
	-6dB	-50dB	-60dB
SSB ceramic	2450Hz	3700Hz	6260Hz
2.3kHz mech	2400Hz	3750Hz	6130Hz
500Hz mech	590Hz	1720Hz	3390Hz
AM	7580Hz	13.6kHz	14.7kHz
FM	13.7kHz	22.0kHz	22.4kHz
FM(N)	9.7kHz	15.6kHz	15.7kHz

UHF Transceiver

end mixer are all wideband covering a remarkably wide frequency range from 160m to 70cm. Only the transmitter power amplifiers are separate, one for HF / 6m and the other for 2m / 70cm.

PRINCIPAL FEATURES

In addition to the usual dedicated controls and keys, three buttons below the display select most of the functions of the radio. 17 sets of button allocations are selectable and scrollable via the rotary channel selector which provides rapid and easy access to the various functions. In addition the menu system allows some 91 parameters of the radio to be set according to user preferences.

Main tuning uses a 45mm diameter rotary control in conjunction with the detented channel selector. The rotary dial tunes in 10 or 20Hz steps (2 or 4kHz per revolution), with higher rates on AM and FM, and a variety of mode dependent step sizes for the channel selector and more rapid frequency excursions. A momentary press of the power switch can select a faster tuning rate. This is not documented in the manual and not really intuitive! 200 regular memories are included which may be partitioned into 10 groups of 20 channels and each channel may have an eight character label attached for easy identification. A one touch quick memory store allows one frequency to be rapidly stored and recalled and a separate home channel for each of the four band groups may be selected at the push of a button.

Selectable power saving features include auto power-off following lack of control activity, a transmission time limiter and auto turn-off of the display backlighting. The backlighting can be set to one of 32 colours and different colours can be set for different bands, modes, memory groups and other operating status conditions. The LCD indicates frequency to 10Hz resolution, memory channels or labels, mode and VFO status and function key labels. The battery voltage is permanently displayed and there is a bargraph type S-meter which indicates power, SWR, ALC level or modulation on transmit.

A number of small omissions and errors in the 68-page manual were found which is unusual for Yaesu who generally produce manuals to a very high standard.

MAINLY HF FEATURES

Twin VFOs are incorporated each with separate band stores. These can be used separately for CW and SSB segments or used together for split frequency operation. A clarifier (receiver incremental tuning) covers ±10kHz and functions on receive only. IF shift helps in reducing adjacent channel interference and an IF noise blanker is included for reduction of ignition and other impulse noise. The radio is provided with a 2.4kHz ceramic IF filter for SSB and CW modes but space is provided to install two optional Collins mechanical filters, a 500Hz filter for CW and digital modes and a 2.3kHz filter with improved shape factor for SSB. A high stability reference oscillator may also be fitted as an option.

Other receive features include fast / slow AGC, RF gain control / squelch, variable CW pitch and a CW tuning aid. For strong signal situations, the receive preamp may be switched out (IPO) and a 10dB attenuator may also be switched in. On 2m and 70cm the receive preamp is permanently in circuit. Audio frequency DSP provides a sharp peaking filter on CW tracking the pitch setting, a bandpass filter on SSB with adjustable low and high frequency cutoffs, a notch filter tracking multiple heterodynes and DSP noise reduction facilities.

On transmit VOX is provided and an audio speech processor functioning on SSB and AM with DSP microphone equalisation to tailor the audio frequency response. Full and semi break-in is provided on CW together with a built-in electronic keyer adjustable in speed over the range 4 - 60WPM. Three 40-character message stores are available which are programmed as text. These can be cascaded for longer messages and one can be set into auto repeat mode to provide a beacon facility. This can be useful for 50MHz DXpedition use. The internal keyer can also be used for code practice, sending and displaying five-character groups via the internal sidetone.

The FT-897 is well equipped with facilities to handle digital and packet modes. As well as the predefined

Rear view of the FT-897 with the FC-30 ATU fitted to the side of the transceiver.

INTERMODULATION (50kHz Tone Spacing)

Frequency	PREAMP IN 3rd order intercept	PREAMP IN 2 tone dynamic range	IPO 3rd order intercept	IPO 2 tone dynamic range
1.8MHz	+2.5dBm	89dB	+3.5dBm	85dB
3.5MHz	+4dBm	91dB	+11.5dBm	91dB
7MHz	+2dBm	90dB	+13dBm	92dB
14MHz	+4dBm	92dB	+21dBm	99dB
21MHz	+5.5dBm	89dB	+20.5dBm	97dB
28MHz	+6dBm	92dB	+22.5dBm	99dB
50MHz	-2dBm	90dB	+7dBm	92dB
144MHz	-2dBm	88dB	–	–
432MHz	0dBm	88dB	–	–

CLOSE-IN INTERMODULATION ON 7MHz BAND

Spacing	PREAMP IN 3rd order intercept	PREAMP IN 2 tone dynamic range	IPO 3rd order intercept	IPO 2 tone dynamic range
3kHz	-41dBm	61dB	-36dBm	60dB
5kHz	-35dBm	65dB	-29dBm	64dB
7kHz	-28dBm	69dB	-22dBm	69dB
10kHz	-15dBm	75dB	-14dBm	74dB
15kHz	-9dBm	82dB	-3dBm	81dB
20kHz	-1dBm	87dB	+3dBm	86dB
30kHz	+2dBm	90dB	+11dBm	91dB
40kHz	+2dBm	90dB	+13dBm	92dB
50kHz	+2dBm	90dB	+13dBm	92dB

FREQUENCY OFFSET	RECIPROCAL MIXING FOR 3dB NOISE	BLOCKING PREAMP IN
3kHz	68dB	-39dBm
5kHz	74dB	-38dBm
10kHz	82dB	-37dBm
15kHz	88dB	-32dBm
20kHz	91dB	-26dBm
30kHz	96dB	-18dBm
50kHz	102dB	-11dBm
100kHz	108dB	-11dBm
200kHz	116dB	-11dBm

modes of PSK31, RTTY and packet, two user definable modes (USB and LSB) are also included. These can be used for SSTV or a future new digital mode.

MAINLY VHF / UHF FEATURES

The FT-897 includes all the features which are available on modern FM equipment. Both wide and narrow FM modes are provided covering 25 / 12.5kHz channelling on VHF / UHF or 10kHz on 29 / 50MHz. Both the receiver bandwidth and transmitter deviation levels are set appropriately. For repeater operation, the shift is separately programmable on 10m, 6m, 2m and 70cm and can be automatically selected according to the bandplan in use in the relevant region on 2m and 70cm. The transmit and receive frequencies can be reversed by a single key press to check for activity on a repeater input channel.

Various selective access methods are provided including CTCSS tone encoder and tone search, 1750Hz tone burst, Digital Coded Squelch and associated code search and the Yaesu ARTS (Auto Range Transponder System). This uses DCS signalling to determine when two ARTS equipped stations are within communications range.

Under the top cover of the FT-897.

Various scanning modes are implemented which include between programmed limits, across memory channels which may be tagged for skipping, Dual Watch and Priority Channel Scanning. Dual Watch allows VFO-B to be checked every 5s whilst using VFO-A for normal communication purposes, and Priority Channel Checking lets you operate on a memory channel while checking memory channel 1 every 5s. Smart Search is a useful feature when travelling in a new area and functions on AM and FM. A scan is initiated in VFO mode and the first 50 active channels are loaded into special memory.

The FT-897 also includes a spectrum scope monitor which monitors activity 10, 15 or 63 channels on either side of the receive frequency and displays relative signal strength as a bargraph on the LCD. The channel step size is selectable. Normal receiver operation is disabled whilst the spectrum monitor is functioning.

The FT-897 can also be used in conjunction with a transverter via the antenna socket. Two transverter settings may be accommodated and the display set to read the transverted frequency up to 9.999GHz. Full operation is not covered in the manual.

MEASUREMENTS

Measurements were made with the review radio powered from the internal mains PSU and are summarised in the tables.

The current consumption on receive measured some 600mA increasing to 1A with the FC-30 auto-ATU connected. This extra current is mainly due to the fan in the FC-30 which runs continuously. The sensitivity was very good on all bands but reduced significantly at LF (5µV at 136kHz). The rejection of spurious responses was generally very good. The AGC recovery time was very dependant on level and set rather too fast for my liking. The strong signal performance (intercept and dynamic range) was rather poor close-in but fairly average at wider spacings and the in-band distortion was poor particularly at fast AGC settings. The reciprocal mixing figures are rather poor compared with some other radios and this means that the IF filter skirts tend to be masked by noise. The overall selectivity and adjacent channel results are shown in Fig 1.

On transmit the results are generally good with the CW keying waveform of low distortion although the fall time is a little sharp. SSB intermodulation products are average to poor but data switching times are good.

ON THE AIR

I found the FT-897 to be an excellent all-round radio. Considering its small size and high number of features, the radio is very easy to use, the controls are well positioned, of a good size, rugged and have a positive action. 17 sets of function keys is about the limit and perhaps too many for easy access although more direct access buttons may have been an advantage.

The receiver was very lively, sensitivity was excellent and coped well with most situations although some strong signal problems could be provoked on the lower bands during darkness. At times the IPO selection (preamp switched out) was not sufficient and the attenuator needed to be switched in circuit to give clean results. The internal speaker gave reasonable communications quality but tended to rattle at higher levels. However, with an external speaker or headphones the quality was excellent. The performance on AM and FM broadcast was also excellent. I preferred to use the AGC slow setting on all modes, except perhaps when using full break-in, to prevent background noise returning between Morse characters and speech symbols in a disconcerting way. The DSP filters were a definite help and the notch fairly effective although not as deep as in some radios. DSP noise reduction seemed rather more effective than with some earlier implementations of this feature.

Power supply noise and spurii were virtually inaudible, just a couple of little 'gurgles' on 80m with the antenna disconnected. The FC-30 auto ATU tuned quickly in about 2 seconds maximum with a clattering of relays but the fan which runs continuously is rather noisy. On transmit good audio quality reports were received and the CW keying effective at full break-in.

CONCLUSIONS

The FT-897 lives up to its promise as a true go-anywhere, do-everything radio with good user ergonomics and a good overall performance. The basic radio is currently listed at £1099 but the extras can add significantly to the price. The FP-30 internal mains PSU costs around £200, the batteries are £100 each and the CD-24 charger a further £100. The FC-30 ATU is £250. No doubt package deals will be available from the main retailers.

My thanks to Yaesu UK for the loan of the review items. ♦

YAESU FT-897 MEASURED PERFORMANCE

TRANSMITTER MEASUREMENTS

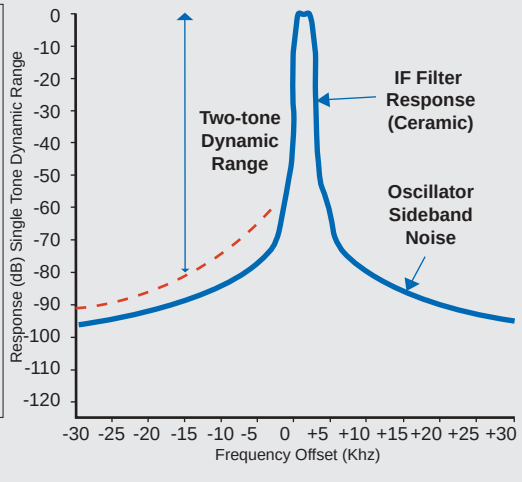
FREQUENCY	CW POWER OUTPUT	SSB(PEP) POWER OUTPUT	HARMONICS	INTERMODULATION PRODUCTS 3rd order	5th order
1.8MHz	100W	100W	-65dB	-26 (-20)dB	-36 (-30)dB
3.5MHz	98W	100W	-70dB	-26 (-20)dB	-36 (-30)dB
7MHz	97W	100W	-60dB	-26 (-20)dB	-36 (-30)dB
10MHz	97W	100W	-58dB	-28 (-22)dB	-38 (-32)dB
14MHz	98W	100W	-60dB	-28 (-22)dB	-38 (-32)dB
18MHz	98W	100W	-57dB	-28 (-22)dB	-34 (-28)dB
21MHz	98W	100W	-57dB	-26 (-20)dB	-34 (-28)dB
24MHz	99W	100W	-64dB	-26 (-20)dB	-34 (-28)dB
28MHz	100W	100W	-64dB	-26 (-20)dB	-30 (-24)dB
50MHz	96W	98W	-68dB	-23 (-17)dB	-29 (-23)dB
144MHz	50W	50W	-70dB	-26 (-20)dB	-32 (-26)dB
432MHz	19W	19W	-67dB	-32 (-26)dB	-38 (-32)dB

Two-tone transmitter intermodulation product levels are quoted with respect to PEP, figures in brackets are with respect to either tone.

Carrier suppression: >60dB.
Sideband suppression: 60dB @ 1kHzFM deviation: 4.6kHz (wide) 2.2kHz (narrow)
SSB T/R switch speed: mute-TX 20ms, TX-mute <1ms, mute-RX 12ms, RX-mute <1ms.

NOTE: All signal input voltages given as PD across antenna terminal. Unless stated otherwise, all measurements made on SSB with the receiver preamp switched in.

Fig 1: FT-897 effective selectivity curve on USB



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Radcom *review Dec 2002*

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Centre pics, clockwise from top left: Martin Lynch (left) checks out the accommodation at the new venue; the huge well-lit exhibition hall that will be used for the show; star attraction Ken Mackintosh, M0COR, with his big band; the smart reception area at Kempton Park Exhibition Centre.

The West London Radio

Kempton Park Exhibition Centre, Sunbury-On-Thames, Middlesex, Sunday 27 April 2003. A major new rally for the south of England.

After the huge success of last June's Epsom rally, the organisers – RadioFairs – decided to add another prestigious event to the calendar of UK radio rallies and shows. The West London Radio & Electronics Show, to be held at the Kempton Park Exhibition Centre, Sunbury-on-Thames, Middlesex, on Sunday 27 April, will feature major exhibitors and traders, including ML&S, Waters & Stanton, Nevada, Yaesu, Kenwood, Icom etc.

There will be an RSGB bookstall and information stand plus an exclusive RSGB members-only area, giving you the opportunity to come along and meet RSGB President Bob Whelan, G3PJT; RSGB General Manager Peter Kirby, G0TWW; and RadCom Editor Steve Telenius-Lowe, G4JVG.

As well as the major traders, there will be an extensive bring-and-buy sale, club tables, and plenty of surplus equipment available. Look out too for the huge, free 'For Sale / Wanted' board! Tables are provided free of charge for charities and at a subsidised rate for clubs. In addition, there is plenty of space available at Kempton Park for demonstrations, exhibits, meetings, forums etc – just contact RadioFairs to let them know your requirements.

A major attraction for radio amateurs and non-radio amateurs alike will be music provided by Ken Mackintosh and his big band throughout the day.

The venue boasts restaurants and bars and there is excellent, free all-weather parking on site. The West

An aerial view of the Kempton Park racecourse.

London Radio & Electronics Show is open between 10.00am and 5.00pm, but get there early because Yaesu is giving away a free 'goody bag' for the first 200 visitors through the doors! Admission to the West London Radio & Electronics Show will be free of charge for students and children – as well as for everyone taking the RSGB

Come and meet...

RSGB President Bob Whelan, G3PJT; RSGB General Manager Peter Kirby, G0TWW; and RadCom Editor Steve Telenius-Lowe, G4JVG, in the exclusive RSGB members-only 'meet and greet' area!

RSGB President Bob Whelan, G3PJT

& Electronics Show

5WPM Morse test at Kempton Park, so there's now no excuse for putting off the Morse test and not taking out a Class 'A' licence!

The Kempton Park Exhibition Centre is easy to find. It's located on the A308 at Sunbury-on-Thames, Middlesex, close to Junction 1 of the M3, and close to both Kempton Park and Sunbury-upon-Thames railway stations (see map). The GB2KRT talk-in station run by the Whitton Amateur Radio Group will be providing directions on 145.550MHz FM (channel S22 / V44) for those operating 'mobile' on their way to Kempton Park.

Come along to the new exhibition centre at Kempton Park racecourse, experience this new style of radio event and enjoy the many attractions.

For bookings and further information see the website at www.kempton-rally.co.uk; tel / fax: 01737 279108 or e-mail: m0cjx@ntlworld.com. ◆

RadioFairs

'Where Fun Gets Down to Business'

Product News

NEW ALINCO RIG WITH DIGITAL VOICE OPTION

The new Alinco DR-620E feature-packed dual-band mobile transceiver is the first amateur dual-band mobile to support optional Digital Voice Communications. A plug-in board (optional) allows use of the advanced 10F3 digital mode with speech compression technology. Other features include an optional TNC board that supports digipeat mode, wideband reception, CTCSS/DCS encode and decode and lots more. The DR-620E costs just £299 and is available from Alinco dealers throughout the UK.

NEW YAESU FT-857 AVAILABLE SOON

The Yaesu FT-857 is a tiny new HF/VHF/UHF multi-mode amateur transceiver. But don't let its diminutive size fool you. The FT-857 is loaded with features, has 100W output on HF/6m, 50W on 2m and 20W on 70cm, with wide-band receive coverage that blends the renowned performance of the FT-897 and FT-1000 Mark V.

The front panel is removable and remotable with the optional YSK-857 kit. Refinements include spectrum display, 32 colour display, beacon mode, electronic keyer, 200 alphanumeric memories and CTCSS. In the UK, the optional DSP unit will be supplied as standard at no extra charge. Available later in the year, the amazing new Yaesu FT-857 provisionally will cost around £849 inc VAT.

Yaesu (UK) Ltd, Unit 12, Sun Valley Business Park, Winnall Close, Winchester, Hants SO23 0LB.

EH ANTENNAS

The EH is a new design of vertically-polarised antenna with a claimed gain of 0 to 2dB and claimed efficiency of over 95%. The antenna consists of two copper cylinders encased in plastic tubing. No tuning is required and they are ready to install. Versions are available for 20, 40 and, now, 80m. The 20m version, pictured here, is just over 1.10m long. The manufacturers, Arno Elettronica in Italy, say that 10, 11, 15 and 17m versions will also be available soon. For further details contact: Arno Elettronica, I-56033 Capannoli (PISA), Italy; tel: +39 0587 606122; e-mail: info@eheuroantenna.com or see www.eheuroantenna.com

NEW PRODUCTS FROM bhi

The bhi Noise Eliminating Speaker was reviewed by Chris Lorek, G4HCL, in the December 2002 RadCom. Now, two new products are available from bhi. One is the 1042 Switch Box, which, at just £29.95 plus £2.75 P&P, allows you to connect more than one piece of equipment to your bhi Noise Eliminating Speaker. The second is the NEIM1031 Noise Eliminating In-line Module. It is a compact noise cancellation unit that removes unwanted noise and interference from speech. It has connections for high and low level audio signals and is designed to be easily connected in the audio path of noisy signals. Further details from bhi ltd, PO Box 136, Bexhill on Sea TN39 3WD; e-mail: sales@bhinstrumentation.co.uk; or see www.bhinstrumentation.co.uk

MFJ DUMMY LOAD/ VSWR/POWER METER

The new MFJ-267 dual dummy load and VSWR meter is now available. Designed for use up to 54MHz, it will handle up to 1.5kW of power with dual-range power switching and PEP/ Average power switch. For 100W applications the internal load is rated for 10 minutes continuous use, while at 400W it can be run for 40 seconds before cooling is recommended. A switch enables the dummy load to be bypassed so that the VSWR meter is left in line to measure VSWR on the antenna. Waters & Stanton plc, 22 Main Road, Hockley, Essex SS5 4QS; tel: 01702 206835.

NEW TRIDENT 80m VERTICAL

The Trident HFV1-MkII is a fibreglass helical antenna resonant in the 80 metre amateur band. It gives surprisingly good DX performance from an antenna only 5.6m (18ft 4in) long. The HFV1 can even be phased in pairs or as a four square array for the real enthusiast with limited space. Sold originally as the Chelcom HFV1, this antenna has now been re-designed and released under the Trident brand name with improved efficiency and increased power handling of 1kW. Although designed primarily for 80m, the HFV1 has, over the years, provided amateurs with useful performance on other bands when used with an ATU - in many cases the built-in tuners in modern rigs will quite happily match the antenna.

Complete with mounting brackets, termination is an SO239 socket. In three sections, the two longest being 2.3m, the HFV1 is easily transported, making it ideal for portable operation. More details on the Trident website at www.tridentantennas.co.uk The HFV1-MkII costs £139.95 and is available from UK distributors Nevada, tel: 02392 313090.

WALFORD ELECTRONICS LATEST

Three interesting new construction projects have been added to the Walford Electronics 'Somerset' range of kits. The 'Fivehead' is a single-band phone superhet transceiver for any band 20 to 160m inclusive. It is aimed at portable operation, so is compact, with the main PCB just 100mm square! It produces 1.5W on a 13.8 volt supply. Optional extras include a CW kit, AGC/meter, speech processor, digital readout and linear. From £79 plus £1 P&P.

The Linear amplifier is a new optional extra for the 1.5W transmitters of the Somerset range including the Fivehead. It produces 10W on 13.8V but does even better with more volts! Price £24 plus £1 P&P.

The Antenna Matching Unit is a small unit for up to 20W rigs with an LED matching and output indicator. The matching section uses the T configuration and suits all normal antennas, balanced or unbalanced, for 10 to 160m. Price £32 plus £1 P&P.

Walford Electronics, Upton Bridge Farm, Long Sutton, Langport, Somerset TA10 9NJ; or see www.users.globalnet.co.uk/~walfor

The Walford 'Fivehead' transceiver with the Linear amplifier attached.

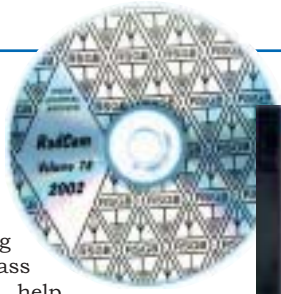
SGC 'STEALTH' KIT

The SGC 'STEALTH' kit provides a way to get on the HF bands from virtually any location – easily and quickly. The kit consists of 80ft of antenna wire in a loop, with an SGC-237 'Smartuner' automatic ATU along with 30ft of nylon support rope, antenna mounting clips and ropes, reusable cable ties and operating manuals, all together in a carrying case. The whole lot weighs just 2kg and is ideal for keeping in your car for unexpected portable or emergency operation. We plan to test the SGC 'STEALTH' kit in RadCom soon.

Coming soon from SGC – the MAC2000 Master Antenna Controller with Smartuner built in. Combining an automatic ATU with an antenna switch in a single compact unit, the MAC2000 will control up to five antennas: three with SO239 coax connectors, one balanced antenna output and one end-fed wire. More details later.

SGC equipment is available in the UK through Waters & Stanton plc, 22 Main Road, Hockley, Essex SS5 4QS; tel: 01702 206835.

Book and Video Review



RADCOM 2002 CD

Reviewed by RSGB HQ Staff

Are the rafters in your loft groaning? Do you need more storage space? If you'd like to throw out dozens of RadComs but can't bring yourself to do so because of the mass of useful information they contain, help is at hand. You need the RadCom 2002 CD. It contains all 1200+ pages of RadCom published last year in easily-readable form.

The CD contains 14 PDF files: one for each month of the year, plus the Index and a 'Welcome' file, which explains how to use the CD and gives information about RSGB membership. Each of the months' PDFs contains the 100 (or more) pages of RadCom. A small vertical strip down the left side of the screen is used for 'thumbnail' images of each page to help your navigation through each issue. You can jump to any page you want or work through them from page 1. Once a page is displayed it is possible to reduce it in size so that the whole page can be seen or, for those of us with less-than-perfect eyesight, it is possible to enlarge a small part of the page so that it fills the screen. Any page can be printed out, for example if a diagram is needed for a construction project.

One advantage of RadCom 2002 being on CD is that the PDFs are searchable - for example you can search for the word 'EMC' (or any other word or phrase) and the first instance that 'EMC' is found will be displayed immediately, followed by any or all subsequent instances.

If you do not have the Adobe Acrobat Reader software necessary to read PDF files, fear not. It is included free of charge on the CD, with clear instructions of how to install it on your PC. Once loaded, you will then also be able to read PDF files from other sources, eg on the Internet.

If you missed out on any copies of RadCom last year, want to store your magazines in a small space, or if you regularly search through your RadComs to find a specific article or feature, the RadCom 2002 CD is for you! [All the years from 1953 to 2001 are also available on CD – contact RSGB Sales for details – Ed.]

Minimum system requirements:
Pentium PC with CD-ROM drive, Windows 98 (second edition), ME, XP or NT 4.0 (with Service Pack 5) or later, 16MB RAM, 30MB available hard-disk space.

RadCom 2002 CD
RSGB
Price: £16.99 (members) (£19.99 non-members).
Available from the RSGB Shop, tel: 0870 904 7373, or www.rsgb.org/shop

HISTORY OF THE RADIO OFFICER IN THE BRITISH MERCHANT NAVY AND ON DEEP-SEA TRAWLERS

By Joanna Greenlaw
Reviewed by RSGB HQ Staff

This book is a must for anyone who has served at sea as a Radio Officer in the Merchant Service or who has an interest in the history of wireless at sea.

It is extremely well written in an easy-to-read style and contains a wealth of historical data, records and amusing anecdotes. From the wireless schools to the ocean liners, Joanna Greenlaw sets the scene of life at sea for the Radio Officer. It is first and foremost a personal story but expands into a comprehensive history of the Radio Officer.

History of the Radio Officer in the British Merchant Navy and on Deep-Sea Trawlers
by Joanna Greenlaw
(Foreword by HRH The Duke of Edinburgh)
Dinefwr Publishers
Price: £16.96 members (£19.95 non-members).
Available from the RSGB Shop, tel: 0870 904 7373, or www.rsgb.org/shop

THE SECRET WIRELESS WAR (video)

Reviewed by RSGB HQ Staff

This video contains two separate programmes, each of one hour duration. Both are on the role played by wireless communications in WWII, and are thus of great interest to those who played a part, or who are interested in, that part of our history.

Only recently have the men and women specially enlisted for wireless communications during the war shared their experiences. Unfortunately, the numbers of them are dwindling and, because most official records of their work have since been destroyed for security reasons, these programmes form a valuable informal collective record of their experiences and the places at which they worked. The production company is to be congratulated for its initiative in this matter.

The first of the two programmes, 'Beyond Bletchley Park', has contributions from several people, amongst whom are David White, G3ZPA, who founded and now runs the Bletchley Park Wireless Museum, and Bob King, G3ASE, who began his work for the Radio Security Service from his Oxfordshire shack, before being recruited to the RSS headquarters in Barnet. Bob is shown in his shack today in the photograph. If mention of equipment like the National HRO, the Whaddon MkIII transmitter, the MkVII Spy Set and the AR88 bring a lump to your throat, this is the programme for you!

Bob King, G3ASE, a member of the RSS during the war, in his shack today.

The 'All-World Two', a receiver typical of those used by individual members of the RSS.

The second programme, 'Black Propaganda', delves into the incredible 'black' organisation masterminded by Sefton Delmer, dedicated to purveying misleading and false information to the Germans. First-hand descriptions are given by transmitter engineer Phil Luck, who revisits his old transmitter building which still exists on the Woburn estate. A similar studio building in Milton Bryan, Bedfordshire, is visited, as is the home of Peter Halliday, son of its wartime Station Manager. Peter unearths, from an old trunk, incredible memorabilia (some secret at the time), which give an eerie insight into station life at the time.

Both programmes have original music recordings and news broadcasts, some of which have not been heard since the cessation of hostilities.

These two programmes can be thoroughly recommended to all radio amateurs. Apart from their significant historical contribution, they should serve to inform all newcomers and relative newcomers to our hobby the part played by radio amateurs in a global catastrophe - a part which they may be called upon to repeat at any time.

The Secret Wireless War
Grindelwald Productions
(www.grindelwald.co.uk)
PAL / VHS video cassette, 2 hours
Price £14.99 + P&P.
Available from the RSGB Shop, tel: 0870 904 7373, or www.rsgb.org/shop

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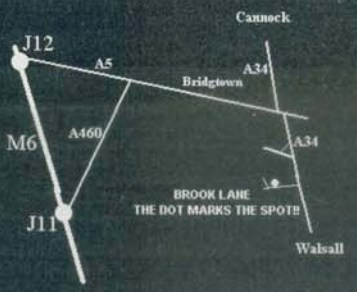

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YAESU	FT-77	INCLUDES FM MINT!	£275.00
YAESU	FT-790R	70CM MULTIMODE MOBILE TRANSCEIVER	£225.00
YAESU	FT-80C	0-30MHz COMMERCIAL RANSCEIVER	£375.00
YAESU	FT-847	HF / 2 / 6 / 70cm BASE TRANSCEIVER	£900.00
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By Don Field, G3XTT, 105 Shiplake Bottom, Peppard Common, Henley on Thames RG9 5HJ.
E-mail: hf.radcom@rsgb.org.uk

HF

Peter, G3HQT, wrote recently that he had worked W6KH in California at 1600 via the long path. Peter was delighted with this contact, as he was running just 100 watts at the time to a horizontal loop only 8ft high. This e-mail reminded me that any of you new to HF might not be familiar with the concept of long-path propagation, yet it is responsible for some of our most useful and reliable DX opportunities. The concept is simple enough. Every country has a 'short path', in other words the great circle bearing which will take you there by the shortest distance (anyone who has flown long distances will recognise the idea – flights to California, for example, don't head directly west, but up towards Iceland and Greenland). The long-path is the reciprocal bearing, so that to California would be roughly to the south-east. Where the short path-distance to California would be about 5400 miles from the UK, the long-path is over 18,000 miles. The reason long-path is best at that time of the day lies in an analysis of which areas of the globe are in daylight, and the resulting MUFs (maximum usable frequency). The short-path lies mainly in darkness, and the MUF may well be below 14MHz, whereas the long-path is in daylight and the MUF high enough not only at both ends, but at any intermediate points of reflection, to sustain 14MHz propagation.

Of course, this is grossly to simplify a complex phenomenon, which is covered in much more detail in the standard texts. But the key point is that long-path should not be overlooked. Many UK operators are able to maintain reliable daily schedules with Australia and New Zealand over the morning long-path (to the south-west) though obviously in this case the long- and short-paths are very much more similar in distance. Another useful one, and reliable through much of the sunspot cycle, is the long-path to Japan on 15 metres around our sunrise, beaming south-west (friends in the Channel Islands have noted this on 10m too, but it is rarely observed by those of us farther north). There are plenty more, all, of course, dependent on propagation and therefore on the time of year, where we are in the sunspot cycle, the level of auroral activity and other factors. A year or two back, for example, 10m was sustaining a reliable evening long-path opening to Australia/New Zealand as an alternative to the morning short-path, but signals were somewhat weaker than on the short-path and contacts were easiest for those with decent beam antennas (probably a 4-element Yagi or better).

DX NEWS

The Dutch Low Land DXpedition Team will activate the Faroes (OY) on all bands and modes between 24 March and 3 April, with two high power stations. This will include activity in the CQ WPX SSB Contest.

Jim, N6TJ, will once again be operating as ZD8Z from 16 to 26 April, all bands, SSB and CW. Jim says that as this will be his only Ascension Island visit this year, he will make a special effort on the low bands and the WARC bands. This will include a focus on 160m especially on 18, 19 and 20 April, conditions and atmospheric noise co-operating.

Peter, G3WQU, has ended his job assignment in Morocco (CN) and Western Sahara (S0) and is heading next to East Timor (4W).

VK4BP and VK4SJ (XYL) plan to be active as ZK1SIM and ZK1AYL from the South Cook Islands during late April and most of May. First stop is expected to be from Aitutaki Island (OC-083) starting around 26 or 27 April. Next stop will be from Rarotonga Island (OC-013) on 15 May for about 12 days of operation. QSL both via VK4SJ.

A large Italian group, led by I2YSB, will be active from the Marquesas Islands (FO0M) from 24 April to 9 May. They plan to have three stations active round the clock. More information nearer the time from the web page. QSL via I2YSB.

VK3OT should be active as VK9XI from Christmas Island (the one near Australia, not the one in the Pacific!) from 7 to 21 April.

GM3JOB and GM4ZNC will be active as VP5/homecalls from North Caicos (NA-002) 5–19 April. They plan to be active on most bands SSB and CW. QSL via their home calls, either direct or through the bureau.

Richard, G3RWL, will be re-activating his 8P6DR callsign from Barbados from 5 to 20 April. Operations will be on 10–40m.

PS7JN is planning to return to St Peter and St. Paul Rocks (PY0, IOTA SA-014) in the first half of April. He expects to operate on 40, 20, 15 and 10 SSB and RTTY. Further details are expected in due course and will be posted on his website.

MT ATHOS

There is some confusion about callsigns used from Mt Athos, as many of the prefix lists (but not the RSGB Prefix Guide! – Ed) mention that the prefix used there is SY. In fact, the SY prefix is simply a special event prefix for Greece, and all recent SY callsigns have been used from Greece rather than the enclave of Mt Athos. Monk Apollo, the only resident amateur, did use SY2A a couple of years ago, but most operations, even some by visitors, use his regular call SV2ASP/A. Apollo has been busy on CW recently; I worked him on 10m but he has also been spotted on several other bands too.

IOTA ACTIVITY

F5JOT, F5LGQ and F6CKH will be active from Chausey Island (EU-039) from 19 to 26 April. They will be on 10 through 80 CW, SSB and possibly RTTY and SSTV.

F5SGL will sign TM6ILE from Groix Island (EU-048) from 7 to 12 April. He will operate CW, 80–10, and possibly some SSB on the morning of 12 April. He will operate from Fort du Grognon (which qualifies towards the French Forts and Castles award).

G3SWH, G3UNA, ZS1AN, ZS1EL, ZS1SC, ZS1SR and ZS1MC will activate Robben Island (AF-064) from 4 to 7 April, with two stations active round the clock, one on SSB and one on CW. They will use the call ZS1RBN. QSL via G3SWH (direct or bureau).

VK3ZZ, VK3FT, VK3WWW and VK3QI will activate a new IOTA

Aitutaki Island, South Cooks, location for ZK1SIM and ZK1AYL operation in April.

Photo: Tim Beaumont, M3SDE / ZK1SDE.

(South Australia State West Centre Group) from 16 to 21 April. They will be active on all HF bands with a special callsign (yet to be notified).

AWARDS

The World Amateur Radio Day (WARD) Award is to commemorate the World Amateur Radio Day celebrated by IARU on 18 April each year. It is issued by the MK QTC – the Polish Amateur Radio Journal with PZK (Polish Amateur Radio Union) support. The Award is for making at least 10 QSOs on the HF bands between 0000 and 2400 on 18 April. A standard application form including the list of QSOs should be sent before 31 May 2003, to: Redakcja MK QTC, ul Wielmozy 5b, 82-337 Suchacz-Zamek, Poland. The price of the Award is $5 (US) or 5 Euros. The e-mail address for enquiries is qtc@post.pl

CONTESTS

The Helvetia Contest takes place over the last full weekend of the month (1300-1300) and is a good opportunity to work towards the various Swiss awards, details of which appear on the USKA web page (or, as always, I can provide them on receipt of an SASE or e-mail).

In the 2002 Baltic Contest, UK scores included: SO Mix G0MTN 768 pts, SO SSB GM0NTL 479, SO CW G0CKP 913, G3RSD 750, G4EBK 696, G3LIK 680, G4OGB 552, G3VQO 281, MO S Tx G2XP/P. In the Top of Europe Grid Contest 2002, UK results were: SOAB G0WHO 242, SOLP G4OGB 18615, G3VQO 6192, G5LP 2538, G0VQR 1425.

There were plenty of UK entrants in the 2002 EU HF Championship, results of which appear on the web. There is also a nice touch, with national scores being added and compared in a country listing. G comes out well in seventh place.

Results from WAE SSB contest 2002 are also on the web.

The table shows results this month of last year's IARU Contest (which, of course, was concurrent with the WRTC event in Finland). This year's contest will, as always, take place in July.

Not a contest, but Robbie, GM3YTS, writes to remind readers that this year's Celtic Connections weekend takes place over 19/20 April. The idea is to encourage activity from Scotland and other Celtic areas, helping participants to work towards the Celtic Knot Award, the Worked All Scottish Prefix Award (see May 2002 'HF' for details of both of these) and other GMDX Group awards. Further details, including recommended operating frequencies, can be found on the GMDX website, or from Drew Givens, GM3YOR, 5 Langhouse Place, Inverkip PA16 0EW.

The EUCW/FISTS QRS Party is from 27 April to 3 May. This is described as a 'Party Event' sponsored by the EUCW/FISTS clubs to promote and encourage Morse operating. I have a copy of the rules and a list of participating clubs or you can drop a line to Bob, M5AGL, 15a Buckden Road, Brampton, Huntingdon, Cambs PE28 4PR (bobm5agl@btopenworld.com).

IARU HF WORLD CHAMPIONSHIP 2002

A=Single-op Mixed mode; B=Single-op SSB; C=Single-op CW; D=Multi-op

Call	Score	Class
G0/N9LYE	47,600	A
G0CWC	34,709	D
G0MRH	41,748	A
G0UKX	52,125	C
G0WJN	81,620	B
G3TXF	225,745	D
G3VAO	464,968	B
G3VQO	72,720	C
G3XTT	789,192	A
G4BJM	6034	A
G4GOY	18,258	B
G4OBK	660	A
G4OGB	242,550	C
G4VGO	3100	C
G4WFQ	30,807	C
GB5HQ	2,448,396	
GW7X (GW3NJW op)	870,870	C
M0GEB	20,040	B
M0SDX	1,794,035	C
M2Z	398,112	D
M4R	1,214,456	D
M4T (G0VQR op)		C
M4U	345,960	D
M5ZAP	1,767,336	D
MW5EPA	243,024	B

CORRESPONDENCE AND TABLES

Dave, G4VFQ, responded to my comments last month on AM operation with a letter telling me that AM is alive and well, focused around 1966kHz, keeping it well clear of most other band activity. Dave lives in Kent, and tells me that a number of stations in the Kent and Essex areas enjoy an AM round-table each morning around 9.30am. They are realists, though, and recognise that there are times of the day when propagation and activity is such that they must swap to SSB to survive. Although some of the participants use older AM rigs such as the Codar AT5 and Heathkit DX100U, most use modern transceivers, almost all of which are able to generate AM with good quality.

Andy, G3UUZ, Chairman of the Trewellard Radio Group (see 'RadCom News' November 2002 for details of this interesting tin mine location), writes of an interesting contact from that location. One of the members, Owen, M0WIN, brought his new FT-817 to the club and was encouraged to connect it to the 99ft sloper antenna (top at 90ft). The first station heard was YB0ECT (Indonesia) on SSB who came back immediately to Owen's call (running 5 watts) with a 59 report. Just goes to show what you can do from a location near the sea with a high antenna.

David, A92GE, responds per my item last month headed 'Sign of the Times'. He points out that 12 and 17m operation is allowed in Bahrain, as is 30m on a spot frequency of 10140kHz. However, he agrees with me that, when using a hybrid Internet/amateur radio link, one should be probably sign according to where the RF part of the link actually originates; in that particular instance, the USA.

Band conditions were generally good during February, with the weekend of the WPX RTTY Contest especially notable for good 10m propagation to JA, VK/ZL and throughout the USA. As a for instance, Keith, MU3EFB, reports RTTY contacts with, among others, T77CD (San Marino) on 40 and 20m, 9G5GA (Ghana) 15m, YE1D (Indonesia) 15m, 9M2TO (Malaysia) 20m and HP1/DJ7AA (Panama) 15m. John, G4ZPL, stays mainly on PSK31 where his recent contacts include AP2NK (Pakistan), YE1D (Indonesia), ZL2PGJ (New Zealand), PZ5RA (Suriname) and D44AC (Cape Verde). His SSTV QSOs were mostly Europe, but I note TA1BM (Turkey) and VE3UDO (Canada) as being among the more interesting ones. John uses 50 watts from a TS-870 to a G5RV fed via an ATU.

Quite a digital flavour this month, in fact, as Dave, M3FXM (previously G8FXM) writes that, on moving to the HF bands, he found his 10 watts simply didn't compete with the higher powered stations on SSB, but that on RTTY and PSK31 he is much more competitive, and his recent RTTY contacts have included such nice ones as AP2IA (Pakistan) and HV3SJ (Vatican). Robin, M5AEF, continues his efforts with 1 watt and was particularly pleased to start the year with an 18MHz contact with AP2JZB (Pakistan). Other nice ones included AA8LL/C6A (Bahamas, IOTA NA-113) and J79RJ (Dominica). Robin's 18MHz antenna is a one and a half wavelength inverted-vee just 5m high. Gus, M5GUS, uses a TS-690S (100 watts) to a half-size G5RV and has recently worked 8N1OGA (Ogasawara), 3DA0TM (Swaziland), 3B9FR (Rodriguez Island), VQ9CJ (Chagos Archipelago) and YI1BGD (Iraq).

David, M0CNP, mentions that his 50 watts and G5RV at just 5m have already brought him 2003 contacts with, among others XQ6ET (Chile), VQ9DT (Chagos), 5T5SN (Mauritania), 5X1DC (Uganda), PZ5RA (Suriname)

COUNTRIES WORKED, 2003

(sorted this month by Mixed totals)

CALL	CW	SSB	DATA	MIXED
G0NXX	156	0	0	156
G3XTT	136	56	83	154
G4KFT	147	0	0	147
G4WXZ	78	89	0	136
G3YVH	108	54	0	131
M3RDX	0	109	58	124
G3LHJ	76	11	58	105
G0ARF	0	0	100	100
ZC4DW	72	47	73	97
G4OBK	85	3	39	94
M0CNP	5	81	29	87
G3WMC (QRP)	84	0	0	84
MU0FAL	67	46	0	79
MM0BQI	14	12	72	78
G0URR	0	0	75	75
ZC4VG	75	35	3	75
G0GFQ	0	70	0	70
GI0NQC	0	37	49	67
G4ZPL	0	2	61	62
M3FSI	0	50	0	50
G0LGJ/M	0	44	0	44
M5AEF (1W)	17	35	0	41
GW4ALG (QRP)	39	0	0	39
G4FVK	10	33	0	36
G4DDL	21	4	1	23

and 3B9FR (Rodrigues). Colin, MU0FAL, mentions some nice DX on 30m including ZL (New Zealand), JA (Japan) and W7 (West Coast US) all via the long-path (see my comments earlier in this column). 30m is actually a largely under-rated band, with interesting DX openings almost round the clock, and very little competition. I have tried a number of 30m antennas over the years but never seemed to have a permanent one, so recently put up an inverted-vee dipole at only 20ft as a standby for the band. I discovered that I could work almost anything that appeared on the band, and CQ calls with 150 watts have brought me calls from as far away as New Zealand, with excellent signal reports both ways. It's not surprising that 30m is popular with QRP (5 watts or less) operators and if you are into CW operation (SSB is discouraged, by international agreement, as the band is so narrow) then I cannot recommend the band enough.

QTH CORNER

3G5Q	**Fernando, XQ5SM,** P.O. Box 2841, Concepcion, Chile.
AH3D	2003 Johnston Atoll DXpedition, PO Box 73, 02380 Espoo, Finland.
OY expedition	**LLDXT QSL** Manager Rob Snieder PA5ET, Van Leeuwenstraat 137, 2273 VS Voorburg, The Netherlands
SV2ASP/A	**Monk Apollo**, Dochiariou Monastery, GR-630 87 Dafni, Mount Athos, Greece
VK30T	**Steven Gregory**, P.O. Box 622, Hamilton, Victoria 3300, Australia
VP6 expedition	**Yuichi Yoshida**, JR2KDN, 4F Kato Building, 529 Rokugaike, Kita-Ku, Nagoya 462-0002, Japan

WEB SEARCH

D4B/D44TT	www.qsl.net/d44tt
EUHFC 2002 results	http://lea.hamradio.si/~scc/hfc/euhfc02.htm
FOOM by Italians	http://digilander.libero.it/i2ysb
G3XTT	www.g3xtt.com
GMDX Group	www.gmdx.org.uk
PS7JN	www.qsl.net/ps7jn
USKA	www.uska.ch/html/en/contest/h26dipl.html
VK30T/VK9XI	http://members.datafast.net.au/electronics/vk9x.htm
WAE Contest results	www.waedc.de

WEB PAGE

I have decided to take the plunge! Like several other RadCom columnists, I have set up a website which should be fully active by the time this appears in print. It will cover various of my activities, but follow the RadCom links to see the latest table scores, QSL information and other data which is either too late for inclusion here or for which there has been insufficient space. I will also archive QTH Corner, WWW, Award Information, etc which has appeared here, so that you can find it easily without digging back through your RadComs. As with all such endeavours, I suspect the hardest part is not the initial setting-up, but keeping it updated, but my hope is that it will be a useful adjunct to this column.

Finally, a plug for the 6th Annual GMDX Convention and Dinner, to be held at the King Robert Hotel, Whins of Milton, Stirling, on Saturday, 26 April starting at 1230. I will be making a presentation about the HC8N contest station and there will also be talks by G3ZBE and G3AB. Further details from Rob Ferguson GM3YTS.

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 June issue by 19 April. ◆

HF F-Layer Propagation Predictions for April 2003

	3.5MHz	7.0MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	0000 1111 1220	0000 1111 1220	0000 1111 1220	0000 1111 1220	0000 1111 1220	0000 1111 1220	0000 1111 1220
(UTC)	2468 0246 8020	2468 0246 8020	2468 0246 8020	2468 0246 8020	2468 0246 8020	2468 0246 8020	2468 0246 8020
*** Europe							
Moscow	81. 1778	872. . . 27888	. 27777778832	14789999743	. 2678888862 .	. . . . 222	. . . . .
*** Asia							
Yakutsk	. . . . .	 111	247666778775	. . 477774322 .	. . 257742	. . . 3 553	. . . 233. . . . .
Tokyo	. . . . . 1. .	. . . . . 37. .	. . . . . 12346 . .	. . . . 233223 . .	. . . . . 2	. . . . 34	. . . . .
Singapore	. . . . .	. . . . . 244 .	. . . . . 16763 .	. . . . . 4785 . .	. . . . . 15662 . .	. . . . . 2465 . . .	. . . . . 1232 . . .
Hyderabad	. . . . .	 123	11 57776	. . 4112689852	. . 655678862 .	. . 46 8889 85 . .	. . 35 677872 . .
Tel Aviv	75. 2566	881. . . 17888	727766688898	2. 2334566253	. . . 2 33333. 3 .	. . . . 3333 3 . 31	. . . . . 22. . .
*** Oceania							
Wellington	. . . . .	. . . . . 5 . . .	. . . 1 35667. . .	. . . . 22222 . . .	. . . . 2.	. . . . 2.	. . . . .
Perth	. . . . .	. . . . . 133 .	. . . . . 1321 .	. . . . . 13332 . .	. . . . . 32	. . 22 46	. . . 245. . . . .
Sydney	. . . . .	. . . . . 35. .	. . . . . 2565. .	. . . . 156775. .	. . . . 355542 . .	. . . 3 56542 . . .	. . . 2432. . . . .
Honolulu	. . . . .	. . 1	. . 13 42	. . . . 3.	. . . . .	. . . . .	. . . . .
W. Samoa	. . . . .	. . . . .	. . 13 3331	. . . . 333	. . . . 222.	. . . . .	. . . . .
*** Africa							
Mauritius	. . . . .	5 1555	1. 17765	 57631	. . . . . 563 . .	. . . . . 144 . . .	. . . . . 22 . . .
Johannesburg	77 65	99 7999	342 . . . 29998	. . 31. . 169872	. . 332237985 .	. . 677889985 .	. . 47778897. .
Ibadan	. 1.	45 333	75841114 7878	53988888 89965	328888888953	2.87 8888 9753	. . 777778863 .
Nairobi	. . . . .	2 111	76 3467	5451. . 136788	226432367875	. . 56 6677 7632	. . 27777784 . .
Canary Isles	662. 766	887 2887	8787 54567888	536888888975	324888889953	. . . 4 6888 86 . .	. . . 2356563 . .
*** S. America							
Buenos Aires	231.	888 48	5461 265	53633 . . . 2876	. . 2 . 42225762	. . . . 3434 67 . .	. . . . . 33355 . .
Rio de Janeiro	. . . . .	555. 145	435 653	64744111 5986	3 .3264447863	. . . . 6556 782 .	. . . . 555576 . .
Lima	. . . . .	435. 3	1.22 21	2. 2731 . . 1563	. . . 52322354 .	. . . . 322 45 . .	. . . . . 22233 . .
Caracas	. . . . .	11. 2	3153. 33	. . . 131 . . . 24 .	. . . . 4222241 .	. . . . 3667 772 .	. . . . . 33354 . .
*** N. America							
Guatemala	. . . . .	211 1	. . . 1 1	. . . . .	. . . . .	. . . . . 21. .	. . . . .
New Orleans	. . . . .	21.	1.11 12	1.12. 7666762	. . . . . 477773.	. . . . . 366 762.	. . . . . 4454. .
Washington	1.	552 5	3232511 11377	 2666772	. . . . . 677773.	. . . . . 34 64 . .	. . . . . 2232. .
Quebec	77. 7	886 78	. . . 12 . 12255 .	. . . 256788841	. . . . 3345662.	. . . . 3334 54 . .	. . . . . 2333. .
Anchorage	. . . . .	11	 22231	 23532	. . . . . 222.	. . . . .	. . . . .
Vancouver	. . . . .	. 2	. . . . .	. . . . . 2552 .	. . . . . 3 . .	. . . . . 3 . .	. . . . .
San Francisco	. . . . .	. 11	. . . . .	. . . . . 2231 .	. . . . . 22 . .	. . . . . 22 . .	. . . . .

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 February 2003 issued by the Sunspot Data Centre, Brussels, was 46.2. The maximum daily sunspot number was 93 on 9 February and the minimum was 10 on 17 December. The predicted smoothed sunspot numbers for April, May and June are respectively: (SIDC classical method – Waldmeier's standard) 79, 76, 74 (combined method) 71, 68, 65.

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SWL

One of the UK Six Metre Group Continental Awards gained by David Whitaker, BRS25429.

Geoff, G0MRC, is keen to advise short wave listeners that this year's International Marconi Day (IMD) on 26 April will be the fifteenth such event. To mark this landmark, the organisers, the Cornish Radio Amateur Club, will be issuing special certificates to short wave listeners who log stations that are participating in the event. It is not a contest. There are certificates for phone and digimodes, and a separate certificate for logging CW contacts. Certificates will be outlined in silver. Full details can be found on the Internet, but to obtain the phone / digimode certificate requires the listener to log 15 stations, while the CW certificate requires only 10 stations to be logged. I would imagine that quite a few IMD stations will use 7MHz, but the HF bands will be worth a look to log a few DX IMD stations. Good Luck, and let me know how you get on so I can comment on the success of the event in a future 'SWL' column.

STATISTICS

Most active listernes collect statistics of one sort or another. David Whitaker, BRS25429, has searched his log for 2002 and has come up with some really interesting statistics. The most astounding is that on the HF bands he heard 274 DXCC entities during the year. He has broken these down by band (Table 1) so that readers can get an idea of how conditions were on the bands last year.

From these figures, David notes that his 274 DXCC entity total equals his annual 2001 total, but that it was eight behind his 1999 total. 232 countries on 10 metres equalled his best-ever total, made in 2000. 186 countries on 12 metres was an all-time best, as was 244 countries on 15 metres. 171 countries on 17 metres was one DXCC entity fewer than his best total, made in 2000. Surprisingly, 231 countries on 20m was no fewer than 26 countries worse than his DXCC total for the band back in 1979!

Yet more interesting statistics are obtained as a result of David merging his 2002 DXCC totals with those of SWL Arthur Miller, GW5218. The combination, shown in Table 2, gave a total of 279 DXCC entities.

BCL CONTEST

Franck Parisot, F-14368, has organised a contest for broadcast listeners in 2003. There are already five sponsors – Klingenfuss, WRTH, Passport to World Band Radio, Universal Radio (who will offer 12 books entitled How to Buy a Used Short Wave Receiver), and The Shortwave Store, who will offer a balun for an SWL antenna. Full details can be found on the websites listed below (see 'Websearch').

LOW BAND ACTIVITY

Philip Davies, RS95258; David Whitaker, BRS25429, and Robert Small, BRS8841, provided details of their Christmas / New Year activity on the low bands. As I said last month, conditions had been quite poor – unless you are the proud owner of a four-square phased vertical array or similar antenna! Philip did not have too many forays on the low bands, but reports ZD8Z on 80m – heard just before Christmas - and W6BH, 7J4AAL and HL3IUA after the holiday period. David confirmed my feelings, but his list showed that the DX was there for the taking if you were in the right place at the right time. Robert was unable to spend as much time as he would have liked at the rig, but his highlight of the period was undoubtedly S9SS on 160m CW. His 80m highlight was HS0ZDZ, while 40m provided E44Q, VU2RIG and 9V1VV.

David's best DX stations were: on 40m SSB: DS3EXX, DU9AXJ, EP3SMH, HS1NGR, VQ9DT, SV2AHT/YA, XT2ATI, YB0AI, YI1BGD. 80m SSB: KB2FB/DU7, 5T5SN. To sum up, the 2002 Winter LF DX season was relatively poor. Next year should be better, as we start to slip down the solar cycle.

HF IN GENERAL

The highter bands had not been much better either! The KH3 Johnston Island DXpedition came and went – perhaps the last time that KH3 will be activated? With a relatively small number of QSOs into Europe, no listener had, at the time of writing this column, reported hearing their signals. As I write this, though, S07V (via DK2WV), ZY0T (via PY1ON) and 5X1DC (via DL7AFS) were livening up the bands a little, but we all wait and hope that the March VP6D (Ducie Island) trip was blessed with better conditions as it will have been a new DXCC entity for many listeners. Those who heard VP6DI will be hoping to add a few more 'band slots'.

Looking briefly at activity during the month, Robert heard SV2ASP/A (Mount Athos) for a new slot on 24MHz SSB but this was the only new country heard so far in 2003. 10MHz had been interesting in patches with YA1BV, FM5WD, J79RJ and D88S (South Shetland) heard. Robert considers 21MHz to have provided the most reliable conditions, including BV3BW, BX1AAB, VQ9DF, ZA0/IK7JWX and N8Z (who was actually active from KP2!)

MORE SWL SOFTWARE

John, 4F3/GM4DKO e-mailed me from the Philippines to advise of a new SWL logging program. This one is Amateur Contact Log (ACL) which can be downloaded from the Internet. It is a straightforward and flexible logging program, ie the input boxes can be arranged in any order, and John considers it could be of benefit to any SWL. It covers some of the major awards and ACL has four other logging fields which can be used for any purpose. Take a look and see what you think. ◆

TABLE 1
BAND-BY-BAND BREAKDOWN OF COUNTRIES (DXCC entities)

10m	232 entities
12m	186 entities
15m	244 entities
17m	171 entities
20m	231 entities
40m	162 entities
80m	114 entities
160m	61 entities

Logged by David Whitaker, BRS25429, during 2002.

TABLE 2
COMBINED 2002 DXCC TOTALS

10m	236 entities
12m	214 entities
15m	262 entities
17m	217 entities
20m	255 entities
40m	174 entities
80m	147 entities
160m	67 entities

From the logs of David Whitaker, BRS25429, and Arthur Miller, GW5218.

WEB SEARCH

International Marconi Day	www.gb4imd.co.uk
Franck Parisot BCL Contest	http://swlcontest.homestead.com and http://site.voila.fr/SWLCONTEST
Amateur Contact Log (ACL)	www.n3fjp.com

MOONRAKER

www.amateurantennas.com

TEL: (01908) 281705 - FAX: (01908) 281706

LOG PERIODIC

MLP32 TX & RX 100-1300MHz one feed, S.W.R 2:1 and below over whole frequency range professional quality (length 1420mm) **£99.95**
MLP62 same spec as MLP32 but with increased freq. range 50-1300 (Length 2000mm) ***New Low Price*** **£169.95**

MOBILE HF WHIPS
(with 3/8 base fitting)

AMPRO 6 mt ..... **£16.95** (Length 4.6'approx)
AMPRO 10 mt ..... **£16.95** (Length 7'approx)
AMPRO 12 mt ..... **£16.95** (Length 7'approx)
AMPRO 15 mt ..... **£16.95** (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**
GF151 Professional Glass Mount Dual Band Antenna Freq: 2/70 Gain: 2.9/4.3 Length 31" **£39.95**

SINGLE BAND MOBILE ANTENNAS

MR 214 2 Metre 1/4 wave
(3/8 fitting) **£3.99**
(SO239 fitting) **£5.00**
MR260S 2 Metre 1/2 wave 2.5 dBd Gain (Length 43") SO239 fitting **£24.95**
MR258 2 Metre 5/8 wave 3.2 dBd Gain (3/8fitting) (Length 58") **£12.95**
MR 650 2 Metre 5/8 wave open coil (3.2 dBd Gain) (Length 52") (3/8 fitting) **£9.95**
MR268S 2 Metre 5/8 wave 3.5dBd Gain (Length 51") SO239 fitting **£19.95**
MR280S 2 Metre 6/8 wave 5.8dBd Gain (Length 58") SO239 fitting **£29.95**
MR 614 6 Metre loaded 1/4 wave (Length 56") (3/8 fitting) **£13.95**

SINGLE BAND END FED BASE ANTENNAS

70 cms 1/2 wave (Length 26") Gain 3.5dBd **£24.95**
2 Metre 1/2 wave (Length 52") Gain 3.5dBd **£24.95**
4 Metre 1/2 wave (Length 80") Gain 3.5dBd **£34.95**
6 Metre 1/2 wave (Length 120") Gain 3.5dBd **£44.95**
6 Metre 5/8 wave (Length 150") Gain 5.5dBd **£49.95**
(All above end fed antennas are DC grounded, so are radial free!!)

VHF/UHF VERTICAL CO-LINEAR FIBREGLASS BASE ANTENNAS

SQ & BM Range VX 6 Co-linear:- Specially Designed Tubular Vertical Coils individually tuned to within 0.05pf (maximum power 100watts)

BM100 Dual-Bander ..... **£29.95** (2 mts 3dBd) (70cms 6dBd) (Length 39")
SQBM100 Dual-Bander ..... **£39.95** (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")
SQBM800 Dual-Bander Ultra Gainer!! ..... **£129.95** (2mts 8.5dBd) (70cms 12.5dBd) (Length 200")
BM1000 Tri-Bander ..... **£59.95** (2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")
SQBM1000 Tri-Bander ..... **£69.95** (2 mts 6.2dBd) (6 mts 3.0dBd) (70cms 8.4dBd) (Length 100")

SQBM 100/200/500/800/1000 are Polycoated Fibre Glass with Chrome & Stainless Steel Fittings. 2 years warranty.

SINGLE BAND VERTICAL CO-LINEAR BASE ANTENNAS

BM33 70cms 2 x 5/8 wave, (Length 39") 7.0 dBd Gain **£34.95**
BM45 70cms 3 x 5/8 wave, (Length 62") 8.5 dBd Gain **£49.95**
BM55 70cms 4 x 5/8 wave, (Length 100") 10 dBd Gain **£69.95**
BM60 2 mtr 5/8 wave, (Length 62"), 5.5dBd Gain **£49.95**
BM65 2mtr 2 x 5/8 Wave, (Length 100"), 8.0 dBd Gain **£69.95**

ROTATIVE HF DIPOLE

RDP-3B 10/15/20 Mtrs Length 7.40m **£99.95**
RDP-40M 40Mtrs Lengh 11.20m **£139.95**
RDP-6B 10/12/15/17/20/30 Mtrs Boom Length 1.00m Length 10.00m **£199.95**

MINI HF DIPOLES

MDO20 20mtr version approx only 11ft **£39.95**
MDO40 40mtr version approx only 11ft **£44.95**
MDO80 80mtr version approx only 11ft **£49.95**

HAND-HELD ANTENNAS

MRW-300 Rubber Duck TX 2 Metre & 70 cms RX 25-1800 MHz (Length 21cm) BNC fitting **£12.95**
MRW-310 Rubber DuckTX 2 Metre & 70 cms Super Gainer RX 25-1800 (Length 40cm) BNC fitting **£14.95**
MRW-232 Mini Miracle TX 2 Metre 70 & 23 cms RX 25-1800 MHz (Length just 4.5cm) BNC fitting **£19.95**
MRW-250 Telescopic TX 2 Metre & 70 cms RX 25-1800 Mhz (Length 14-41cm) BNC fitting **£16.95**
MRW-200 Flexi TX 2 Metre & 70cms RX 25-1800 MHz (Length 21cm) SMA fitting **£19.95**
MRW-210 Flexi TX 2 Metre & 70cms Super Gainer RX 25-1800 MHz (Length 37cm) SMA fitting **£22.95**

All of the above are suitable to any transceiver or scanner.
Please add £2.00 p&p for H/held antennas.

HB9CV 2 ELEMENT BEAM 3.5dBd

70cms (Boom 12") **£15.95**
2 Metre (Boom 20") **£19.95**
4 Metre (Boom 23") **£27.95**
6 Metre (Boom 33") **£34.95**
10 Metre (Boom 52") **£64.95**
6/2/70 Triband (Boom 45") **£64.95**

CROSSED YAGI BEAMS
All fittings Stainless Steel

2 Metre 5 Element
(Boom 64") (Gain 7.5dBd) **£74.95**
2 Metre 8 Element
(Boom 126") (Gain 11.5dBd) **£94.95**
70 cms 13 Element
(Boom 83") (Gain 12.5dBd) **£74.95**

YAGI BEAMS
All fittings Stainless Steel

2 Metre 4 Element
(Boom 48") (Gain 7dBd) **£24.95**
2 Metre 5 Element
(Boom 63") (Gain l0dBd) **£44.95**
2 Metre 8 Element
(Boom 125") (Gain 12dBd) **£59.95**
2 Metre 11 Element
(Boom 185") (Gain 13dBd) **£89.95**
4 Metre 3 Element
(Boom 45") (Gain 8dBd) **£49.95**
4 Metre 5 Element
(Boom 128") (Gain l0dBd) **£59.95**
6 Metre 3 Element
(Boom 72") (Gain 7.5dBd) **£54.95**
6 Metre 5 Element
(Boom 142") (Gain 9.5dBd) **£74.95**
70 cms 13 Element
(Boom 76") (Gain 12,5dBd) **£49.95**

ZL SPECIAL YAGI BEAMS
All fittings Stainless Steel

2 Metre 5 Element
(Boom 38") (Gain 9.5dBd) **£39.95**
2 Metre 7 Element
(Boom 60") (Gain 12dBd) **£49.95**
2 Metre 12 Element
(Boom 126") (Gain 14dBd) **£74.95**
70 cms 7 Element
(Boom 28") (Gain 11.5dBd) **£34.95**
70 cms 12 Element
(Boom 48") (Gain 14dBd) **£49.95**

YAGI COUPLERS

YC-6M For 2 x 50MHz Yagi **£29.95**
YC-2m For 2x144MHz Yagi **£24.95**
YC-7M 2x70cms Yagi **£19.95**

HALO LOOPS

2 Metre (size 12" approx) **£12.95**
4 Metre (size 20" approx) **£18.95**
6 Metre (size 30" approx) **£24.95**

MULTI PURPOSE ANTENNAS

MSS-1 Freq RX25-2000 MHz, TX 2 mtr 2.5 dBd Gain, TX 70cms 4.0 dBd Gain, (Length 39") **£39.95**
MSS-2 Freq RX 25-2000 MHz, TX 2 mtr 4.0 dBd Gain, TX 70cms 6.0 dBd Gain, (Length 62") **£49.95**
IVX-2000 Freq RX 25-2000 MHz, TX 6 mtr 2.0 dBd Gain, 2 mtr 4dBd Gain, 70cms 6dBd Gain, (Length 100") **£89.95**

Above antennas are suitable for transceivers only

G5RV WIRE ANTENNA

All fittings Stainless Steel

	FULL	HALF
Standard	**£22.95**	**£19.95**
Hard Drawn	**£24.95**	**£22.92**
Flex Weave	**£32.95**	**£27.95**
PVC Coated Flex Weave	**£37.95**	**£32.95**
Deluxe 450 ohm PVC Flexweave	**£49.95**	**£44.95**

TSI Stainless Steel Tension Springs (pair) for G5RV **£19.95**

G5RV INDUCTORS

"New Lower Price"

Convert your half size g5rv to a full size with just 8ft either side. Ideal for the small garden **£19.95**

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SHORT WAVE RECEIVING ANTENNAS

MD37 SKY WIRE **£39.95**
(Receives 0-40MHz)
Complete with 25 mts of enamelled wire, insulator and choke Balun Matches any long wire to 50 Ohms. All mode no A.T.U. required. 2 'S' points greater than other Baluns.

MOUNTING HARDWARE ALL GALVANISED

6" Stand off Bracket *(complete with U Bolts)* **£6.00**
9" Stand off Bracket *(complete with U Bolts)* **£9.00**
12" Stand off *(complete with U bolts)* **£12.00**
12" T & K Bracket *(complete with U Bolts)* **£11.95**
18" T & K Bracket *(complete with U Bolts)* **£17.95**
24" T & K Bracket *(complete with U Bolts)* **£19.95**
36" T & K Bracket *(complete with U Bolts)* **£29.95**
Chimney Lashing Kit **£12.95**
Double Chimney Lashing Kit **£24.95**
3-Way Pole Spider for Guy Rope/ wire **£3.95**
4-Way Pole Spider for Guy Rope/ wire **£4.95**
1 1/2" Mast Sleeve/Joiner **£8.95**
2" Mast Sleeve/Joiner **£9.95**
Solid copper earth rod **£9.95**
Pole to Pole clamp 2"-1.5" **£4.95**
Di-Pole Centre (for wire) **£4.95**
Di-Pole Centre (for aluminium rod) **£4.95**
Dog Bone insulator **£1.00**
Dog Bone Insulator (H/Duty) **£2.00**

5ft POLES H/DUTY (SWAGED)

1 1/4"Single 5'Ali Pole **£7.00**
1 1/4"Set of four (20' total approx) **£24.95**
1 1/2"Single 5' Ali Pole **£10.00**
1 1/2"Set of four (20' total approx) **£34.95**
1 3/4"Single 5' Ali Pole **£12.00**
1 3/4"Set of four (20' total approx) **£39.95**
2" Single 5' Ali Pole **£15.00**
2" Set of four (20' total approx) **£49.95**
(All swaged poles have a push fit to give a very strong mast set)

REINFORCED HARDENED FIBRE GLASS MASTS (GRP)

1 1/2" Diameter 2 metres long **£16.00**
1 3/4" Diameter 2 metres long **£20.00**
2" Diameter 2 metres long **£24.00**

GUY ROPE 30 METRES

MGR-3 3mm (max. load 15 kgs) **£6.95**
MGR-4 4mm (max. load 50 kgs) **£14.95**
MGR-6 6mm (max. load 140 kgs) **£29.95**

10/11 METRE VERTICALS

G.A.P.12 1/2 wave aluminium (length 18' approx) **£24.95**
G.A.P.58 5/8 wave aluminium (length 21' approx) **£29.95**

CABLE & COAX CABLE

RG58 best quality standard per mtr **35p**
RG58 best quality military spec per mt **60p**
Mini 8 best quality military spec per mt **70p**
RG213 best quality military spec per mt **85p**
H200 best quality military coax cable per mt **£1.10**
3 Core Rotator Cable per mt **45p**
7 Core Rotator Cable per mt **£1.00**
PHONE FOR 100 METRE DISCOUNT PRICE.

CONNECTORS & ADAPTORS

PL259/9 ..... **£0.75**
PL259/6 ..... **£0.75**
PL259/7 for mini 8 ..... **£1.00**
BNC (screw Type) **£1.00**
BNC (Solder Type) **£1.00**
BNC for 9mm (RG213) **£2.50**
N TYPE for RG58 ..... **£2.50**
N TYPE for RG213 ..... **£2.50**
SO239 to BNC **£1.50**
PL259 to BNC **£2.00**
N TYPE to SO239 ..... **£3.00**
BNC to N Type **£2.50**
SMA to BNC **£3.95**
SMA to SO239 ..... **£3.95**
SMA to PL259 ..... **£3.95**
SMA to BNC (male) **£3.95**
SO239 chasis socket round **£1.00**
N-Type chasis socket round **£2.50**
SO239 (double female) **£1.00**
N-Type (double female) **£2.50**

BALUNS

MB-1 1:1 Balun 400 Watts Power **£24.95**
MB-4 4:1 Balun 400 Watts Power **£24.95**
MB-6 6:1 Balun 400 Watts Power **£24.95**
MB-1X 1:1 Balun 1000 Watts Power **£29.95**
MB-4X 4:1 Balun 1000 Watts Power **£29.95**
MB-6X 6:1 Balun 1000 Watts Power **£29.95**
MB-Y2 Yagi Balun 1.5 to 50MHz **£24.95**

TRI/DUPLEXER & ANTENNA SWITCHES

MD-24: HF or VHF/UHF Internal Duplexer (1.3-225 MHz 500w) (350-540 MHz) SO239/PL259 fittings **£22.95**
MD-24N same spec as MD-24 'N-type' fitting **£24.95**
MD-25 HF or VHF/UHF Internal/External Duplexer (1.3- 225 Mhz 500w) (350-540 MHz) SO239 fittings **£24.95**
MX2000 HF/VHF/UHF Internal Tri-plexer (1.6-6OMHz) (110-170MHz) (300-950MHz) SO239 and fly leads PL259 fittings **£49.95**
CS201 Two Way Di-Cast Antenna Switch (Freq: 0-1000MHz) (Max: 2,500 Watts) SO239 fittings **£18.95**
CS201-N same spec as CS201 'N-type' fitting **£28.95**

ANTENNA ROTATORS

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

MOBILE MOUNTS

Turbo Magnetic Mount 7inches 4 mtrs coax/PL259 3/8 or SO239 ..... **£14.95**
Tri-Magnetic Mount 3x5 inches 4 mtrs coax/PL259 3/8 or SO239 ..... **£39.95**
Hatch Back Mount (stainless steel) 4 mtrs coax/PL259 3/8 or SO239 fully adjustable with turn knob **£29.95**
Gutter Mount (same as above) **£29.95**
Rail Mount (aluminium) 4 mtrs coax/PL259 suitable for up to 1 inch roof bars or poles ..... 3/8 fitting **£12.95**
..... SO239 fitting **£14.95**
Gutter Mount (cast aluminium) 4 mtrs coax/PL259 ..... 3/8 fitting **£9.95**
..... SO239 fitting **£12.95**
Hatch Back Mount 3/8 4 mtrs coax/PL259 ..... **£12.95**
Roof Stud Mount 4mtrs coax/PL259 3/8 or SO239 fitting **£12.95**

ANTENNA WIRE & RIBBON

Enamelled Copper Wire 16 gauge (50 mtrs) **£9.95**
Hard Drawn Copper Wire16 gauge (50 mtrs) **£12.95**
Equipment wire Multi Stranded (50mtrs) **£9.95**
Flexweave High Quality (50mtrs) **£27.95**
PVC Coated Flexweave High Qualiy (50 mtrs) **£37.95**
300 Ohm Ladder Ribbon H/Duty USA imported (20 mtrs) **£15.00**
450 Ohm LadderRibbon H/Duty USA imported (20 mtrs) **£15.00**
(Other lengths available please phone for details)

HF BALCONY ANTENNA

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

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**

VISA SWITCH MasterCard

HF VERTICALS (cont'd)

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 **£12.95**
OPTIONAL 80 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 **£89.95**
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 **£79.95**
(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**
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**
Alignment 5pc kit **£1.99**

PATCH LEADS

Standard Leads
1 mtr RG58 PL259 to PL259 Lead **£3.95**
10mtr RG58 PL259 to PL259 Lead **£7.95**
30mtr RG58 PL259 to PL259 Lead **£14.95**
Military Specification Leads
1 mtr RG58 Mil Spec PL259 to PL259 Lead **£4.95**
10mtr RG58 Mil Spec PL259 to PL259 Lead **£10.95**
30mtr RG58 Mil Spec PL259 to PL259 Lead **£24.95**
1mtr RG213 Mil Spec PL259 to PL259 Lead **£4.95**
10mtr RG213 Mil Spec PL259 to PL259 Lead **£14.95**
30mtr RG213 Mil Spec PL259 to PL259 Lead **£29.95**
(All other leads and lengths available ie BNC to 'N' Type etc. Please phone for details)

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E-mail: tim@g4vxe.com

CONTEST

I'm always pleased to receive your letters and e-mails. This month, I received a letter from G3ORE, located in Surrey. He writes that he was keen to participate in his first 50MHz activity contest in January, but ended up somewhat disappointed. He used a vertical, a horizontal and a sloping 'V' but despite numerous CQs only worked one station. "Was it worth it?" he asks.

Well, I don't suppose anyone would be surprised to know that I'd say "yes!" For me, one of the key points about contesting, particularly at VHF, is to generate some activity. Even if you only generate one contact, that's something. Of course, the other issue is how you go about making the contacts. When I am operating from home, where I have a very sub-optimal set-up, I almost never call CQ, but instead tune the band. It's easy to spend a whole activity contest just tuning. Much of the time, you'll only hear white noise, but when a beam is turned towards you, a signal can come out of the noise and give you a chance of a contact. In those conditions, just a few contacts can be extremely satisfying, and I can point to a number of contacts made over the years with very simple equipment and a little patience. Don't expect it to be easy, but then good and worthwhile things rarely are.

So don't be put off by having only a few contacts in a contest session. Come back again next time – perhaps having improved your station if you can – but see if you can work more than you did in the last session. Setting goals like that for yourself is much of the fun of contesting.

CONTESTS THIS MONTH

One of the more challenging events this month, or indeed of the RSGB Contest Calendar, is the RoPoCo contest on 6 April. 'RoPoCo' stands for 'ROtating POstCOdes'. The idea is simple: with the first contact that you make, you send your own postcode to the station that you are working, but for subsequent contacts, you send the postcode that was sent to you by your previous contact. Make sure you do that, rather than send your own postcode for each contact, in which case it all goes horribly wrong! But be sure to send what was sent to you, rather than what you think the postcode should have been! You'll find that the CW speed in this contest is slower than you might be used to, as accuracy is paramount. If you haven't had a go at this before, give it a go.

Another contest which is different from the usual mould (and therefore to my mind, more interesting) is the EU Sprint contests. The SSB event takes place on 12 April and the CW one on 19 April between 1500 and 1900UTC. The QSO exchange must contain your call, the other station's callsign, serial number (RST is not required) and your name or nickname. The other interesting element to the contest is that if a station calls CQ, they may only work one station on that frequency and must then move at least 2kHz. These contests are really great and I encourage you to participate. Last year's spring sprints saw a bumper participation from the UK; let's try and do the same again.

At VHF, there are both 50MHz and

CONTEST CALENDAR

HF CONTESTS

Date	Time	Mode	Contest	Bands	Exchange
1 Apr	1900-2030	CW	RSGB SlowSpeed Cum #2	3.5	RST + First Name
5/6 Apr	1500-1500	CW/SSB	SP DX Contest	1.8 – 28	RST + SN
6 Apr	0700-0900	CW	RSGB RoPoCo 1	2.5	RST + Postcode received
9 Apr	1900-2030	CW	RSGB Slow Speed	3.5	RST+First Name
12 Apr	1500-1859	SSB	EU Sprint	3.5, 7, 14	Your Call+Their Call+SN Name
17 Apr	1900-2030	CW	RSGB Slow Speed Cum #4	3.5	RST+First Name
19 Apr	1500-1859	CW	EU Sprint	3.5, 7, 14	Your Call+Their Call+SN+Name
19/20 Apr	1200-1200	CW/SSB	YU DX Contest	1.8 – 28	RST+SN
25 Apr	1900-2030	CW	RSGB Slow Speed Cum #5	3.5	RST+First Name

VHF CONTESTS

Date	Time	Mode	Contest	Bands	Exchange
1 Apr	2000-2230 Local	ALL	RSGB 144MHz Activity	144	RST+SN+Locator
8 Apr	2000-2230 Local	ALL	RSGB 432MHz Activity	432	RST+SN+Locator
13 Apr	0900-1300	ALL	RSGB 1st 70MHz	70	RST+SN+Locator+QTH
15 Apr	2000-2230 Local	ALL	RSGB 1.3 – 24GHz Activity	1.3 –24G	RST+SN+Locator
22 Apr	2000-2230 Local	ALL	RSGB 50MHz Activity	50	RST+SN+Locator
27 Apr	0900-1300	ALL	RSGB 50MHz	50	RST+SN+Locator+Postcode

MICROWAVE CONTESTS

Date	Time	Mode	Contest	Bands	Exchange
13 Apr	1900-2100	ALL	RSGB 24GHz Cum #1	24G	RST+SN+Locator

The full rules of RSGB HF, VHF/UHF and Microwave contests were published in the 'RSGB Contesting Guide' in January 2003 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/calendar2003.html.

432MHz LOW POWER CONTEST, 2002

The entry to this contest recovered well from last year's foot-and-mouth struck event, but unfortunately activity levels were not great, and the leaders in their sections had to show great perseverance to achieve the QSO totals which they did manage. Last year's Open Section winners, the Five Bells Group, G4SIV/P, had great problems with their system this year and had the antennas up and down several times. This lost them substantial operating time, and the problem was exacerbated by Bob, G1ZJP, getting stung by wasps three times! This enabled the A1 Contest group, G4ZAP, to take the lead in the Open section, followed by Bracknell ARC, G4BRA/P.

In the Single Operator Portable section, Erik Gedvilas, G8XVJ, operated the Warrington Contest Group station to take first place, with Geoff Morris, GW1ATZ, using a much more modest set-up came in second.

The Single Operator Fixed section was led by Frank Laanen, PE1EWR, who takes the leading Overseas station award. In the UK, Bryn Llewellyn, G4DEZ, fairly narrowly beat Roger Piper, G3MEH, into second place. It was excellent to see newly-licensed 14-year old Steven Cox, M3SVC, making a decent score in this section – he only received his callsign the previous day, and he wins the leading Foundation Licensee award! *Andy Cook, G4PIQ*

432MHZ LOW POWER, 2002

Single Operator Fixed Station

Pos	Callsign	Loc	QSOs	Mult	Points	Pwr	Ant	Best DX	km
1*	PE1EWR	JO11SL	20	25	128275	13	2 x 21Y	G4BRA/P	425
2*	G4DEZ	JO03AE	23	28	113960	25	2 x 28Y	F6KPL	409
3*	G3MEH	IO91QS	28	32	104640	20	2 x 23Y	PA5DD	367
4	G4APJ	IO83UP	19	28	72072	25	19Y	G0GCI	332
5	G0GCI	JO01ED	16	23	67551	25	2 x 21Y	M0AFC/P	373
6	G1KHX	IO81MI	17	22	57552	25	19Y	G4OBK	351
7*	M3SVC	IO91FE	12	19	27265	5	14Y	G4SIV/P	252
8	G4OBK	IO940F	7	12	16524	25	20Y	G4BRA/P	396
9	G3YJR	IO93FJ	11	13	10244	10	19Y	G0VHF/P	218

Single Operator Portable Section

Pos	Callsign	Loc	QSOs	Mult	Points	Pwr	Ant	Best DX	km
1*	G8XVJ/P	IO93AD	74	74	1021940	20	2 x 32Y + 21Y	DG1KJG	673
2*	GW1ATZ/P	IO82KW	39	40	184960	25	18Y	G4KDH	295
3	G0WJR/P	IO81PH	15	23	44620	4	10ZL	G4APJ	261

All Others Section

Pos	Callsign	Loc	QSOs	Mult	Points	Pwr	Ant	Best DX	km
1*	G4ZAP/P	IO93EH	82	74	1101416	25	4 x 28Y+Collinear	DG1KJG	659
2*	G4BRA/P	IO80ST	48	50	525200	25	2 x 21Y	DB2KA	650
3	G0VHF/P	JO01HW	47	46	363216	25	2 x 21Y	DF4UE	721
4	G8NWM/P	IO92TR	38	45	341100	25	2 x 22Y	DG1KJG	558
5	G4SIV/P	JO03CE	28	32	171840	25	8 x 28Y	DG1KJG	542

* CERTIFICATE WINNER

CLUB CALLS CONTEST, 2002

CLUB CALLS CONTEST 2002

Pos	Callsign	Club Name	Stat	QSOs	CS	M	NC	Score
1#+	G0RGH	Harwich ARG	CS	122	29	78	15	1481
2	GC4CC	Swansea ARS	CS	112	27	70	15	1361
3*	GX3UES/P	Echelford ARS	CS	107	28	67	12	1356
4	G4AHG/P	Shirehampton ARC	CS	112	25	75	12	1336
5	G6RC	Crawley ARC	CS	114	24	78	12	1332
6	GX4NOK/P	North Wakefield RC	CS	115	24	77	14	1330
7	G5RR	Hucknall Rolls Royce ARC	CS	107	25	71	11	1301
8	M0CMU	Central Contest Association	CS	99	26	65	8	1272
9	G3WOR/P	Worthing & District ARC	CS	102	25	67	10	1266
10	G0SWI/P	Sudbury & District RA	CS	111	22	74	15	1253
11+	G4CZB	Northampton RC	M	82	29	49	4	1216
12	G3YAJ	Colchester RA	M	82	27	50	5	1171
13	G3SWC	Horsham ARC	M	78	27	49	2	1154
14	G0AOZ	Harwell ARS	M	97	21	66	10	1146
15	M5ARC/P	Wisbech ARAEC	CS	101	19	73	9	1143
16	G3KKQ	Echelford ARS	M	80	25	53	2	1130
17	G5XV/P	Newbury ADARS	CS	84	24	52	8	1112
18	G3RAL	Loughborough ADARC	CS	83	23	52	8	1084
19	G4ADV	Newbury ADARS	CS	86	21	56	9	1063
20	G3SNU	Torbay ARS	M	76	24	45	7	1053
21	M5BXB	Hadley Wood Contest Group	M	83	21	49	13	1019
22	G3WZT	Horsham ARC	M	83	21	48	14	1014
23	G4TPO/P	Horsham ARC	M	71	23	45	3	1013
24	GX4FRS	Farnborough & District ARS	CS	78	18	56	4	964
25	G3YEC	Colchester RA	M	61	24	35	2	958
26	G3SKY	Isle of Wight RS	CS	64	23	37	4	952
27	G3ZVW	Hadley Wood Contest Group	M	66	22	40	4	948
28	GX4RSB	Bolsover ARS	CS	59	24	33	2	942
29	G4JHI	Horsham ARC	M	63	22	40	1	939
30	G3SAD/P	Stevenage ADRS	CS	73	19	47	7	929
31	G0VQR	Reading ADARC	M	71	19	48	4	928
32	G3OGP	Horsham ARC	M	64	20	40	4	892
33	MX0EEE/P	Reading ADARC	CS	56	23	29	4	888
34*	G3NEO	Bolsover ARS	M	51	23	26	2	858
35*	G0VYR	Farnborough & District ARS	M	51	22	29	0	848
36*	G3NPF	Horsham ARC	M	56	20	34	2	838
37	G3VXJ	Worthing & District ARC	M	43	24	19	0	824
38	G3FIJ	Colchester RA	M	51	20	31	0	808
39	G3GWB/P	Northampton RC	CS	71	14	48	9	803
40	G3UKV	Telford ADARS	M	47	21	25	1	791
41	G4LRP	Horsham ARC	M	48	20	28	0	784
42	GX0WRC	Wythall RC	CS	43	21	21	1	759
43	G0AQH	Worthing & District ARC	M	37	22	15	0	736
44	G3MPZ	Northampton RC	M	35	21	14	0	700
45	G0SHC	Kings Lynn ARC	M	32	21	11	0	676
46*	G4FQR	Horsham ARC	M	36	19	17	0	668
47	M0DRN	Hadley Wood Contest Group	M	59	12	37	10	662
48	G3NDJ	Worthing & District ARC	M	34	18	16	0	632
49	G3VER	Verulam ARC	CS	33	18	15	0	624
50	G4KIT	Worthing & District ARC	M	29	19	10	0	612
51	G4HRS/P	Horsham ARC	CS	46	12	33	1	603
52	G3EUE	Worthing & District ARC	M	35	16	19	0	600
53*	G4GSC	Echelford ARS	M	32	17	15	0	596
54	GX3NJA/P	Torbay ARS	CS	38	15	21	2	594
55	M3DFV	Horsham ARC	M	33	16	17	0	584
56	GX4SJM	Ripon & District ARS	CS	39	14	23	2	582
57*	G3MA	Gloucester ARES	M	30	17	12	1	575
58	G4VTO	Torbay ARS	M	29	17	12	0	572
59	G3HEJ	Farnborough & District ARS	M	44	11	29	4	552
60	G0ECW	Worthing & District ARC	M	26	17	9	0	548
61	G4GPW	Worthing & District ARC	M	23	18	5	0	544
62	G4SLE	Worthing & District ARC	M	31	15	15	1	543
63	G4DDX	Stevenage ADRS	M	31	14	17	0	528
64	M3PMT	Echelford ARS	M	27	13	14	0	476
65	G4KZD	Hadley Wood Contest Group	M	26	13	13	0	468
66	G4AYM/P	Gloucester ARES	CS	28	12	16	0	464
67*	G0MTN	Wythall RC	M	20	15	5	0	460
68	G0IDA/P	Hadley Wood Contest Group	M	24	13	11	0	452
69	G3CO/P	Colchester RA	CS	36	8	26	2	438
70	M3MYK	Bolsover ARS	M	22	13	9	0	436
71*	G0RXT	Bolsover ARS	M	19	14	5	0	432
72	G0OQG	Bolsover ARS	M	23	12	11	0	424
73	G4MRH	Worthing & District ARC	M	21	12	9	0	408
74	G2HS	Echelford ARS	M	19	11	8	0	372
75*	M0DEY	Horsham ARC	M	20	8	12	0	320
76*	M3IDE	Echelford ARS	M	12	11	1	0	316
76*	G0THF	Bolsover ARS	M	12	11	1	0	316
78*	G0OUR	Open University ARC	CS	10	9	1	0	260
79	G3KXF	Worthing & District ARC	M	17	6	11	0	256
80	G0WMG	Worthing & District ARC	M	9	6	3	0	192
81	M0AEJ	Wythall RC	M	7	6	1	0	176
82	M3BHR	Northampton RC	M	7	5	2	0	156
83*	G3PYC	Horsham ARC	M	11	3	8	0	148
84	G3ISK	Colchester RA	M	4	4	0	0	112
85*	G4SOB	Colchester RA	M	5	2	3	0	80
86*	M3GCR	Horsham ARC	M	4	0	4	0	32
	G0WRS	Warrington ARC	CS					ck log

TROPHY WINNER. + CERTIFICATE OF MERIT. * ERROR FREE LOG.

DAVID HILL G4IQM MEMORIAL TROPHY

Club Name	Score
Horsham ARC #	5012
Hadley Wood Contest Group	3549
Worthing & District ARC	3404
Colchester RA	3129
Echelford ARS	2890
Bolsover ARS	2466

CLUB CALLS CONTEST, 2002

Affiliated societies have certainly used this event to give encouragement to M3 Foundation Licensees to join in and learn about contesting. It was delightful to hear so many young operators on air, the youngest reported being 12-year old Rachael, M3RAR, a member of North Wakefield RC. Altogether, 38 valid Foundation Licences were involved, comprising six who submitted a contest entry, 14 operators at club stations, and a further 18 operating their own stations. Well done to all concerned, this shows amateur radio and contesting is active and growing!

More good news in the results. Horsham Amateur Radio Club have been trying very hard for a few years and have succeeded this time in winning the David Hill, G4IQM, Memorial Trophy. They managed to get 12 club members on air, giving a good choice for the best five to be selected towards the award.

Leading Club Station, Harwich Amateur Radio Group, G0RGH, wins the Ariel Trophy award and certificate of merit. John Cockrill, G4CZB, the leading individual club member, also wins a certificate of merit. No entries were received from non-club individuals, although there were many, including some M3 Foundation Licensees, who could have claimed the non-club certificate. *Mike Thayne, G3GMS*

432MHz TROPHY, 2002

Entries were slightly up for this contest compared with 2001, largely due to the resurgence in portable contesting possible after the foot and mouth outbreak. Stations found activity quite low and conditions poor but, in spite of this, some good DX was worked, including QSOs over 900km.

Reg Woolley, G8VHI, won out over Roger Piper, G3MEH, in the single operator section with a cleaner log and longer distance QSOs, and Gordon Wyatt, GW8ASA/P, won out over Geoff Morris, GW1ATZ/P, in a similar way in the single operator portable section. In the All Others section, the Parallel Lines Contest Group won easily, with a fairly closely fought competition for second place being taken by the Colchester Contest Group, M1CRO/P, in spite of some time out due to an EHT failure in the amplifier.

Top honours in the Low Power Single Antenna award stakes went to Graham Coyne, G3YJR, and James Beatwell, 2E1GUA, takes the leading Intermediate award. *Andy Cook, G4PIQ*

432MHZ TROPHY, 2002

Single Operator Fixed Section

Pos	Call	Points	QSO	Loc	Pwr	Ant	Best	DX	km
1*	G8VHI	14689		IO92FM	56	100	2 x 23Y	DK0BN	708
2*	G3MEH	12847		IO91QS	61	250	2 x 23Y	DF2VJ	599
3	G0GCI	4085		JO01ED	28	100	2 x 21Y	DL0VR	464
4	G1KHX	2465		IO81MI	17	120	19Y	PA6NL	493
5*	G3YJR	2455		IO93FJ	13	10	19Y	PI4ZLD	422
6*	2E1GUA	1228		JO01FS	16	10	19Y	GW8ASA/P	276
7	G4LRT	47		IO92LJ	1	10	2 x 18Y	G8OHM/P	47

Single Operator Portable Section

Pos	Call	Points	Loc	QSO	Pwr	Ant	Best	DX	km
1*	GW8ASA/P	6424		IO81FP	33	50	23Y	DJ8SP	703
2*	GW1ATZ/P	3150		IO82KW	20	10	18Y	G8P	367
3	G4APJ/P	1290		IO94MJ	6	25	21Y	G4RFR/P	404

All Others Section

Pos	Call	Points	Loc	QSO	Pwr	Ant	Best	DX	km
1*	G8P	68720		JO01QD	179	400	8 x 21Y + 38Y	OK1KHI	921
2*	M1CRO/P	37783		JO01PU	122	400	4 x 21Y	DK2GR	728
3	G5B	35050		JO03CE	105	400	8 x 28Y + 8 x 21Y	DF4UE	815
4	M6V	32686		IO94RJ	74	400	4 x 28Y	DF4UE	934
5	G8OHM/P	8031		IO92GB	46	400	4 x 19Y	DK2MN	598
6	G4RFR/P	5376		IO80UU	37	400	QLY	M6V	411
7	G4LOO/P	3711		IO91RU	23	200	3 x 36Y	DL2DAO/P	557

Adrian, G0HAS, operating G0GRI/P from grid square IO91BJ during the RSGB 2 metre Trophy Contest. The portable shack is a Transit van.

PHOTO: IAN CARTER, G0GSR

70MHz contests to enjoy this month. Tropo on both of these bands can be hard going .If you're at home with a small or medium sized aerial, then bear in mind the advice about tuning the bands carefully to make the most of what's available on the band, which can often include stations from GD and GM.

2nd 50MHz CONTEST, 2001 – CORRECTION

Unfortunately, the published results for the 2nd 50 MHz contest were incorrect, and G4DEZ should have been in first place in the Single Operator Fixed section with 4,419,946 points. Our apologies to Bryn for the error. ◆

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VHF/UHF

VERY FEW REPORTS this month, reflecting the generally poor conditions on the VHF and UHF bands. Compared with this time last year, the 50MHz band has been devoid of any DX apart from the very infrequent winter Sporadic E (Es) contact, some so brief that they might have been via a long meteor burst.

The internet has had a dramatic impact on our hobby in recent years. When I first began writing a monthly VHF column in 1976 the majority of the news from contributors came through the postal service supplemented by the occasional telephone call and information passed during QSOs. Now the 'snail mail' is down to one or two letters a month, the remaining input being almost entirely in the form of e-mails.

The majority of Internet traffic consists of e-mails but there is a vast amount of information out there on the world wide web (WWW) ranging from aardvarks to zymurgy – that's a branch of applied chemistry dealing with the science of wine-making, brewing and distilling, by the way.

The amateur radio hobby is well served via the WWW. The RSGB, and many other national societies, have comprehensive web pages with scores of links to other sites. From a single site you can get information on contests, awards, licensing conditions and propagation, to mention just a few.

Many individual radio amateurs have their own websites and spend considerable time keeping them up to date for our benefit and for no financial reward. Typical of these of interest to we VHF folk is that of Derek Gilbert, G0NFA, who publishes a daily newsletter in .pdf format, each file being approximately 100KB, and containing details of current activity from rare locations, future DXpeditions and so on. Those interested in auroral and field aligned irregularity (FAI) propagation will find the site run by Paul Kelly, N1BUG; Allard Munters, PE1NWL; and Volker Grassmann, DF5AI; a mine of information. Subscribers to the DXrobot service receive VHF aurora warnings by e-mail, for example.

There is a large amount of software available, much of it freeware, to help us to run our stations more efficiently. These range from logging programs to sophisticated operating systems. For example, meteor scatter (MS) operators can download Ilkka Yrjölä's, OH5IY, comprehensive *MSSOFT* suite of programs. Weak signal experimenters can download Joe Taylor's, K1JT, JT44 software that has enabled so many with average stations to complete moonbounce (EME), MS and tropo QSOs when the human ear hears only white noise, and the popular VK3UM Moon program, frequently referred to in 'VHF/UHF', from VE1ALQ's fine website.

Those interested in solar and geomagnetic activity have at their fingertips access to a wealth of information from the NOAA's Space Environment Center (SEC) which is the source of the data given in 'VHF/UHF' each month. The NASA's Space Weather website includes information on meteor showers, auroral events and solar flares that directly affect VHF propagation.

The foregoing is just a small idea of what the Internet has to offer and there are many excellent search engines you can use to find what you want. For example, logging on to the Google site and typing in 'aurora borealis' will enable you to link with numerous sources of information within seconds. Typing 've1alq' leads you immediately to Darrell's brilliant website. And of course there is Jeremy Boot's, G4NJH, regular 'WWW' column in *RadCom* to further whet your appetite.

DUBUS

Issue 4/2002 of the quarterly *DUBUS* magazine features a number of articles of particular interest to VHF/UHF operators. Werner Rahe, DC8NR, writes on 'The performance of input circuits for low noise amplifiers in the VHF/UHF range', using the Agilent Technologies high current ATF34143 HEMT device.

Henning Weddig, DK5LV, describes the design of a low noise amplifier (LNA) for the 2m and 70cm bands based on the RF Microdevices RF2360 developed for the mobile communications industry. The specified output intercept point of +37dBm was achieved at 500MHz. The experimental 2m LNA recorded a 1.6dB noise figure and 19dB gain. DF5AI's article deals with 'Unusual auroral observations in the 144MHz band: off-normal auroral scattering'.

Roger Rehr's, W3SZ, 12-page article is a very thorough treatise on 'Using software solutions to enhance weak signal communications', being a discussion of LinRad, SM5BSZ's Linux PC radio. Supplementing this is Jonathan Naylor, HB9DRD / G4KLX, who describes 'DSP for dummies (or what I learned about DSP when writing LinWSJT)'. All these articles are well illustrated with diagrams, tables, graphs, circuits and PCB layouts as appropriate in the usual excellent *DUBUS* style. The UK agent for *DUBUS* is Roger Blackwell, G4PMK (QTHR) whose e-mail address is dubus@marsport.demon.co.uk

BEACON NOTE

Ted Warne, G3YJX, reports that the GB3MCB 23cm beacon and its spare unit were stolen during a break-in at the Beacon and Repeater Group's site. A lot of equipment was stolen including the 2m repeater GB3NC. He reckons that the beacon will be off air for some considerable time. The late Cyril James, G3VVB, donated the equipment.

PROPAGATION

John Quarmby, G3XDY, reports that the William Hepburn Tropo Forecast has been extended to cover five days – details of the URL for north-west

This is the home-built very lightweight 3.95 metre dish for EME work constructed by Graham Daubney, F5VHX (formerly G8MBI) (JN04).

Europe are in the list. Thanks to Dr Steve Reed, G0AEV, for the copy of The Six and Ten Report for December 2002.

SOLAR AND GEOMAGNETIC ACTIVITY

In the 30 days to 11 February the 10.7cm solar flux averaged 136.1 units per day, 13.6% lower than for the previous period. The maximum value was 172 on 13 January and the minimum of 120 occurred on the 31st. The maximum SESC sunspot number was 182 on 13 January with a minimum of 61 on 2 February. For the third month in a row the number of new sunspot areas recorded was 30 but their areas in millionths of the Sun's visible disc never exceeded 900. The daily average was very much down on last month's figure confirming the decline in solar activity.

In the 30 days to 11 February at middle latitude Fredericksburg there were 18 geomagnetic quiet days and only on 2 February did the A-index reach a sub-storm level of 29, the remainder being in the 11–20 unsettled region. Things were much livelier at the high latitude of College in Alaska when the A-index hit 83 on 25 January and the K-index reached 8 in one 3-hour period.

WEB SEARCH

RSGB	http://www.rsgb.org
G0NFA (Newsletter)	http://www.144mhz.co.uk
N1BUG (Auroras)	http://www.gooddx.net/
OH5IY (MS software)	http://www.saunalahti.fi/oh5iy
VE1ALQ	http://www.ve1alq.com
Solar news	gopher://solar.sec.noaa.gov/
Space Weather News	http://www.spaceweather.com
Google search engine	http://www.google.com
Hepburn forecasts	http://www.iprimus.ca/~hepburnw/tropo_nwe.html
GW4DGU	http://www.blaenffos.org
G4CCH (EME news)	http://www.g4cch.com
NA1CW 6m chat page	http://6m.dxers.info/index.php

NEWS FROM WALES

Chris Bartram, GW4DGU, writes that he was last properly active (QRV) on the VHF/UHF/SHF bands about 15 years ago. After several moves to houses in poor locations and/or with restrictions regarding antennas, he moved to north-west Carmarthenshire (IO71CV) last December. He has pretty well started again from scratch having sold or lost most of his old equipment.

A trailer-mounted 60ft tower and separate 2m and 70cm transceivers have been acquired and he has a number of professional 125W nominal linear PA modules for 220MHz using a balanced 28V MOSFET. Four of these have been modified and combined to produce 600W on 2m such that the PA module has a better linearity than the one in the transceiver. The design of the combiners, although not difficult, isn't entirely straightforward and he will be putting appropriate notes on his website in the near future – see the list. More details of Chris's activity are in the Band Reports section.

METEOR SCATTER

According to the OH5IY program, the Lyrids meteor shower should peak around 0230-0400 on the 23rd with a zenithal hourly rate (ZHR) of 15. However, this shower does not usually exhibit a significant peak, like the Quadrantids for example, just a slow rise and fall. The radiant is above a mid-UK horizon for 20 hours from 1830.

The only report on the Quadrantids was from GW4DGU when, from a single spot on the Cluster, Chris completed with four DLs in IO62! And OK1VT (JN79) in 80min using FSK441. He writes, "After having grown up as an MS operator in the mid-1970s with tape loops and elaborate schemes for slowing down fast CW, I positively like the FSK441 mode."

BAND REPORTS, 50MHz

As mentioned at the beginning, the 6m band has been in very poor shape and Bryn Llewellyn, G4DEZ (JO03), reports "Nothing new apart from a Greek station in KM07." In the period from 1 January through 10 February, Ted Collins's, G4UPS (IO81), records day after day with comments such as "No beacons audible." Nevertheless his long-running morning CW skeds with G3CCH (IO93) continued successfully until 23 January after which Johnny was in hospital.

Since 30 January Ted and Arne, SM7AED (JO65), have been carrying out proper CW MS-type skeds for the first time on 50.170MHz starting at 0750. They use 1min periods with Ted transmitting in the even minutes. They are pleasantly surprised at the excellent results over 1200km. Ted reports the first aurora on 2 February from 1547 when he heard GI4OSX*, GW6TYO*, G4FVP* and the GB3RMK beacon. At 1557 he worked GM4WJA (IO87) at RS41 each way but all auroral signals faded by 1605.

On the news front he received very prompt QSLs via DL7UFR for November 2002 QSOs with 3XY7C. On 16 January he received a QSL via G3SXW for a QSO with XT2DX last 20 November. Daniel Lee, MW1MFY (IO81), writes that Tim, NA1CW, has made huge improvements to his 6m chat pages on the Internet and has also reinstated the 2m version. He suggests it's fine for arranging skeds

Moonbounce

First some items from the February issue of the *432 and Above EME Newsletter* starting with the sad news that Willy Mank, W1ZX, died on 5 January, just a day before his 66th birthday. He was the mainspring of the K3NSS EME tests and subsequently used the US Navy's 85ft dish in Cheltenham, Maryland, in the 1980s for regular 70cm operation.

Conditions during the January Moon weekend were relatively good on 70cm and 23cm in spite of the high path loss and noise. However, activity was low. Peter Blair, G3LTF (IO91), missed the December activity weekend then set about rebuilding the dish gearbox with a new worm drive to reduce backlash further. This was not completed in time for the January sked weekend but on 20 January he had an excellent QSO with DJ4PV* and next day with K7XQ* for initial (#) 193. Peter is available for skeds on 13, 23 and 70cm.

Stuart Jones, GW3XYW (IO81), has been on 23cm and on 21 December completed with LX1DB, ZS6AXT and IK2MMB. On 18 January he worked IK3COJ, HB9O and IK2MMB and on the 19th G4CCH, W2UHI, OZ6OL, N2IQ and K5JL all on CW. WSJT was tested on Echo mode on 23cm with his normal EME system without the amplifier. Good peaks were obtained first on 5W and then on just 1W.

For an hour from 2245 on 18 January he called CQ test with JT44 during the European window on 1296.040MHz, the JT44 calling frequency (QRG) agreed at last year's Prague conference. He ran further tests from 0105 next morning during the US window but no contacts resulted. He advises that the JT44 Echo mode is considerably more sensitive than regular JT44 mode and suggests its use on full power until a few JT44 QSOs have been made.

GW4DGU has been experimenting with K1JT's JT44 Echo mode software and has been able to detect his own Moon echoes. Chris writes "The returns have been weak and success has depended on hitting the right combination of libration fading and ground gain, but with just a 9-ele Yagi and 1.8dB of feed-line loss, I still find it quite remarkable."

From JN04, Graham Daubney, F5VHX, writes that he has developed a direct conversion radiometer, which converts a band centred in 1296MHz to the detector chip. Thus there is "no local oscillator, mixer or other stuff to introduce gain drift and noise." He still has much to do and a lot of software to write for the micro controller that runs it all. Eventually he hopes to write it all up and make the boards and software available for those interested.

On his website – see the list – Howard Ling, G4CCH (IO93), records his recent 23cm activity. In January on the 11th he completed with F1ANH, DF4PV, ZS6AXT and F2TU and on the 17th with HB9Q, OZ6OL and W2UHI all on CW. In the sked weekend on the 18th he records CW QSOs with N2IQ, ZS6AXT, DL1YMK, HB9JAW #174 and IK2MMB. Next day saw GW3XYW*, K7XQ (O/RO) #175, K2UYH* also on SSB at 56/56, K5JL, N2UO (O/RO), JA6AHB* and SM5CFS (439/RO) #176.

On 8 February he completed on CW with SM2CEW, G3LTF, SM5CFS, DL8OBU, K5JL and K7XQ to bring his scores on the band to 176 initials, 32 countries, six continents, 24 US states, 27 fields and 130 grids, a fine achievement.

The second weekend of the European World Wide EME Contest is on 12/13 April and is for the 2m, 23cm and 3cm bands. The rules are in DUBUS 4/2002 and entries must be sent no later than 30 days after the end of this event to Patrick Magnin, F6HYE, Marcorens, F-74140 Ballaison, France. They can also be submitted in ASCII form by e-mail to f6hye@ref-union.org

For London latitude stations there will be a total of 28.7 hours of Moon time. The declination varies from +20.77° to +10.75° and the signal degradation referred to perigee ranges from -0.74dB to -0.34dB. The 144MHz sky temperature varies from 203K to 236K.

or just to have a natter. There's a lot on this site including DX maps and propagation information – see the list.

144MHz

GW4DGU managed to get on just in time for the Christmas Cumulatives. With the little 9-ele Yagi 35ft AGL, just below the lip of a little hollow in which the house stands, Chris has been able to work into ON, PA and northern France during contests and normal troposcatter conditions. He writes "That's pretty well as predicted by theory, which also suggests that a bigger antenna up at the full height of the tower, and better receiver sensitivity should result in an achievable range of about 700km without help from enhancements."

He still enjoys CW and his ODX so far was in a small aurora on 2 February. Beacon GB3ANG went auroral at 1545 and GB4NGI was 59A. At 1550 he worked SM7EOI (JO86) at 1450km. Further QSOs were with GM4VVX and in a second phase at 1836 GM3WKZ (IO88) and MM0CEZ (IO75) were worked. The beam heading (QTE) for these contacts was close to 0°. In the only extended tropo opening on 24 January Chris worked EB1HAL (IN63) at about 950km exchanging RS59 reports but no other activity from northern Spain was heard.

Jamie Ashford, GW7SMV (IO81), has nothing to report due to poor conditions and lack of 'radio time.' He wonders if the apparent lack of tropo propagation might have something to do with global warming and the climate changes. He has heard no winter tropo in his area for many years.

430MHz UP

No activity reports on the higher bands but GW4DGU has persuaded his aforementioned 220MHz PAs to work on 70cm so will be building an amplifier for the band. Chris is currently designing antennas for 2m, 70cm and 23cm with the object of building a tropo system that can be used for casual EME on 2m and 70cm.

DEADLINES

Let's hope that things liven up for next month. The deadline for June is **Monday 14 April** and for July it's **Tuesday 20 May**. The telephone answering and fax machine is on 020 8763 9457 and my CompuServe ID is g3fpk. ♦

LOCATOR SQUARES TABLE

Starting date: 1-1-1979

Callsign	50MHz	70MHz	144MHz	430MHz	1296MHz	Total
G3IMV	835	20	616	125	53	1649
G4YTL	–	53	529	122	–	704
GM4JJJ	206	3	430	46	–	685
G0FYD	676	1	285	20	–	982
GJ4ICD	780	1	267	121	79	1248
G4ZHI	101	10	259	33	–	403
G3XDY	–	34	251	175	123	583
G3FPK	30	–	246	–	–	276
GW7SMV	664	–	211	–	–	875
G8HGN	310	–	168	67	–	545
M5BXB	335	15	160	56	–	566
G4DEZ	607	24	153	64	27	875
G8TOK	406	34	140	56	29	665
G6TTL	220	–	133	90	27	470
GM4VVX	324	5	132	–	–	461
G1UGH	280	–	130	18	–	428
G3FIJ	278	29	108	51	23	489
EA7IT	–	–	103	–	–	103
G0ISW	224	5	88	22	–	339
G1EFL	231	–	67	2	–	300
G4OBK	426	25	65	6	–	522
G4APJ	176	–	58	25	–	259
G0JHC	1000	26	48	4	–	1078
M1DUD	241	1	32	1	–	275
G8RWG	–	–	30	–	–	30
G4FUJ	96	20	25	6	5	152
G7KHF	487	–	18	–	–	505
M3VAM	17	–	18	6	–	41
G8BCG	661	–	–	–	–	661
GM6MEN	186	–	–	–	–	186

No satellite, repeater or packet radio QSOs. If no updates received for a year entries will be deleted. Band of the month 144MHz. Next deadline is 14 April.

By Mark Lewis, GW7KDU, 14 Hornbeam Close, St Mellons, Cardiff CF3 0JA.
E-mail: rmcwales@ntlworld.com

Repeaters

Front panel displays of an FT-100 transceiver set up for (top) 12.5kHz channel spacing (2.5kHz deviation), and (bottom) 25kHz channel spacing (5.0kHz deviation).

It appears that there is still some confusion among about the differences between the 25kHz and 12.5kHz channel-spacing standards that apply to repeaters in the UK. The current standard in use in the UK is 12.5kHz on 2m and 25kHz on 70cm. This is an IARU requirement that was implemented in the UK in June 2000. The standards refer to the channel spacing, and in order to comply with them, both the peak deviation of transmitters and the IF bandwidth of receivers have to be correct.

The transmitter requirements are generally quite well understood, where the maximum, total deviation of speech and CTCSS if used, is ±2.5kHz for 12.5kHz channel spacing, and ±5kHz for 25kHz channel spacing. However, it is often forgotten that the receiver characteristics also have to be correct if equipment is to work at its best. For a 25kHz, 'wide', system the receiver should ideally have a -3dB bandwidth of ±7.5kHz and a -70dB bandwidth of ±25kHz. In a 12.5kHz, 'narrow', system the figures are ±3.75kHz at -3dB and ±12.5kHz at -70dB.

Most modern dedicated amateur VHF / UHF transceivers can switch their transmitter deviation between 'wide' (5kHz) and 'narrow' (2.5kHz), but usually have only a 'wide' IF filter in the receiver.

All 2m repeaters must now comply with the 12.5kHz channel-spacing standards, which means they must transmit 'narrow' deviation and have matching 'narrow' receivers.

There is still some work to be done in persuading 2m repeater users to adjust their deviation down to ±2.5 kHz. Those who have not yet done so will suffer from distorted signals or break-up through repeaters, and should be encouraged to check their equipment. Many clubs run 'alignment evenings' where professional test equipment is brought along so equipment can be brought into line.

Most reports of adjacent-channel interference on 2m are found to result from either excess transmitter deviation, wide IF bandwidth or a combination of the two.

All repeaters will now have the correct receiver bandwidth and will not suffer adjacent channel interference from correctly-adjusted mobile transmitters. However, there can still be a problem from those operators who have not reduced their deviation, as they not only produce an offensive signal on the chosen repeater, but cause interference to channels on either side. With more repeaters appearing on the 12.5kHz channels in between those of the 'old' 25kHz system the problems will get worse if individual's transceivers are not adjusted as required.

REPEATER ABUSE

Neil Marr of the Radiocommunications Agency's Enforcement Department attended a recent RSGB Repeater Management Committee (RMC) meeting. He asked the committee to emphasise to repeater users the importance of dealing with repeater abuse correctly.

It is vital not to respond to abuse in any way on the air. If the abuse is regular, the best course of action is to gather as much information as possible without revealing to the abuser that this is being done. The information should be sent to RSGB HQ marked for the attention of the RMC or, if preferred, to the Radiocommunications Agency, Enforcement & Interference Policy Department, Wyndham House, 189 Marsh Wall, London E14 9SX. Under no circumstances should direct action be taken against an individual suspected of abusing repeaters as this may jeopardise an on-going investigation. Please do not send details of repeater abuse to the Amateur Radio Observation Service (AROS).

NEWSLETTER EDITOR SILENT KEY

IN THE LAST 'Repeaters' column I mentioned the Cambridgeshire Repeater Group's newsletter that I had received from their editor Terry Bickell, G0UIO. Unfortunately Terry passed away in January at only 40 years of age. I'm sure that all who knew Terry will miss him and his efforts.

2m SSB REPEATER

The keeper of GB3SF, Derek Carson, G4IHO, contacted me with the news that GB3SF, the UK's only 2m SSB repeater, is currently off the air.

Unfortunately, due to the amount of work and time that would be required to restore GB3SF to service there are no plans to do so for the foreseeable future.

INTERNET LINKING APPLICATIONS

There is a new policy for processing applications for Internet linking to repeaters. In future these should be sent to RSGB HQ for the attention of the RMC Chairman.

A new dedicated Internet-linked repeater has come into service to the south east of Birmingham. Built and operated by the Birmingham Online Repeater Group, GB3DX (RV57, 145.7125MHz) was connected to the Internet using Echolink on 22 February using node number 62872. More details can be found on the group's website [1].

KENT REPEATER GROUP NEWSLETTER

In the latest edition of the Kent Repeater Group Newsletter Bob, G8JNZ, reports that the performance of GB3NK is disappointing as it is not providing coverage to some areas close to the repeater. This is caused by the fact the repeater is currently using a 2-element beam and the effected areas are to the rear of the antenna. The proposed solution is to change to a Diamond X-50 collinear to provide omni-directional coverage. ◆

WEB SEARCH

GB3DX www.gb3dx.co.uk
RMCWeb www.coldal.org.uk/rmc

LATEST CLEARED REPEATERS

Callsign	Type	Channel/Frequency	Keeper
GB3MX	2m Site change Mansfield	RV60 145.750 MHz	G6CUK
GB3IB	New 70cm Wide split Weston-super-Mare	RU72 In: 438.500MHz Out: 430.900MHz	G4SZM
GB3BY	6m Site change Kidderminster	R50-1 50.720MHz	G8EPR
GB3DX	New 2m Birmingham	RV57 145.7125MHz	G4KQU
GB3DM	New 70cm Dumbarton	RB9 433.225MHz	MM1APC
GB3WW	Site change 2m Nant-y-Caws, Nr Carmarthen	RV62 145.775MHz	GW4FOI
GB3RB	New 70cm Wide split Bolsover	RU78 In: 438.575MHz Out: 430.975MHz	G1SLE

OUTSTANDING VOICE REPEATER PROPOSALS SUBMITTED FOR LICENSING ARE

Callsign	Type	Process Stage	Proposed Keeper
GB3AA	New 23cm Alveston, North of Bristol	PU	G4CJZ
GB3BM	Southport	RA	G4WPS
GB3ET	New 70cm Winchester	PU	G8GTZ
GB3IT	New 70cm Wide split Tamworth	PU	G6NHG
GB3ML	New 70cm Motherwell	RMC	GM3SAN
GB3YS	Site change 70cm Yeovil	RA	G3UGR

Repeater proposal status as of 23 February 2003. The latest clearance status can be obtained from the RMC website. Please note that even though an application may have cleared it is beyond the control of the RMC as to when the keeper will bring the repeater into service.

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IC 706 MK2 G	£789	FT 847	£1129	BA6100 2M/70cms	£50		
IC 2725 H	£319	FT 100D	£799	**MOBILE ATENNAS**		**KENWOOD**	
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IC E90	£269	FT 8900	£369	DA70002M/70Cms	£22	TM-D700E	£429
IC R8500	£1149	VX 7R	£329	**EARTH RODS**		TM-G707E	£279
IC R75	£579	VR 5000	£569	4FT LONG adjustable Brass fixing solid copper £11 P+P £5.00		TH-F7E	£249
IC R3	£369	VR 500	£199				
IC R5	£155	VR 120	£134				

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PHOTO: K1ZZ

Members of the IARU Region 1 Executive Committee and guests at the meeting in the Netherlands. L to R: LZ1US, PA7BT, LA2RR, K1ZZ, ON7LX, 6W1KI, PA0EZ, A41JT, G3BJ, JJ1OEY, HB9JOE, 5Z4MR, SP5FM, DF5UG and VE6SH.

IARU

The executive Committee (EC) of IARU Region 1 is the executive body of the Region, elected by member societies at the General Conference. It is charged with directing the affairs of the Region between such conferences, maintaining contact with member societies, the IARU International Secretariat and other IARU Regions and generally carrying through the decisions made at the General Conference. Crucially, it also maintains liaison with the ITU and other international organisations. As I mentioned in the February 'IARU' Column, a virtually new EC was elected at San Marino. The EC meets together once a year (with most of the work being done by e-mail in the intervening time). It held its 2003 meeting in the Netherlands in mid-February. Members of the nine-person EC are drawn from Norway, Switzerland, Germany, Great Britain, Bulgaria, Kenya, Oman, the Netherlands and Senegal.

The 2003 meeting covered a lot of ground. As is always the case with a new team, time was taken agreeing the way the Committee will work, both in its annual meetings, but more importantly, in between the meetings. The committee also reviewed the position of handover of responsibilities from the previous EC. Within Region 1, there are a number of Working Groups and Committees specialising in specific areas of amateur radio. Chairmen of these bodies are appointed at each General Conference, but at the EC meeting, each Committee member agreed some personal responsibilities for being a link with certain of these Working Groups. EC members had the opportunity to hear first-hand from the HF Chairman and VHF / UHF / Microwave Chairman (ON7LX and PA0EZ respectively) of progress in their particular areas of responsibility. The Committee also reviewed written reports from other working groups, including those responsible for EMC issues, ARDF, High Speed Telegraphy, the IARU Monitoring service, the Radio Regulatory Working Group and STARS ('Support for The Amateur Radio Service' – concerning stimulating amateur radio in developing countries).

The Committee developed a set of objectives for IARU Region 1 for the next three years. These covered defence of the amateur radio spectrum, strengthening the relationship between IARU Region 1 and its member societies, promoting amateur radio to administrations and other relevant bodies, improving the flow of newcomers into amateur radio and some internal issues concerning use of the web and revision of the constitution and bylaws. Work was done to develop some detail around these themes, and more is planned in the coming months.

KEEPING COSTS DOWN

IARU Region 1 is funded by fees from member societies, and part of the meeting was devoted to ensuring that the budget for the Region is properly controlled and will be spent on the priority areas for action. Most member societies are under financial pressure, and the EC is very conscious of the need to minimise the financial burden of Regional activities. As part of the drive for cost savings, the EC has agreed not to employ any secretarial support. The Regional office will be run from the home of the secretary, at much reduced cost to the Region.

One area which generated a lot of discussion at the meeting was the development of a new 'look and feel' for the Region's website. Increasingly, the Internet will provide a powerful way of communicating with member societies, and of setting out the activities and objectives of the IARU. So the EC agreed the main focus areas for a new web site, and over the next few months a new webmaster will get on with the job of turning these ideas into practice.

ACTIONS FOR WRC-03

A lot of time was spent at the EC meeting considering further actions needed to support the IARU initiatives for WRC-03 (the World Radio Conference being held in June / July 2003 in Geneva). Much is at stake here for the amateur service, and the last few months before the Conference will involve a lot of activity by those who carry the prime responsibility for advocating the IARU case. But the responsibilities are not limited to just a few people. Each member society has a role to play in encouraging its national administration to support the IARU position, and the EC discussed how member societies might take further actions in support of the IARU strategy.

Also discussed at the EC meeting were the actions necessary to give effect to the many decisions taken by member societies present at the San Marino General Conference of the Region in November 2002. Some 60 decision areas need following up. Some are relatively minor, but others will require a lot of hard work to bring the San Marino decisions to life.

At the EC meeting were representatives from the other two Regions: Tim Ellam, VE6SH, representing Region 2 (the Americas), and Yoshiji Sekido, JJ1OEY, representing Region 3 (Asia-Pacific). Also at the meeting was David Sumner, K1ZZ, the Secretary of the Administrative Council of the IARU. Members of the EC were thus able to review developments elsewhere in the world of amateur radio, and to hear at first hand of initiatives and plans being taken.

As a result of the 2003 meeting of the EC, much is planned over the next year or so. Now the hard work begins. Between now and the next meeting of the EC in April 2004, I hope to be able to report on some of the progress in future editions of this column. ◆

UK Band Plans 2003

As a result of decisions made at the IARU Region 1 Conference in San Marino in November 2002, the IARU and UK band plans are currently in a state of flux. As reported in the January 2003 RadCom in the report 'IARU Region 1 Conference in San Marino' (pages 18 – 19), it was agreed at the conference that the basis of planning for the HF, VHF, UHF and Microwave bands would be changed to a system based on the bandwidth required by the signal. A new term 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 on HF very much easier with a logical placement of the new digital modes.

As reported on page 6 of the January 2003 RadCom, this new approach was brought into effect on the 6m and 2m bands straight away but will be introduced on the other VHF / UHF bands later. The 6m and 2m band plans are therefore in a similar format to the HF band plans, but are different to the plans for 4m and 70cm.

Most of the changes to the Microwave band plans are expected to be introduced on 1 January 2004 and therefore these are not published again now. However, a report (below) by the RSGB Microwave Manager Mike Dixon, G3PFR, gives some more detailed background to the changes that will be introduced to the Microwave band plans and how the usage of those bands will be affected. His report also provides background to the band plans that will be published in the 2004 RSGB Yearbook.

First, though, Colin Thomas, G3PSM, the RSGB HF Manager with some notes on the thinking behind the changes to the HF band plans.

HF Band Plans

by Colin Thomas, G3PSM, RSGB HF Committee Chairman and HF Manager

Over the past few years there has been an increase in the development of new digital modes of varying speeds and bandwidths. The use of these has caused some problems with some of the more traditional modes and as a result a small number of IARU Region 1 Societies have been working together to address these problems.

The recent Region 1 Conference agreed to a gradual introduction of a new concept of looking at band plans and the recent publication in the January RadCom of the 6 metre and 2 metre band plans goes some way to explain this. Briefly, instead of looking at a band in terms of modes the emphasis will be on the bandwidths of modes. Thus when a new mode is developed there should be a portion of most HF bands available to use. The current usage of the bands has not changed although the division of the 40 metre band at 7035 - 7045kHz should go some way to settle ongoing discussions.

It was also agreed to introduce a new mode designation for those modes that require the use of computers, and more specifically soundcards to generate and decode the particular mode eg PSK31, MT63. The designation is 'Machine Generated Modulation' (MGM) and in general this replaces the 'Digimode' designation.

An important addition is that of the newly adopted 'QRS' or Slow Morse telegraphy calling frequencies. In line with other calling frequencies it is intended that these should provide a meeting place for those developing their skills in Morse code. Having established contact they should then move to a nearby unoccupied frequency.

This published RSGB band plan is in fact more detailed than the newly published Region 1 band plan and goes some way to showing the way forward. The German Society DARC has also adopted this approach and together with RSGB and the Slovak Society SARA forms the IARU Region 1 band planning Working Group. This group will work in conjunction with similar groups that have been, or will be, formed in the other IARU Regions in order to come to a common position.

Members who feel they would like to input into the Working Group via the HF Committee are invited to contact Colin Thomas, G3PSM, the HF Committee Chairman and HF Manager, either by post via RSGB HQ, or preferably by e-mail to: HF.Manager@rsgb.org.uk

Microwave Band Plans

by Mike Dixon, G3PFR, RSGB Microwave Manager

Several very significant changes to band usage in the microwave bands were debated and agreed in Committee C5 (VHF, UHF and Microwave Committee) at the IARU Region 1 Conference in San Marino last November. Some of these have already been outlined in the summary report published on pages 18–19 of the January 2003 issue of RadCom, under the sub-heading 'Band Plans'. The purpose of this report is to expand on that summary report and give some more detailed background to the changes and how they will affect usage of the microwave bands in particular. A secondary aim is to provide background to the band plans that will appear in the 2004 RSGB Yearbook and on the Society's website.

NEW NARROWBAND MODES & BAND PLANNING

The first significant change is the recognition and introduction of new modes, named 'Machine Generated Modulation' (MGM). Although originally aimed primarily at HF, VHF and UHF usage where there is, at the moment, higher band occupancy than in the microwave bands, it was agreed that the basis of all future band planning will be by mode and bandwidth occupied by the signal. These new modes will be used for those amateur communications systems that use computer processing as an essential component of transmitting and receiving. Current examples of these are FSK441, JT44 and PSK31, primarily used for very narrowband, very weak signal enhancement, making it possible in many instances to recover signals which are at, or below, the receiver system noise level. Such techniques are evolving rapidly and may be particularly useful in the microwave bands, as well as at the lower frequencies for which they were originally developed.

Since the bandwidth occupied by such modes is fully compatible with existing narrowband modes, such as CW, it was agreed that parts of the 'CW only' or 'CW exclusive' sub-bands would be used for MGM. This means that in future published band plans 'CW' will be replaced by 'CW/MGM'.

In the 1.3 and 2.3GHz band plans, therefore, the segments currently marked as 'CW only' will be designated as 'CW and MGM', ie 1296.000 to 1296.150MHz in the 23cm band, and 2320.000 to 2320.150MHz in the 13cm band.

In the case of the 3.4GHz (9cm band) things are slightly different, since several Region 1 countries (but not the UK) have only a 2MHz-wide band, extending from 3400 to 3402MHz, all of which is shown as Narrow Band CW/EME/SSB, with 3,400.100MHz designated as the 'centre of activity'. MGM will, as already explained, co-exist comfortably with the existing usage band plan, needing only to have 'MGM' added to the IARU column.

'REFARMING' AND THE USE OF PREFERRED PRIMARY SEGMENTS

Similar principles will be used in all the other, higher, microwave bands as the occupancy increases and needs arise. However, there are further complications and here we come to the second significant change that

was debated and agreed at the conference.

At WRC 2000 there was considerable 're-farming' of the millimetre bands above 70GHz resulting in very significant band movements due to be implemented by all administrations by 2005. It is probable that these changes will now be implemented in the UK in the latter half of 2003 (possibly earlier) and have, indeed, already been implemented in some Region 1 countries, notably the Netherlands.

The Amateur / Amateur Satellite Primary (Exclusive) status given in WARC '97 has disappeared as a result of WRC 2000 and been replaced by Amateur / Amateur Satellite Primary (Shared). It has long been IARU policy to use the Amateur Primary segments in preference to Amateur Secondary segments, and it was agreed that in all bands where there is a Primary allocation, this must be used in preference to the Secondary allocation. The Amateur Services have Primary allocations in the 5.6 and 24GHz bands, and all the bands above 46GHz.

Dealing with the band movements above 71GHz first (but including the 24 and 47GHz bands for comparison), briefly these are as follows:

24GHz	No change, Primary 24,000–24,050MHz
47GHz	No change, Primary 47,000–47,200MHz
75.5–76.0GHz	Withdrawn
76GHz	Secondary 76,000–77,500MHz (new)
	Primary 77,500–78,000MHz (new)
	Secondary 78,000–81,000MHz (new)
122GHz	Secondary 22,259–123,000MHz (new)
134GHz	Primary 134,000–136,000MHz (new)
	Secondary 136,000–141,000MHz (new)
142–144GHz	Withdrawn, replaced by 134GHz
241GHz	Secondary 241,000–248,000MHz (new)
248GHz	Primary 248,000–250,000MHz

Arising from these changes, it has been agreed that the first 10MHz segment of each of the bands shown above shall be reserved for all modes. It was also agreed that both terrestrial and satellite narrowband activity including MGM should be adjacent and located in the first 2MHz of this 10MHz-wide segment.

In the case of the 5.6GHz band, in accordance with the IARU policy, it has been agreed that narrowband operation will take place in the segment 5,668–5,670MHz, rather than 5,760–5,762MHz, with the same band planning principles applied here as in the other bands.

In the 24GHz band, the Primary segment 24,000–24,050MHz is allocated to both the Amateur Services on an equal basis. Almost by default Amateur Satellite activity focuses on 24,048MHz in the Primary segment and certainly by default other (terrestrial) narrowband activity in Region 1 has been in the Secondary segment at 24,192MHz. There is a considerable technical argument for bringing together both satellite and terrestrial activity in one place, in the Primary segment of the band. There is no reason to suppose that terrestrial and satellite activities cannot co-exist in the 24,048–24,050MHz segment, although some hold the view otherwise! My personal recommendation would be to 'suck it and see' and, only if necessary, use the first one megahertz (24,048–24,049MHz) for satellite activity and the second megahertz (24,049–24,050MHz) for terrestrial activity. In either event a 2MHz-wide segment is a manageable proposition – 50MHz isn't so easy!

CONCLUSIONS

So, there we have it! The recommendation of IARU Region 1 Committee C5 is that these changes will come into full effect on 1 January 2004, with the option of making the changes earlier where it is possible and desirable to do so. Designers and builders of amateur microwave equipment take note!

Julian Gannaway, G3YGF, of the RSGB Microwave Committee comments: "As part of a major reorganisation of the allocations above 71GHz at WRC 2000, the amateur allocations were re-arranged. The Radiocommunications Agency (RA) intends to make the bands available as shown below. The UK Frequency Table on the RA website [www.radio.gov.uk, go to 'A-Z Index', 'Frequency Allocation Table 2002', then 'Main Table'] shows the new bands being available from 1 January 2003, and the old bands remaining available until 31 December 2006, giving a four-year changeover period. However, the new bands cannot be used until a Gazette notice is issued, varying Amateurs' licences; it is hoped this will be done by Spring 2003. Detailed band planning information will be provided in due course. It is hoped that activity will focus on the Primary segments."

Current UK Allocation	New UK Allocation
75,500–76,000	–
	76,000–77,500
	77,500–78,000
	78,000–79,000
	79,000–81,000
	122,250–123,000
	134,000–136,000
	136,000–141,000
142,000–144,000	–
	241,000–248,000
248,000–250,000	**248,000 - 250,000**

Note that all bands, except 78,000–79,000 and 122,250–123,000, will also be available to the Amateur Satellite Service.

NOW TURN TO PAGE 61

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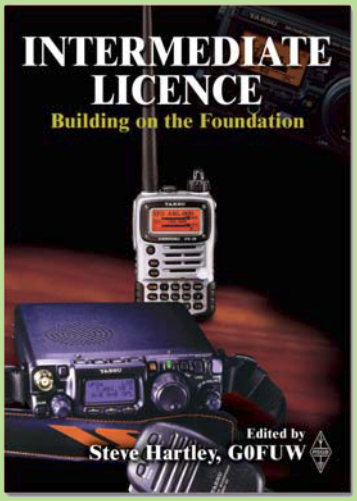

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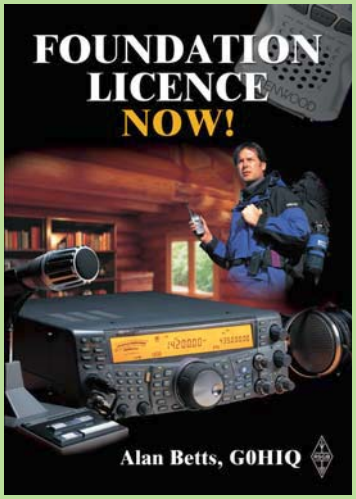

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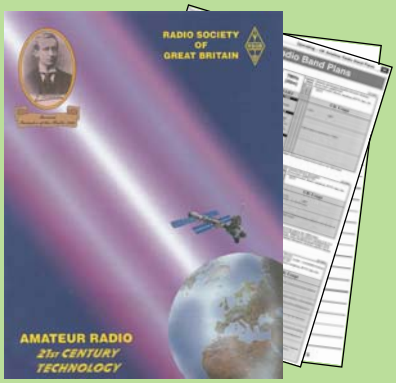

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VSWR: (Typical)	Typically less than 1.4:1
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DC Operating Range:	•10.5 to 18 VDC
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Recurrent set time:	Typical: less than 10 milliseconds
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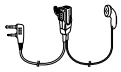

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ZERO DEPOSIT!
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ML&S £499
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36 x £18.14

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36 x £10.14

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ML&S £349
ZERO DEPOSIT!
36 x £12.69

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low PRICE

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.

ML&S £1999
ZERO DEPOSIT!
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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

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HF/VHF/UHF SWR/PWR Meter
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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!

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27th April 2003

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- RSGB, PW & RAIBC plus many more club stands
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- Main traders and the 'small hard to find retailers' will be there
- Bars and hot food available thoughout the day
- Free entry for under 16yrs
- Normal entry £3.50 and £3.00 after 12.30pm
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Package Deal

- FT-8900 Quad Band Transceiver
- YSK-8900 Remote Mount kit
- MEK-2 Mic Extension kit
- MMB-60 Quick Release Bracket
- SP-4 Mobile Speaker
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RRP: £614.75

ML&S: £566.95

ZERO DEPOSIT 36 x £20.61

NEW! Yaesu FT-857

Blending a mixture of technologies developed on the FT-897 & the FT-1000mkV Transceivers, the FT-857 is the world's smallest HF/VHF/UHF Multimode Transceiver.

- High Performance compact mobile
- 160-6m (100W) 2m (50W) 70cm (20W)
- Uses the RX performance of the FT-1000mkV & FT-897
- Full DSP
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Available soon! Price: £799

FT-1000MPmkV Field HF Transceiver

The very latest 100W H.F. Base Station to come out of Yaesu with a built in PSU, Auto ATU, Class A SSB Transmission (25W).

RRP: £2299.00

ML&S: £1899.00

Package Deal

- SP-8 Matching Desk Speaker
- MD-100 Desk Microphone
- Full compliment of filters (5 in total)

RRP: £2912.65

ML&S: £2449.00

ZERO DEPOSIT 36 x £89.04

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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: £1099.00

ZERO DEPOSIT 36 x £39.96

FT-1000MPmkV 200W

Still the bench mark for HF operation. Full DSP & 200W, with 75W of pure Class A TX.

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VX-7R

Submersible Tri-Band Handie

The worlds very first Tri-Band Handie that you can actually fully submerse! Tough construction (to MIL Spec 810). 5W on 6/2/70, RX 500kHz-999MHz, plus Dual RX.

RRP: £359.00

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Package Deal

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- CD-15A Rapid Charger (needs NC-72U)
- NC-72U 5Hr Charger
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- CSC-88 Soft Case
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RRP: £578.60

ML&S: £499.00

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Still the only truly handheld all band transceiver, 160m-70cm, 5W.

RRP: £799.00

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ZERO DEPOSIT 36 x £21.05

Package Deal

- FT-817, c/w Nicads, Charger, Whip, Mic, Strap
- HL-50B 160-6M Linear Amp
- CSC-83 Case
- Miracle Whip Antenna

RRP: £1248.85

ML&S: £925.00

ZERO DEPOSIT 36 x £33.63

FT-897

At last the new 160m-70cm Transportable is available from stock. This compact package offers all mode operation with 20 Watts output from its optional internal batteries or a full 100W (on HF/6M) from its own internal PSU. (Optional)

ML&S: £989.00

ZERO DEPOSIT 36 x £35.96

- FT-897 All Band Transceiver
- FP-30U Internal 240V PSU
- FC-30 Bolt-on Auto ATU
- YF-122S Collins SSB Filter
- YF-122C Collins CW Filter
- MH-36E8J DTMF Mic
- MD-100 Desk Microphone
- MMB-80 Mobile Bracket
- ATAS-120 Active Tuning Antenna System
- 2xFNB-78 Twin Internal Ni-MH Battery Packs
- PA-26 & CD-24 12/240V chargers
- Miracle Whip Antenna (max 20W)
- TCXO-9 Hi-Stab Unit. (0.5ppm)
- CT-39A Packet Cable
- CT-62 PC Interface Cable

RRP: £2816.20

ML&S: £2529.95

ZERO DEPOSIT 36 x £91.98

The Ultimate 'Get a Divorce' Package

Portable Package

- FT-897 All Band Transceiver
- 2xFNB-78 Twin Internal Ni-MH Battery Packs
- PA-26 & CD-24 12/240V chargers
- Miracle Whip Antenna (max 20W)

RRP: £1598.75

ML&S: £1449.00

ZERO DEPOSIT 36 x £52.68

Mobile Package

- FT-897 All Band Transceiver
- MMB-80 Mobile Bracket
- ATAS-120 Active Tuning Antenna System
- MH-36EHJ DTMF Mic
- SP-4 Mobile Speaker

RRP: £1449.80

ML&S: £1317.99

ZERO DEPOSIT 36 x £47.92

Base Package

- FT-897 All Band Transceiver
- FP-30U Internal 240V PSU
- FC-30 Bolt-on Auto ATU
- YF-122S Collins SSB Filter
- YF-122C Collins CW Filter
- MD-100 Desk Microphone

RRP: £1870.75

ML&S: £1699.00

ZERO DEPOSIT 36 x £61.77

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RSGB IOTA 2002 Contest

2002 WAS A record year for the IOTA contest, with entries up about 11% on last year. While band conditions were good, they were far from outstanding but this was more than compensated by the high level of activity. Once again, records were broken and yet again there were some rare IOTAs in evidence for the serious aficionados.

Reported by Don Field, G3XTT, 105 Shiplake Bottom, Peppard Common, Henley-on-Thames RG9 5HJ.

Examples include the single-operator effort by YB5NOF/P (OC-106) and the multi-op from 5C2MI (AF-065). Participant reaction has been excellent.There simply isn't space to reproduce entrants' comments here, but an extensive 'Soapbox', along with a wide selection of photographs, was published on the HFCC web page in the autumn of 2002, shortly after the Claimed Scores appeared at the same location. Two recurring themes did, however, come out of the entrants' comments. One was that too many stations identified far too infrequently. The other was that propagation was poor. Well, none of us can do too much about the latter, but if you are guilty of the former, then please take note for this year.

The lighthouse provides a fine mast for the low-band antennas for ES8X on Kihnu Island, Estonia (EU-178).EU-136.

One word of caution up front. If you are planning to operate from an island, do make sure that it qualifies under the rules of the IOTA Awards Programme. The SK2KW team went to the trouble of activating what they thought was a qualifying island for EU-135, but the island is not listed in the RSGB IOTA Directory and the IOTA Manager confirmed that it is in an enclosed bay and does not qualify. That particular group has therefore been reclassified as a 'World' entry and other entrants' logs have been rescored appropriately.

An apology is in order at this stage. Last year's results appeared in the March RadCom, while this year they appear a month later. This despite a general trend for contest results to appear more quickly. The IOTA contest is, in terms of the number of entries, by far the biggest RSGB con-

Trophy	Winner (operators)
IOTA	9A8RR (OM2VL OM3BH OM3GI OM3RM OM3RG OM7JG OM7IR 9A2R 9A3PA 9A3LG 9A3NY 9A3SK 9A3ZA 9A4RV 9A4VV 9A7R S57C)
Geoff Watts Memorial	(OE1EMS OE1WWA OE2WPO OE8GBK OE8KDK OE8MHQ OE8SKQ Mrs Senka 9A6PPJ 9A9R)
Roger Balister, G3KMA	LZ1KSL (LZ1QV LZ1ZM LZ1ZU LZ3YY LZ4BU LZ5QZ LZ1TA LZ3QE LZ5XM)
David King, G3PFS	GW0GEI
G3DYY Memorial	M0C (G0CKP)
W9DWQ	W4/LZ3SM

Below: The 9A0R group wins the Geoff Watts Memorial trophy. They were on the air from Krk, EU-136.

RESULTS LISTINGS
(An asterisk by the callsign indicates Low Power)

ISLANDS - MULTI-OPERATOR

Pos.	Callsign	QSO	Mults	Score	IOTA Ref	Island name
1	9A8RR	3249	676	15,998,892	EU-016	Korcula island
2	9A0A	2848	557	11,147,798	EU-170	Pasman Island
3	9A0R	2625	509	9,483,179	EU-136	Krk Island
4	OH9A	3121	443	8,687,673	EU-173	Sandström Reef
5	UU7J/P	3040	452	8,575,344	EU-180	Tuzla Island
6	GM5A	2533	519	8,527,689	EU-008	Islay
7	G5XV	2350	486	7,788,636	EU-120	Isle of Wight
8	PI4HQ	2389	499	7,354,761	EU-146	Goeree Overflakkee
9	GU8D	2466	472	7,213,104	EU-114	Guernsey
10	TM2ON	2619	428	6,423,852	EU-068	Sein Island
11	EI7M	2632	417	6,194,952	EU-115	Ireland
12	MD4K	2922	388	6,134,280	EU-116	Isle of Man
13	CT9M	2845	345	5,838,435	AF-014	Madeira
14	G3BJ	1870	470	5,687,940	EU-005	UK Mainland
15	OH2U/P	2610	317	5,023,182	EU-097	Lilla Grötholmen
16	DF4XX/P	1839	394	5,005,770	EU-128	Fehmarn Island
17	R1MVI	2284	318	4,533,408	EU-117	Malyy Vysotskiy Island
18	*DL3KZA/P	1974	334	4,434,852	EU-057	Ruegen Island
19	9A/S55A	1658	359	4,383,390	EU-136	Krk Island
20	J45RW	2637	286	4,263,402	EU-001	Rhodes
21	PJ2Y	2109	308	4,214,364	SA-006	Curaçao
22	*ED1URJ	1948	322	4,018,560	EU-077	Sisarga Grande
23	EJ4F	1976	292	3,798,336	EU-006	Inisheer
24	*LZ1KSL	1656	348	3,666,528	EU-181	Sveta Anastasia
25	SN6F/1	1582	321	3,649,770	EU-132	Wolin Island
26	OZ0RM	1937	282	3,239,334	EU-171	Vendsyssel
27	EJ5E	1432	298	3,082,512	EU-121	Inishbofin
28	CU9D	2073	265	3,079,035	EU-089	Corvo Island
29	PA6TEX	1347	316	2,801,340	EU-038	Texel
30	AA1IZ	1566	272	2,749,920	NA-148	Georges Island
31	PA5ET/P	1745	277	2,706,567	EU-146	Goeree-Overflakkee
32	VE9W	1629	270	2,638,170	NA-014	Whitehead Is
33	EA5KB/7	2464	180	2,436,480	EU-143	Sacti-Petri Island
34	GM2T	1578	227	2,387,586	EU-008	Tiree
35	*DL2KUW/P	1002	274	2,086,236	EU-129	Usedom Island
36	RI0L	990	235	2,045,910	AS-066	Rikorda Island
37	G8A	1534	251	2,001,474	EU-005	UK Mainland
38	DL0KWH/P	1398	226	1,967,556	EU-129	Usedom Island
39	CU3I	1737	192	1,781,568	EU-175	Terceira Island
40	M2C	716	289	1,768,680	EU-005	UK Mainland
41	RK1A/P	1315	217	1,764,861	EU-133	Kotlin Island
42	*9A7T/P	892	232	1,559,040	EU-136	Trstenik
43	*5C2MI	2148	145	1,480,740	AF-065	Mogador Island
44	EA6URP	1066	210	1,425,060	EU-004	Mallorca
45	*ES8X	1333	176	1,400,432	EU-178	Kihnu
46	*LB8RE	1622	156	1,350,648	EU-055	Sotra Island
47	5K0Z	1512	160	1,338,240	NA-033	San Andres Island
48	SK7DX	1360	163	1,324,212	EU-138	Hano Island
49	G9Q	1802	158	1,252,308	EU-005	UK Mainland
50	C6DX	1930	132	1,228,392	NA-001	Eleuthera
51	*J48S	1540	135	1,036,800	EU-049	Samos Island
52	*GM5V	1168	138	937,296	EU-008	Gigha
53	*GN0ADX/P	711	153	820,233	EU-122	Rathlin Island
54	*N4C	808	153	782,136	NA-067	Core Banks
55	DS0DX/2	1193	106	768,606	AS-105	YongYu
56	M5BFL/P	973	157	765,375	EU-005	UK Mainland
57	*8S5T/0	948	138	730,296	EU-084	Yxlan
58	BV2B/9	1044	88	702,240	AS-155	Kueishan
59	BI5H	826	114	665,532	AS-137	Shengshan Island
60	*SY9DIA	755	130	645,450	EU-187	Dia Island
61	GM3HAM/P	1043	110	612,150	EU-123	Great Cumbrae
62	*GI3XRQ/P	700	141	604,044	EU-115	Ireland
63	*9H3D	1094	98	606,228	EU-023	Gozo
64	BI4J	760	89	577,788	AS-136	Chongming Island
65	K5M	694	110	533,940	NA-092	Mustang Island
66	II7GR	782	112	508,704	EU-091	Isola Grande di Porto Cesareo
67	RI1CGG	1086	84	441,000	EU-133	Gogland Island
68	*M5Q	584	125	438,000	EU-005	UK Mainland
69	*RI0MP	512	104	435,552	AS-066	Popov Island
70	G4FOX/P	519	110	348,150	EU-005	UK Mainland
71	*W4HY	518	85	263,670	NA-076	Cedar Key
72	*ED1OCV	354	92	222,456	EU-077	Coelleira Island
73	*M3S	219	106	222,282	EU-005	UK Mainland
74	*WW4LL	519	75	212,175	NA-213	Dauphin Island
75	*OH5AD	413	64	154,560	EU-140	Kuorsalo Island
76	KM5VI	424	40	80,160	NA-143	Galveston Island
77	*IS0JMA	209	44	57,684	EU-024	Sardinia
78	*DU9DWV	153	31	45,105	OC-130	Mindanao
79	*VK6BPM/P	118	36	39,960	OC-164	Rottnest Island
80	*AE4GB	60	26	14,040	NA-034	Mullet Key
81	*R1ANC	34	12	4,536	AN-016	Antarctica

test, and a huge amount of manual effort has been involved in previous years in adjudicating the results. This year, as those of you who heard my talk at the HF Convention will be aware, a lot of effort has gone into automating the process. The IOTA Contest is leading the way to standardisation of log formats (more of this later) and work has been done on developing software which will speed the checking process. The benefits should start to become more apparent next year, now that the bulk of the work has been done. This year, if anything, all the development work has simply increased the overall workload!

RESULTS

As always, the highest scores are achieved in the multi-operator category, and 2002 scores were quite remarkable. The 9A8RR team raised the bar by almost 4m points, up from third place last year with a great effort and a very accurate log. Places two and three were also taken by Croatian groups, and a quick look at the results of other categories will show that 9A really was the place to be in 2002. It has to be said that the OH9A team were, so they tell me, taking it easy after their efforts with WRTC, with the result that they had to be content with fourth place.

For the first time there was a recognised World multi-op category, won by the DJ6QT team. I would hope to see more World multi-op entries this year.

With M6T moving from the SSB to the Mixed category, 5B4KH takes the honours in the Islands 24-hour category. KP2/AA1BU deserves mention for his third place, despite running low power and with the possible geographical disadvantage of not being in Europe. There are also some new faces at the top of the Islands 24-hour CW category, with OH0TA emerging victorious by a comfortable margin, so obviously it wasn't essential to be operating in Southern Europe to achieve a winning score. 9H3QC wins the Islands 24-hour Mixed mode category, with a close fight between M0SDX and M6T for second and third place respectively. I said last year that I expected multiplier totals to rise considerably in this category and that is certainly what happened in 2002.

The 9A0A gang on Pasman Island, EU-170.

Left: A view of Cedar Key, Florida (NA-076), location for the W4HY operation.

WORLD – MULTI-OPERATOR

Pos.	Callsign	QSO	Mults	Score
1	DJ6QT	1070	385	3,624,390
2	DF0RI	1243	364	3,432,156
3	UR4IZA	745	273	1,868,139
4	*SK2KW	1071	202	1,339,866
5	*F5KIN	374	240	1,104,480
6	K3WW	681	188	1,018,584
7	*US7IGF	572	202	998,688
8	*YO9KVV	421	137	482,103
9	N6VR	266	146	447,636
10	RK3DZD	529	88	299,112
11	W6IXP	318	92	239,016
12	*OE1XPB	211	86	165,894
13	*IV3WMS	130	68	99,960
14	*AY5FZ	309	41	68,019
15	RK3AWK/1	139	52	62,868

Yet again, the 12-hour categories proved to be hugely popular, presumably because they fit well with entrants' domestic priorities. GW0GEI moves up from third last year to take first place in the Islands 12-hour SSB category, while IC8WIC once again comes in second, a great achievement with his low power. P3F put in a million-point-plus score to win the Islands 12-hour CW category, while the Islands 12-hour Mixed mode honours return to Europe with a win by OH6NIO/P.

World (ie non-island) entrants continue to support this contest in a big way, and there are some excellent scores yet again. 9A5Y wins the 24-hour SSB category by a huge margin, while OK2PP, a low power entrant, wins the 24-hour CW. 24-hour Mixed mode honours go to RK4FF, up from his 2001 third place, and edging out DL4MCF who last year was 24-hour SSB winner. It's good to see so many entrants trying out different categories from year to year. 12-hour SSB winner is HG8Z, while 12-hour CW winner is RA3XO with a substantial increase on last year's winning score in this category. This category caused some headaches in scoring the second, third and fourth-placed entrants, who were so close that their positions kept changing as the checking went on. 12-hour Mixed mode honours go to IK2UCK, with almost twice the score of runner-up SP9W who last year won this category.

ASSISTED CATEGORIES

The number of Assisted entries (ie single-ops using PacketCluster to help with multiplier chasing) almost doubled compared with 2001, so it looks as though there really is a demand for this category, perhaps from island chasers not wishing to miss a 'rare

Kueishan Island, AS-155, was the home for BV2B/9.

one'. As I said last year, the scores are not directly comparable, as I have listed all the Assisted entrants together, but it is notable that scores are generally well down on last year's, so perhaps this really is the category for those who want to participate but with a primary focus on chasing islands.

SWL

Despite the reminder in last year's write-up, a couple of entrants once again fell foul of the '1 in 3' rule, whereby two other callsigns must appear in the 'station worked' column before the same station can appear again. I have never checked SWL logs before, as Bob Treacher has generally undertaken this task. I have to say, I was shocked at the poor standard of logging in a number of cases. I appreciate that SWLs don't get chance to ask for a repeat if they fail to catch a callsign the first time but, if you aren't sure of the station worked, wait a moment and log the next one instead. I also noticed that some SWLs automatically logged both sides of the QSO for contest points each and every time. The rules allow this if you can actually hear both sides, but it was quite clear to me that, in a number of instances, the SWL had actually only been able to hear one side of the QSO. Penalties have been applied where appropriate.

Of course, these criticisms are by no means universal and I want to single out LYR-794 who not only once again put in the highest score, but did so with what was by a long way the best-presented, most accurate SWL log received. A pleasure to check and a deserving winner.

ISLAND EXPEDITIONS

The listing of island expeditions is slightly changed this year. Expeditions appear alongside other island operations in the main listings but, provided they meet certain criteria, can also compete for a range of awards specifically targeted at expedition operations. Unfortunately, there has been some confusion over the new definition of an island expedition. As explained last year, the main reason for the change was to encourage what might be described as 'true' expeditions, rather than setting up a Field Day type of operation in a local field, with trailer-mounted towers or whatever. In doing so it appears we may have taken this a step too far, in eliminating islands where there is an air service, so for 2003 this restriction has been removed. The other elements of the definition remain. For 2002, under the criteria which applied, the winners were 9A8RR in the High Power and/or Yagis category, and LZ1KSL in the Low Power and Single-Element antennas category. I am aware that the change of definition of an island has been a source of some consternation, but hopefully we are now converging on

Antenna work at CU9D on Corvo Island, EU-089.

The CU9D group on Corvo in the Azores, EU-089.

ISLANDS – 12 HOUR SSB

Pos	Callsign	QSO	Mults
1	GW0GEI	1039	184
2	*IC8WIC	1184	135
3	FM5GU	1205	136
4	OH6RX/P	1040	116
5	*SV1BRL/8	997	102
6	*DK8OL	529	117
7	*EI7CC	381	118
8	*OZ4PAX	643	74
9	G0DIZ	251	126
10	*5B4AFB	303	106
11	*EI4CF	228	119
12	*SV8DCY	699	69
13	*DF6QC	359	99
14	*IT9VCE	476	79
15	*PA/ON4CJK/P	566	75
16	*G0AJH	266	94
17	*OZ1ACB	236	87
18	ES1QD/0	500	59
19	*G3TTC	208	92
20	EA8BGY	445	63
21	9V1UV	366	60
22	*VK6NU	216	73
23	*GM0NTL	229	83
24	*K4EP/P	364	61
25	*M0GEB	144	82
26	*PA9ZZ/P	244	70
27	*MM/F5BLC/P	497	51
28	*9H4JB	351	59
29	EC8ABT	617	41
30	*G3YCH	127	81
31	*HS2JFW/P	337	47
32	*VE1OTA/VY2	286	62
33	9V1RH	126	69
34	*KH6GMP	309	49
35	JR4QZH	379	50
36	VK3KXG/P	259	47
37	*SV8DTP	223	60
38	*OX3LG	365	45
39	*CT3KY	200	56
40	*ED1IRM	271	47
41	*EA8AD	318	43
42	*GM0WJN/P	127	50
43	*SV8DTL	303	37
44	*A35RK	222	39
45	*MM5PSL	103	49
46	*WA4JA/P	266	35
47	*JA4PXE/4	108	35
48	*G4EDR	98	46
49	*JH1UUT	103	43
50	VK1JDX	86	38
51	*N1WJ	107	40
52	*UA3NAN/1	109	34
53	*G3FNM	87	39
54	*JI3DST/8	152	27
55	*G0VAX	66	40
56	*M0BWY	61	40
57	*M0BAO/P	90	34
58	*EC8AQQ	214	18
59	*IA5CNE	71	33
60	*IT9DTU	99	30
61	*WP3GW	57	31
62	*JA9SCB/1	79	26
63	*OZ1DYI/P	75	25
64	*CT9KB	52	26
65	*EA6XD	28	28
66	*MU3EFB	53	27
67	*AI2P	40	24
68	*DL6BQE/P	66	19
69	KE7UI	56	20
70	KL7XL	39	17
71	*JA2GHP	25	18
72	*N7YX/VE7	80	13
73	*OZ1IOA	47	15
74	*G4WGE	33	17
75	*7N2UQC	25	16
76	*JH3OXM	21	15
77	AH6OZ	64	13
78	*EC8ACX	57	8
79	*JA6QDU	17	9
80	*JA1BUI	17	10
81	*WP4LNY	24	7
82	*JA7ADV	13	6
83	JA3AER	14	6
84	*M3AEU	21	5
85	*JA1KK	9	5
86	YB5A	18	3
87	*JG1GCO	3	3
88	*JA1AAT	5	1

Score	IOTA Ref	Island name
1,145,400	EU-124	Anglesey
1,023,840	EU-031	Capri
946,968	NA-107	Martinique
719,664	EU-101	Raippaluoto
533,970	EU-052	
434,187	EU-042	Sylt
347,274	EU-115	Ireland
299,034	EU-171	Vendsyssel Isl
297,486	EU-005	UK Mainland
278,250	AS-004	Cyprus
275,604	EU-115	Ireland
268,065	EU-049	Chios Island
263,439	EU-127	Helgoland
223,728	EU-025	Sicily
223,650	EU-038	Ameland
210,372	EU-005	UK Mainland
185,832	EU-029	Sjaelland
181,248	EU-034	Muhu
168,912	EU-005	UK Mainland
164,997	AF-004	Gran Canaria
154,440	AS-019	Singapore
149,796	OC-001	Australia
142,677	EU-005	UK Mainland
136,884	NA-112	Bogue Banks
130,872	EU-005	UK Mainland
130,200	EU-146	Shouwen-Duiveland
128,061	EU-009	Orkney
126,555	EU-023	Gozo
125,583	AF-004	Gran Canaria
119,313	EU-005	UK Mainland
115,761	AS-107	Samet Island
114,948	NA-029	Prince Edward Island
113,022	AS-019	Singapore
108,927	OC-019	Hawaii
97,650	AS-007	Honshu
92,919	OC-136	Phillip Island
92,700	EU-049	Lesvos Island
90,855	NA-220	Kook Island
81,984	AF-014	Madeira
79,383	EU-077	Lobeira Grande Island
67,338	AF-004	Tenerife
64,050	EU-010	Isle of Harris and Lewis
55,833	EU-174	
54,522	OC-169	Lifuka Island
49,245	EU-012	Shetland
46,410	NA-085	Shell Island
44,100	AS-117	Yashiro Island
42,780	EU-005	UK Mainland
40,635	AS-007	Honshu
36,708	OC-001	Australia
33,000	NA-137	Peaks Island
31,926	EU-153	
28,899	EU-005	UK Mainland
28,512	AS-147	Okushiri Island
28,080	EU-005	UK Mainland
27,000	EU-005	UK Mainland
25,092	EU-005	UK Mainland
23,652	AF-004	Gran Canaria
22,869	EU-028	Elba
22,230	EU-025	Sicily
17,577	NA-099	Puerto Rico
14,898	AS-007	Honshu
13,725	EU-125	Romo Island
13,104	AF-014	Madeira
11,760	EU-004	Mallorca
11,745	EU-114	Guernsey
10,080	NA-083	Tangier Island
9,918	EU-129	
8,880	NA-065	Fidalgo Island
7,905	NA-041	Baranof Is
6,750	AS-007	Honshu
5,616	NA-051	Graham Island
5,535	EU-029	Sjaelland
5,355	EU-005	UK Mainland
5,040	AS-007	Honshu
4,545	AS-007	Honshu
4,524	OC-019	Oahu
2,232	AF-004	
1,647	AS-077	
1,590	AS-007	Honshu
1,092	NA-099	Puerto Rico
810	AS-007	Honshu
756	AS-007	Honshu
615	EU-005	UK Mainland
495	AS-007	Honshu
306	OC-143	Sumatra
135	AS-007	Honshu
27	AS-007	Honshu

something which entrants find interesting to compete for, while not finding themselves in competition with the 'big guns' on EU-005 and similar.

LOGGING AND ADJUDICATION

The percentage of electronic logs continues to increase, up from 70% last year to just over 80% this year. By far the majority of electronic logs provide the required information in an easily-readable format, but a significant minority do not. QSO data varies from line to line, fields are run together, a variety of separators (comma, tab, space, etc) are used within a single log, etc. One so-called electronic log proved to be simply an electronic image (JPEG) of the entrant's paper log! For 2003, therefore, the organisers are encouraging a move to the Cabrillo format for logs. This standard is already widely used in major international contests, and the authors of the major contest logging programs (including EI5DI, author of the popular SDI package) are supporting this move. Obviously the changeover will not happen overnight and no one will be penalised for using other formats or, indeed, for sticking with paper logging. But sending a Cabrillo log will certainly make the adjudicators' job easier. Of course, you don't need to use a commercial logging program. The Cabrillo specification is available on the HFCC web page, and any decent text editor will allow you to generate the necessary file.

The other big problem is always identifying the category entered. We can usually work out mode and operating hours from the log itself but your power category is something you have to tell us.

One of the benefits of computerised adjudication is that all logs are properly rescored from scratch. It is clear that Claimed Scores can be extremely misleading. We had entrants using 15 points for every QSO, counting DXCC countries as multipliers, and a variety of other innovative scoring systems!

Points were obviously lost for broken calls and other received data. But I want to mention three types of error which were notable and which entrants should be able to avoid. Firstly, mislogging the band, especially around the time of band changes. This can adversely affect several QSOs and is surprising nowadays when many entrants have their rig linked to their logging PC. Then there is the similar issue of

The ED1URJ group on Sisarga Grande (EU-077), northern Spain.

ISLANDS – 24 HOUR SSB

Pos	Callsign	QSO	Mults	Score	IOTA Ref	Island name
1	5B4KH	1899	186	2,226,978	AS-004	Cyprus
2	GM3PPG/P	1462	233	2,154,318	EU-010	South Uist
3	*KP2/AA1BU	1709	199	2,032,785	NA-106	St John
4	GM0F	1505	232	1,966,200	EU-005	UK mainland
5	EA8BVX	1399	152	1,256,280	AF-004	Gran Canaria
6	MM0CWJ	681	150	736,650	EU-010	South Uist
7	*EI7IQ	533	130	540,150	EU-115	Ireland
8	*IB0/IZ0BVU	878	94	428,076	EU-045	Ventotene Island
9	DU9RG	597	93	412,083	OC-130	Mindanao Island
10	*EA6XQ	556	108	384,912	EU-004	Mallorca
11	IS0KEB	540	93	322,524	EU-024	Sardinia
12	*EA6/DL6YFB	528	91	291,564	EU-004	Mallorca
13	*IS0LLJ	504	80	250,560	EU-024	Sardinia
14	*YB2ERL	365	79	189,837	OC-021	Java
15	*YC3MM/5	432	54	178,200	OC-245	Tebingtinggi Island
16	*RU3ST/1	465	64	176,064	EU-066	Solovetsky Island
17	*SV8CYV	374	69	160,218	EU-049	Samos Island
18	D44TD	695	48	158,832	AF-086	Sal
19	VK2CZ	261	71	140,793	OC-001	Australia
20	*SP3GHK/1	263	63	122,283	EU-129	Uznam Island
21	*G4ZCS	151	75	109,575	EU-005	UK Mainland
22	YB5NOF/P	296	33	83,556	OC-106	Natuna Besar Island
23	*EA8AMY	334	44	74,580	AF-004	Gran Canaria
24	*KW1DX	389	37	66,711	NA-137	Long Island
25	*JA5EO	170	40	59,280	AS-076	Shikoku Island
26	OX3HX	165	47	57,105	NA-018	Greenland
27	*DH6GD	99	46	46,782	EU-128	Fehrman Island
28	*M0AFZ	74	48	40,032	EU-005	UK Mainland
29	*DK7OM/P	45	18	7,182	EU-098	Poel
30	*4D70SAN	70	11	6,402	OC-042	Luzon Island
31	*IT9YSW	33	17	5,151	EU-025	Sicily
32	*GI4TSK	11	10	1,530	EU-115	Ireland

QSL card from the RU3ST/1 operation from Solovetsky Islands, EU-066, in Arkhangelsk oblast, northern Russia.

From the top: This beach on Curaçao was the tempting alternative to operating as PJ2Y! Members of the Bristol Contest Group on Curaçao, SA-006, from where they operated as PJ2Y. The impressive vertical antenna array at GM3PPG/P on South Uist in the Outer Hebrides (EU-010). The IC8WIC station on the Isle of Capri, EU-031, in the Islands 12 Hour SSB section.

ISLANDS – 12 HOUR CW

Pos	Callsign	QSO	Mults	Score	IOTA Ref	Island name
1	P3F	1249	141	1,051,155	AS-004	Cyprus
2	G4BUO	717	200	984,600	EU-005	UK Mainland
3	9A/HA6NL/P	966	142	791,082	EU-170	Pasman Island
4	OY1CT	1056	116	786,480	EU-018	Faroe Island
5	G4BJM	862	155	728,190	EU-005	UK Mainland
6	G0IVZ	678	164	719,304	EU-005	UK Mainland
7	*9H1ZA	978	130	702,780	EU-023	Malta
8	*G3SXW	586	148	555,000	EU-005	UK Mainland
9	*GM7X	730	116	500,424	EU-123	Isle of Arran
10	*ZC4DW	797	90	438,750	AS-004	Cyprus
11	*9A5V/P	595	111	416,583	EU-016	Sipan
12	*DJ5DT/P	330	131	384,354	EU-042	Sylt
13	*G3LHJ	429	121	357,555	EU-005	UK Mainland
14	*OZ/DL5SE	798	84	357,336	EU-125	Romo Island
15	9A/HA6PS/P	607	95	349,695	EU-170	Pasman Island
16	G3GLL	402	115	324,990	EU-005	UK Mainland
17	GM4SID	610	98	319,284	EU-005	UK Mainland
18	*IV3/HA8KW/P	499	87	296,235	EU-130	Grado Island
19	JH3AIU	770	76	281,352	AS-007	Honshu
20	*5B4/G0LII	767	65	269,685	AS-004	Cyprus
21	*ES5MC/0	636	70	243,600	EU-034	Saaremaa
22	ES0EA	777	65	231,075	EU-034	Muhu
23	*G0UKX	258	98	209,916	EU-005	UK Mainland
24	*W4/LZ3SM	456	77	206,976	NA-083	Tangier Island
25	G2HLU	198	99	196,614	EU-005	UK Mainland
26	*DL4FCH/P	412	78	189,072	EU-042	Pellworm
27	G4BGW	208	95	185,820	EU-005	UK Mainland
28	*GM3CFS	259	95	184,395	EU-005	UK Mainland
29	*EI4DW	382	76	181,944	EU-115	Ireland
30	*OZ4FF	488	58	180,264	EU-030	Bornholm Island
31	GW3NJW	295	82	171,954	EU-005	UK Mainland
32	*G5LP	387	76	164,844	EU-005	UK Mainland
33	*G0PSE	242	83	149,898	EU-005	UK Mainland
34	*IT9ORA	382	62	140,244	EU-025	Sicily
35	*M0AXP	153	84	128,268	EU-005	UK Mainland
36	*OZ8AE	204	64	108,288	EU-029	Sjaelland
37	JA1BNW	201	61	93,147	AS-007	Honshu
38	*G2AFV	206	63	90,342	EU-005	UK Mainland
39	*G3GMS	138	69	89,010	EU-005	UK Mainland
40	*OH0JV	138	60	83,160	EU-002	Åland Islands
41	*G3PJT	379	47	82,767	EU-005	UK Mainland
42	*CO2JD	284	36	66,960	NA-015	Cuba
43	*E20HHK/P	370	28	65,352	AS-053	Phuket Island
44	*GW3KJN	135	56	61,656	EU-005	UK Mainland
45	*N6HR/VE7	308	35	60,480	NA-051	Graham Island
46	JA5APU	405	30	52,290	AS-076	
47	*G4DDL	117	52	51,324	EU-005	UK Mainland
48	*MM/PA0INA/P	241	34	42,534	EU-123	Isle of Arran
49	JA7IC	276	30	37,440	AS-007	Honshu
50	*OZ5RM	177	30	34,650	EU-029	Sjaelland
51	*V63ZF	144	23	28,428	OC-010	Pohnpei
52	*8S4C/5	246	24	27,216	EU-084	Orskar Island
53	EA8EY	117	29	26,535	AF-004	Gran Canaria
54	*JA2KKA	92	35	26,460	AS-007	Honshu
55	*DK4CU/P	75	28	17,052	EU-047	Baltrum Island
56	*JA2VZL	54	26	13,260	AS-007	Honshu
57	EA8ZS	70	18	8,532	AF-004	Gran Canaria
58	JK1LUY	33	17	6,375	AS-007	Honshu
59	*M0AJT	49	17	6,375	EU-005	UK Mainland
60	*IS0SDX	122	8	5,328	EU-024	Sardinia
61	*YB2MTA	56	7	4,368	OC-021	Java
62	*G0MRH	30	13	3,354	EU-005	UK Mainland
63	*JH7QNG	27	10	2,130	AS-007	Honshu
64	*JJ4PPK	19	7	1,071	AS-007	Honshu
65	*JH1NXU	6	6	540	AS-007	Honshu
66	*E20NTS/8	4	4	240	AS-053	Phuket Island
67	*JF7GDF	5	2	78	AS-007	Honshu

ISLANDS – 24 HOUR CW

Pos	Callsign	QSO	Mults	Score	IOTA Ref	Island name
1	OH0TA	1941	187	2,013,429	EU-002	Åland Islands
2	4N6IOTA	1855	153	1,580,337	EU-163	Sveti Nikola
3	DL5XL/P	1145	202	1,418,646	EU-127	Helgoland
4	RZ1OA/A	1368	181	1,400,940	EU-153	Lyasomin Island
5	N2GC	1173	183	1,384,029	NA-026	Long Island
6	*M0C	968	176	1,039,104	EU-011	Isles of Scilly
7	DL3KUD/P	800	159	883,404	EU-057	Ruegen Island
8	*GW4BVJ/P	1171	104	577,512	EU-124	Flatholm
9	*FR5FD	961	94	483,066	AF-016	La Reunion
10	IS0IGV	705	77	318,087	EU-024	Sardinia
11	OZ8SW	445	97	315,735	EU-029	Sjaelland
12	*OZ7HAM	861	66	295,614	EU-029	Sjaelland
13	*W4SAA/P	736	76	284,544	NA-141	Virginia Key
14	*OZ/DL2JRM/P	436	78	240,552	EU-029	Lango Island
15	*KP4AH	512	64	172,800	NA-099	Puerto Rico
16	*OZ/DL7VOX/P	266	81	163,782	EU-171	Vendsyssel-Thy Island
17	*PY8AZT/P	496	31	74,772	SA-060	Cotijuba Island
18	*IS0UWX	165	49	63,651	EU-024	Sardinia
19	JL3SBE	150	46	52,716	AS-007	Honshu
20	G3JJG	110	51	51,714	EU-005	UK Mainland
21	*G3GMM	113	32	23,904	EU-005	UK Mainland
22	*JR3NDM	62	32	19,008	AS-007	Honshu
23	*JJ6WYS	4	3	180	AS-077	Kyushu Island

WORLD - 24 HOUR SSB

Pos	Callsign	QSO	Mults	Score
1	9A5Y	1436	352	4,371,840
2	S52DG	705	257	1,823,415
3	*YT1RA	1217	198	1,637,658
4	SP9LJD	842	224	1,632,960
5	S51CK	748	207	1,343,844
6	UA4LCH	1078	158	1,206,804
7	RX3FS	696	201	1,184,292
8	*9A4SS	493	219	1,164,861
9	*SK0HS/0	607	190	1,043,670
10	*OK6A	585	172	857,076
11	DJ1AA	666	175	832,650
12	*HK3JJH	885	145	802,140
13	LX1NO	551	171	795,663
14	*SP6IEQ	403	171	736,155
15	*F6KZC	574	156	706,680
16	*3Z7Z	796	120	675,360
17	IN3XUG	415	166	664,830
18	*YZ1V	453	155	638,445
19	*SP1EK	354	162	591,948
20	*DH9SB	310	161	545,790
21	*SP5MXA	339	144	505,584
22	*LY1DR	415	133	491,169
23	*LZ3UA	597	109	477,747
24	I1COB	540	128	477,696
25	UZ4E	613	100	449,100
26	EW6AF	511	111	435,231
27	N3FX	510	105	406,350
28	LU7DW	421	115	396,405
29	*RV6LA	313	124	378,324
30	*PA2SWL	181	148	373,404
31	*SM5ARL	207	134	369,438
32	F2AR	258	133	367,878
33	OK2HBY	250	128	367,872
34	OK1TFH	250	128	366,336
35	RW1AP	441	103	338,973
36	*SP3BLT	225	120	307,080
37	*OK1JN	296	107	288,900
38	*OM3YK	236	113	286,116
39	*SP90HP	224	114	285,912
40	*SP3BVA	195	113	254,589
41	8S4Z	540	60	230,400
42	*US8IZM	259	94	212,910
43	US1MM	180	98	211,680
44	*9A6AJK	281	75	185,625
45	*SP1EOI	148	98	183,456
46	*S57NDT	195	83	165,087
47	*DL3KDC	198	84	157,752
48	*I8OCA	119	95	151,335
49	*OK2BRX	198	79	149,310
50	*IV3AJZ	210	79	147,414
51	*SM5U	141	78	125,658
52	*SP3HZG	167	77	124,509
53	*YU7HI	151	73	120,669
54	*IZ8EQF	318	57	106,362
55	*IZ2ABN	94	78	102,492
56	*IK7WPD	121	67	99,093
57	*F5VHQ	99	72	94,824
58	IZ2ABZ	122	66	87,516
59	*EA5BX	122	62	86,676
60	*OK1VHV	130	64	84,096
61	*N0YYO	121	64	83,136
62	HB9CQS	100	67	82,812
63	*TI2DLL	230	51	79,866
64	*RX3MX	76	63	68,796
65	K9YNF	108	55	63,360
66	*SM7AIL	149	50	63,150
67	*SP6AOI/6	77	53	56,127
68	*DL1OFD	132	48	51,264
69	*VU3DJQ	146	38	42,636
70	*IK2RZG	72	49	41,160
71	*SP7TEX	117	41	39,483
72	*EA3LS	51	50	38,250
73	SP8OOB	95	40	35,400
74	RZ3DZY/1	209	30	32,850
75	*EA3DZZ	130	30	28,980
76	9A4VM	56	31	20,460
77	*SP2ATF	42	32	19,392
78	*LU9JX	51	31	19,251
79	*UA0IV	45	30	19,170
80	*EA1CYW	67	29	17,313
81	*PS8NF	177	17	14,943
82	IZ0CRN	49	28	14,532
83	*DL8DXL	36	28	12,768
84	*9A3CY	40	24	11,232
85	*SQ6FHP	54	23	10,902
86	*K6ACZ	36	22	8,976
87	UR4MO	28	21	8,316
88	*KC9AZL	9	9	1,215
89	*PA3EXS	8	8	960
90	*EA3BJE	9	4	444
91	EC7DWE	11	2	234

WORLD – 12 HOUR SSB

Pos	Callsign	QSO	Mults	Score
1	HG8Z	474	189	853,146
2	UP5P	501	171	790,533
3	UT7E	662	150	740,700
4	4X4FJ	538	152	699,504
5	I2AT	265	167	547,593
6	*DH2SP	357	136	483,480
7	9A2BD/P	506	114	475,380
8	*SP4TKR	510	110	425,700
9	*LY2TZ	462	105	393,750
10	EA5DFV	526	96	384,192
11	UR7M	375	111	348,651
12	*I7FMN	362	97	262,482
13	*RN3OG	217	113	257,979
14	*UA3BM	195	107	246,207
15	*LU3DR	368	91	240,240
16	*W1DAD	220	103	223,716
17	LZ2OG	247	89	216,537
18	*SP4TVO	193	97	202,827
19	*YO5CRQ	221	94	201,066
20	SM7CQY	201	90	184,950
21	*SQ8FEW	185	88	165,000
22	OK2BHM	190	86	164,604
23	*IK2SFQ	141	85	151,215
24	*EV6C	196	78	142,272
25	*IK2QPO	141	85	141,015
26	*DH5AO	162	82	140,220
27	UA9ACJ	115	83	140,187
28	*W3TN	154	79	135,090
29	*W6AFA	230	65	134,550
30	*SP3JHY	148	81	132,192
31	*YO9XC	361	59	128,325
32	*DK6BT	99	87	127,107
33	*DL7UIO	153	77	124,047
34	*Z36W	194	72	123,984
35	*PB7JOS	133	76	110,580
36	*DL8SDC	99	76	110,124
37	*OM4JD	101	78	109,746
38	*YO7ARY	147	69	107,433
39	*OK2BMT	116	77	103,488
40	AD6WL	265	56	102,312
41	*SP9RQH	125	72	102,168
42	*PP5ZP	157	66	97,614
43	PT2ADM	304	51	95,472
44	*EA4YK	99	68	87,108
45	I4CSP	106	66	84,348
46	*EA7FRX	107	67	84,219
47	WA4ATJ	117	63	81,081
48	*PA3GZC	130	57	70,794
49	*SP1MVG	77	61	68,259
50	*LY2OU	125	58	67,686
51	*CX2TG	215	50	67,050
52	UT7MD	86	60	66,600
53	*UA9MQR	71	59	60,003
54	*EA3AKA	116	53	59,784
55	SM7BJW	106	51	59,670
56	*9A4LT	107	53	59,625
57	*YO5OEF	114	51	56,610
58	*HA8CQ	116	48	56,448
59	*SP5DRE	75	48	54,000
60	*YO6AJI	82	51	51,714
61	EX2T	110	45	51,570
62	*K4JAF	85	52	51,324
63	*OH2BPA	78	52	50,232
64	*DJ4MH	117	48	49,680
65	*YV3BKC	110	46	48,852
66	LZ2TRC	214	39	47,034
67	YO6KQQ	103	45	46,305
68	*HK3AXY	139	43	45,795
69	*IK3SSJ	76	48	44,928
70	*UR5WBQ	57	53	44,043
71	*ON4ADZ	62	50	43,500
72	*RA6HJR	95	41	40,713
73	N9GKE	60	48	39,744
74	*F8DFN	88	44	36,432
75	*SM5ILE	72	42	35,784
76	*SP4AAZ	82	41	35,178
77	*SQ6GTZ/6	88	38	35,112
78	*YO3FLQ	105	39	34,281
79	*YO5BWI	79	38	34,086
80	*VE3YQY	84	39	33,696
81	*SP3BVI	92	39	33,228
82	*EA3DVJ	71	42	33,138
83	*VE3BUC	63	41	30,873
84	*SP6FJ	45	44	29,172
85	*SP9HQC	48	39	27,144
86	WB6NFO	71	36	26,676
87	*SP6NVK	73	33	24,255
88	*IK2YSJ	62	35	23,730
89	*EZ8CW	49	37	23,643
90	*YL2NK	65	30	22,770
91	KB0ENE	50	37	22,422
92	*EA1AAW	53	35	20,685
93	*IV3TYS	38	36	20,088
94	*EA1BZP	37	36	19,980
95	*SP9TCC	38	34	19,380
96	*PA1DV	60	28	18,144
97	*DL7UGH	55	29	16,965
98	*DK3RA	38	32	16,704
99	*LZ1DM	69	22	13,530
100	*N9LF	43	27	13,527
101	*HS5AYO	31	29	13,137
102	OH2NAF	31	28	13,020
103	*LA1K	45	26	12,870
104	*PA1PAT	52	26	12,480
105	*ON5CZ	46	26	12,324
106	YW1A	121	18	12,150
107	*DL1HSR	36	27	11,988
108	*PR7FN	64	23	11,868
109	*PA7SL	45	25	11,775
110	*UA6JAD	55	21	11,025
111	*DL4RCK	33	23	10,557
112	*CT1ELF	38	24	10,512
113	*UR3CIX	41	23	9,729
114	*WN4M	25	25	9,375
115	*EA1DFP	25	24	8,712
116	*YO9IAB	27	23	8,487
117	*LU7JA	64	18	7,992
118	*SP1BYS/1	29	22	7,986
119	*EA3FHP	40	20	7,920
120	*TI2KAC/8	45	18	7,614
121	RK9LWO	66	17	7,038
122	*SP1FUM/1	26	20	6,840
123	*SP1MWK/1	31	19	6,783
124	SM3LIV	29	20	6,780
125	*CE4EM	46	17	6,222
126	*PY3AJB	34	17	5,814
127	*EA7HE	33	14	5,082
128	*UA3BZ	23	17	4,845
129	IZ8DWH	40	13	4,368
130	*RX3DTN	17	17	4,335
131	*DH8WE	35	14	4,326
132	*N2LQQ	24	15	3,960
133	*K2KLA	20	15	3,600
134	*DL7CU	29	12	3,492
135	*PR7QI	76	8	3,168
136	*PR7CP	37	11	2,937
137	*AJ3J	15	13	2,613
138	*EU6NN	53	9	2,511
139	*PY2OZF	37	10	2,430
140	*RA0ALM	16	11	2,112
141	*9A6PKT	20	10	2,040
142	*PS7AB	12	11	1,980
143	*SN150HZ	14	11	1,914
144	SM6CDG	16	10	1,800
145	*3Z6V	20	9	1,512
146	*KA6MAL	10	9	1,350
147	*UA3LHL	12	8	1,056
148	*YO3KYO	18	6	828
149	*UA9ORQ	14	6	684
150	*SP6DHD	8	6	648
151	*PY7BEL	11	5	525
152	IK3XTY	13	4	396
153	*PU4EYE	9	4	300
154	*PY1AFS	11	2	114
155	*PY7VI	8	2	96
156	*PY7ZY	8	2	96

WORLD – 12 HOUR SSB

Pos	Callsign	QSO	Mults	Score
1	*OK2PP	981	242	1,946,406
2	*9A7P	1006	240	1,795,680
3	DL6KVA	383	279	1,552,635
4	*UR3HC	841	204	1,332,324
5	HB9CZF	505	210	1,038,870
6	*LZ1PJ	690	186	1,012,212
7	UU9JH	570	185	889,110
8	*OK1HX	586	177	882,522
9	UY0ZG	395	197	871,725
10	*YO7FT/P	1116	134	813,648
11	*PY1NX	1049	123	736,893
12	*S53F	783	138	728,226
13	*RN6CF	570	154	705,012
14	*PA3BFH	453	165	677,655
15	*ER3DX	239	180	638,820
16	*SP6LV	331	149	512,709
17	*SP2QG	513	128	506,496
18	UA9JKA	454	129	502,326
19	*OK1XC	345	146	482,238
20	*HB9ARF	339	138	479,826
21	LZ2PL	501	127	463,677
22	*OH2CI	553	116	462,492
23	*IK2WXV	392	120	375,840
24	*OM7AG	324	126	373,464
25	*S51W	469	98	350,742
26	*UY5ZI	298	119	350,574
27	*OK2PAE	278	122	349,164
28	*DL8DXL	316	118	327,096
29	*YU1AAV	289	105	298,935
30	*UA6LFQ	150	120	248,400
31	*DM3PKK	207	109	237,729
32	*SM6CRM	219	94	227,574
33	*UA3RF	261	89	214,935
34	*YO4ASG	186	100	213,000
35	*SP9FT	209	93	211,203
36	*SP8BAB	159	89	210,129
37	*OM7AT	259	87	209,583
38	*UY5WA	255	90	204,930
39	*UN6G	162	93	203,670
40	*OK2BNC	199	93	197,253
41	*SM7EH	245	85	197,115
42	*OM7VF	191	92	190,716
43	*DL3KWR	145	98	187,278
44	*SP3DIK	209	90	184,950
45	*OK1FCA	175	87	169,911
46	*LU5BB	487	56	169,176
47	*OK1MZO	138	93	160,146
48	*OK2SJ	192	75	138,600
49	*DL1LAW	246	65	136,890
50	*PA0RRS	201	76	134,292
51	*F5ICC	105	86	133,386
52	*I2AZ/1	483	53	132,129
53	*SP2UKB	174	74	128,316
54	*UA3UJE	101	80	111,600
55	*UR3PA	121	71	110,973
56	*ON5ZO	204	68	110,160
57	*DL5SVB	175	62	94,302
58	*HP1AC	152	63	90,720
59	HL5UOG	176	51	88,740
60	*UA9OA	176	54	87,480
61	EU1FY	160	59	84,960
62	*VU2UR	125	65	84,435
63	*DL7AXM	81	72	81,432
64	*UA3AKI	126	59	81,066
65	*OK2PBG	107	59	68,499
66	*RW0LIA	106	41	55,842
67	*HS0/0Z1HET	217	28	54,516
68	*YL2GTD	83	32	28,704
69	*DF5SF	115	29	24,621
70	K1KU	44	23	9,660
71	*ON4KVA	44	19	7,068
72	*SM5PAX	45	17	6,783
73	*DL7UJM	14	14	2,940
74	*RV3DBK	7	5	405

ASSISTED SECTION

Pos	Callsign	QSO	Mults	Score	24/12 hr	Mode	IOTA Ref	Island name
1	G3TXF	1247	263	1,987,491	24	CW	EU-005	UK Mainland
2	W1NG	726	265	1,686,990	24	Mix		
3	ON4ACA	976	203	1,356,852	24	SSB		
4	XE1KK	811	174	993,366	24	Mix		
5	*YT1LT	796	173	967,416	24	Mix		
6	IN3ASW	350	203	770,994	24	Mix		
7	OH6NJ	289	177	629,235	12	Mix		
8	W2YC	262	180	599,400	12	Mix		
9	*DJ1OJ	257	170	541,110	24	Mix		
10	SM7BHM	325	149	504,663	24	Mix		
11	*8S0F	671	114	496,242	24	CW		
12	*RA3OU	289	139	429,093	24	SSB		
13	AA3B	340	116	348,000	12	CW		
14	*PA3GSL	257	121	312,543	24	SSB		
15	G3XTT	293	126	302,778	24	Mix	EU-005	UK Mainland
16	*SP2DNI	327	106	296,058	24	CW		
17	*DL7VSN	132	130	254,280	12	Mix		
18	*SP6TRX	220	104	237,120	24	SSB		
19	EA4DEC	325	97	233,091	24	SSB		
20	SM5D	141	111	217,449	24	Mix		
21	*JA3YPL	319	73	145,197	24	Mix	AS-007	Honshu
22	*S53AU	102	91	134,862	12	CW		
23	*WN6K	121	82	124,230	24	Mix		
24	*SP6XP	173	74	120,990	12	CW		
25	RA4LW	241	52	96,876	12	Mix		
26	*DH6DAO	102	68	82,824	12	SSB		
27	*M0DDT	159	61	79,605	12	SSB	EU-005	UK Mainland
28	W6FRH	83	59	59,295	24	Mix		
29	*RW0BG	161	49	57,183	12	Mix		
30	*DL1DBR	79	46	39,054	12	SSB		
31	SP3FAR	55	49	38,661	24	Mix		
32	N2BJ	47	43	28,767	12	SSB		
33	*PT2ND	80	26	15,600	12	SSB		
34	*JH5OXF	51	29	15,573	12	Mix	AS-076	Shikoku Island
35	CE7AOY	69	24	15,048	12	SSB	SA-064	
36	EA1AS	27	24	9,144	24	SSB		
37	*W5CTV	34	22	8,052	12	SSB		
38	*OH5PA	16	16	3,840	12	Mix		
39	*UY5LQ	26	13	3,042	12	CW		
40	SP7GAQ	11	11	1,815	24	Mix		

The lighthouse on Ameland, EU-038, was the location for the PA/ON4CJK/P entry.

WORLD – 12 HOUR CW

Pos	Callsign	QSO	Mults	Score
1	RA3XO	308	196	882,000
2	YZ9A	798	129	672,606
3	UA3TU	486	158	668,340
4	SP5CJQ	398	165	668,250
5	*T93Y	439	146	589,986
6	UT7UJ	570	139	584,634
7	*YO6EX	439	148	574,980
8	K5ZD	475	140	540,540
9	NY4A	554	129	517,806
10	RN6AL	435	135	467,775
11	*OK2QX	321	145	458,925
12	IK0YVV	322	144	446,688
13	*SP4ZO	531	112	436,464
14	*F6IRF	305	133	426,531
15	VE3KZ	529	110	409,530
16	RA3NZ	368	122	405,528
17	DL6UNF	394	119	387,702
18	OL4M	366	115	355,350
19	*I7PXV	252	129	351,396
20	*LZ7X	369	115	349,485
21	OH2LU	307	111	333,999
22	IK6SNQ	436	107	333,840
23	*LZ6C	424	108	330,480
24	OK1MR	253	126	325,458
25	*SP9VEG	255	123	319,923
26	*HG9M	389	103	314,253
27	*PA0JR	289	113	302,727
28	*OM4DN	279	100	261,300
29	*DL1EFD	292	104	258,336
30	RX3AP	296	95	247,380
31	*UR6QS	313	95	244,245
32	*RN4SS	408	87	240,120
33	*YO6BHN	203	111	239,427
34	UA1CEC	297	92	232,116
35	*YU1ZZ	251	98	227,850
36	*SP4AVG	264	97	221,160
37	*UR6IJ	299	82	211,314
38	*UY5TE	256	89	205,056
39	*UT4NY	429	71	204,693
40	*UX5EF	206	93	200,322
41	*OM4TX	240	88	199,584
42	*9A6C	366	74	198,468
43	*HA3JB	270	81	192,942
44	*UA0KCL/3	296	83	186,252
45	*UT9IR	138	95	184,110
46	*DJ5AA	123	100	172,500
47	*OH6BG	321	72	169,560
48	*OH2FS	117	99	164,241
49	*EA5EOH	141	89	161,535
50	*UA3AO	152	87	155,556
51	RA3ANL	189	77	137,907
52	*VE3KP	261	67	132,057
53	*OK1FPG	135	83	131,223
54	*US9QA	266	68	129,336
55	*LZ2PB	284	64	128,256
56	IZ1DFI	227	64	121,920
57	*SP7EXJ	109	76	119,700
58	*IK2NUX	150	73	119,574
59	*OK1ZF	185	69	116,127
60	*YO3BWK	161	73	115,851
61	*OK1AOU	142	74	114,108
62	F5IN	218	71	112,890
63	*EA4DRV	296	60	108,720
64	UA9APA	153	66	107,118
65	*UX7QD	283	53	105,417
66	*I6FDJ	141	69	105,363
67	*HA4YG	159	66	105,138
68	*IK0HIT	162	68	104,040
69	*DL2GBB	150	70	102,060
70	UT5UGR	208	60	100,800
71	*PA0JED	129	73	100,083
72	EX2A	268	54	99,792
73	*RW4LR	114	69	98,118
74	*SP3JUN	173	63	97,713
75	*OK2TBC	135	70	97,230
76	*DJ7PT	178	65	97,110
77	*EU6AA	180	58	92,568
78	*YZ1EW	210	59	91,686
79	*SP3LWP	140	65	90,480
80	*SP2MKI/2	141	62	88,722
81	*YU7RN	117	65	88,335
82	UT4XU	144	64	87,552
83	*SM3AVW	223	54	86,022
84	UA0LS	208	48	78,912
85	*UA3XGM	119	61	78,873
86	*OK2BEM	105	59	78,765
87	F6GQO	132	61	78,324
88	*K9QVB/9	156	60	77,760
89	*YO9AGI	250	48	77,472
90	OK1DVK	72	71	76,680
91	*LY750FE	206	50	75,300
92	LZ9V	440	35	74,760
93	EW6AL	75	64	71,232
94	*RA9JR	226	48	69,984
95	UA9XS	87	57	66,861
96	*DL4JYT	140	52	63,024

Pos	Callsign	QSO	Mults	Score
97	*OM3CDN	116	53	62,964
98	*OK7AZ	131	52	62,868
99	RA9SG	86	57	61,902
100	*HA8IC	72	57	61,560
101	*7S3A	158	49	61,446
102	*VE9DX	66	60	59,400
103	*XQ1ZW	202	39	58,734
104	*UR5FCM	133	48	55,440
105	*SP9EMI	103	52	54,756
106	*K5XR	95	53	54,537
107	*UA1NFA	140	45	51,300
108	*HS4BPQ	113	46	49,818
109	DL3YA	101	48	47,952
110	*RX3AGQ	103	45	47,925
111	*EW1CQ	112	44	45,408
112	*F5NQL	64	51	45,288
113	*VR2BG	117	42	44,982
114	*YO5DAS	100	44	44,352
115	*Z33F	119	42	44,226
116	*RA3FD	67	46	44,022
117	*RW0UM	154	35	43,890
118	9K9O	507	21	43,785
119	AY1DZ	159	36	42,228
120	*KJ9C	106	40	40,560
121	*UN7EX	73	42	40,446
122	*EA7NW	101	43	40,377
123	*DL3KWF	100	39	40,248
124	*RN3BK	112	41	39,360
125	*EA1DGG	102	41	39,114
126	*EA7AAW	161	35	38,745
127	*SQ1EUG	193	30	37,530
128	*F2NZ/P	92	40	36,000
129	*SP3HC	98	38	35,340
130	RW6CW	90	39	32,526
131	*K5NZ	100	37	30,636
132	*PA3AFF	83	39	29,835
133	*OM2SM	82	34	29,172
134	*OK1CZ	90	33	28,710
135	*SM6DER	50	38	28,044
136	*LZ4UU	60	39	27,612
137	*UA1ACC	116	32	26,880
138	*IK2RLS/5	53	39	26,793
139	*UR9MM	47	41	26,445
140	*WA2VQV	54	37	26,418
141	*UN4PD	70	35	25,830
142	LY2BBF	120	29	25,404
143	*DL8ZAJ	85	36	24,732
144	*SP8JUS	45	38	24,282
145	*I4JEE	42	38	23,940
146	*W1FJ	55	34	21,930
147	*VE3DZ	75	31	19,995
148	*UT3EK	78	27	18,954
149	*RA3UAG	61	30	18,450
150	*OM7PY	58	29	17,574
151	*EC3AMJ	77	24	17,064
152	*UA9QFF	176	18	16,794
153	RA9ST	73	22	13,266
154	LZ3WG	59	25	13,125
155	*UU4JO	52	25	12,300
156	*W9HR	36	24	10,368
157	*9A3FO	77	19	10,317
158	UA3UCD	29	25	10,275
159	PY7IQ	32	25	10,200
160	*PP7ZZ	98	18	9,828
161	*RU2FM	54	21	9,702
162	*K8CV	28	23	9,384
163	*YO2ARV	39	20	9,300
164	*UA4ARL	30	23	9,246
165	*4Z5OL	59	19	8,379
166	*UN7CZ	47	19	8,151
167	*PR7AB	123	13	8,073
168	*PY7OJ	34	21	7,434
169	*PR7AR	49	18	7,182
170	WO6M	26	20	6,840
171	*W6SJ	32	19	6,840
172	*OK1HCG	39	17	6,477
173	*UA9QCP/3	35	18	6,426
174	*DL0AKR	21	19	5,757
175	*OH1BOI	21	19	5,757
176	DL6DVU	23	18	5,562
177	*UA9FGJ	28	17	5,304
178	*VA3XRZ	27	17	5,253
179	*UR7EQ	42	13	3,978
180	*RK1NA	20	14	3,360
181	UN5J	45	10	2,670
182	*VE7ASK	25	12	2,628
183	*WA2BMH	13	13	2,535
184	*YO3APJ	27	11	2,343
185	*F5NLX	26	9	2,322
186	*VA3WN	17	10	1,830
187	*NG7Z	28	9	1,728
188	*DL5FCO	20	9	1,512
189	*UT8LO	21	8	1,368
190	*DJ1WQ	20	8	1,248
191	*EW6AW/P	12	8	1,152

ISLANDS – 12 HOUR MIXED

Pos	Callsign	QSO	Mults	Score	IOTA Ref	Island name
1	OH6NIO/P	1108	144	957,312	EU-101	Replot Island
2	*G0MTN	666	194	904,428	EU-005	UK Mainland
3	UA0FZ	621	139	642,597	AS-018	Sakhalin Island
4	9M6A	778	107	541,206	OC-088	Borneo
5	G3KZR	378	152	482,448	EU-005	UK Mainland
6	*DL6MHW/P	525	116	420,732	EU-128	Fehmarn Island
7	SM1T	951	83	412,095	EU-020	Gotland
8	VO1TA	552	92	354,384	NA-027	Newfoundland
9	*JA6LCJ/6	651	93	327,825	AS-012	Amakusa Kami
10	RW1ZZ/P	630	46	149,316	EU-082	Kildin Island
11	*GW4MVA	254	79	144,570	EU-005	UK Mainland
12	G3SEK	159	80	125,520	EU-005	UK Mainland
13	*G4FVK	163	74	107,226	EU-005	UK Mainland
14	*N6NF	316	54	92,664	NA-092	Padre Island
15	*JS6GIM	314	49	80,850	AS-017	Okinawa
16	*YC4FIJ	308	35	73,080	OC-144	Belitung Island
17	*N2US/P	211	52	72,852	NA139	Assateague Island
18	*8S0W	275	46	67,758	EU-084	Muskoe Island
19	*YV7QP	237	34	47,430	SA-012	Margarita Island
20	*RA0FN	191	36	44,388	AS-018	Sakhalin Is.
21	*JA4GXS/4	103	38	35,910	AS-117	Yashiro Island
22	*JA6SRB	78	40	35,280	AS-077	Kyushu Island
23	*VE2OWL	123	35	33,915	NA-128	Coudres Island
24	*MU0FAL	165	31	30,969	EU-114	Guernsey
25	*DL5KVE/P	146	21	16,002	EU-098	Poel Island
26	*G3ECS	33	31	15,345	EU-005	UK Mainland
27	*JG1OWV	33	28	13,188	AS-007	Honshu
28	*KG9N/KH6	189	14	10,458	OC-019	Maui
29	*N7MQ/VE7	96	17	9,792	NA-075	Galiano Island
30	*N0AX	63	20	9,780	NA-065	Vashon Island
31	*IT9VYY	90	18	9,180	EU-025	Sicily
32	*JA1XPU	33	23	9,177	AS-007	Honshu
33	*N7XY	49	21	8,883	NA-065	Bainbridge Island
34	*G4XPE	34	16	4,704	EU-005	UK Mainland
35	*SP1RXE/1	62	12	4,104	EU-132	Wolin Island
36	*JE1REU	30	12	3,240	AS-007	Honshu
37	*CO8LY	34	11	2,574	NA-015	Cuba
38	*TF3VS	4	3	144	EU-021	Iceland
39	*7L2ICS	2	2	60	AS-007	Honshu

ISLANDS – 24 HOUR MIXED

Pos	Callsign	QSO	Mults	Score	IOTA Ref	Island name
1	9H3QC	2530	369	5,457,510	EU-023	Malta
2	M0SDX	1616	426	4,682,592	EU-005	UK Mainland
3	M6T	2181	387	4,580,145	EU-005	UK Mainland
4	H2G	2296	247	3,295,227	AS-004	Cyprus
5	5B4/RW9UP	2072	194	2,144,088	AS-004	Cyprus
6	GJ2A	921	164	880,188	EU-013	Jersey
7	*GB5SI	551	169	800,553	EU-092	Summer Isles
8	*9A2V/P	805	151	748,809	EU-170	Vrgada Island
9	*RA0FF	538	142	665,412	AS-018	Sakhalin
10	RA3NN/1	1033	116	618,396	EU-153	Zhizhginskij Island
11	ZX7XX	860	118	593,304	SA-046	Itamaraca Island
12	*K1VSJ	527	144	568,080	NA-046	Martha's Vineyard
13	*JM6CIP/6	1070	94	502,524	AS-077	Kyushu Island
14	*YB0ECT	701	96	469,152	OC-021	Java
15	G3UFY	538	134	460,692	EU-005	UK Mainland
16	*F5RAB/P	558	125	440,250	EU-048	Belle Isle
17	9V1YC	468	82	264,696	AS-019	Singapore
18	*9A/OK2SW	353	98	247,254	EU-170	Vrgada
19	*ZD9IR	578	67	232,758	AF-030	Gough Island
20	JF1SEK	215	98	201,978	AS-007	Honshu
21	*9A/DL1ZU	153	100	193,500	EU-016	Brac
22	*PA2JJB	305	93	191,115	EU-038	Texel
23	*FP/VE9MY	514	61	188,490	NA-032	St Pierre & Miquelon
24	*OH2/SM0ELV	358	80	187,680	EU-097	Pirttisaari
25	*WB8YJF	447	71	178,707	NA-067	Ocracoke Island
26	*SN1A	141	60	72,900	EU-132	
27	*WL7O	143	29	53,157	NA-158	Kalgin Island
28	*FP/VE9GLF	103	14	9,030	NA-032	St Pierre & Miquelon
29	*M3OKU	43	22	8,910	EU-005	UK Mainland
30	*JO1EPY/1	29	16	5,424	AS-008	Izu Oshima Island

mislogging the mode. Not only does it give you a false sense of your multipliers worked and needed as the contest progresses, but you lose points during the adjudication process too. Finally, it is noticeable that a significant number of the contacts made by multi-op multiplier stations end up as 'not in log' of the station they supposedly worked. I am at a loss to explain this other than those multi-ops rush back to their pile-up or to the next multiplier without waiting to hear a final confirmation from the station they thought they were working.

Last year, on request, I made available to entrants a copy of their adjudicated log (in the form of a spreadsheet), so they could see where errors had been made and penalised. Provided demand isn't too great, I am happy to do so again, preferably by e-mail.

RULES FOR 2003

The rules remain very much the same as for 2002. Mention has already been made of the change in preferred log format, and the slight amendment to the definition of an island 'expedition'. The only other change of note is to introduce a third power category – QRP. There has always been some confusion with respect to the Category and Section definitions in the IOTA Contest, so the wording has been amended in the published rules this year. ▶

WEB SEARCH

HF Contests Committee
(2003 Rules and 2002 Results): www.rsgbhfcc.org
IOTA Programme Information: www.eo19.dial.pipex.com/index.shtml

EI5DI (Super Duper): www.ei5di.com
RSGB IOTA: www.rsgbiota.org/dx.htm

E-MAIL

RSGB HF Contests Committee: hfcc.chairman@rsgb.org.uk
IOTA Contest Manager: iotacontest@rsgbhfcc.org
IOTA Contest Log entries: iota.logs@rsgbhfcc.org
RSGB IOTA Programme: iota.hq@rsgb.org.uk

Well-known operator UA0FZ, who took third place in the Islands 12 Hour Mixed Mode section from his home on Sakhalin Island AS-018.

However, the actual categories (with the exception of the new QRP option) remain exactly as before.

THANKS

As I said last year, the task of adjudicating the IOTA Contest and preparing the results for publication is well beyond the scope of one person. To this we have added the additional burden over the past 12 months of developing standards and software. I am, therefore, extremely grateful to a wide group of people including Catherine Pearson at RSGB HQ, EI5DI, G3LET, G3LZQ, G3NKC, G3ZBE, G4FON, G4IIY, G4OGB, G4VXE, G4ZFE, GM3PPG, GM4FDM, GM4SID, GM4UYZ, MM0BQI and N5KO. Also, as ever, to the HF Contests Committee and especially its Chairman G4TSH. My apologies to anyone I have inadvertently omitted.

It has not been possible this year to produce a Results Booklet in the form that it appeared last year. However, detailed results, write-up, photographs and Soapbox appear on the HF Contests Committee website, and those entrants who provided an e-mail address will also receive a copy of this write-up by e-mail.

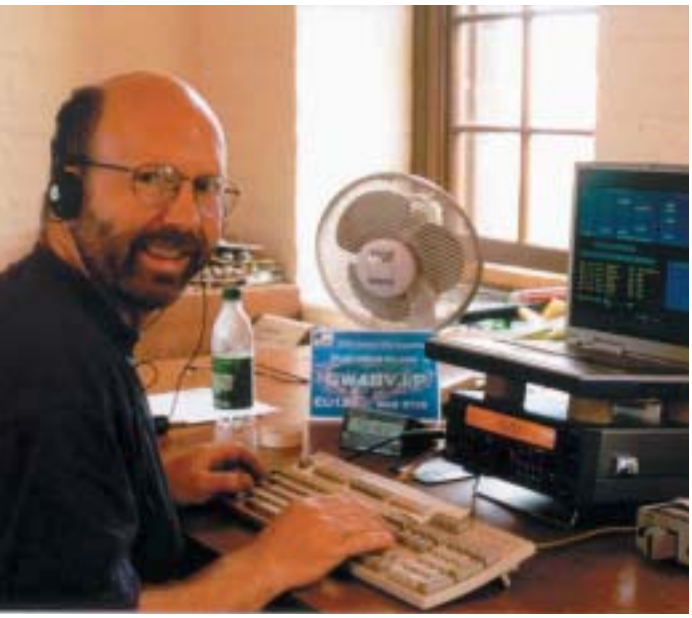
CHECK LOGS

All received logs are put into the contest database which is used for checking entrants' logs (the 2002 database holds well over 400,000 QSOs) so check logs are very helpful (though we can easily score them if you wish to be shown in the listings). A few logs have had to be reclassified as check logs, usually because they failed to contain key data such as serial numbers.

TROPHY WINNERS

We are delighted that several new plaque and trophy sponsors have come forward for 2003, and details are presently being finalised as to how those new awards will be allocated. Some will be on a category basis and some on a continental basis. Do check the HFCC web page, and maybe there will be a suitable new plaque or trophy for which you can compete. Congratulations to all the 2002 Trophy winners, listed below. Trophies are normally presented at the RSGB HF Convention, or sent out to those unable to attend. A large number of certificates will also be mailed out to the leading entrants in the various categories. ◆

Richard Mortimore, GW4BVJ, operated portable from Flatholm Island, EU-124, in the Islands 24 Hour CW category.



IOTA CONTEST SWL RESULTS

		QSO	Mults	Score
24 hour – SSB				
1	BRS-91529	572	197	881,772
2	ONL-3647	544	146	614,514
3	DE0RFE	287	138	410,274
4	SP2-0534-BY	160	135	322,380
5	BRS-91705	227	101	203,313
6	CX-N020	92	34	26,588
24 hour – Mixed				
1	LYR-794	1056	350	3,124,800
2	UA3-170-847	960	215	1,473,180
3	EW1-008	377	154	513,744
4	UU-J-1	268	121	310,728
12 hour – SSB				
1	ONL-383	511	165	732,105
2	US-W-5	586	160	685,440
3	BRS-32525 (/P GW)	180	129	305,601
4	OH2-836	247	108	281,880
5	RS-177448 (/P GW)	152	82	136,940
6	OK1-23233	65	56	50,568
7	PA-5205	51	40	29,040
8	SP-2300LG	95	30	23,850
9	I5-1990	72	33	20,097
10	JA2-9329	3	3	135
12 hour – Mix				
1	UA3-155-75	66	34	21,420
12 hour – CW				
1	UA1-143-1	580	165	777,150
2	DH2URF	240	80	170,880
3	YU1RS-461	210	78	161,460
4	UA3-155-28	152	56	71,904
5	JA4-4665/1	88	35	26,040
6	F-9780	39	28	16,380

CHECKLOGS ARE ACKNOWLEDGED WITH THANKS FROM 3Z0AJC 4J9NM 4Z5FL/M 9A2TN 9M2/G4ZFE AA6EE AC7LX CO8ZZ DH5MM DK7OM DL2AL DL2AWW DL2HWI DL5CX DL6UBF DL7UCX DL7UEO DL7VMM EA3ALV EA4EJP ES6CO G0RCI G3JTO G3LZQ G3VQO G3YYD G4IUF G4OGB G4ZME GW4BLE HA0DD HA8KVK IK7RVY KF0U KF3CV L20E LA7FJA LT5Y LU8XP LZ1CW LZ1FJ LZ2DD OE8GHR OH6W OK1BNS OK1DSU OK2BPL OK2HZ OK2OU OK2ZW OZ/SM7GCZ OZ2JI PA5TT PP5AMP PT7WA PU7EEL PY1WMJ PY3AU PY4FQ PY5KD R1ANF/A RA1QCZ RF4R RU3DG RW9MJ RX3RB SK0X SM0BDS SM1CXE SM3NXS SM3X SM6CAW SM6DUA SM6PVB SM6Z SM7CWI SP1DMD SP1DOT/6 SP1EGN/6 SP1GZT SP2AVE SP4GFG SP5AHY SP6EUA SP6ZLC SP7CKP SP8HXN SP9CVY SP9MDY SP9SOU SQ1GU/1 SQ7BCG SQ9CAQ SQ9MZ SV1XV SW8L T94JS UA0FGN UA1ANE UA3AVR UA3DEE UA3DNR UA3QU UA3RAW UA6AF UA6YEF UA9JMS UR7IRL UT8EL UX3MR W1EBI WA6PXU YB0DPO YL2SW/MM YO2BEH YO2CJX YO3FOM YO4RHK YO7BKT YO7LBX YO8CRU YV5JBI YW1T.

IOTA CONTEST – EXPEDITIONS

High-Power/Yagis	
9A8RR	15,998,892
9A0A	11,147,798
0H9A	8,687,673
UU7J/P	8,575,344
TM2ON	6,423,852
0H2U/P	5,023,182
R1MVI	4,533,408
ED1URJ	4,018,560
EJ5E	3,082,512
AA1IZ	2,749,920
EA5KB/7	2,436,480
RI0L	2,045,910
4N6IOTA	1,580,337
RZ10A/A	1,400,940
SK7DX	1,324,212
BV2B/9	702,240
BI5H	665,532
RA3NN/1	618,396
GM3HAM/P	612,150
BI4J	577,788
II7GR	508,704
RI1CGG	441,000
RW1ZZ/P	149,316
YB5NOF/P	83,556
CE7A0Y	15,048
Low Power/Single-element antennas	
LZ1KSL	3,666,528
9A7T/P	1,559,040
5C2MI	1,480,740
ES8X	1,400,432
GM5V	937,296
GN0ADX/P	820,233
GB5SI	800,553
N4C	782,136
9A2V/P	751,074
8S5T/0	732,366
SY9DIA	645,450
9H3D	606,228
GW4BVJ/P	577,512
SV1BRL/8	533,970
GM7X	500,424
RI0MP	435,552
IB0/IZ0BVU	428,076
9A5V/P	418,248
9A/0K2SW	248,724
OZ/DL2JRM/P	240,552
PA/ON4CJK/P	223,650
W4/LZ3SM	206,976
OH2/SM0ELV	187,680
WB8YJF	178,707
YC3MM/5	178,200
HS2JFW/P	115,761
OX3LG	90,855
ED1IRM	79,383
PY8AZT/P	74,772
KW1DX	66,711
N6HR/VE7	60,480
SV8DTL	55,833
WL7O	53,157
WA4JA/P	46,410
MM/PA0INA/P	42,534
VK6BPM/P	39,960
VE2OWL	33,915
8S4C/5	27,216
AI2P	10,080
N7MQ/VE7	9,792
N7YX/VE7	5,616
J01EPY/1	5,424

WL7O needed to used this light aircraft to fly into Kalgin Island, Alaska, for his operation from NA-158. He entered the Low Power/Single-element antennas section.

WORLD – 24 HOUR MIXED

Pos	Callsign	QSO	Mults	Score
1	RK4FF	1657	466	6,074,310
2	DL4MCF	1168	447	5,127,984
3	*HA1CW	1029	413	4,263,399
4	*YZ1SG	560	402	3,063,240
5	DL5AWI	578	385	2,885,190
6	RW1QD	1112	287	2,490,012
7	K9NW	1081	280	2,460,360
8	*UT5JDS	537	294	1,884,834
9	*RW1AC/1	910	249	1,827,162
10	*YO7LCB	391	311	1,805,355
11	DL7FER	954	219	1,625,418
12	OK1RR	539	257	1,510,389
13	Z39Z	797	209	1,277,199
14	*I2WIJ	404	243	1,166,400
15	*DL7VOG	426	228	1,045,836
16	DL7JAN	772	183	996,984
17	*PA0MIR	340	196	736,176
18	*UT5JAP	300	197	728,112
19	*OM7RC	361	176	691,152
20	*US3IZ	544	156	683,280
21	*US2WU	242	197	667,830
22	*S51NZ	345	171	650,997
23	PA0JNH	290	181	635,310
24	*SQ9IDE	341	172	634,164
25	OK1AOV	268	177	603,216
26	*SP9KRT	349	165	590,535
27	*SP6MLX	299	169	565,305
28	*DL1ARJ	397	155	562,185
29	*UY7C	465	149	554,727
30	*RW3VZ	225	168	540,792
31	*DL5JRA	328	160	535,680
32	*OL2U	340	157	527,520
33	K4BAI	488	137	522,792
34	*OM3PQ	246	160	521,280
35	*SM6N	455	124	463,884
36	UA0ACG	539	111	412,587
37	*LY2UF	282	135	402,570
38	*DL1DQY	243	145	387,585
39	RW3PN	299	129	366,489
40	*EA7KJ	305	122	334,158
41	*UA9CGL	203	136	332,520
42	*9A3KS	175	138	332,442
43	*YU1LM	256	112	295,680
44	RA6AR	234	120	287,280
45	*ON4CCP	279	113	281,709
46	*UN7JX	345	100	279,900
47	*SP6EKS	227	107	257,763
48	*SP3OL	206	113	246,114
49	*RW3XZ	278	95	229,710
50	*US5MTJ	335	94	223,062
51	*UA6JAJ	132	109	207,972
52	EX8O	129	110	198,330
53	*RU3WR	201	98	196,686
54	*YO5BRZ	210	89	182,094
55	*OM7YC	176	97	181,584
56	*US0YA	129	100	175,500
57	*UU2JA	175	95	174,135
58	*RX9WN	130	95	165,870
59	*SP5ICS	167	88	158,136
60	UR5E	151	92	154,284
61	*SP9MRQ	173	79	147,177
62	*DL3ZAI	205	84	146,412
63	*OK2SWD	179	73	125,925
64	RX3OM	175	73	125,049
65	*DL5AUA	99	87	125,019
66	*OK1FKV	166	67	105,726
67	YO7BGA	151	69	104,121
68	*W1TW	93	62	68,634
69	*YO7LFV	105	51	54,009
70	*SM3AF	150	43	53,406
71	*RK0SXF	84	41	45,756
72	*OZ5LH	74	47	39,198
73	AF4RK	109	39	35,217
74	*PV8DX	100	31	24,180
75	*YO9FYP	69	31	20,925
76	*SQ8GHY	32	9	2,160

The highest-scoring station in the British Isles, GM5A, took this fine antenna set-up to Islay, EU-008.

WORLD – 12 HOUR MIXED

Pos	Callsign	QSO	Mults	Score
1	IK2UCK	521	276	1,620,396
2	SP9W	601	178	861,342
3	UY5ZZ	347	187	706,299
4	OK2SG	282	195	686,790
5	*EU2MM	379	167	680,859
6	DK3KD	335	175	623,175
7	N2ED	463	130	486,330
8	*UA6JD	268	157	482,304
9	*RD4M	318	140	427,560
10	SP3GTS	297	137	394,971
11	*SP6CDP	239	139	384,891
12	DL3JPN	186	141	374,778
13	*UA4CCG	369	116	349,740
14	*EA5AER	387	112	334,320
15	UA4RC	183	133	326,781
16	DL3BRA	265	121	322,707
17	OZ4RT	193	126	310,338
18	*VE1JS	333	108	307,476
19	WB2YQH	224	120	300,960
20	*DJ5GG	242	120	295,920
21	E21EIC	389	92	274,068
22	*UT4EK	240	109	252,444
23	UA0FDX	312	86	250,776
24	*IK2QPR	230	109	247,866
25	*VE2AWR	223	105	231,525
26	*RA6YJ	119	108	192,780
27	DL6JZ	125	104	188,136
28	*UT8IT	124	104	184,704
29	N4MM	158	102	184,212
30	*US1PM	206	88	177,936
31	*YU1AST	330	76	175,560
32	*EU6TV	159	94	172,302
33	*OK1ANN	187	89	170,613
34	UU2JQ	127	101	170,589
35	N4UH	159	94	170,046
36	*YO6MT	183	92	169,740
37	*PA7RA	211	89	169,545
38	*UR7IKU	191	94	168,918
39	*SN4X	197	87	164,169
40	*RA9MX	196	88	159,456
41	*IZ8AJQ	191	82	159,162
42	*UR7EU	134	94	152,844
43	UU5AB	106	97	151,902
44	*UA6NZ	205	83	148,653
45	*RA3AF	162	85	148,410
46	DL4WA	104	90	139,320
47	SP4IGV	139	84	134,820
48	*9A1CMS	164	75	126,000
49	*US8IM	197	66	106,326
50	*UA9XAB	159	61	94,245
51	UA0AZ	115	67	88,239
52	*HS0XNO	200	47	87,420
53	K7XN	118	69	85,698
54	*RU6CZ	111	65	80,145
55	RZ1AZ	74	72	79,920
56	*HA8FW	83	64	68,928
57	*SP9IBJ	98	57	66,006
58	*W4NTI	101	57	62,415
59	*WB0YJT	93	57	62,415
60	*9A3Z	107	55	61,875
61	*VE3MQW	89	56	55,272
62	*LY2CU	127	48	54,576
63	*RU9UG	78	52	52,104
64	*SP7FBQ	78	52	50,232
65	*LZ2UZ	176	43	48,504
66	VA7NT	79	46	47,886
67	*N4NX	62	51	42,534
68	*DJ1CW	154	39	39,546
69	*CE4U	254	29	38,802
70	*HA1TI	88	43	38,184
71	*KE3VV	81	42	33,894
72	*IK2WYI	51	41	28,413
73	*RA9XF	66	40	27,600
74	*RA3MB	43	41	26,445
75	*Z32XX	46	41	25,830
76	*EA1AAA	41	41	25,215
77	*VA3IX	56	32	21,504
78	*PA0RBS	42	35	21,210
79	*RW0AR	66	32	20,928
80	*DL1EV	43	33	17,721
81	*YO6GCW	85	25	17,175
82	*YO4AAC	103	22	15,510
83	*EA5DFX	107	19	14,307
84	K8KFJ	33	28	12,516
85	*UR7IJQ	28	26	10,920
86	DL3AMJ	33	23	9,453
87	UA6JY	46	20	9,000
88	*UA3QIX	44	21	8,568
89	UT5HP	27	23	8,211
90	RU6FA	21	21	6,615
91	*VE5SF	32	19	6,384
92	*DJ2QV	30	17	5,202
93	*RX3MM	20	17	5,100
94	*OM1AW	33	15	4,185
95	RA9AC	40	14	4,032
96	*RV6AB	19	16	3,984
97	*UA6HON	18	15	3,510
98	*W4BAA	18	13	2,730
99	*EA2CR	13	11	1,881
100	*UR5XDB	58	6	1,764
101	*VE3EY	14	9	1,458
102	*HS6NDK	39	7	1,407
103	*PA0FEI	10	7	798
104	*UA3LBE	11	6	702
105	*ER5OK	6	5	390
106	K6OWL	8	4	336

HF EXCITEMENT

INTRODUCING YAESU'S ALL NEW HF MOBILE

Blending leading-edge technologies developed on the FT-897 and MARK-V FT1000MP transceivers, the FT-857 is the world's smallest HF/VHF/UHF Multimode Transceiver, and it's available now!

FT-897 DESIGN HIGHLIGHTS

The FT-857 is a high-performance, ultra-compact transceiver operating on the 160-10 meter HF bands, plus the 50, 144, and 430 MHz VHF/UHF bands. Providing 100 Watts of power on HF/6 meters, 50 Watts on 2 meters, and 20 Watts on 70 cm, the FT-857 is ideal for mobile, vacation, DX-pedition, or home use when space is at a premium.

Utilising the renowned receiver performance of the FT-897 and MARK-VFT-1000MP, the FT-857 features wide dynamic range, optional Digital Signal Processing, and outstanding audio. (*DSP supplied as standard in the UK)

The wide array of convenience features includes a 32-colour display; Spectrum Scope; built-in keyer with memory and beacon mode; U.S. Weather Band reception; 200 memories with Alpha-Numeric labels; AM Aircraft reception; detachable front panel (optional YSK-857 required); and much, much more.

You've asked for it, and it's here today: the FT-857 New Mobile. . .from the engineers at Yaesu!

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The optional MH-59A8J Remote Microphone provides control of the major functions of the FT-857 from the microphone's keypad. The MH-59A8J includes a rotary control knob for adjusting the operating frequency and the receiver volume level.

HF EXCITEMENT

Actual Size

FT-857

ULTRA-COMPACT HF/VHF/UHF
100 W ALL-MODE TRANSCEIVER
(HF/6m 100W, 2m 50W, 70cm 20W)

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Specifications subject to change without notice. Some accessories and or options may be standard in certain areas. Frequency coverage may differ in some countries. Check with your local Yaesu Dealer for specific details.

UK Band Plans 2003

136 kHz	No rigid bandplan is proposed for the 136kHz band, but amateurs are asked to work within the following conventions, giving long-distance communications and experimentation priority.
135–136.0	**StationTests and transatlantic reception window.** 135.900–135.980 preferred transatlantic window for Europe to North America transmissions of very slow telegraphy (cw)(QRSS).
136.0–137.4	**Telegraphy (cw)** 135.980–136.050 preferred transatlantic window for Europe/North America contacts.
137.4–137.6	**Non-Telegraphy** (cw) digital modes.
137.6–137.8	**Very slow telegraphy (cw) centered on 137.7kHz.** 137.700–137.800 preferred transatlantic window for North America to Europe transmissions.

1.8 MHz (160m)	Max Bandwidth [Hz]	UK Usage
1810–1838	200	**Telegraphy (cw).**
1838–1840	500	**All narrow band modes.**
1840–1842	2700	**All modes.**
1842–2000	2700	**Telephony (SSB)** (Note 1)**, Telegraphy (cw).** 1.843 QRP (low power) calling frequency. 1.960 DF Contest beacons (14dBW) – 12.5 kHz max b/w.

Note 1: Lowest LSB carrier frequency (dial setting) should be 1843 kHz. AX25 packet should not be used on the 1.8 MHz band. **LICENCE NOTES:** 1.810-1.850 MHz. **Primary User:** 26dBW permitted. 1.840-2.000 MHz. **Secondary User:** 15dBW permitted.

3.5 MHz (80m)	Max Bandwidth [Hz]	UK Usage
3.500–3.510	200	**Telegraphy (cw) – Priority for inter-continental operation.**
3.510–3.560	200	**Telegraph (cw) – contest preferred.** 3.555 – QRS (slow telegraphy (cw)) calling frequency.
3.560–3.580	200	**Telegraphy (cw).** 3.560 – QRP (low power) calling frequency.
3.580–3.600	500	**All narrow band modes**. 3.590 – 3.600 AX25 packet.
3.600–3.650	2700	**All modes – Phone contest preferred** (Note 2)**.**
3.650–3.700	2700	**All modes.** 3.690 – QRP(low power) calling frequency.
3.700–3.800	2700	**All modes – Phone contest preferred.** 3.730 – 3.740 SSTV/FAX recommended.
3.775-3.800		Priority for inter-continental telephony (ssb) operation.

Note 2: Lowest LSB carrier frequency (dial setting) should be 3603 kHz. **LICENCE NOTES: Primary User:** Shared with other users services: 26dBW permitted.

7 MHz (40m)	Max Bandwidth [Hz]	UK Usage
7000–7035	200	**Telegraphy (cw).** 7.030 – QRP (low power) calling frequency.
7035–7040	500	**All narrow band modes.**
7040-7045	2700	**All modes** (Note 3)**.**
7045-7100	2700	**Telegraphy (cw), Telephony (SSB).**

Note 3: Lowest LSB carrier frequency (dial setting) should be 7043 kHz. **AX25 packet** should not be used on the 7 MHz band. **LICENCE NOTES:** Amateur and Amateur Satellite Service – Primary User. 26dBW permitted.

10 MHz (30m)	Max Bandwidth [Hz]	UK Usage
10100–10140	200	**Telegraphy (cw). 10.106 – QRP (low power) calling frequency.**
10140–10150	500	**All narrow band modes.**

AX25 packet should not be used on the 10 MHz band. **Unattended Machine Generated Modes** (Digimodes) should avoid the use of the 10 MHz band. **The 10MHz band** is allocated to the Amateur Service only on a Secondary basis. **IARU has agreed** that only cw and other narrow bandwidth modes are to be used on this band. Likewise, the band is not to be used for contests and bulletins. **LICENCE NOTES:** Amateur Service – Secondary User. 26dBW permitted.

14MHz (20m)	Max Bandwidth [Hz]	UK Usage
14000–14060	200	**Telegraph (cw) – contest preferred**
14060–14070	200	**Telegraphy (cw).** 14.055 QRS (slow telegraphy (cw)) calling frequency. 14.060 – QRP (low power) calling frequency.
14070–14099	500	**All narrow band modes.** No unattended or Store and Forward operations. 14.089 – 14.099 AX25 packet preferred frequencies.
14099–14101	200	**IBP – reserved exclusively for beacons.**
14101–14112	2700	**All modes**. AX25 packet preferred frequencies. MGM (Digimode) Store and Forward operations.
14112–14125	2700	**Telegraphy (cw), Telephony (SSB)**
14125–14300	2700	**All modes – Phone contest preferred.** 14.230 SSTV/FAX calling frequency. 14.285 QRP calling frequency.
14300–14350	2700	**All modes**

LICENCE NOTES: Amateur Service – Primary User. 26dBW permitted. 14.000–14.250 Amateur Satellite Service – Primary User.

18 MHz (17m)	Max Bandwidth [Hz]	UK Usage
18068–18100	200	**Telegraphy (cw).** 18.086 QRP (low power) calling frequency.
18100–18109	500	**All narrow band modes.**
18109–18111	200	**IBP – reserved exclusively for beacons.**
18111–18168	2700	All modes.

LICENCE NOTES: Amateur and Amateur Satellite Service – Primary User. 26dBW permitted.

21 MHz (15m)	Max Bandwidth [Hz]	UK Usage
21000–21080	200	**Telegraphy (cw)**. 21.055 QRS (slow telegraphy (cw)) calling frequency. 21.060 QRP (low power) calling frequency.
21080–21120	500	**All narrow band modes.** 21.100 - 21120 AX25 packet preferred.
21120–21149	200	**Telegraphy (cw).**
21149–21151	200	**IBP** – reserved exclusively for beacons.
21151–21450	2700	**All modes.** 21.285 QRP calling frequency. 21.340 SSTV/FAX calling frequency.

LICENCE NOTES: Amateur and Amateur Satellite Service – Primary User. 26dBW permitted.

24 MHz (12m)	Max Bandwidth [Hz]	UK Usage
24890–24920	200	**Telegraphy (cw)**. 24.906 QRP (low power) calling frequency.
24920–24929	500	**All narrow band modes.**
24929–24931	200	**IBP – reserved exclusively for beacons.**
24931–24990	2700	**All modes.**

LICENCE NOTES: Amateur and Amateur Satellite Service – Primary User. 26dBW permitted.

28 MHz (10m)	Max Bandwidth [Hz]	UK Usage
28000–28050	200	**Telegraphy (cw).**
28050–28150	500	**All narrow band modes.** 28.055 QRS (slow telegraphy (cw)) calling frequency. 28.060 QRP calling frequency. 28.120 – 28.150 AX25 packet preferred.
28150–28190	200	**Telegraphy (cw).**
28190–28199	200	**IBP – regional time shared beacons.**
28199–28201	200	**IBP – world wide time shared beacons.**
28201–28225	200	**IBP – continuous-duty beacons.**
28225–29200	2700	**All modes.** 28.360 QRP calling frequency. 28.680 SSTV/FAX calling frequency.
29200–29300	6000	**All modes.**
29300–29510	6000	**Satellite down-links.**
29510–29700	6000	**All modes.**

LICENCE NOTES: Amateur and Amateur Satellite Service – Primary User. 26dBW permitted Beacons may be established for D.F. competitions except within 50km of NGR SK985640.

50MHz (6m)	Bandwidth Maximum 6dB	Mode	UK Usage	
50.000				
	500Hz	Telegraphy	50.000–50.080	Beacons
			50.090	Telegraphy centre
50.100				
50.100				
	2700Hz	All narrow band	50.100–50.130	Intercontinental Telegraphy/SSB (Note 1)
		modes	50.110	DX Calling (Note 2)
		(telegraphy,	50.150	SSB centre of activity
		SSB, MGM etc)	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
			50.710– 50.910	FM repeater outputs
			51.210	Emergency comms priority
			51.210–51.410	FM repeater Input channels (20kHz spacing)
			51.430–51.590	FM (Note 3)
			51.510	FM calling frequency
			51.530	(Note 4)
			51.940–52.000	Emergency comms priority
52.000				

LICENCE NOTES: Amateur Service: 50.0–51.0MHz Primary. 51.0–52.0MHz Secondary. **Available on the basis of** non-interference to other services (inside or outside the UK). **Power limit:** 50.0–51.0MHz 26dBW PEP, 51.0 - 52.0MHz 20dBW PEP. **Permitted modes:** Morse, telephony, RTTY, data, fax, SSTV. **Note 1:** Only to be used for QSOs between stations in different continents. **Note 2:** No QSOs on this frequency. Always QSY when working intercontinental DX. **Note 3:** 20kHz channel spacing. Channel centre frequencies start at 51.430MHz. **Note 4:** Used by GB2RS and for slow Morse transmissions.

70MHz (4m) IARU		UK Usage
70.000		
Beacons	70.030	Personal beacons
70.050		
70.050		
	70.085	PSK31 centre of activity
SSB and CW only	70.185	Cross-band activity centre
	70.200	SSB / CW calling
70.250		
70.250		
All modes	70.260	AM / FM calling
70.300		
70.300		
	70.3000	RTTY / fax calling / working
	70.3125	Digital modes
	70.3250	Digital modes
	70.3375	Digital modes
Channelised	70.3500	Emergency comms priority
operation	70.3625	Digital modes
using 12.5kHz	70.3750	Emergency comms priority
channels	70.3875	Internet voice gateway
	70.4000	Emergency comms priority
	70.4125	Internet voice gateway
	70.4250	FM simplex – used by GB2RS
	70.4375	Digital modes
	70.4500	FM calling
	70.4625	Digital modes
	70.4875	Digital modes
70.500		

LICENCE NOTES: Amateur Service: Secondary. Available on the basis of non-interference to other services (inside or outside the UK). **Power limit:** 22dBW PEP; **Permitted modes:** Morse, telephony, RTTY, data, fax, SSTV.

144MHz (2m)	Maximum Bandwidth -6dB	Mode		UK Usage
144.000				
	500Hz	Telegraphy		EME exclusive
144.035				
144.035				
	500Hz	Telegraphy	144.050	Telegraphy calling
			144.100	Random MS telegraphy (Note 1)
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	144.175	Microwave talk-back
			144.195–144.205	Random MS SSB
			144.250	GB2RS and slow Morse
			144.260	Emergency comms priority
			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				
144.490				
		(Guard band)		
144.500				
144.500				
	20kHz	All mode	144.500	SSTV calling
			144.525	ATV SSB talkback
			144.600	RTTY calling
			144.600±	RTTY working (FSK)
			144.630–144.660	Linear transponder out
			144.660–144.690	Linear transponder in
			144.700	FAX calling
			144.750	ATV talkback
			144.775–144.794	Emergency comms priority
144.794				
144.794				
	12kHz	MGM		Packet radio
			144.800	APRS
			144.800–144.990	Digital modes (inc unattended)
144.990				
144.994				
	12kHz	FM	RV48–RV63	Repeater input exclusive (Note 2)
145.1935				
145.200	12kHz	FM		Space communication (eg ISS)
145.206				
	12kHz	FM	V16–V46	FM simplex (Note 3)
			145.2125	Internet voice gateway
			145.225	Emergency comms priority
			145.2375	Internet voice gateway
			145.250	Used for slow Morse transmissions
			145.300	RTTY local
			145.500	(Mobile) calling
			145.525	Used for GB2RS
			145.550	Used for rally / exhibition talk-in
145.5935				
145.594				
	12kHz	FM	RV48 - RV63	Repeater output (Note 2)
145.7935				
145.800	12kHz	FM		Space communication (eg ISS)
145.806				
	12kHz	All mode		Satellite exclusive
146.000				

LICENCE NOTES: Amateur Service: Primary; **Amateur Satellite Service:** Primary; **Power limit**: 26dBW; **Permitted modes:** Morse, telephony, RTTY, data, fax, SSTV; **Unattended beacons:** only for DF contests.

Note 1: Meteor scatter operation can take place up to 26kHz higher than the reference frequency.
Note 2: 2.5kHz channels numbered RV48–RV63. RV48 input = 145.000MHz, output = 145.600MHz.
Note 3: 2.5kHz simplex channels numbered V16–V46. V16 = 145.200MHz.

430MHz (70cm) IARU		UK Usage
430.000	430.000–430.810	Digital communications (Note 6, 7)
	430.0125	Internet voice linking (Note 8)
	430.0250	Internet voice linking (Note 8)
All modes	430.0375	Internet voice linking (Note 8)
	430.0500	Internet voice linking (Note 8)
	430.0625	Internet voice linking (Note 8)
	430.0750	Internet voice linking (Note 8)
	430.600–430.800	(Note 5)
430.810		
430.810	430.810–430.990	7.6MHz split repeaters
Repeater outputs (Note 1)		
431.000		
431.000		
All modes (Note 1)	430.990–431.900	Digital communications (Note 6)
432.000		
432.000	432.000–432.025	Moonbounce
CW, Datamodes	432.050	CW centre of activity
	432.088	PSK31 centre of activity
432.150		
432.150		
	432.200	SSB centre of activity
SSB, CW,	432.350	Microwave talkback calling frequency (Europe)
Datamodes	432.370	FSK441 calling frequency
432.500		
432.500	432.500–432.600	IARU Region 1linear transponder outputs
	432.600–432.800	IARU Region 1linear transponder inputs
All modes nonchannelised	432.500	SSTV activity centre
	432.600	RTTY (fsk) activity centre
	432.625	Digital communications
	432.650	Digital communications
	432.675	Digital communications
	432.700	Fax activity centre
432.800		
432.800	432.800–432.990	Beacons (Note 9)
Beacons		
433.000		
433.000		
FM repeater outputs in UK only (Note 1)	RU240 (RB0)–RU270 (RB15)	FM repeater outputs (25kHz channels)
433.400		

430MHz (70cm) IARU		UK Usage
433.400	433.400 U272 (SU16)	
	433.425 U274 (SU17)	
	433.450 U276 (SU18)	
	433.475 U278 (SU19)	
FM	433.500 U280 (SU20)	FM calling channel
simplex	433.525 U282 (SU21)	
channels	433.550 U284 (SU22)	Used for rally / exhibition talk-in
	433.575 U286 (SU23)	
	433.600 U288 (SU24)	RTTY afsk
	433.625	Digital communications
	433.650	Digital communications
	433.675	Digital communications
	433.700	(Note 2, 3 and 5)
	433.725	(Note 2 and 5)
	433.750	(Note 2 and 5)
	433.775	(Note 2 and 5)
	433.800–434.250	Digital communications
434.600		
434.600		
FM repeater inputs in UK only (Note 1) and fast scan TV (Note 4)	RU240 (RB0)–RU270 (RB15)	FM repeater outputs (25kHz channels)
435.000		
435.000		
Satellites and fast scan TV (Note 4)		
438.000		
438.000		
Fast scan television	438.025– 438.175	(Note 5)
	438.200–439.425	(Note 1)
438.425		
438.425		
Repeater inputs + fast scan TV	438.425–438.575	7.6MHz split repeaters
438.575		
438.575		
Fast scan television	438.200–439.425	(Note 1)
	439.600–439.750	Digital communications (Note 6)
439.750		
439.750		
Packet radio	439.750–440.000	Digital communications (Note 6)
440.000		

LICENCE NOTES: Amateur Service: Secondary. **Amateur Satellite Service:** 435–438MHz Secondary, Exclusion: 431–432MHz not available within 100km radius of Charing Cross, London. Power limit: 430–432MHz 16dBW ERP PEP, 432–440MHz 26dBW, Permitted modes: Morse, telephony, RTTY, data, fax, SSTV, FSTV. **Note 1:** In Switzerland, Germany and Austria, repeater inputs are 430.600–431.825MHz with 25kHz spacing, and outputs are 438.200–439.425MHz. In France and the Netherlands repeater outputs are 430.025–430.375MHz with 25kHz spacing and inputs at 431.625 431.975MHz. In other European countries repeater inputs are 433.000–433.375MHz with 25kHz spacing and outputs at 434.600–434.975MHz, ie the reverse of the UK allocation. **Note 2:** Emergency communications priority. **Note 3:** IARU Region 1 fax / AFSK. **Note 4:** Fast scan television carrier frequencies shall be chosen so as to avoid interference to other users, in particular the satellite service and repeater inputs. IARU Region 1 recommends that video carriers should be in the range 434.000–434.500MHz or 438.500–440.000MHz. **Note 5:** IARU Region 1 packet radio. **Note 6:** The DCC will recommend usage of this sub-band at a later date. **Note 7:** Users must accept interference from F / PA repeater output channels in 430.025 to 430.375MHz. Users with sites which allow propagation to other countries (notably F and PA) must survey the proposed frequency before use to ensure that they will not cause interference to users of repeaters in those countries. **Note 8:** Internet voice linking channels: maximum deviation ±2.4kHz, maximum effective radiated power 10dBW. **Note 9**: The beacon band is scheduled to change to a new allocation 432.400–432.500MHz effective from 1 January 2004.

By Steve Hartley, G0FUW, 5 Sydenham Buildings, Lower Bristol Road, Bath BA2 3BS.
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Newcomers' News

Another good postbag this month with lots of issues. So, without further ado, let's see what's new.

Eight people received an early present just before Christmas. They all studied the Foundation Licence course at the Hilderstone Radio Society, Broadstairs and everyone passed the examination.

The Course was very successful with most participants being attracted through advertisements in the local press. Everyone enjoyed it so much that the society immediately made plans for another course in January.

A notable result from the first course was that it included one of the youngest candidates in the country to obtain a success in the exam. Connor Williams passed the exam while he was just seven. He received his callsign, M3CJW, and is now active on the air. Well done Connor!

Should any reader be interested in joining another course at the Hilderstone society, they should get in touch with the organisers: Ken Smith, tel: 01304 813175, or Ron Marchant, tel: 01304 812723.

NEW INFORMATION

The Great Yarmouth Radio Club has added some new information to its website that may be of interest to newcomers and old hands alike. There is a comprehensive world-wide prefix listing, details of UK repeater frequencies, band plans and broadcast radio information. Citizens Band radio is also covered as the club acknowledges that many radio amateurs come into the hobby through CB.

The latest addition to the site is a 'Moon phase' indicator that is extremely useful if you are getting started on 'moonbounce' - bouncing your signals off the moon. Nigel Brown, G5NB, tells me that the site recently received a gold award from the American Association of Webmasters for content and design. Well done all concerned.

LOOPS AND WALLS

J W 'Wally' Barker, G3WAL, sends words of caution for those intending to build the small loop by G4DDW featured in the February edition of 'Newcomers News'. He was one of the operators who helped to test the loop's performance and he notes that the construction of your property can have a dramatic effect on your signals.

It seems that some modern buildings use a plasterboard with a foil backing for the internal walls. Wally says it took rather longer that it should have done for him to realise that he operates in a 'Faraday cage' and why his loop did not perform as well as others!

Indoor antennas are never the best option from an EMC point of view, but if you are restricted by outdoor factors it is sometimes the only way of getting on the air. However, it might be worth checking out your walls before investing time, trouble and money on an indoor antenna! Thanks for the tip Wally.

INTERMEDIATE PARTS

Readers with an interest in the revised Intermediate Licence (IL) syllabus may have now had chance to see the RSGB book Intermediate Licence – Building on the Foundation. Having put in many hours of drafting and editing I really hope it meets with your approval. Feedback so far indicates that it does.

Donald Lamb, G0ACK, must have been one of the first to buy a copy as he soon got in contact to ask where he could buy the parts for the practical exercises. I advised that him that the parts used are all quite common and many companies will be able to supply them. I am fortunate to have a well-stocked electronics shop less than 100m from my front door, but for others mail order may be the only option.

The Maplin catalogue in my bookcase lists all the parts required but it is not the latest edition so you might like to check their website (see www below) or visit one of their many stores. I often use JAB Electronics in Birmingham run by Peter, G7JAB, and Christine, G0DOG. They too have a website under construction or you can contact them at PO Box 5774, Birmingham, B44 8PJ. Coincidentally, keen Foundation tutor Alan Ralph, G8XLH, sent me a note to say that Lake Electronics is selling an Intermediate 'pack' with all the bits required by students for £6. Good to know.

VFO IDEAS?

The Lake 'Starter Pack' does not include the parts for the Intermediate Licence (IL) book variable frequency oscillator (VFO) but this is only an optional construction exercise. Whilst students are not required to build a VFO they do have to calibrate one. This means that assessors may have to build one if they do not have one already.

I would be interested to know if anyone has built the IL book VFO into a larger project. Perhaps we could run a few suggestions under the heading of 'putting the IL VFO to work'?

M3 SUPPORT

Mr I Hogan, G0FYN, would like to go on record as being a keen supporter of the Foundation scheme. He has witnessed some very bad manners amongst a few 'older' stations who should know that their anti-Foundation behaviour on 7MHz will be witnessed across Europe and beyond. A poor reflection on the UK amateur population as a whole!

It is a shame that an extremely successful initiative that is receiving world-wide praise is being knocked by amateurs at home. I have a reasonable collection of old radio magazines and it seems to be a feature of any major change (eg SSB rigs, Class B licences, multi-choice exams, the Novice scheme) that one or two forget that this is a hobby with a fantastic variety of people with an equally broad range of interests. Please let's all get on and enjoy it instead of finding reasons to denounce the changes. ♦

The successful candidates and their Instructors from left to right: John Chantler, Colin Turner (Lead Instructor), Dr Ken Smith, Richard Edwards, Fiona Godfrey, Michael Plastow and Ben Robertson. At the front are Ron Marchant (Instructor), Ken Godfrey (Instructor) and Connor Williams. Paul Smith was unfortunately unable to attend the photo session (see 'Success at Hilderstone').

WEB SEARCH

Great Yarmouth Radio Club:	www.qsl.net/g3yrc
Maplin Electronics:	www.maplin.co.uk
JAB Electronics:	www.jabdog.com
Lake Electronics:	http://ourworld.compuserve.com/homepages/radkit/index.htm

By Ian Poole, G3YWX, 5 Meadway, Staines, Middlesex TW18 2PW.

Guide to HF

PART 2 ON THE BANDS

In order to make the best use of the amateur bands and to minimise interference between users, different areas of the band and different frequencies are reserved for various types of emission or for particular uses. Typically the bottom section of the band is reserved for CW, and the upper sections for SSB. However, other frequencies are reserved for transmissions such as QRP, slow scan television, and the like. In the UK the band plans are a 'gentleman's agreement', but in some countries they are a part of the licence conditions. Here, it is considered very discourteous not to abide by them. Copies of the band plans can be found in the *RSGB Yearbook*. In any case it is always best to listen first to make sure that you are in the correct area of the band and that no interference is being caused to other users.

FIRST STEPS

Getting the station set up and knowing what to expect on the bands are the first two steps in becoming active on the bands. The next is making the first few forays on to the bands themselves. This is a particularly exciting time, and one that will be remembered for many years to come. I can still remember my very first contact. Then some months later after I had bought a CW transmitter that covered 20 metres, I still remember the feeling of tremendous excitement and yet almost disbelief when stations in California and Montana responded to my calls early one morning.

MAKING CONTACTS

First, take som time to listen on the bands to find out how contacts are made. In fact the best apprenticeship for anyone wanting to use the HF bands is to spend some time as a short wave listener. In this way all the procedures and the way contacts are made can be learned. The time will come to make the first contact. Make sure that everything is prepared, the log book is to hand and there is some scrap paper for notes. Contacts on the HF bands tend to be rather short and they tend to follow a straightforward pattern. Combined with all the abbreviations that are used this makes it very much easier for people who don't speak English as their first language.

Typically contacts consist of a station making a CQ call and then another station responding. The first station will then proceed to give a report, name and location and then at this stage they will pass the transmission back. By keeping the transmissions fairly short at this stage it means that if reception is poor it helps to reduce the possibility of losing contact altogether. Once reports, names and locations have been exchanged the next transmission typically provides information about the equipment, and possibly the weather. Under many circumstances the third transmission is the final one and consists of passing QSL information and good wishes to the other station. Naturally the contact can be extended and many people do talk for much longer but, typically, short contacts are by far the most common. In fact for rare stations contacts are even shorter, just consisting of a confirmation of the callsign and a report. When calling a station that is in great demand be careful to ensure that the contact is quick, otherwise others will become impatient.

LISTEN, LISTEN, LISTEN

Whilst there is always a great temptation to get straight on the air, the advice from any experienced operator is to listen, listen a bit more, and then spend some more time listening. This is the best way to find out how the band is performing, and select the stations that are most likely to give a chance of having a contact. Just putting out CQ calls may make you feel good, but in my experience and that of most others, it brings far fewer results, unless you are a very rare DX station.

Listening is one of the important skills any DXer needs to learn. The most experienced operators on the bands spend far more time listening than actually transmitting. Often they are able to pick out stations in the noise that less experienced operators may not hear. They are also quickly able to pick out the 'interesting' stations on the band amidst a host of less interesting signals. Whilst stations running less power may not be able to contact other stations that are low in strength, having the ability to pick out the interesting stations that are likely to result in contacts is just as important for the large station as for the smaller one.

A little experience on the bands will develop a sense of what to listen for: a different accent may indicate someone from a different area of the world from all the other signals that can be heard, a 'fluttery' signal may indicate that it is coming from across the north pole, or a station talking about his QSL manager may indicate that he is in a rare location. These and many other tell-tale signs become almost second nature indicators to the experienced DXer. However. one of the biggest give-aways is a pile-up. At certain times an enormous cacophony of noise may be heard on the band. Underneath or to one side of this there may be a rare or interesting station. A pile-up is a certain indication that a station of interest is around. However, competition may be stiff, but against this, the contacts are usually swift, allowing more people to have a chance. Also by developing the skills it is possible to become very successful in making contact under these conditions.

QSL CARDS

As the number of interesting contacts under your belt begins to grow, it is often nice to have some form of token by which to confirm or remember these contacts. In the early 1920s radio amateurs exchanged letters to confirm the contact details, but soon the idea of a postcard-sized card arrived and soon amateurs had special cards printed. Since then the idea of QSL cards has grown dramatically and many millions are exchanged each year.

There are several companies that print these cards. Prices naturally vary from one supplier to the next, so shop around when you decide to order some for there are several addresses in the advertisements in RadCom. If cost is a real issue or you want to make your own design it is even possible to print them from a computer.

Whatever route is taken to buy them, they should have certain information on them. Naturally the callsign, address, name of the operator and any other relevant information

The RSGB's Islands on the Air World award.

Operating

should be included. Space should be provided to accommodate the contact information. This may be filled in by hand, although many people print out sticky labels from information held on a computer log and only have to attach them to the card. If they are to be filled in manually the wording on the card should allow for the contact information to be added. This should include the callsign of the station to whom the card is addressed and with whom the contact was made, the date, time, and frequency or band on which the contact was made along with the mode of transmission, Morse, SSB etc. The signal report should be given and it is also very useful to have space for the equipment that was used, including the antenna. A space to ask for a return card, or to thank the station for a card already sent is normally added, and space for a signature as well. Whilst there are many standard items that are printed on QSL cards, there is plenty of variety and many of them are very colourful, making them very attractive to collect.

Exchanging cards can be expensive if they are sent out individually by post. To overcome this a QSL bureau operates in most countries. Amateurs send their cards in bulk to their bureau. These are sorted and sent in bulk to other countries where they are distributed in bulk to the members. This naturally takes longer than sending them direct and it can sometimes take a few years for replies to be received but it is very much cheaper than the alternative. For RSGB members the service is free. Only the postage for the cards sent to the bureau at RSGB headquarters and postage for stamped envelopes sent to and kept with QSL bureau sub-managers for the return cards are required. In some countries the societies charge their members for the cards sent through the bureau.

For some of the more interesting or rewarding contacts it can be an idea to send cards directly. It is only polite to include the return postage. This is particularly important for rare or interesting stations who are likely to receive many hundreds of cards. International Reply Coupons (IRCs) are normally used for this as they can be redeemed for the surface rate postage. They can be bought at main Post Offices, but if bought via this route they can be expensive. Often DX stations who receive large quantities sell them off second-hand and this represents a good deal for both parties.

Stations located in remote areas of the earth often arrange for someone else to act as their QSL manager. These managers are sent the logs by the DX station and then they handle all applications for cards. As the managers are located in areas of the world where postal services are faster and more reliable they are far better placed to respond to QSL card requests.

When collecting cards do not expect everyone to reply to cards that are sent out. Most people only expect to receive replies to a maximum of 30 or 40% of the cards they send out. It is better for cards that are sent out with return postage but even then it is not 100% so be warned not to expect everyone to reply. However, when cards are returned, many are very attractive and colourful and can be displayed in the shack.

AWARDS

Many people enjoy the challenge of working towards awards. Not only are the awards attractive to display in the shack but they are great fun to work towards. There are plenty of awards that can be gained for achieving a great variety of challenges. However, there are several well-established and very popular ones. One of these is DXCC. Awarded by the American Radio Relay League (ARRL), the US equivalent of the RSGB, it can be gained by showing proof (QSL cards) of making contact with stations 100 or more countries. A list of countries for this award is published by the ARRL. Endorsements can be gained for making contact with further countries. In fact many top DXers have over 300 countries to their credit.

The RSGB has a number of awards. One of these is the IOTA or Islands On The Air award. This is gained by making contacts with the requisite number of islands. There are 18 different certificates that are awarded for achieving different requirements. Full details are available on the IOTA website (see WWW. below), and many others can be found on the RSGB website.

OTHER ACTIVITIES

There is plenty that can be achieved on the HF bands. Once established on the bands you can decide what blend of the hobby you enjoy. For many the challenge and excitement of chasing DX is their main interest. Others enjoy chatting to old friends. Many people enjoy low power (QRP) operation, or building and experimenting with new equipment. One aspect of the HF bands that many people enjoy is experimenting with antennas. In fact whatever one's interest in the HF bands there is sure to be plenty to maintain a healthy interest for many years. To demonstrate this there are several 90-year olds on the bands! ◆

WEB SEARCH

Ian Poole:	www.radio-electronics.com
RSGB:	www.rsgb.org
RSGB Shop:	www.rsgb.org/shop
IOTA:	www.rsgbiota.org

A BEGINNER'S HF VOCABULARY, PART 2

long wire	Strictly speaking a long wire antenna should be 'long' in terms of wavelength, so a long wire on 80m would be at least 80m long; but usually taken to mean any random-length end-fed wire.
propagation	Means by which radio signals are transmitted through space.
QRP	Low power (usually taken as meaning 5 watts or less).
QSL (card)	Verification card sent to confirm a contact.
radials	Series of wires, sometimes but not necessarily a quarter-wavelength long, radiating like the spokes of a wheel from the base of a vertical antenna and connected to earth.
reflector	Element of beam antenna placed behind the dipole; typically a few per cent longer than the dipole.
RF	Radio Frequency; the frequency of the transmission, as opposed to the audio frequency of the speech on the transmission.
SSTV	Slow Scan Television (SSTV), a means of sending still pictures by amateur radio.
SSB	Single Sideband, a type of speech transmission.
sunspot cycle	Solar activity rises and falls over an approximately 11-year cycle. High solar activity, associated with a high number of sunspots, generally provides better propagation conditions on the higher HF bands.
topband	The 160 metre amateur band, in the UK 1810 - 2000kHz.
transceiver	Transmitter and receiver combined into one unit.
trap dipole	Dipole antenna containing circuits that stop certain frequencies but pass others. This allows what would otherwise be a single-band antenna to work on two or more frequency bands.
'WARC bands'	12, 17 and 30 metre (24, 18 and 10MHz) bands, which were allocated to the Amateur Service at the World Administrative Radio Conference (WARC) in 1979.
Yagi	Type of directional beam antenna with two or more elements dipole Antenna consisting of two lengths of wire or metal rod of the same length and fed in the centre, usually with coax cable.

(SEE ALSO PAGE 57, RADCOM MARCH 2003)

FURTHER READING

Amateur Radio Explained, Ian Poole, G3YWX.
Your Guide to Propagation, Ian Poole, G3YWX.
Backyard Antennas, Peter Dodd, G3LDO.
HF Amateur Radio, Ian Poole, G3YWX.
RSGB Yearbook 2003, edited by Steve White, G3ZVW.
RSGB IOTA Directory, edited by Roger Balister, G3KMA.

ALL OF THESE RSGB PUBLICATIONS ARE AVAILABLE FROM THE RSGB SHOP – SEE WWW.RSGB.ORG/SHOP OR TEL: 0870 904 7373.

By Brian Horsfall, G3GKG, West Mount, 183 Chester Road, Macclesfield SK11 8QA.
E-mail: brian@g3gkg.fsnet.co.uk

Noise bri

A novel circuit design and applications.

Over the years there have been many published designs [1 – 3] for RF impedance bridges having different degrees of complexity, range of measurement and accuracy. The accent is almost always on their use in connection with low impedance aerial feeders and little mention is made of other possibilities. They all seem to employ the same basic bridge circuit which, while enabling simple direct calibration and reading of the resistance dial, usually entails having a divided scale on the variable capacitor used for reading the reactive component. Using one half of this scale, the measurement of actual capacitance values likewise presents no difficulty and the direct calibration of that part is also simple. However, in the other section, where the unknown impedance presents an inductive reactance, the calibration is necessarily cramped and more or less difficult to accomplish and interpret, being complicated by the frequency dependence of the relationship.

In the present design, which is based on the ARRL Handbook project, but incorporates some novel modifications, the method of calibration and interpretation is simplified by a re-arrangement of the bridge circuit itself. Using its associated spreadsheet calculations this instrument now allows the determination of most of the complex impedances present at the feedpoint of any aerial / feeder system, balanced or unbalanced, over a wide range of frequencies. In addition, I have developed its application (with a second worksheet) to some very useful measurements on unknown inductors and the determination of the characteristics of toroidal and other cores.

BRIDGE DESIGN

The concept of a noise source (sometimes gated or modulated) coupled to the bridge via a balanced broadband transformer allows for various configurations of the four bridge components. In essence, two arms are formed by the bifilar windings of the transformer itself, the others being a known and an unknown impedance, with a variable resistance element to balance that of the unknown, and two reactive components, one fixed and one variable (both capacitors). Shuffling these elements around and arranging for the two capacitive elements to be transposed at will by means of a switch, considerably simplifies both the reading and the calibration in respect of inductive reactances.

My bridge has two large dials; the reactance one now has only a single scale, calibrated as 'Capacitance', while the range covered by the resistance scale is considerably extended beyond that normally provided, with much finer discrimination and accuracy of the readings in the most significant portions of both. The single, easily- and directly-calibrated capacitance scale serves for the measurement of both inductive and capacitive reactances.

The noise source (**Fig 1(a)**) is a wide-band amplifier incorporating a Zener diode, which can be of any convenient voltage (mine is 18V, type 1N4746A) and the DC supply is derived from a variable bench PSU, adjusted to give the minimum voltage which produces adequate noise in use. My 'receiver' is, in fact, an ancient, somewhat modified Airmec Wave Analyser (in essence a wide-range, direct-conversion valve receiver) with calibrated attenuators and both audio and calibrated meter readouts. With these two complementary readouts and minimum chance of spurious responses in this type of receiver, there is no necessity for a gated or modulated source. If it is intended to use a similar instrument with the station transceiver, that option might be well worth consideration.

In one position of the switch, the dial reading is that of the unknown capacitance (negative reactance, or –j). In the other position, the dial gives the capacitance that would tune the unknown inductance to resonance at the test frequency; ie the negative reactance of the indicated capacitance numerically equals the positive reactance (+j) of the unknown inductance. As only the one scale is required, it is arranged that the reactance zero mark (infinite capacitance) now occurs almost at one end of the range. Although this scale is calibrated in capacitance, the switch position captions refer to the polarity of the reactance of the unknown component. Capacitance values read in either position can be entered into calculations directly, with the correct polarity.

My calibrated variable resistor is a high-quality component from a surplus source which gives a sort of 'hyper-logarithmic' scale, ie the calibration marks for the low values are

measur

dge

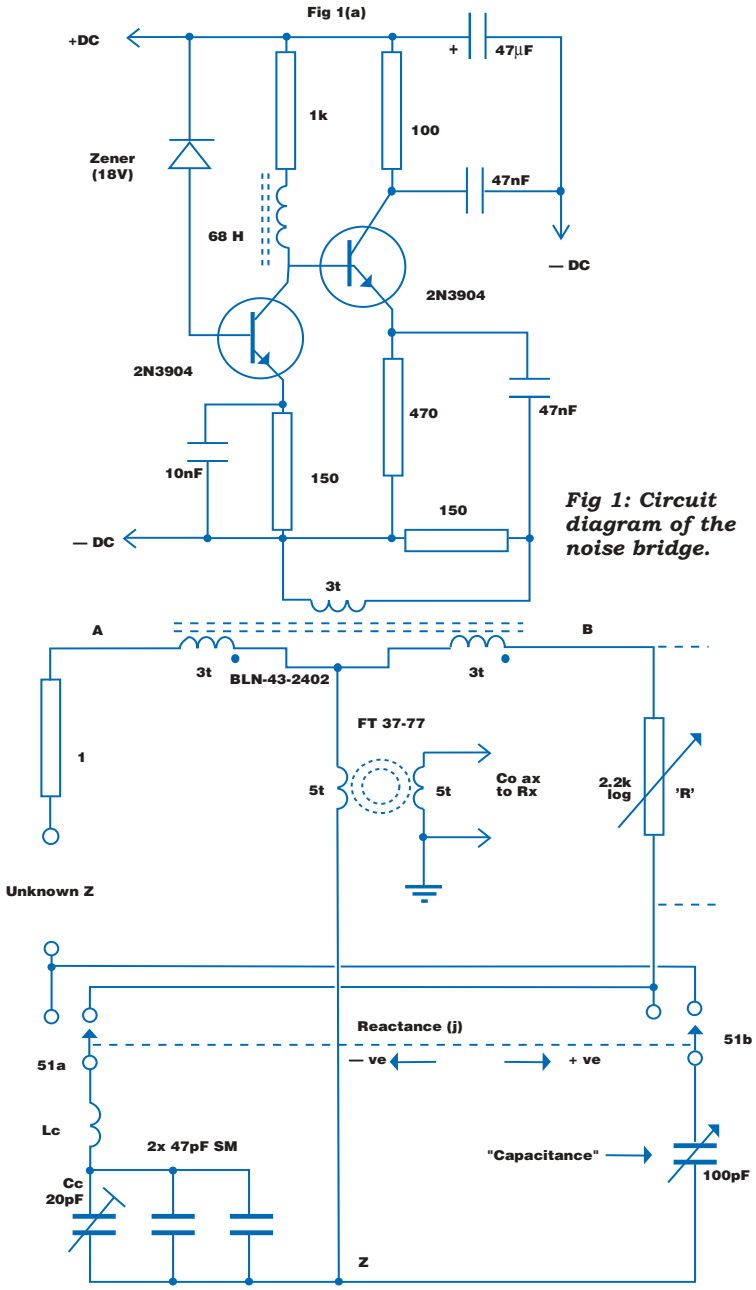
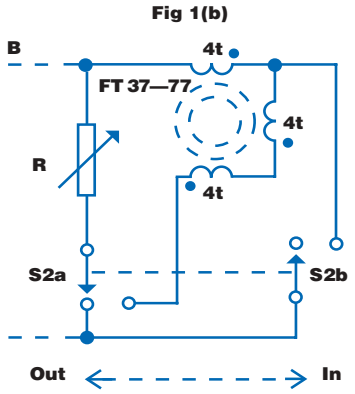


Fig 1: Circuit diagram of the noise bridge.



well spread out with the higher readings becoming more crowded together (the mid-point of the scale is 25Ω). This does mean that readings at higher calibration points (up to 2.2kΩ) are much less precise but, for present purposes, we are not really interested in very exact values in that region. The small fixed resistor in series with the 'unknown' terminals (which might have to be increased in some cases) is there to ensure that the 'zero resistance' calibration mark also occurs just short of the end of the scale.

Adding another broadband transformer to provide the coupling of the bridge output to the receiver / detector produces a design in which the entire bridge circuit is isolated from any direct 'earthy' connection. As it is also balanced capacitively with respect to earth during calibration, it now allows measurements to be made directly

ements

G3GKG noise bridge – exterior.

at the lower feed-point of open-wire or other types of tuned balanced feeders.

CALIBRATION

Leave out the inductor Lc initially; use just a short wire connection.

(a) Calibrate the Resistance dial by connecting an accurate ohm meter directly across the variable resistor, in situ, with all wiring completed. To allow for the fact that the potentiometer resistance may not go right down to zero at the end of its travel, and also to provide a 'dip' when the resistance at the Unknown terminals is actually zero, the 1Ω resistor (in my case) is connected internally in series with the unknown. The scale is therefore marked as '0' when the Ωmeter reads 1Ω and all the other scale values are marked with values 1Ω less than those measured.

(b) Connect the power supply and receiver and switch on with the receiver tuned to about 3MHz. Check operation and, with both dials in mid-position, adjust the DC supply voltage to give somewhat less than peak noise output. Set the Resistance dial to zero with the Unknown terminals shorted together. With the Reactance switch in the -ve position, rotating the Capacitance dial should enable a dip to be found in the noise. Take care not to overload the receiver RF stages; use front-end attenuators if necessary. Adjust trimmer Cc to obtain the lowest noise output almost at one end (maximum capacity) of the Capacitance scale. The value of the series 1Ω resistor can also now be adjusted if necessary (by parallel combinations) so as to obtain the dip exactly at the zero Resistance mark.

(c) With the Capacitance dial adjusted to minimise the noise output, note the position of this, then switch to the +ve position and re-balance to minimise the noise. This second position will probably be different from the first. Connect a small 'gimmick' capacitor from point A to point Z and adjust the value until the two previous positions occur at the same place on the dial and should now be the same depth (but sharper). If this cannot be achieved, try instead connecting the capacitor from B to Z and repeat the adjustment. When both switch positions produce the minima at the same place, this can be marked as the calibration point, ∞.

(d) Now tune the receiver to progressively higher frequencies whilst introducing and adjusting the small 'gimmick' inductor, Lc, (say, 3 or 4 turns of 22SWG wire, about 3mm diameter) to ensure that the minimum remains at the same '∞ Capacitance' mark in both switch positions, throughout the frequency range. In practice, it will be found that at the higher frequencies – above about 10MHz – the readings start to show progressively more positive capacitance. Provided this is less than a few hundred picofarads at 30MHz, it is of no real significance.

(e) With the Resistance dial set at zero, connect a series of known capacitances across the unknown terminals, tune for the minimum and mark the positions on the Capacitance dial with the values. Resist the temptation to use a calibrated variable capacitor for this,

Formulae

1. Aerial Measurements

Measure values of resistance, r, and Capacitance, C, at frequency, f

THEN:

(Noting the polarity of the reactance switch)

	Reactance (X) = $10^6/(2\pi fC)$	(Ω)
	Impedance (Z) = $\sqrt{[(r^2)+(X^2)]}$	(Ω)
and, if switch is at +ve position	Inductance (L) = $X/(2\pi f)$	(μH)

2. Toroids, etc Inductance, Q, A_l value & Permeability

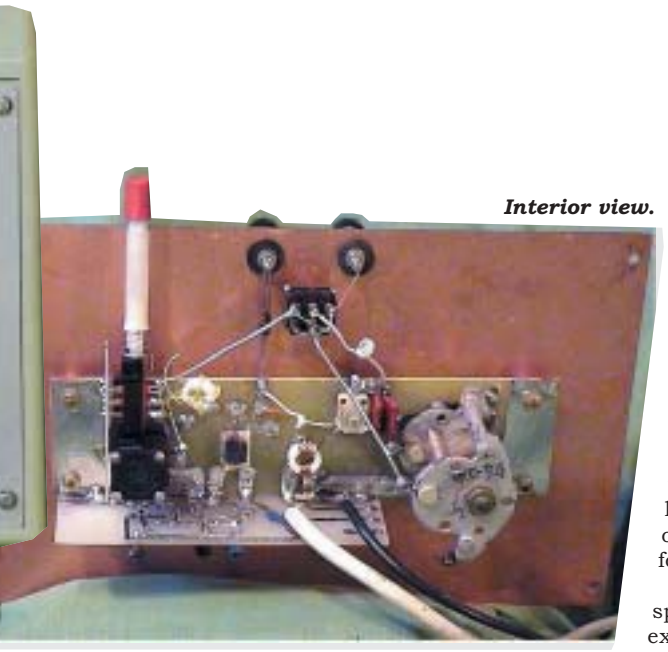
With a known number of turns, n, on the toroid and with the reactance switch in the +ve position - Measure the values of C & r at the specific frequency, f.

Use these values in the formulae below, together with the measured dimensions of the toroid.

(Note: A_l values are based on 100 turns, or 1000 for ferrite – fewer turns give somewhat higher values)

THEN:

From Noise Bridge Measurements				From Toroid Measurements [4]			
IF:	Number of turns	=	n	**IF:**	Outside diameter	=	D mm
	RF Resistance	=	r Ω		Inside diameter	=	d mm
	Capacitance	=	C pF		Height	=	h mm
	Frequency	=	f MHz				
THEN:	Reactance, X	=	$10^6/2\ \pi fC\ \Omega$	**THEN:**	Path Length, Le	=	$((D+d)/2)\pi$ mm
	Inductance, L	=	$X/2\ \pi f$ μH		Effective Area, Ae	=	$((D+d)/2)h$ sq.mm
	Q	=	X/r		Core Factor C1	=	Le/Ae
	And A_l value	=	$(10^3L)/n^2$ nH / turn		And Initial Perm μl	=	$A_lC1/1.257$
FROM THE ABOVE:				**AND:**			
	If Inductance	=	L μH		If No. of turns	=	n
	and A_l value	=	A_l nH / turn		and A_l value	=	A_l nH / turn
	then turns, n	=	$10\sqrt{(L/10A_l)}$		then Inductance, L	=	$(n^2 10A_l)/10^4$ μH



Interior view.

because stray capacitance will produce erroneous calibrations – instead, use series / parallel combinations of close tolerance components connected with the shortest possible lead lengths directly across the terminals. Note that this calibration, which holds true for both positions of the switch, is independent of frequency, but it should still be done at the lowest convenient frequency to minimise errors due to lead inductance etc.

APPLICATIONS

Apart from measurement of impedances presented by aerial and feeder systems, which have been adequately covered elsewhere it is possible to obtain a virtually complete characterisation of any type of inductor used in RF circuits. The coil is connected to the Unknown terminals with the shortest possible leads and the Resistance and Capacitance are measured at a given frequency or frequencies (Reactance switch in the +ve position). From these, the inductance and Q-values can be determined and, if the number of turns in the coil is known, the Al value of a toroidal core. If the physical dimensions of the toroid are then measured, further calculations, based on those that have previously appeared in RadCom [4], enable the initial permeability of the material to be determined. From all of which, the actual type can be ascertained by reference to published characteristics.

In all the others I have measured (eg a series of Toko KANK 10K coils and numerous small RF chokes, etc), the measured and calculated values have corresponded very satisfactorily with those in the manufacturer's published data. See the tables on the RSGB Members-Only website – details below. More directly to the point, coils, EMC chokes, baluns and transformers with known characteristics can now be made using some of those cheap cores of hitherto unknown origin frequently found at rallies.

For a complete specification of, for example, an unknown toroid, the measurements should be repeated with a given number of turns at several frequencies. If the measured inductance remains essentially the same at all frequencies the core is probably iron dust, but values that differ markedly with frequency indicate ferrite materials. With any particular core material, as the frequency increases the values of both RF resistance and reactance will do likewise and Q will generally decrease. The suitability of a coil or core will depend on the required Q at the particular frequency of the application. High Q combined with moderate inductance would be shown by a core suitable for resonant applications, whereas very high inductance with low Q would suggest a wide-band transformer or an EMC suppression choke.

In this application, it is sometimes useful to be able to measure the RF resistance at even lower levels, and I have added a refinement which enables the dial reading to be divided by 10 when the actual resistance is below about 40Ω (**Fig 1(b)**). By switching the transformer into circuit, the apparent resistance of the variable can be made to look much lower than its true value. I realise that the impedance ratio is theoretically 9:1 but, for all practical purposes, the effect is to produce minimum noise with values of external resistance which are near enough to 1/10 of the scale reading.

The whole extra assembly is mounted, as is the rest of the circuit, so as to keep lead lengths and stray capacitances as small as possible, with the push-type switch actuated remotely by an insulated rod. In conjunction with the ultra-log characteristic of my own pot, this means that I can read resistance with reasonable accuracy down to fractions of an Ohm, a feature which is really useful only in the determination of high-Q values in inductors. With a more readily-obtainable component for the variable resistor, such as an ordinary, logarithmic law, 1 or 2.2kΩ potentiometer (preferably moulded carbon rather than cermet), this modification would be necessary.

CALCULATIONS

As with most instruments of this type, its real value can be appreciated only if it is employed along with some means of automating the calculations. The actual capacitance reading could be equated directly to negative reactance using a standard ABAC [5], while capacitance measurement in the +ve position of the switch would enable determination of both positive reactance and inductance using two similar charts, ie 'Reactance of capacitor versus frequency' and then 'Inductance of (that) reactance versus (the same) frequencies'. ◆

ACKNOWLEDGEMENT

Once again, I am greatly indebted to Don, G3ALP, for the digital photography.

REFERENCES

[1] *ARRL Handbook*, 1994 edition.
[2] Ed Chicken, G3BIK, *RadCom*, Jun 94, p13, Jul 94, p69 and Dec 99, p18.
[3] Jack Gentle, G0RVN, *RadCom*, Jul 95, p38.
[4] 'EMC', *RadCom*, Jun 94, p75.
[5] Radio Data Charts, Iliffe & Sons.

Interior close-up.

WEB INFO

Especially when further calculation of derived parameters is required, something more is highly desirable. Examples of some of the results obtained are given on the RSGB Members-Only website (www.rsgb.org/membersonly) in Tables 1 and 2, using the actual Microsoft Excel spreadsheets.

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- 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!

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DJ-596 NEW 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).

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- 100 memory channels, any mix of VHF/UHF
- Alphanumeric channel labels
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- Large backlit display and keypad
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- 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
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- New dual band handy transceiver
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- Up to 6 character alpha-tagging
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- Bug detector
- Stereo FM (with headphones)
- Attenuator
- SMA Antenna
- Battery saver cct
- Size: 56w x 102h x 23d mm
- Weight: 14.5g (without batteries)
- Supplied c/w: 3 AA dry cell battery case carrying strap

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- Ni-Mh battery pack
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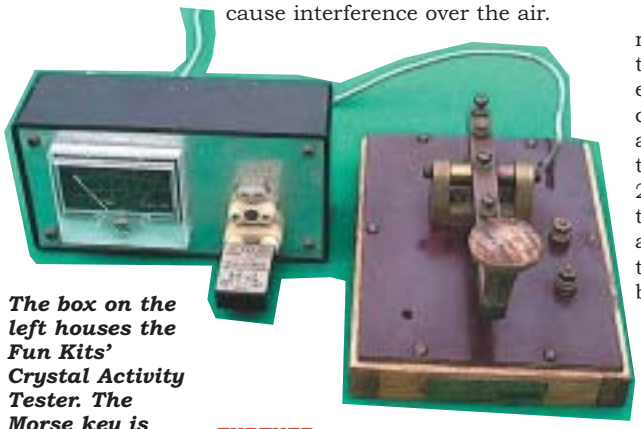
By Roger Davis, ZS1J.
E-mail: info@forestwagontrails.co.za

Can you hear the ZS1J Beacon?

Testing out the efficiency of some home-made mobile antennas on 40m the other day, I required a stable signal source to give me a constant signal level over a distance of a few hundred metres. Going through the junk box, I found a crystal activity tester, which was a kit manufactured by Fun Kits and I decided to use this as my source with a suitable 7MHz crystal, as shown in **Fig 1**. As the current drain at 12V was only 2mA, it was hoped that when I connected the frequency counter output of the oscillator to an antenna, this low-power transmitter would not cause interference over the air.



The box on the left houses the Fun Kits' Crystal Activity Tester. The Morse key is home-made.

FURTHER...

After having conducted my tests, I was in contact with John, ZS2J, in Bathurst, in the Eastern Cape and, just out of interest, I asked him to listen on the frequency of 7076MHz to see if he could hear the carrier. When John came back and gave me a 53 report, I was amazed and to confirm that it was my carrier that he was copying, I sent a series of dashes with an electronic keyer. He immediately confirmed reception of the dashes. John's location was about 350km away.

I decided to measure the output power of the oscillator, so I coupled a high-frequency oscilloscope probe to the antenna to measure the peak-to-peak reading, which was 200mV. To convert this to watts, the RMS value is needed. This is obtained by dividing the peak-to-peak value by two and multiplying by 0.707, giving 70 mV. This must now be squared and then divided by the load impedance of 50Ω. The resultant power was 0,000099W, or 0.099mW, or 99µW!

The reason that the output power of the oscillator is so low, when compared to the input power of 24mW (12V times 2mA), is that the antenna is very loosely coupled to the oscillator by the two 82pF capacitors, C3 and C4, which are in series.

As I wished to see the maximum range that this exceedingly low power transmitter could be received, I needed to key the oscillator with identification. This I achieved by using the audio output of a receiver tuned to the ZS1J beacon, transmitting on 28,2025. This audio output was fed through a couple of diodes to bias on a BC109, which keyed the 12 volts to the oscillator. Very' Heath Robinson', but it worked.

...AND FURTHER

Since having the QRPP beacon on the air, it is consistently received in Port Elizabeth, a distance of 230km, at most times of the day, at anything up to S3, and numerous reports from Cape Town, which is to the order of 450km, have been received, also with reports of up to S3. The best DX so far has been a report from Aliwal North, a distance of 540km.

The one thing that I think these tests have proved, beyond any doubt, is that the secret of the success of any amateur radio station is the antenna. Get it up as high as you can. Get it resonant. Get it matched. If you need an antenna tuner to lower your VSWR, you have a bum antenna to start with.

The antenna used for the QRPP tests is nothing but a half-wave dipole at a height of no more than 8m with RG-58U coaxial cable connected directly to the centre of the dipole. The other interesting point is that my dipole is end-on to both Cape Town and Port Elizabeth.

No Balun. 'Balun', by the way is, in my book, a corruption of the word 'baloney'.

I used to think that my QRP contact in the late 1980s of Durban to Pretoria using only 2mW was good, but this microwatt level takes QRP into a new dimension.

The 0.1mW beacon has been copied 529 in Pretoria by ZS6UT, a distance as the crow flies in excess of 1000km, and by ZS6HRD in Pretoria, at a similar distance.

We are very fortunate to have the 40m band virtually unused during the day so that experiments such as this can be successful.

STOP PRESS

(The following text has been received in February 2003 and updates the results quoted above – Ed.)

This last week, on one of their early morning daily skeds, Bill, WA8LXJ, was asked by John, ZS2J, to see if he could receive this beacon. This is because Bill has an extremely efficient antenna system and is consistently heard in South Africa on 40m at 20dB over S9. Bill requested an accurate frequency readout of the transmission which was given to him as 7029.0155 kHz, Bill having the facility to narrow his receiver bandwidth down to 10Hz, thus being able to pluck out even the weakest signal out of the noise.

On Tuesday 29 January, Bill, WA8LXJ, made a positive identification of the beacon's callsign and gave it a 219 report. He also made a tape recording of the signal received and played it back to amazed South African amateurs on the daily split-frequency net, held on 7095 and 7177kHz on the morning of 29 January.

Visit the ZS1J beacon web site at www.qsl.net/zs1j ◆

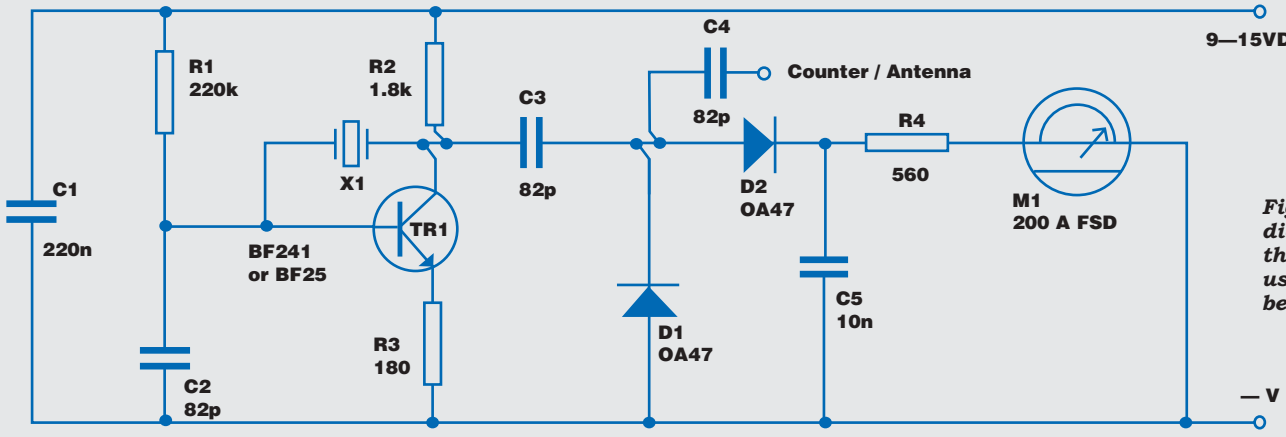


Fig 1

Fig 1: Circuit diagram of the oscillator used in the beacon.

By Mike Grierson, G3TSO, 1, Blenheim Close, Upper Rissington, Cheltenham GL54 2QX.

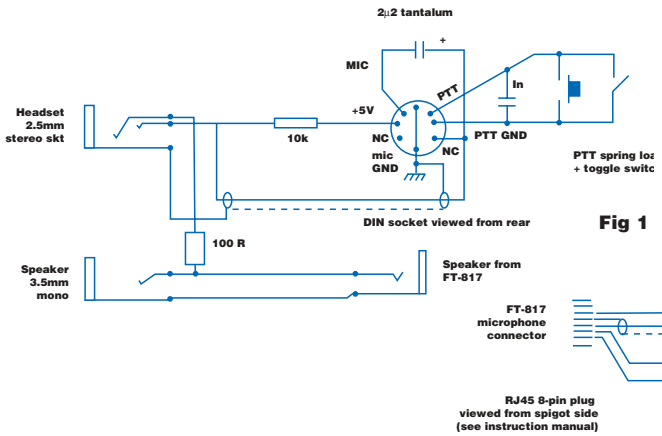


Fig 1

A hands-free microphone for the Yaesu FT-817

One of the shortcomings of the Yaesu FT-817 is the use of a RJ45 network connector as the microphone connection to the radio. This means that no existing commercial headsets will fit it, and the construction of a patch lead is hindered by this non-standard plug and socket.

GET CONNECTED

Examination of a number of cables sporting the RJ45 revealed them to be unsuitable for use as a microphone lead. I had purchased a FCC68 eight-pin socket (identical to the RJ45) from Maplin, hoping that I could use the existing Yaesu microphone lead, which also detaches from the microphone head, with another RJ45 connector. Unfortunately, the facia of the Maplin connector did not accommodate the rubber shroud fitted to the Yaesu plug. Eventually I decided that I would have to make a new cable with a RJ45 connector.

A visit to the Longleat Rally provided the necessary components. Barenco sells a 1.8m (fully extended) curly cable with one screened and four unscreened leads, six ways including the screen – more than enough for the task, and very similar to the Yaesu microphone lead. Fitting the RJ45 proved to be less of a problem than I had imagined and can be effected without recourse to special crimping tools. A crimping tool for the RJ45 can be purchased from Maplin for £17.99, but you will need to fit a lot of plugs to pay for it! Simply cut the ends of the wires in a straight line and feed them into the RJ45 until the wire ends reach the extremity of the plug, even the screen fed in quite nicely after it was twisted tightly. Placing the plug on an open vice with the flexible spigot downwards, the contacts can then be pressed home using a narrow bladed screwdriver; taking care not to damage the plastic channels. The cable securing clamp can then be pressed home with a blunt tool. Finally, a shroud was added to the plug and secured in place with a dab of clear silicone sealant. The result, a neat curly lead with a RJ45 that matches the FT-817.

INITIAL TESTS

While I have several headsets and boom microphones from previous mobile encounters, I was keen to try a very lightweight Kondor headset that had been purchased from Staples for use with a mobile phone. It has an earpiece and a noise-cancelling microphone using an electret insert. The headset is fitted with a standard 2.5mm stereo jack plug.

Initially, I lashed up the headset with the newly-made lead to test it; the results were encouraging, reports indicated no major difference in audio compared with the Yaesu hand microphone, and some reports indicated that the boom microphone might be an improvement. The final part of the project was to house the connections in a convenient way so that PTT functions of the hand microphone could be replicated.

Two switches are used, one spring-loaded for intermittent operation, and a toggle switch for longer overs; the latter meets the original hands-free objective.

A small plastic T2 ABS box from Maplin provided a suitable container. It was decided to connect the curly cable using a plug and socket rather than hard-wire the two together; this accommodates further experiments and use with other radios. A seven-pin DIN socket provided the required number of connections leaving one pin spare. A 2.5mm Stereo Jack socket proved elusive however. It is available as an in-line socket and can be modified for chassis mounting; some are available as cylindrical chassis-mounted versions, with a retaining nut. The circuit diagram is shown in **Fig 1**.

The electrical connections are quite simple, all that is required to connect the electret microphone is a 1kΩ series resistor connected to a DC supply; 5V is available at the FT-817 microphone socket; a higher value may be used to reduce the audio output if required. A coupling capacitor of around 2.2µF is required to isolate the DC from the microphone input. This component was wired onto the back of the DIN socket using the non-connected pin as an anchor point.

Above: The switch box and headset shown connected to the Yaesu FT-817.

LISTEN CAREFULLY...

As the headset partially covers the ear, it will attenuate the sound coming from the car speaker, so provision is made to feed receive audio to the headset. This is achieved by routing the external speaker cable through the switching unit, and tapping off some audio through a 100Ω resistor; the value may be varied to set the required audio level. The layout of the switching box can be adjusted to meet individual requirements, the most important consideration being the location of the unit and positioning of the PTT switches for ease of operation. It is recommended that the microphone earth be isolated from the PTT earth to prevent RF feedback, so that the only common point is at the FT-817. The photographs illustrate the completed hands-free system.

SUMMARY

The FT-817 is a truly amazing little radio that is catching the imagination of many amateurs. The absence of a suitable hands-free microphone makes mobile operation less attractive. This project has shown that, with a few components, a readily-available cellphone hands-free kit can be easily adapted to use with the FT-817. ◆

COMPONENTS LIST

1.8m 5-way curly cable	Barenco Ltd
RJ45 plug and shroud	
T2 ABS plastic box	Maplin
7 pin DIN plug and socket	
2.5mm stereo jack	
2 x 3.5mm jacks	
SPST toggle switch	
Push-to-make spring-loaded switch	
R1 1kohm	
R2 100Ω	
C1 2.2µF tantalum	
C2 1nF ceramic	
Kondor headset or similar	Staples

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		Bnos 6m Amp 3w input 50w out	£80
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		Akd Mobiles 2m/70cm etc., choice	£95
Trio Tr751e Quality 2m Multimode Mobile	£275	Target Hf3 SW RX	£90
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Part 9

PIC-A-STAR

Fig 12: DSP assembly illustration and recognition drawing, not to scale. The IF board and two end-plates are seam-soldered to form an H-section. The height of the end-plates is typically 6cm as a minimum, but can be up to the full height of the Tx / Rx enclosure. The DSP board is bolted to the back of the IF board. Note that critically, the external connections are brought out at different 'levels' depending on which side of which board they connect to - and at different ends depending on the destination. Two further sides and a top and bottom (not shown) complete the screening but are not added until after final commissioning.

Building the IF board is detailed this month. Next month covers its commissioning and integration with the DSP board.

The IF board comprises a traditional PCB – with two end-plates soldered on to form an H-section as shown in **Fig 12**. The DSP board is subsequently mounted on the IF board as illustrated.

This form of construction is not strictly necessary. You could build the IF board and DSP board into two separate enclosures, but this approach was chosen because these two boards are highly interconnected.

The IF PCB dimensions are determined by the size of (and are just larger than) the DSP board - resulting in generous spacing between the functional blocks. The surplus board area has been allocated around the crystal filter and the crystal oscillator; the former so that any reasonably-sized filter may be fitted, the latter to give room for a more sophisticated oscillator if desired.

CONSTRUCTION NOTES

The PCB is assembled by soldering most of the components to the track side. This approach makes signal tracing easier and minimises the amount of hole-drilling. SMD components were not specified here because they are not needed, but most of the components are in fact mounted SMD-style.

Mask, etch and drill the PCB using the iron-on laser film technique covered in Part 3. On the ground-plane side, countersink the ungrounded holes associated with FL1 and the SBL-1. Both the coax lead to the SBL-1 and C37 are soldered directly to the SBL-1 pins - as opposed to PCB track – so drill generous clearance holes for these pins. All other holes are grounded both sides of the board and are not countersunk.

End-plate dimensions

The width of the end-plates is that of the IF board. The task now is to determine their height – which is principally (but not entirely) determined by that of your crystal filter.

Fit FL1 and then, using spacers somewhat longer than the height of this filter, crudely trial-mount the DSP board as in Fig 12.

The height of the end-plates is now that of this assembly plus at least 20mm for the IF board components. The approximate sum is 24mm for the DSP board plus 20mm for the IF board components plus 2mm for the PCB thickness plus the height of your chosen crystal filter plus 3mm margin. The latter two measurements also sum to give you the length of the four mounting spacers. Be generous.

End-plate fitting

The end-plates are fitted before mounting the components, because this makes the board easier to build and handle without contaminating it with finger marks.

Mark the target position of both boards on the inside of the end-plates and then, looking at Fig 13, lay off the position of the feedthrough capacitors from the IF board. Drill holes for these now, but leave fitting the capacitors till later.

Clean both sides of the IF board and end-plates immaculately, and apply a light coat of spray flux / lacquer to both sides.

Now seam-solder the end-plates to the IF board with a large iron. If you mount both at the same time, you will be able to check on the geometry by eye. Progressively checking that all remains true and working both sides of the IF board, use small single tacks first of all, then multiple tacks and finally form neat fillets.

Component mounting

Refer to **Fig 13**. Tin all the pads except those under the FST3125s. Mount both FST3125 chips. Align the chip and tack down two opposite corners to the larger pads provided. For the remaining pins, offer the iron and solder to the track just short of the pin – and the solder will spread along the board and wet the pins by capillary action.

Fit the wire link across IC4. Sorry about this, but I just could not design out that one link.

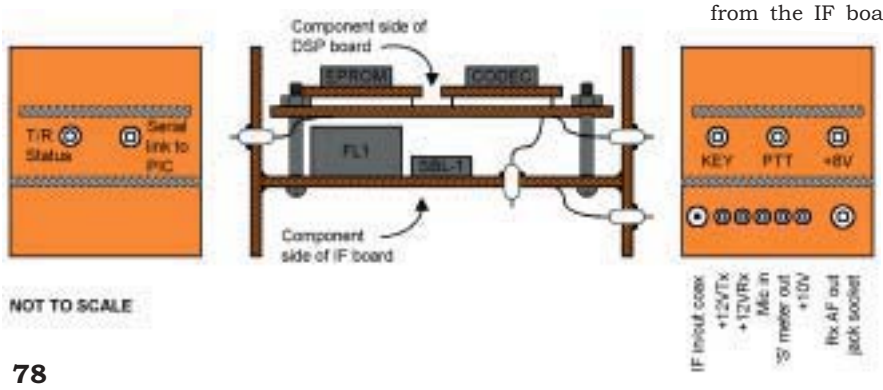
Cutting their ungrounded leads so that they sit just above the board, mount all the other components - except the preset capacitors. A pair of tweezers is useful for handling the smaller components.

To surface-mount the DIL ICs, cut off all the pins back to the shoulder except any grounded pins which pass through the board. Do not use sockets.

Fit the feedthrough capacitors – which are typically made off to the IF board – by using a series RFC as a flying lead. Mount RFC1 and RFC2 at right-angles to each other in the vertical plane to minimise mutual coupling.

Trim and solder all the grounded leads on the back of the board. Check with a continuity meter that all grounded track is in fact grounded. Also perform all the usual basic tests such as checking isolation and integrity of the power rails.

Mask off the preset resistors and give both sides of the board a final and generous coat of spray lacquer. Finally, fit the preset capacitors, definitely unlacquered. ♦



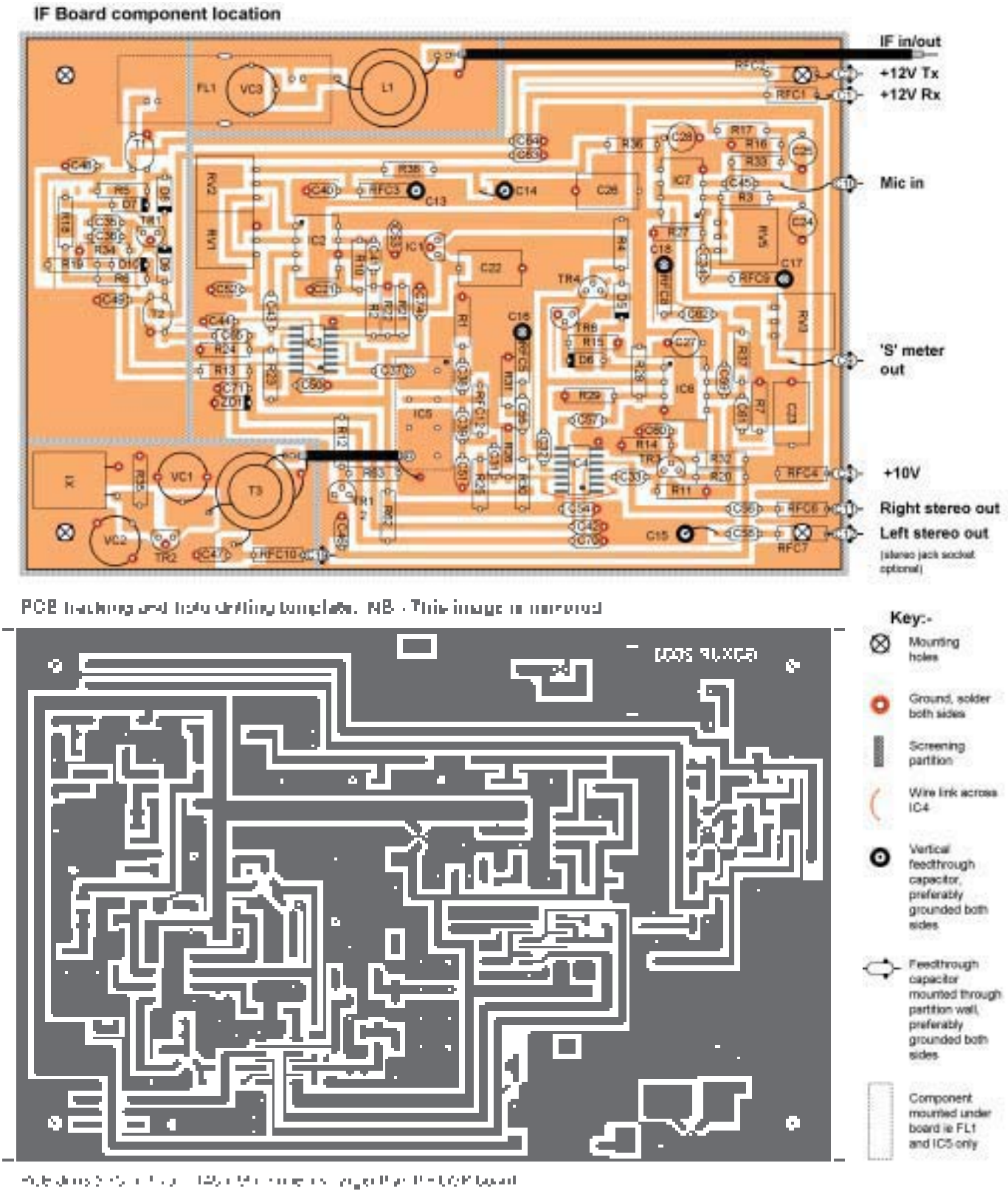


Fig 13: IF board PCB layout on double-sided board. The reverse side is completely unetched to form a continuous ground plane and screen. All components with the exception of the crystal filter, FL1, and the SBL-1 mixer, IC5, are mounted on the track side. You may need to customise the tracking to suit your crystal filter. The 'holes' are shown on the component layout only to define the tracks should you be producing the PCB by some manual method. Only components which feed through to the back of the board require actual drilled holes and these are as defined on the tracking template. The tracking template image is mirrored (ie flipped left-to-right) for direct copying to iron-on laser film. The basic drilling size is 0.7mm – with holes for mounting, feedthroughs etc drilled larger to suit. Some internal screening partitions are made from PCB material or brass shim stock. Those around the X1 crystal oscillator need to be particularly RF-tight to prevent oscillator leakage into the IF strip.

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By Pat Hawker, G3VA, 37 Dovercourt Road, London SE22 8SS.

Technical

I7SWX's TWO-TRANSFORMER H-MODE MIXER

'TT', October 1993, carried the first announcement of a new high-performance mixer configuration which had been developed by Colin Horrabin, G3SBI, and which he had christened the 'H-mode Mixer'. The performance was later further improved following the suggestion by Gian Moda, I7SWX, that surface-mounted 'fast bus switches' such as the FST3125 and its equivalents might provide further enhancement of the already-excellent dynamic range (over 40dBm), see 'TT' July, August, September 1998 or *Technical Topics Scrapbook 1995–1999*. It was noted that the dynamic range was limited primarily by the ferrite cores used in the construction of the transformers. It has also become clear that, with the development of the H-mode mixer, the limitation to receiver performance is now centred on the phase-noise of the frequency synthesiser, with the H-mode mixer tending to provide more than sufficient dynamic range to cope with even the most stringent requirements.

Gian Moda, I7SWX/F5VGU, has now developed a simplified H-mode mixer that uses two instead of three transformers, and thus represents a useful improvement. He writes: "Recently we have seen an increase in home construction with a lot of interest, world-wide, focused on the now well-known H-Mode mixer using the fast bus switch FST3125. One recent application has been for the CDG2000 transceiver published in *RadCom*, (June to December 2002) and available on the Warrington Amateur Radio Club website: www.warc.org.uk/home.htm

"I have been working on the modification of mixers in some well-known Japanese 'black boxes', particularly my Icom IC-751. I also distributed the FST3125 (not easy to buy) to some of my Italian friends to 'corrupt' them into modifying their rigs (IC-781, IC-765, FT-1000).

"I first modified the 3rd mixer (dual-gate MOSFET) of my IC-751 using the original (G3SBI) 74HC4066, which is easy to purchase, in order to check the validity of this component compared with the FST3125 (see my article in *Radio Rivista*, April 2002). I used the G3SBI circuit diagram of 'TT', September 1998. The results were very positive and the article helped alert many Italian amateurs to the potential of modifying and improving Japanese black boxes, and also encouraging home construction focused on the use of the H-mode mixer.

"In efforts to achieve the top performance attained by G3SBI, several Italian amateurs have been blocked by the difficulty and expense of purchasing the recommended Mini Circuit transformers. The now-standard H-mode mixer can have an IP3 of around +45dBm, a performance impossible with factory-built products. With the CDG2000 it has been shown that the IP3 limits are no longer due to mixers. Now we have to deal with IMD due to preamplifiers, post-mixer and IF amplifiers, filters and passive components including the transformers or coils! [And the close-in phase noise of synthesisers - G3VA.]

"One result is that there are now two groups of people involved in the design and improvement of receivers. One group, like G3SBI, aspires to the maximum possible IP3 values, measured to 0.1dBm. The other group, which includes me, looks for compromised solutions without caring for say 1dBm or more of difference in measurements, but wishing to encourage as much 'home-brewing' as possible. The wonderful H-mode mixer has plenty to give in dynamic range, making happy the members of both groups. As a 'compromiser' I have been working on home-made transformers using balun cores; they are easier to wind and easier to find than toroids.

"Having been 'infected' both by my friend Maurice, F5NRZ, who has a laboratory crammed with test equipment, and by my visit to Bill Carver, W7AAZ, I began saving money to acquire some second-hand test equipment in order to 'see and check' what I am doing, reducing guesswork. The first modifications that I applied to factory-made transceivers were done using only a meter and oscilloscope; later, as a second step, a home made two-tone generator (a very nice one having the possibility of testing at 20 and 10kHz spacing, output -10dBm). Now, I have acquired, thanks to Maurice, an HP141T spectrum generator, and also not one but two HP8640. 'Life' here is very different.

"I decided to review again the third mixer modification to my IC-751, this time using a FST3125. Every experimental change made to the number of turns on the transformers was a headache. To find the optimum solution it was necessary to rewind each of the three transformers, each time. In particular, the two transformers with their primaries in parallel, were always different. It was then that I decided to try the experiment of replacing these two transformers with a single transformer, with five windings. The use of a single core should provide similar characteristics.

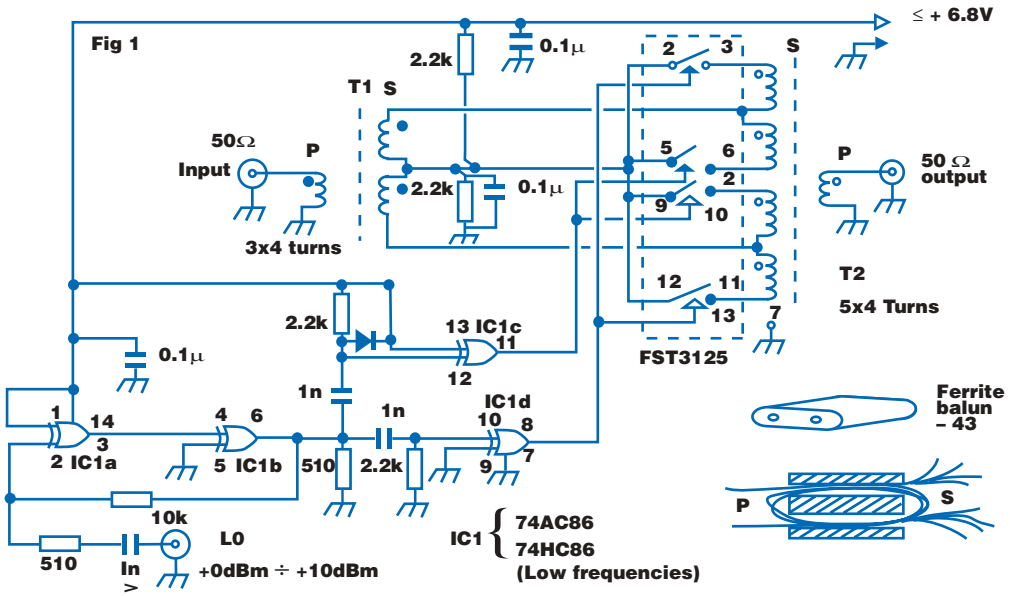

Fig 1: Circuit diagram of the I7SWX two-transformer H-mode mixer.

Topics

"Initially, this proved a nightmare. Mixer attenuation was so high and so variable that I nearly gave up. Finally, I decided to make the now two transformers with the same number of turns. The magic number of turns was four. With this number the results were very positive and up to expectations. I compared the two mixers, the classic H-mode with three transformers with the new, simplified one with two transformers. The simplified version has an attenuation about 1dB higher than the G3SBI mixer. I would claim 6dB attenuation (measured at approximately 5.5dB). The bandwidth seems a little narrower, but certainly nothing to worry about.

"I have completed the replacement of the third mixer with the simplified version in my IC-751 with good results and showing quite a difference with the previous one using a classic H-mode with a 74HC4066, both in respect of attenuation and IP3.

"I have also carried out additional tests on the basic simplified mixer, with inputs ranging from less than 2MHz to 52MHz, testing this range at IFs of 10, 21, 46 and 70MHz. Mixer attenuation was around 5 - 6dB. At 70MHz, output attenuation increases by about 1dB or maybe a little more - possibly due to the switching speed limits of the FST3125 gates. The input – output bandwidth of the FST3125 is over 300MHz. I even tested the mixer with an input of 146MHz, but the attenuation was some 20dB! Also, a quick test at 460kHz (MF) with IF 10MHz (attenuation 8dB) and at 46MHz (attenuation equal to or a little less than 9dB).

"It is thus possible to claim that the H-mode mixer, even with two transformers, is good from MW up to 50MHz input. The circuit diagram of this simplified mixer is shown in Fig 1. This shows that the 74AC86 is quite different from the original mixer presented in 'TT', September 1998. There is no balancing adjustment. Only two XOR gates work in the linear band and amplify the local oscillator or VFO signal (0 to +10dBm). The remaining two gates are driven through a capacitor. This circuit gives two complementary outputs quite symmetrical from low frequencies up to 100MHz. The diode, connected between the input of the XOR gate with the resistor connected to +Vc, is there to clamp the AC signal. I blew several 74VHC, while the 74AC86 presented no problems. Another advantage of this circuit is that, due to having only two gates polarised linearly, there is no excessive heating of the chip when the input local oscillator signal is absent. The transformers use ferrite balun cores type 43 (a gift from W7AAZ). The windings are made using a sewing needle. The wires are not twisted together, as normally done; this reduces capacitance and inductance leakage between windings.

"I should mention that the possibility of using a special five-winding transformer was mentioned by Colin Horrabin, G3SBI, in his original notes on the H-mode mixer based on the SD5000 ('TT' October 1993 or *TTS1990-1994*, p231). He then reported 'It is possible that a special five-winding transformer might give even better results, but so far the intercept points achieved with a home-made transformer have been unsatisfactory, it is probably a question of having the right ferrite material'.

"I have sent one of the new simplified H-mode mixers to a good friend for proper testing – someone who is able to perform measurements to 0.1dB, but he is very busy and has yet to test the mixer. However, I am sure the two-transformer mixer will work out for many amateurs. There are no longer technical excuses for not using an H-mode mixer! I hope the H-mode mixer virus, in both solutions, will spread fast for the benefits of the amateur radio fraternity!"

Gian has been in touch with both Bill Carver, W7AAZ and Peter Rhodes, G3XJP. W7AAZ comments: "It is about time there is another big leap forward in simplicity and cost…", while G3XJP adds "This mixer is also being evaluated by G3XJP for use in PIC-A-STAR."

I7SWX has also provided details of just how he has incorporated the two-transformer H-mode mixer as the third-mixer in his IC-751, but I will hold over this material for possible use in 'TT' at a later date when space permits, or I could provide photocopies of the relevant material.

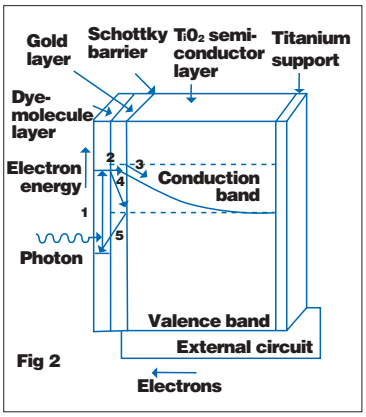

Fig 2

NEW TYPE OF SOLAR CELL

It is always debatable just when to include in 'TT' details of a new development that may not become available for workaday use for some years. But I find it irresistible to refer, if briefly, to a new form of photovoltaic device, announced recently in the prestigious *Nature* (February 6, 2003): both in a commentary 'Solar Cells to Dye For' by Michael Graetzel (pp586/7); and in a letter from the scientists responsible for its development: 'A Photovoltaic Device Structure Based on Internal Electron Emission', by Eric W McFarland & Jing Tang (University of California, Santa Barbara, pp616-8).

So far, the technique of producing electricity from sunlight has proved attractive for the charging of batteries but, in practice, photovoltaic cells have always been relatively expensive. However, there seems every chance that a promising new device, moving away from traditional silicon design will come to have an important role in the generation of electricity.

As Michael Graezel puts its: "Photovoltaic conversion of solar energy - from photons to electronics - has so far been dominated by solid-state devices, usually made of silicon and profiting from the expertise of the semiconductor industry. That dominance is now being challenged by new generations of photovoltaic cell… McFarland and Tang present an intriguing embodiment of a converter that is based on light harvesting by dye molecules on a metal surface. Contrary to expectation, their device shows strikingly high internal quantum efficiency for electric-current generation. The silicon used in most of today's solar cells must fulfil several tasks. It must absorb sunlight, converting photons into negative- and positive-charge carriers (electrons and holes, respectively); it must transmit an electric field to separate the electrons and holes; and it must then conduct these carriers to the current

Fig 2: Structure and conversion process of the new photovoltaic device described by McFarland and Tang in Nature. It offers the possibility of reducing the cost of solar electricity compared with the established silicon photovoltaic devices. Photons hitting the layer of dye molecules cause excitation (1). This results in electrons being injected into the gold layer (2). It is suggested that the electrons move ballistically across the thin gold film and over the Schottky barrier into the conduction band of the TiO2 layer (3). If instead electrons lose energy in the gold layer (becoming thermalised), they are no longer energetic enough to cross the Schottky barrier (4). It is claimed that an advantage of this device is that the photoexcited dye layer is automatically regenerated by electron donation from the gold film (5).

collectors. To achieve all this simultaneously, materials of very high purity are needed and, consequently, silicon-based solar cells are too costly to compete with conventional means of producing electric power. In contrast, the [new] device has a multi-layer structure that physically separates the processes of light absorption and charge-carrier transport (Fig 16)."

McFarland & Tang summarise their work as: "There has been an active search for cost-effective photovoltaic devices since the development of the first solar cells in the 1950s. In conventional solid-state solar cells, electron-hole pairs are created by light absorption in a semiconductor, with charge separation and collection accomplished under the influence of electric fields within the semiconductor. We report a multi-layer photovoltaic device structure in which photon absorption occurs instead in photoreceptors deposited on the surface of an ultra-thin metal semiconductor junction Schottky diode. Photo-excited electrons are transferred to the metal and travel ballistically to – and over - the Schottky barrier, so providing the photocurrent output... This alternative approach to photovoltaic energy conversion might provide the basis for durable low-cost solar cells using a variety of materials."

THE SMALL LOOP CONTROVERSY

Pity the poor columnist trying to reconcile two diametrically opposing views, each of which is argued on the basis of mathematics and measurement, simulated and practical. This is the quandary in which I find myself, dealing with the question of the radiation efficiency of very small transmitting loop antennas. On the one side is Professor Mike Underhill, G3LHZ, and his student Marc Harper who claim (*Electronic Letters* August 29, 2002, pp1006/7, see 'TT' December 2002, pp62/3): "Over the HF 1.7-30MHz frequency range, loops with diameters of 0.8–1.2m can have radiation efficiencies of no worse than 90%"; and that the series radiation resistance of small loops is some 1000 times greater than predicted by the classic formula given by Dr John D Kraus, W8XK, in *Antennas* (2nd Edition, McGraw Hill, 1988, pp250/1). If validated, G3LHZ's claims would be highly significant for amateurs using HF!

G3LHZ agrees that the Kraus formula, as given in his *EL* letter and reproduced in 'TT', contained a typographical error. It should have been $3.123 \times 10^4(n.A/\lambda^2)^2$ (where n is the number of turns in the loop, 1 for a single-turn loop) ie not A^2, but this does not affect the issue (see below).

On the other side are several correspondents, including professional antenna engineers, who believe that G3LHZ's claims fly in the face not only of classical theory, but also of common sense. If a 1m diameter loop has a radiation efficiency of better than 90% throughout the HF spectrum, why on earth has this not been recognised before? As given by Kraus, the loop-mode radiation resistance of a small loop is extremely low. Apart from increasing the percentage of power lost in the ohmic resistance of the loop, this will also increase the power losses in coupling the RF into the loop. Classic theory, supported by measurements, suggests that, in practice, the radiation efficiency of typical small amateur transmitting loops is somewhere between about 1 and 15%, with the efficiency rapidly decreasing at the lower frequency end of the loop's frequency range.

To some extent, G3LHZ still bases his high efficiencies on the fact that there are radiation modes other than the classical loop mode - for example, a small loop acts also as a folded dipole radiating in a dipole mode. At the 'IEE Conference on HF Radio Systems and Techniques, 2000', Alan Boswell, G3NOQ, a professional antenna engineer, concluded: "At the frequency at which the loop circumference is $\lambda/8$, the loop mode produces 11dB more radiated field than the folded-dipole mode. The latter becomes relatively more significant at the rate of 6dB per octave in the frequency range of interest."

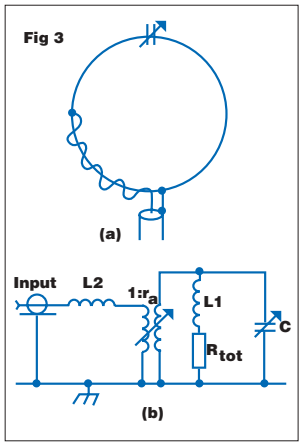

Fig 3: Diagram repeated for convenience from the December 2002 'TT'. (a) Typical loop configuration as investigated by G3LHZ. (b) Circuit model as proposed by G3LHZ. Rtot combines all radiation and loss resistances of the various modes. In general, each of these varies differently with frequency. For fuller details see Electronics Letters, 29 August 2002.

It can thus be accepted that the dipole mode becomes appreciably more significant for a given size of small loop as the frequency increases. G3LHZ has performed a valuable service in drawing attention to the minor radiation modes of small loops!

Following G3LHZ's comments in the November 'TT', G3NOQ raised the issue of how G3LHZ defines efficiency: "If G3LHZ has a personal definition of efficiency, as seems possible, his results obviously can't be faulted; but, in fact, there is a practical and close definition of 'radiation efficiency'. As published in IEEE-Std 145-1993 (the IEEE web site is at www.ieee.org) this definition is used professionally across the world. It is the total radiated power, divided by the power accepted at the antenna's input terminals. If the 'input terminals' means the 50Ω or 75Ω connector at the input to the ATU (where an in-line power meter could be connected), as is normally the case, then efficiency includes the antenna and the ATU, ie everything a systems engineer would call 'the antenna'." [G3LHZ appears to base efficiency on the power loss primarily on the temperature rise in the loop element – *G3VA*.]

G3NOQ continues: "It's my opinion that efficiency cannot be measured accurately without direct field-strength measurements over an adequate set of pattern points, and unfortunately Mike's letter in *EL* had none of these. I suggest Mike makes an honest estimate of his experimental errors, as every good scientist should. Computer codes like NEC often don't help with this problem because there is no accurate data available to quantify the losses, especially circuit losses in the ATU and eddy current losses. Claims that the Chu-Wheeler limit has been breached are a reliable pointer to dubious measurements and should ring the alarm bells.

"[Professional] HF loop antennas are available from suppliers in the UK, US and Europe, and they usually have an area of about 2 square metres, with built-in tuning for 3–30MHz or even 2–30MHz. These invariably possess reduced efficiency (on the official definition) at the low end of the band, and a figure of 1% is typical at 3MHz. Their automatic tuners with vacuum capacitors make them a little expensive.

"For amateur use, efficiency is not always that important as long as one can have some QSOs and generate some fun, so there is a place for all kinds of experimental antennas for people with reduced space (including CFAs?). It's different in applications above a few kilowatts, when energy costs become an issue, and then there is no room for low efficiency or unclear definitions."

In a further comment, G3NOQ writes: "I have re-read all three (1997, 2000, 2002) of Mike's IEE-published papers on loops... to see what measurements were made to support the conclusions drawn on radiation efficiency. My scan uncovered only one efficiency measurement in the three papers, for an 833mm diameter loop at the relatively high frequency of 14MHz (1997 paper) and given as 68% by the Wheeler Cap method. This looks reasonable when the dipole mode and possible feeder radiation are taken into account. The Chu formula predicts a minimum Q of 547 for the loop at 14MHz, and the measured Q of 250 quoted in the paper therefore indicates a maximum efficiency of 46% which is not very different.

"The problems with loops come at lower frequencies, because the radiation resistance reduces quickly with [lower] frequencies, so that the same antenna is probably 1% efficient or less at 3.5MHz, where the minimum Q predicted by Chu is 35,000 ignoring losses. In the three papers there are no efficiency measurements at the low end of the band, and so there is no visible evidence for the seemingly extravagant claim of 90% efficiency across the band.

"I think most antenna engineers would agree that the minimum requirement for measuring radiation efficiency is a power meter to measure the RF power going into the antenna, and a field strength meter to measure the power density over enough points in the radiated field region to determine the total radiated power. Mike is clearly hoping for ground-breaking discoveries and I wish him well, but his aggressive claims will come under a microscope. If he wishes to forestall criticism, my advice would be to get hold of the means to make direct and accurate efficiency measurements as soon as possible."

After I had drawn G3LHZ's attention to the typographical error (but not the comments by G3NOQ), he replied:

"This typographical error does not provide a valid challenge to the contention of 1000 times discrepancy. The 1000 times error still most emphatically stands. It is based on the discrepancy between Kraus's formula and the formula for the measured dominant loop mode. (There are always other loop and dipole modes that are obvious from the measurements that Marc Harper and I have made as the *EL* letter points out.) Our formula for the dominant loop mode is:

$$R_{loop} = 2\pi f L_1 \frac{D}{Q_{il}}$$

(from equations (4) and (5) in the *EL* letter).

"The example taken for comparison of these two formulae was a top-band single turn (n = 1) loop of D = 1m diameter and inductance of 1µH per metre of loop conductor length. (This inductance value holds true for a conductor tube diameter of approximately 6mm). At 150m wavelength (2MHz), we take the measured Q_{il} as 455 (between 300 to 600) as quoted in the *EL* letter and compute and compare the two formulae as follows:
Kraus:
$R_r = 3.8 \times 10^{-5}\Omega$ where $A = \pi D^2/4$;
Underhill-Harper:

$$R_{loop} = 2\pi f L_1 \frac{D}{Q_{il}} = 0.086\Omega$$

"The ratio of these is about 2300, corresponding to a discrepancy of about 33.6dB in these loss estimates! I hope that I have made my point. By the way, the typographical error would have made the ratio 3710 which corresponds to an error of about 35.7dB. My point is still well made in spite of the typographical error."

Personally, I find it hard to believe that the classic Kraus formula, which has been accepted for many years, can be out by a factor of 1000, let alone 2300, or that a 1.5m diameter loop can have a radiation efficiency of 90% at 2MHz, but I must leave it to others to find the flaw in the Underhill-Harper contentions or his methodology, if such exist. But I would remind Mike of the IEE Editorial on EMF Health effects ('TT' January 2003, p81): "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 …"

Some further information on larger transmitting loops including pyramid loops, fractal loops, circularly-polarised twisted loops, etc will have to be held over for the moment.

MORE ON GOLDEN ARROWS, NORWAY, etc

The February 'TT' item on wartime use of the 'Golden Arrow' mobile units, steam chargers and the trio of Norwegian brothers all of whom were clandestine radio-agents has attracted a number of comments, including some corrections.

First, Norleif Bjørneseth, LA9FG has sent along some of the photographs he took during his visit last November to the surviving brother, Olav Åsaether. The small 'Sweetheart' receiver that he took along was issued in large numbers to members of the Norwegian secret army (Company Linge) rather than radio-agents, but – as mentioned in February – has been claimed as the smallest receiver, consuming the least power, produced in quantity during WWII (see the photograph).

In respect of the model steam-engine chargers, Dave Williams, G3CCO, who, at the end of WWII, was in India instructing MI6 / SIS radio-agents destined for the jungles of Malaya, recalls that the steam generators were not as quiet running as I suggested in 'TT'. Agents were told to dig a hole in which to place the generator unit in order to muffle the sound.

Two letters were received from 'TT' readers who served with Golden Arrow mobile units in the Far East. Tony Timme, G3CWW (one-time VU2CW), was Section Sergeant of the 7M Golden Arrow section operating in Calcutta in 1946, taking traffic between GHQ in New Delhi and Eastern Command HQ (Calcutta), also at night relaying traffic from GHQ to another Golden Arrow section in Rangoon.

Ted Landon, G3MHT, recalls that there were at least three such sections deployed in Burma at the beginning of 1945, and was member of Section 25M that ploughed the trail from Calcutta to Rangoon by road and river at that time – and presumably was the section working to G3CWW's unit in Calcutta. He writes: "Great fun was had trying to load and off-load the vehicles on and off landing craft via muddy riverbanks – the monsoon had just started. Due to the high humidity and the all-pervasive 'green mould', there were many equipment failures when we finally arrived at Rangoon. Tropicalisation of components was not state-of-the-art in those days."

G3CCO points out that by 1945, the Americans were using a lot of RTTY in the Far East, somewhat slower than high-speed Morse but less labour-intensive.

G3CWW notes that the paper onto which the slip-readers transcribed the Creed undulator tapes was multiply machine-glazed (not 'duplicating') paper, interleaved with carbons so that multiple copies were produced from the Imperial pica Gothic typewriters – communications machines with small and large capitals, no lower case letters. The Marconi SWB-8 transmitter (colloquially Swab-8) operated at 6kW input and 3.5kW output maximum. The section also had a '33' set as an emergency transmitter. The moving-pen undulators carried the name Creed but were thought to be made by Muirhead with the speed variable to suit the operating speed. This varied between 80 and 120WPM, dependent on radio conditions. The RB-150 recording bridges were by Marconi. The widely-used GNT transmitting heads could operate from 20 – 200WPM. Continuous speeds of 150WPM were maintained on the fixed higher power main links using SWB-11E transmitters with 10kW output. The GNT heads transmitted from punched 'parchmentised' paper tape produced on Creed keyboard perforators.

All masts on the Golden Arrows were 72ft for both transmitting and receiving [possibly the 92ft masts mentioned in 'TT' were only for the original 'Blue Train' cable-company unit – G3VA]. Masts were sectional steel, carried slung beneath the two main trailer vehicles. The operating vehicle was fully air-conditions, primarily for the benefit of the equipment but much appreciated by the operators in hot and humid climates. In Calcutta, a 40-gallon oil drum was nearly filled with extracted water every 24 hours! One diesel generator powered the operating vehicle, the other the transmitter.

G3CWW provides information on the tasks, shifts etc of the Golden Arrows personnel, mentioning that the RAF also operated similar mobile sections during the European campaign known as 'Heavy W/T' sections. 7M remained in operation for some years, later as a unit of the Indian Army.

G3CWW originally operated VU2CW in one of the two 7M 3-tonners which, by then, had been converted into the instrument mechanic's workshop, the section sergeant's office (and his very first ham shack), using the spare CR100 receiver and remote-keying the 33 set as transmitter. After G3CWW returned to GHQ Signals in New Delhi, the section came under the command of John Bladon, now G3FDU; another Golden Arrow section in Indonesia had Ray Webb (G3EKL and currently a Vice-President of RSARS) as a senior NCO. ◆

Olav Åsaether who, at the end of WWII, was a clandestine radio-agent in Norway operating an SOE B2 suitcase transmitter-receiver. Both of his brothers operated a highly successful clandestine radio link with the UK from the Ålesund area over extended periods during 1942-45, see 'TT' February 2003 (or in more detail in 'TT' December 1996 or TTS 1995-99). On the right of the photo is a 'Sweetheart' miniature receiver (SOE Type 31/1) produced in large numbers for the Norwegian 'Company Linge' secret army. Photo taken in November 2002 by Norleif Bjørneseth, LA9FG.

By Steve White, G3ZVW, 31 Amberley Road, London N13 4BH.
E-mail: steve.white@rsgb.org.uk

Whatever next

Above: The 5U4 mains rectifier – a thermionic double-diode (see 'The Incredible Shrinking Diode').

Opposite: A semi-conductor diode.

Top right: A 'stratellite', designed to operate at 62,000ft (see 'Stratellite Technology'). This is a smaller version of one of the airships that will carry the equipment to provide 'Internet anywhere' coverage across the USA. At 79m (260ft) in diameter, the final versions will be the largest airships ever built.

The Cybiko is a small handheld computer that's just a little larger than a PDA. I first mentioned it in this column in December 2001. As KR1ST puts it on his web site, "The Cybiko looks like a toy and it works like a toy, so it's perfect for ham radio!" To prove the point he has written an application for it that is capable of receiving and transmitting messages using AX.25 UI frames. UI Messenger uses the UI / KISS Driver to exchange data with any KISS-mode TNC. When a message is received, a window pops up with the received message. Combined with a second Cybiko running UI Gate, you can create your own 900MHz wireless network.

There are two versions of the Cybiko available, the Classic and the Xtreme. The difference, besides looks, is that the Xtreme has a USB port whilst the Classic has a serial port. To connect a serial device you need the Classic version. These days Cybikos are available new from toy and mobile phone shops for as little as £30.

STRATELLITE TECHNOLOGY

In October 2001, I wrote about Airborne Relay Communication (ARC), a system intended to provide mobile phone coverage over a wide area of Brazil by employing directional antennas under a helium balloon tethered at 15,000ft. Now it looks as though some even higher-flying airships are about to appear, this time above the USA. They will be used to provide 'Internet anywhere' coverage.

If everything goes according to plan, Telesphere, in a joint venture with Sanswire Technologies Inc, will send 10 of 21st Century Airships' craft up to the stratosphere early in 2004, at a cost of about US $36m. By connecting to the company's 'National Wireless Network', subscribers will then be able to access the Internet at high-speed from anywhere in the continental USA, plus parts of Canada and Mexico.

The airships which are to carry the equipment look very different. As the photo shows, they are spherical rather then cigar-shaped. These revolutionary craft are amphibious, finless, have no external gondola, and are claimed to be highly manoeuvrable. Employing a hybrid system of solar cells and a VW diesel engine, the large slow-turning propellers result in a low noise profile.

From their intended operating altitude of 62,000ft, which is well above the weather and any commercial airline traffic, the footprint of each 'stratellite' will be 670 miles across. They are intended to stay aloft for a year at a time.

SINGLE-MOLECULE DIODE

Two physicists have succeeded in producing a P-N junction diode from a single molecule. It measures 2.5nm in diameter. The people responsible are Man-Kit Ng, a Chemistry PhD, and Luping Yu, a professor of Chemistry. Both work at the University of Chicago.

Reginald Penner, Professor of Chemistry at the University of California – Irvine, has said of the project "There has been a tremendous amount of hyperbole surrounding this area of molecular electronics, but Professor Yu's advance is nothing less than a quantum leap forward in molecular electronics," adding "Professor Yu has developed diblock co-polymer-based molecular diodes. Essentially, he has shown that the important electronic properties of this circuit element can be engineered into a single polymer molecule." Making the diode required a multi-step process that involved the creation of two different compounds that display opposite electronic properties, then chemically bonding them together (the diblock co-polymer). The compounds, which are mostly hydrocarbon, are embedded in a 'monolayer', which is a sheet of material one molecule thick. The sheets are then transferred to a gold platform, where a scanning tunnelling microscope measures the properties of the diodes. After developing the process for more than six months, Ng and Yu now say they can mass-produce molecular diodes with relative ease.

Since a transistor is basically two diodes back-to-back, the single-molecule diode leads the way to the two-molecule transistor. However, for the moment, the problem of making connections to and between single-molecule semiconductor devices is still to be solved.

THE INCREDIBLE SHRINKING DIODE

In the beginning there was the thermionic diode. Large (around 5in high), hot and with a limited life span, devices such as the 5U4 mains rectifier in the photograph were the workhorse rectifiers of equipment in the 1940s.

Then came semiconductors, and by the 1970s diodes such as the 1N4007 in the photograph were capable of the same function, but had shrunk to millimetres in length. Moreover, they rarely needed replacing.

Now there is the single-molecule diode. At 2.5nm in diameter it is far too small to picture, but if you imagine an A4 sheet of paper scaled-up so that the diode is 2.5mm in diameter, the paper would be 210km x 297km (62,370km^2), three times the size of Wales.◆

WEB SEARCH

UI Messenger for Cybiko	www.kr1st.com/cybiko.htm
Stratellites	www.thestar.ca/NASApp/cs/ContentServer?pagename=thestar/Layout/Article_Type1&c=Article&cid=1035775623359&call_pageid=968350072197&col=969048863851
Single molecule diode	www.nanoelectronicsplanet.com/nanochannels/research/article/0,4028,10497_1474851,00.html

BOOK CHOICE

Radio Communication Handbook

First published in 1938, the *Radio Communication Handbook* has always been one of the world's largest and most comprehensive guides to the theory and practice of amateur radio communication. Since the sixth edition, progress in electronics has been such that all chapters have needed updating, and many have been completely re-written. Extensive changes have been made to the following chapters: Building blocks, HF transmitters and transceivers; VHF/UHF receivers, transmitters and transceivers; Power supplies; Construction and workshop practice; and Data communications. These all incorporate new circuits, techniques and practices. For example, the new data mode, PSK31, described in chapter 21.

The new LF bands at 73 and 136kHz (wavelengths of 4.1 and 2.2km respectively!) are comprehensively covered in a new chapter which emphasises the experimental nature of low (ERP) power operating in this part of the spectrum. Despite the increasing miniaturisation of components, such as surface mount devices, and the reduction in the real cost of imported commercial transceivers, the art of construction is still very much alive in amateur radio. Although difficult to handle because of their small size, surface mount devices are essential for microwave transmitters and receivers, and Chapter 10 gives some up-to-date designs for these.

We have employed experts in their individual subjects to write each chapter. This book is an invaluable reference for radio amateurs everywhere. It also provides a comprehensive guide to practical radio, from LF to the GHz bands, for professionals and students alike.

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This edition reflects the revolution, with many references to web pages - even to its own page at the RSGB web site!. It also includes for the first time advice on organising a DXpedition, which will be of great interest to those contemplating operation abroad.

More specialised topics such as data communications, mobile operation, television and talk-in stations are included, and the book features a comprehensive set of operating aids and reference information.

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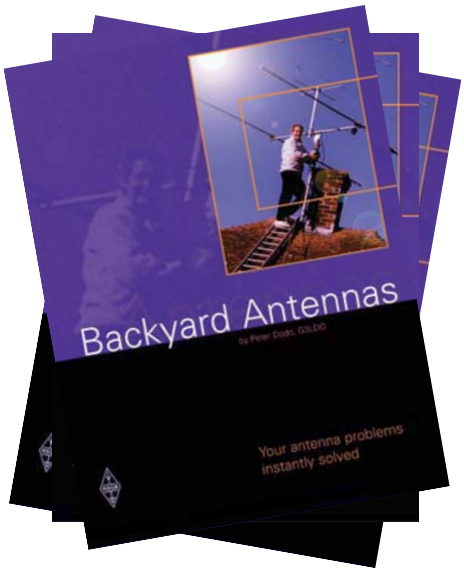

Backyard Antennas

Radio amateurs and short-wave listeners all want to achieve the very best from their HF and VHF equipment. Receivers and transmitters are available to professional standards, but very few people have the real estate to erect the sort of antenna used by a commercial radio station.

The objective of this book is to provide practical amateur radio antenna designs to overcome site (usually size) restrictions. It also discusses methods of obtaining the good antenna efficiency and effectiveness from restricted site and restricted size antennas. For the purpose of this book Peter Dodd has defined a restricted site as one in which it is not practicable to erect a 12m high lattice tower with a multi-band three-element beam. Site size may not be the only criterion - planning restrictions also play their part.

This book is not a comprehensive book about antennas. The number of different antennas described is limited to those whose performance is well known and whose construction is relatively easy.

Antenna guru Peter Dodd explains how, by using a variety of simple techniques, it is possible to achieve very high performance from a compact antenna. Also detailed is how to make an antenna efficient on several bands at once.

The book covers end-fed and centre-fed antennas, rotary beams, loops, tuning units, VHF/UHF antennas, antenna and mast construction, transmission lines, and how to estimate and measure the performance of your antenna.

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All these books can be purchased from the RSGB shop on www.rsgb.org/shop or tel: 0870 904 7373

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

In practice

WHAT'S THE FREQUENCY?

Q *What does my transceiver's digital frequency readout mean on packet, RTTY and other digital modes?*

A This continues the description of frequency readouts from the February column. The meaning of 'the frequency' for digital modes may vary, because there are two different ways of generating the signals.

Probably the most common method for generating digital transmission modes is to inject a frequency- and/or phase-shift-keyed audio signal into the transceiver's microphone socket, or an equivalent audio input on the rear panel. According to the mode and the hardware, the audio may come from either a dedicated data terminal or packet TNC (terminal node controller) or – increasingly – from software driving a PC sound card. This audio 'keying' method is universally used for VHF / UHF packet, which uses the transceiver's FM mode. The mode, as defined in BR68, is F2B for RTTY / AMTOR [1] or F2D for packet / data. You're simply sending audio over an FM radio link, so 'the frequency' is that of the carrier before any frequency-modulation is applied, just as it is with voice FM (F3E) – see the February column.

On the HF bands, digital transmissions can also be generated by injecting keyed audio into the transceiver - but with the important difference that the transceiver is in SSB mode. Recall that if you inject a pure sine-wave audio signal into an SSB transmitter, the output will be a pure RF carrier. As shown in **Fig 1**, the transmitted frequency will be offset from the suppressed carrier point, and thus it will vary with the tone modulation. February's Fig 3 shows how this applies to voice modulation, and digital data is just another complex audio signal. The transmission mode is called J2B for RTTY/AMTOR, or J2D for packet/data. The pitch of the received signal now depends on the tuning of the receiver (as in February's Fig 4), so accurate receiver tuning is vital. On both transmit and receive, your transceiver is in SSB mode, so the transceiver continues to display the 'carrier point' frequency as explained in February.

However, the classic way to generate frequency-shift keying (FSK) is simply to generate a continuous carrier (CW) and shift its frequency. The transmission mode is then F1B for RTTY/AMTOR, or F1D for packet/data, and many transceivers have a rear-panel FSK input which keys the frequency synthesiser directly. RTTY simply shifts back and forth between two frequencies; by convention the higher of the pair is called *mark* and the lower is called *space*. *Mark* is the frequency produced when the direct FSK input is un-keyed (or disconnected), and by convention this defines 'the frequency' for RTTY/AMTOR. Any modern HF rig that has a dedicated direct-FSK mode for F1B RTTY/AMTOR should automatically display the *mark* frequency; and the display should not change when the frequency shifts to *space*. Although this definition of 'the frequency' is based on direct FSK, it applies regardless of the way the signal is actually generated – because at the receiving end there should be no detectable difference between F1B and J2B [2].

This means a certain amount of calculation if you use J2B and want to pre-tune to an exact nominal frequency. For example, how would you generate HF RTTY / AMTOR using audio tones (J2B) with a 14080.000kHz *mark* frequency? The default audio tones are 2125Hz *mark* and 2295Hz *space* (for 170Hz shift). Note that the *mark* audio tone is lower than the *space* tone, but you will need to transmit the RF carrier frequencies 'the other way up' with *mark* being the higher of the pair. This is easily done by setting your transceiver to LSB. To transmit the *mark* tone at exactly 14080.000kHz, you will need to set the transceiver's frequency display, ie the carrier point, to (14080.000 + 2.125) = 14082.125kHz. This will bring the *space* tone out correctly at (14082.125 – 2.295) = 14799.830kHz. As a check, note that *space* has been shifted down from 14080kHz by the correct value of 170Hz. **Fig 2** shows what you have done.

Technical Editor George Brown adds: "Any pair of tones can be used as audio input in J2B mode, provided that they are 170Hz apart. I prefer the alternative frequencies of 1275Hz *space* and 1445Hz *mark*, as I find them much less wearing to listen to during extended contest operation. These lower frequencies are also easier to tune by ear, to within about 5Hz. In this case it is especially important to control the drive level [2] because harmonics of these lower tones can appear within the transmitted audio bandwidth, if care is not taken. Also, because I don't like switching between USB and LSB when changing modes on the higher bands, I leave the transmitter in USB and make the 1445Hz tone the *mark* frequency on USB by activating 'Reverse' on the software setup. I know I'm not alone in preferring the lower tone pair and USB."

HF packet can similarly be generated by either direct FSK (F1D) or by injecting audio into an SSB transmitter (J2D), and there should be no detectable difference between these two modes at the receiving end [2]. However, unlike RTTY / AMTOR, 'the frequency' for packet is defined as being mid-way between the frequencies of the two transmitted tones. Once again, any modern HF rig that has a specific Packet-FSK mode (F1D) should automatically display that mid-way frequency. The calculation for J2D is similar to the one above, except that you should use the mid-point between to the two audio tone frequencies (ie the average).

Newer digital modes in amateur radio are almost invariably computer-generated as audio tones for input to the transceiver. Everyone's transceiver is switched to either FM for local VHF/UHF working, or to SSB

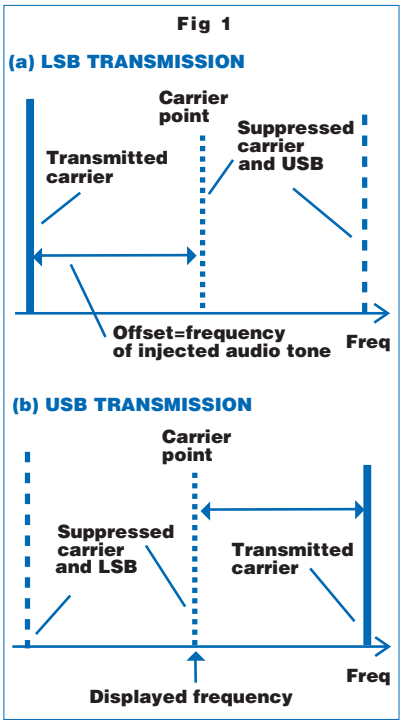

Fig 1: Generating a carrier by injecting an audio tone into an SSB transmitter. This audio input can then be modulated to create a complex data signal (J2B or J2D).

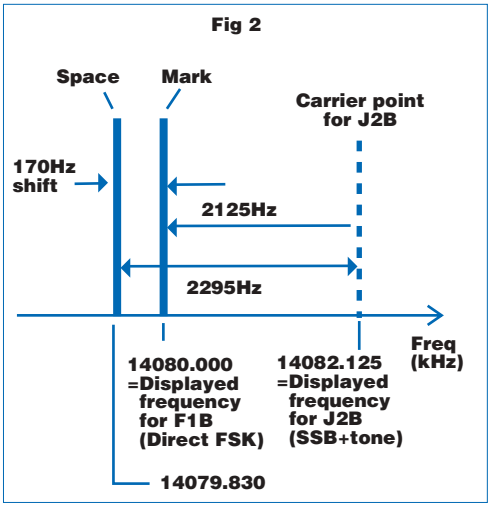

Fig 2: The two different ways of generating HF RTTY & AMTOR. Most transceivers that support direct FSK (F1B) will display the mark frequency, in this case 14080kHz. For J2B (SSB + audio tones) the displayed frequency must be offset HF by the frequency of the mark tone.

for HF and for VHF DX, so there is no ambiguity between QSO partners about the meaning of 'the frequency'. But when using tone-SSB transmission, always remember that the frequencies you're occupying on the air will actually be either above or below the carrier-point frequency displayed by your transceiver.

That raises a final question: how much does all this matter? As a point of principle, I hope it matters to you that you understand what you're doing with your transceiver. However, in practice it often won't matter much, especially if you only ever tune around for other people's signals. But sometimes accurate frequency setting does matter: for example, if you're close to the edges of the sub-band for the mode that you're using; if you're trying to squeeze in accurately between the signals of other users; or if you've made a sked and you need to appear exactly on an agreed frequency. These last two points apply very much on 136kHz, where high accuracy is needed to fit exactly between spectral lines caused by sidebands of the Loran navigation transmission around 100kHz, and you may also be using extreme weak-signal modes that don't allow you to tweak the tuning by ear. Something similar applies to VHF weak-signal operation using digital modes like WSJT-JT44 (a form of FSK using multiple frequencies); or to meteor-scatter where there is no signal until a meteor trail comes along. Many of these modes have facilities for coping with small frequency errors, but everything always goes better if you're on the right frequency.

NOTES AND REFERENCES

1. AMTOR uses the same frequency-shift keying system as RTTY, but with different encoding designed for computerised error correction. For further details of HF digital modes, see the *HF Digital Handbook* (ARRL) and G4JNT's regular 'Data' column.
2. An F1B signal is simply a pure carrier shifted between two discrete frequencies (with minor transients which can be minimised by maintaining phase continuity during the shift). If a J2B signal has sufficient carrier suppression and is free from distortion, it should be completely indistinguishable from F1B at the receiving end. If you use J2B, it's your responsibility to make it so. Similarly, if you use J2D for HF packet, it's your responsibility to make it sound just like F1D. Carrier suppression is usually excellent on modern SSB rigs, but it's your responsibility to keep the audio drive level down to avoid distortion which generates harmonic tones.

CROWBAR MODIFICATION

K8KK e-mailed to point out a useful addition to January's crowbar circuit.

If the load connected to the power supply contains a large capacitor, there will be a significant reverse current flow out of the load when the thyristor crowbar fires, and this may damage the pass transistors (TR1a-d in January's Fig 1). That is, of course, assuming that the power transistors had not failed already – something must have triggered the crowbar, and failure of one or more pass transistors is a very likely cause. Even so, any further damage can be prevented by adding the protective diode, D1, between points B and C as shown in **Fig 3**. In normal operation this diode is reverse-biased, so it only comes into play if the output is driven positive by an external source. When D1 conducts, the output of the power supply (point C) is effectively clamped close to ground by the thyristor, TH1. Just about any 3A or 6A rectifier diode will do the job.

However, there is still another snag, because we are assuming that the load contains only a capacitor, which will be discharged by D1 and TH1 within a few moments. But if the power supply was being used to charge a battery, those components will become almost a direct short, with very nasty consequences. The obvious solution is: never use a variable power supply to charge a battery - it's not meant for that job! Or, more practically, never do it without an external protective diode between the output of the supply and the positive terminal of the battery, so that current can only ever flow *into* the battery.

SEND AND LISTEN

Q *What is 'break-in' on CW?*

A All modern transceivers will automatically change to transmit when you press the Morse key, and automatically return to receive after a certain delay. The difference between 'semi-break-in' and 'full break-in' lies in the length of this delay. Semi-break-in is the normal mode for CW ragchewing - you set the delay so that the transceiver stays locked in transmit until you make a significant pause. When the key is up, you're still in transmit mode and the receiver remains dead. 'Full break-in' is different: it switches back to receive between individual dots and dashes, so the other station can break in to interrupt you at any time. **Fig 4** shows the difference.

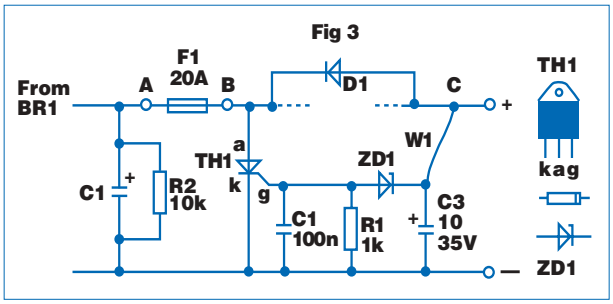

Fig 3: Modification to January's thyristor crowbar, to prevent damage from discharging capacitors in the load.

The glory days of full break-in were in CW traffic nets handling long messages, where a receiving station could instantly ask for a repeat of the bit they'd just missed; but this kind of operation has never been a feature of amateur radio in the UK.

Full break-in is favoured by some DXers, contesters and advanced CW ragchewers because you're not totally deaf while transmitting, and can have much more awareness of what's going on. For example, when trying to crack a pileup for some rare DX, full break-in lets you hear immediately if the DX goes back to someone else (so any further transmission on your part would be useless). More importantly, you also have more time to try to find the station he replied to instead of yourself, and a better opportunity to judge your next call.

If full break-in is going to be a priority for your next transceiver, be careful! Most new transceivers have both full and semi-break-in, but you need to check older or entry-level models much more carefully - they may only have semi-break-in. Also be aware that some transceivers implement break-in much better than others. When you first press the key, the automatic changeover to transmit will clip some time off the leading edge of the first character transmitted. On semi-break-in this affects only the first character of the whole transmission; but on full break-in it affects every character, can turn high-speed Morse into gibberish. From the viewpoint of receiving, some transceivers implement full break-in very smoothly, with quiet and clean transitions between hearing transmitter sidetone and received signals; this is very important to avoid operator fatigue. But other transceivers have clicks and thumps that paralyse the receiver and make the full break-in facility quite useless. Do check Peter Hart's equipment reviews for details of individual models. ◆

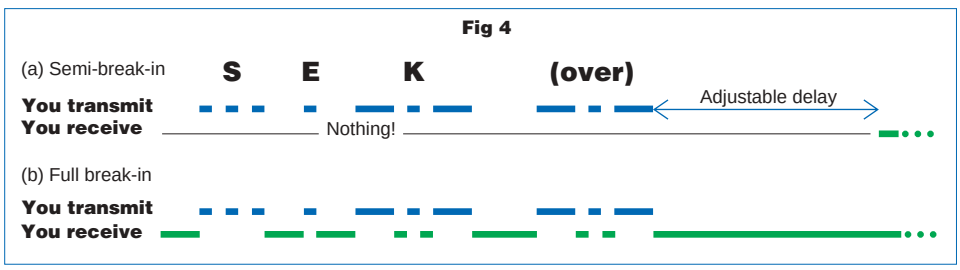

Fig 4: Full break-in CW gives you much more awareness of what is happening while you are transmitting.

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ANTENNAS

I occasionally receive letters where the writer expresses the impossibility of operating on the lower frequency bands because of having a very small, or even no, garden in which to put up the ubiquitous G5RV. If you think about it, one of the most restricted sites you can have is a mobile one. Not only does the antenna have to be small but it also had to be fairly rugged. These sorts of restrictions do not stop radio amateurs operating /M.

With this in mind I tried my 'Texas Bugcatcher' mobile antenna as a fixed antenna by mounting it on a ledge above the bedroom window and using the central heating system as an RF ground. It worked fairly well on 80m, although the SWR bandwidth was rather narrow. This is understandable because on the lower HF bands a mobile antenna is small in terms of wavelength. If you are limited with space at your QTH and your interest is the lower frequencies what is the best antenna configuration?

(1) The top loading coil showing its construction and method of connecting to the top capacity section and the vertical radiator. This is actually the 40m version but the construction is the same as for the 80m version. (2) The 80m vertical, built by IK5PWN to the I5TGC design, with the 3.5m-long vertical radiator, a top capacity section, a top loading coil and two lower capacity frames. (3) The tuning and matching coil with 20 turns tapped at 15 turns. The two-turn coupling link can be moved up or down the coil former rods for optimum coupling adjustment. The remote tuning is achieved using an aluminium disk, which is moved along the axis of the coil by means of a threaded PVC rod, driven by a small motor and reduction gear. (4) The antennas of Cesare Tagliabue, I5TGC, on his rooftop in Florence.

THE I5TGC ANTENNAS

On 3 March 2000, I had a two-way QSO on 136kHz with Cesare Tagliabue, I5TGC. Later, I received a QSL card with a photo of his QTH and antenna. I was surprised to see that the antenna was confined to the roof area of his house, which is located in a suburban area of Florence. Cesare tells me that his 136kHz antenna is derived from earlier designs for the 40, 80 and 160m bands and he has kindly supplied me with diagrams, photos and notes. The most interesting aspect of these antennas is that (apart from the 136kHz version) they are vertical dipoles and do not require any RF grounding. From these designs I have selected information on the 80m antenna, which I trust you will find interesting. I hope to give further details of I5TGC's antennas in later 'Antennas' columns.

VERTICAL DIPOLE FOR 3.5MHz

This antenna was originally designed and built in 1993 [1]. The example shown in photo 1 was built by IK5PWN and is made up using a 3.5m long vertical radiator, a top capacity spherical frame, a top loading coil and two lower capacity frames. A tuning and matching coil is used to tune the antenna and couple the antenna to the feeder.

The top capacity sphere comprises an open frame made from four 800mm diameter loops of aluminium tube. This is fixed to a short insulated section above the top loading coil. This coil has seven turns wound as a flat spiral with an inner diameter of 380mm and an outer one of 560mm as shown in photo 2. The outside of this coil is connected to the top capacity section and the inside to the vertical radiator.

The bottom end of the vertical radiator is connected to the bottom end of the tuning and matching coil, while the top end is connected to the two lower capacity frames, as shown in photo 1. Each of these frames is 600 x 1500mm and constructed from aluminium tube. The tuning and matching coil is 170mm in diameter and has 20 turns of 4mm aluminium wire spaced at 8mm (see photo 3). This is a greater inductance than required and coil taps are used for coarse tuning. The coil is coupled to the feeder with a two-turn link with a mechanical arrangement to allow for coupling adjustment.

The band of 3.5MHz is fairly wide, so the antennas has a remote tuning facility. This consists of an aluminium disk, which can move along the axis of the coil by means of a threaded PVC rod, driven by a small motor and reduction gear. Both coils are supported using 15mm diameter MOPLEN rods drilled with 4.5mm holes.

So how well does it work? An analysis of QSOs made by IK5PWN during the years 1993–96, using the I5TGC design, is shown in Table 1. This is an excellent way of assessing the performance of an antenna. IK5PWN has also built a 160m version – but that is another story.

REFERENCE

[1] Described in *RadioRivista*, (official magazine of ARI, the Italian national amateur radio society), October 1996. ◆

Total number of QSOs	1261
Number of stations	1122
Number of countries	120
Number of zones	27
Average signal reports	R4.95, S 9+2dB
Maximum signal reports	R5, S 9+40dB
Asia: AP, A4, A7, A9, DU, HL, JA, JY, OD, TA, UA9, UJ8, UM9, V8, XU, XY, ZC4, 4S, 4Z, 5B, 9K, 9V	
Average signal reports	R4.89, S6.87
Maximum signal reports	R5, S9+10dB
Africa: C5, EL, J2, TU, 3V, 5N, 5T, 7X, 9G	
Average signal reports	R 4.9 S 8.26
Maximum signal reports	R5 S9+20dB
Americas: CO, FG, FM, HH, HI, HJ, KP4, LU, PY, PZ, TI, VE, VP2, VP5, VP9, W, XE, YV, ZP, 8R, 9Y	
Average signal reports	R4.84, S7.56
Maximum signal reports	R5, S9+20dB
Oceania:	VK, ZL
Average signal reports	R5, S7.25
Maximum signal reports	R5, S9

Table 1: From the digital log of IK5PWN, the 80m band during the period from October 93 to January 1996. The signal reports indicate how DX stations received signals from IK5PWN and exclude Europe or meaningless contest reports.

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DATA

Alan Bain, M5AIQ / AE6AQe-mailed to say "In the December *RadCom* you mentioned the use of old machines running MS-DOS and the difficulties of getting hold of it. There are two projects around called *FreeDos* and *C-DOS* (www.freedos.org) which aim to have to produced a completely free *MS-DOS*-compatible OS. This sounds just the thing to use on such old shack PCs without running foul of Microsoft Licence agreements."

After February's column, Tim Booth, G4YTD, commented "Just read the February issue of *RadCom* and your comments about Internet clock setting for accurate time keeping purposes. I use the *Windows XP* operating system. If you double-click the current time that sits in the task bar, the clock set window appears. The third tab is the Internet time-set menu; open this tab, check the 'automatically sync with an Internet time server' box, choose your preference and away you go. This also schedules a daily synchronisation if asked. Hope this helps."

Tim also goes on to ask "Do you know how to install a second sound card for use with data modes? I know it can be done with *MMTTY*, and *MMSSTV*. I use *Digipan* for PSK modes, and I think it uses the windows default settings for direction to the sound card. This works well, but means I have to disconnect one speaker to plug in the interface box. Any ideas?"

I have seen somewhere in one of the many manuals that come with PCs that it is possible to install more than one sound card, but don't know anyone who has tried this.

WATCHDOG TIMER FOR COMPUTER CONTROL OF TRANSMITTERS

Using a PC to control transmit / receive switching, such as is usual for most data mode software, means there can be a remote possibility that a computer crash or software malfunction could leave the transceiver in 'transmit' indefinitely. The solution is then to reboot the computer, remove the interface connector or switch off the power to the rig. More commonly though, some other programme may be started that takes control of the serial port while it is still connected to the transceiver. With many modern rigs, the only indication that it in transmit is a tiny LED that can easily go unnoticed, particularly if no RF is actually being generated to give an indication on the power or SWR meters due to the lack of any audio drive.

Most data mode software interfaces to the PTT line by making use of one of the handshaking lines on the serial (or COM) port: Data Terminal Ready (DTR) or Request to Send (RTS) appear on pins 4 and 7 respectively of the nine-pin PC RS-232 connector. The circuit in Fig 1 is for a watchdog timer to replace the normal interface circuit. During normal operation, it passes the DTR / RTS state straight though to the transistor controlling the PTT line. However, after approximately four minutes of transmitting the PTT line is released and the LED lights up to show an error, or 'timeout' condition. The 74HC14 has Schmitt trigger inputs and the time delay is generated as C2 charges until the voltage on pin 11 drops below the gate threshold point.

The circuit is self-powered via a diode and Zener diode combination, making use of the fact that the RS-232 line can quite easily deliver several milliamps of current. For a longer timeout period, the value of the 470µF capacitor can be increased, although new, 25V-working devices should be used to keep leakage current as low as possible. By increasing the value of the 1MΩ resistor also, longer timeout periods can be achieved. The 470Ω resistor ensures a rapid discharge of the timing capacitor when returning to receive. The LED needs to be an ultra-high brightness type, because only a couple of milliamps can be spared to operate it without overloading the RS-232 line too much.

METEOR SCATTER SIGNALLING PROTOCOL

Having now defined the signalling waveform, we now need to look at a protocol for exploiting the short duration bursts, or path openings, which may last for only a few hundreds of milliseconds. There are basically two ways of exploiting this.

Method 1 is to send probe signals continuously from the originating station, (station A) when it requires to send some data, and for the destination (station B) to look for these probes and transmit back when one is successfully detected. When the acknowledgement from B is received at A, data can be transmitted from A in packets with added coding for error detection. Station B decodes each packet and sends back an acknowledgement with the success or failure of the decoding process. In the event of failure, the packet is resent, otherwise the next packet of data is sent in the same way. Theoretically, the packet length can be nearly as long as the complete meteor burst, provided each burst can be detected quickly enough by the probe signal.

Method 2 does not use a probe to check channel availability, but repeatedly transmits a data packet until an acknowledgement is heard that is has been successfully decoded, whereupon the next packet is sent. This is the fundamental principle behind normal packet radio. Packets will need to be shorter than for Method 1 as each is, in effect, carrying a probe signal

We also know that, once a meteor burst has occurred, a good quality communications link will exist for a short period, and we need to exploit this as much as possible and must waste no time when an opening has been detected. Unless a full-duplex link is available (which changes the rules!), switching from transmit to receive and vice versa will take a few tens of milliseconds out of each packet / acknowledgement cycle. Method 1 makes better use of the short duration openings because, once a probe has been detected and acknowledged, we know the channel will remain open for a period, and we waste less time on the Tx / Rx switching. Furthermore, the probe signal can be designed to allow station B to measure the signal quality, and choose the modulation format accordingly – remember that we left open the choice of BPSK or QPSK. It may also be possible to build up statistics of the meteor activity at any time and adjust the packet length accordingly. ◆

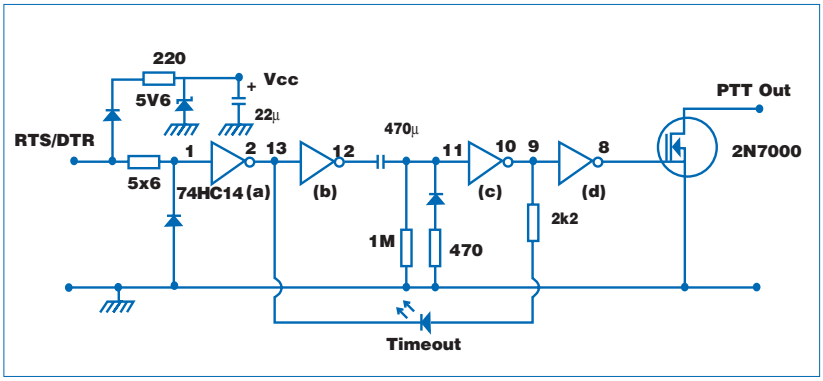

Fig 1: Circuit diagram of a watchdog timer for preventing transceivers from becoming latched in transmit in the event of COM port or computer failure.

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EMC

This month's 'EMC' column contains important information for anyone who plans to install amateur radio equipment in a car.

SWISS PLT KAPUT?

An article appeared in the *Neue Züricher Zeitung*, 29 Jan 2003, about the Swiss company Ascom, a leading supplier of Power Line Telecommunications equipment (see Websearch.). The headline can be translated as "Things are getting a bit tight for Ascom: 500 more redundancies – withdrawal from Power Line Communications".

The main points in the Swiss article are that Ascom will use Power Line Communications only as a technology partner; there will be no more technology development. This means a symbolic 'loosening' from Power Line Communications – a partnership which, four years ago, was hailed as a revolutionary technical breakthrough; now it is seen as a business failure of large proportions.

NEW AUTOMOTIVE EMC REGULATIONS

New UK regulations which came into force on 1 Oct 2002 apply to the installation of radio transmitters in most passenger cars made after 1 Jan 1996. They do not apply to cars made before 1 Jan 1996 or to models that were type-approved before 1 Jan 1996 but continued in production after 1 Jan 1996.

The regulations cover the fitting of Electrical/Electronic Sub-Assemblies (ESAs). These include all radio equipment including amateur radio transceivers although there are certain provisions described below. The regulations relate to the 'e-marking' of ESAs, which is not the same as a CE mark. An e-mark is an approval mark related to vehicles. Many non-electrical vehicle components and assemblies including window glass and seat belts have been e-marked for many years.

The new regulations relate to the European Automotive Directive 95/54/EC, which was originally brought into effect in the UK by Statutory Instrument SI 1996 No 2329. Another SI amends those changes, SI 2002 No 2126, 'The Road Vehicles (Construction and Use) (Amendment) (No. 3) Regulations 2002'.

Right: Mobile transceivers should use an external aerial located in accordance with manufacturer's recommendations and be properly grounded to the car body shell, like the one in the foreground, not like the 'mag-mount' in the background.

Amended regulation 60(1C) of the Road Vehicle Construction and Use Regulations 1986 covers the electromagnetic compatibility of electrical or electronic equipment fitted to passenger cars (motor cars with nine or fewer seats) after first registration.

It appeared from the wording of the 1996 regulation that it would apply to all ESAs installed after 1 Oct 2002. This would have included existing equipment moved from a used vehicle into a new or another used vehicle, but this is not the case as the 1996 regulation has been amended. The Department for Transport (DfT) received representations from various users of mobile radio equipment including emergency services and users of Private Business Radio (PBR). After consultation with interested parties, the DfT amended the 1996 regulation before it came into force.

The DfT Vehicle Standards and Engineering Branch 4 has produced a guidance note, *Electromagnetic Compatibility (EMC) in Vehicles – Directive 95/54/EC in the UK*. At the time of writing, this seven-page document is available via the RSGB EMC Committee Web Site (see Websearch) but not from the DfT.

The DfT guidelines are not intended as an authoritative statement of UK law nor are they intended as an exhaustive guide to the application of all relevant legislation. Some extracts from the DfT guidelines are given below, but members are advised to obtain a copy of the complete document if they intend to operate a mobile transmitter that may be covered by the new regulations.

The UK interpretation of Vehicle EMC Directive 95/54/EC is considered to be the least strict in the European Union. In Germany for example, it is reported that a vehicle will fail its annual TÜV test if fitted with any non-e-marked equipment. In the UK however, there are certain exemptions for 'legacy' non-e-marked equipment with no cut-off date, provided the safety of the vehicle is not affected.

Section 2 of the DfT Guidelines, 'Who is affected?', states, "Persons concerned with installation of equipment. Installers should first of all be aware of whether the type of equipment that they are installing needs to be e-marked. See section 3. Whether or not the equipment is required to be e-marked, it needs to be installed in accordance with equipment and vehicle manufacturer recommendations and any relevant codes of practice, such that vehicle electronic systems are not put at risk. Specialist advice should be sought if there is any doubt on this."

Section 3 states that, as a general rule, ESAs intended for fitment to passenger cars must be e-marked. Section 4 states that equipment which meets one or more of the conditions 4.1 to 4.7 is normally exempt from Directive 95/54/EC.

Condition 4.7 is of interest to radio amateurs who construct their own equipment. It relates to 'one-off' equipment where one unique item is produced by a person not normally engaged in the business of manufacturing electronic equipment for sale. This means that equipment which is

WEB SEARCH

NEWS ITEM IN NEUE ZÜRICHER ZEITUNG
About Ascom and PLT (in German).
www.nzz.ch/2003/01/29/wi/page-article8NED6.html

RSGB EMC COMMITTEE WEB SITE
Includes Department for Transport guidelines on EMC in vehicles and EMC Committee leaflet EMC 06, Automotive EMC for Radio Amateurs.
www.qsl.net/rsgb_emc/

RA LEAFLET RA414, Interference from Amateur and Other Hobby Radio to Domestic Broadcast Reception: Investigation Procedure.
www.radio.gov.uk/publication/ra_info/ra414.htm

Left: New EMC regulations on installation of transceivers in modern cars apply to all radio users.

installed in their own vehicle by persons who are able to demonstrate competence (for example, radio amateurs) is exempt from 95/54/EC. However, equipment designed by a commercial producer for use by radio amateurs is not exempt.

Another section that is relevant to radio amateurs is section 6 about 'legacy' equipment. This means existing equipment that was second-hand as of 1 Oct 2002, and includes all equipment that was sold as new before 1 Oct 2002.

'Legacy' and 'one-off' equipment are not now subject to 95/54/EC and may be installed in any vehicle, new or old, after 1 Oct 2002. However, this does not exempt the installer from exercising due care to ensure that installation does not compromise road safety.

Any new equipment that was sold after 1 Oct 2002, of a particular type that was already on sale before 1 Oct 2002, is not legacy equipment, however, and must be e-marked (if applicable).

So, to sum up, amateur radio equipment installed in a car does not need to be e-marked if any of the following apply:

– The car was manufactured before 1 Jan 1996.
– The car was manufactured on or after 1 Jan 1996, but the model was type-approved before 1 Jan 1996.
– The radio equipment is a radio amateur's 'one-off' construction installed by him or her in his or her own vehicle.
– The radio equipment is 'legacy' equipment, ie sold as new before 1 Oct 2002 or sold second-hand after that date.

So what happens if you buy a new amateur transceiver for installation in a model of car that was type-approved on or after 1 Jan 1996? To comply with the amended Construction and Use Regulations, the transceiver must be e-marked. Which models of amateur transceiver are e-marked? At the moment, they appear to be 'thin on the ground' to say the least. It is planned to report on this further in a future EMC column.

Another item 'in the pipeline' is information about various car manufacturers' recommendations about installing amateur transceivers (or in some cases not installing them). In the meantime, a useful source of information on installing transmitting equipment in vehicles is the RSGB EMC Committee leaflet EMC06, *Automotive EMC for Radio Amateurs*, available from the EMC Committee web site (see Websearch).

TRAFFIC LIGHT QRM

Dave Baxter reports that, in his travels for work, he has an IC-706MkIIG 144MHz radio on in the car, listening to the West London repeater or using the Reading repeater (145.625 and 145.675MHz, respectively). The car is a VW Passat TDi, that is pretty well RF quiet, at least at VHF/UHF (he hasn't tried HF).

At the M4 junctions at Maidenhead and Slough, Dave reports S9++ broadband noise that blanks both repeaters, both of which produce a good S7 to 8 signal strength at those locations. He can even hear the noise to a lesser extent on the national BBC FM broadcast stations on his car radio. The noise is only present when sitting at a red light but, past the lights, there is no problem. These lights are the new high intensity LED type and Dave wonders what EMC standards they meet.

As traffic lights normally contain a microprocessor, they would probably be classed as Information technology Equipment (ITE) and would have to meet EN 55022. As they are not normally used in a domestic environment, the higher Class 'A' limit might be used.

Most traffic lights use low voltage halogen lamps powered by a transformer but the new LED type are probably driven with pulsed DC which could radiate some RF interference. Although this problem is short-lived for VHF mobile operators, it could be much more significant for VHF base station operators who live near a road junction with traffic lights, if the lights are converted to the new LED type.

Dave also comments on the amount of RF noise emitted by some passenger coaches as they pass by, especially at night. This may be caused by inverters that step up the coach battery voltage to operate fluorescent lamps.

NEW RA INTERFERENCE LEAFLET

The RA has recently produced a new leaflet, RA414, *Interference from Amateur and Other Hobby Radio to Domestic Broadcast Reception: Investigation Procedure*. This is a useful publication for radio amateurs to give to neighbours if an EMC problem arises. The full text is given in the box.

80m NOISE

Further to the item in Feb 'EMC' about noise on the 3.5MHz band, Fred, G3GVM, believes it may be a purely natural phenomenon and a function of the sunspot cycle. He reports that the same poor propagation coupled with high atmospheric noise has been present at roughly the same time of winter for at least the last three years and he also recalls it from previous sunspot cycles. Fred reports that it is noticeable that the bands have become progressively noisier with each successive sunspot cycle after a period when bands were superb in 1946 and into the early 1950s. ◆

The new RA Interference Leaflet

"The Radiocommunications Agency (RA) is an executive agency of the Department of Trade and Industry, and is responsible for regulating the use of radio. We investigate complaints of interference to television or radio reception, if the interference appears to be caused by a radio or electromagnetic source. Interference happens when unwanted signals (which can come from many different sources) are picked up by a radio or television set or aerial, disturbing the reception.

"RA often receives reports of interference allegedly caused by amateur radio and Citizens' Band (CB) installations, although we have found that most incidences of interference are not the fault of the amateur or CB enthusiast. We will only investigate a complaint if the information we receive shows us that the interference is likely to be caused by a radio or electromagnetic source. If you want RA to investigate an interference problem, please complete form RA 179, available on the RA website at www.radio.gov.uk or from the RA Library (telephone 020 7211 0502 / 0505).

"New televisions and radios brought onto the market since 1 January 1996 must meet minimum standards of protection against interference, and they have a CE mark to show that they do so. However, we still receive many reports of interference where the problem is caused by lack of immunity in televisions and radios to unwanted signals. Even if the interference is only present when a nearby transmitter is being used, this does not necessarily mean that the transmitter is at fault – there may be nothing wrong with the transmitter or the way it is being operated.

"Most interference problems concerning a radio amateur are quite easy to put right. Usually, amateurs are only too pleased to help a neighbour who has an interference problem; many cases of interference are resolved in a friendly way and are never reported to us. We do, however, investigate a small number of difficult complaints each year. These involve more in-depth investigation by our mobile teams – which are accredited by the United Kingdom Accreditation Service (UKAS) – using specialised equipment. They visit and take calibrated measurements to determine whether the amateur's transmitter is generating an excessive received field strength at the affected equipment.

MEASUREMENT TECHNIQUE

"There is no specific standard for domestic radio / television installation. Whenever RA engineers are asked to judge whether a problem is caused by a radio / television receiver's lack of immunity or by excessive emissions from a radio amateur or CB user, they use the laboratory standard for the immunity of a radio / television receiver. This standard requires the equipment to operate with 'not more than a defined degree of degradation in a field strength of 125dBμV/m (1.78V/m) modulated 80%' (a radio measurement that can determine whether the transmitted signal level is unreasonable).

"Measurements are made using a CISPR detector (a device with a known performance).

"Our engineers usually take measurements from a point as close as possible to the boundary of the complainant's property with the radio enthusiasts property. They make allowances for the reduction in signal strength due to walls or other obstructions.

"We have produced a range of information leaflets on the use of the radio spectrum. These publications are all available on the RA website or can be obtained free of charge from:

"Library and Information Service. Radiocommunications Agency, Wyndham House, 189 Marsh Wall, London E14 9SX, Tel: 020 7211 0502/0505."

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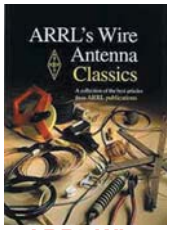

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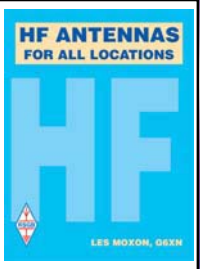

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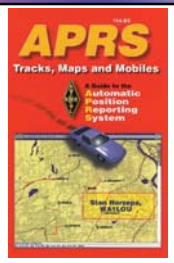

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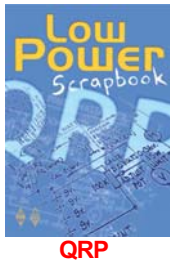

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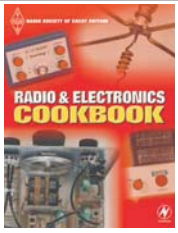

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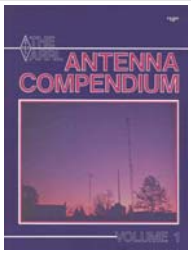

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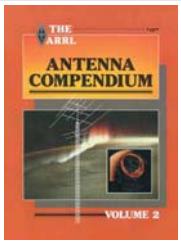

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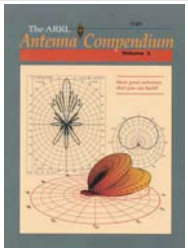

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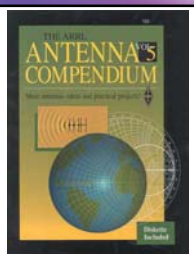

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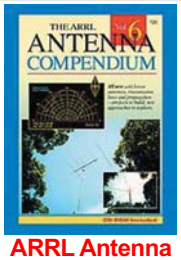

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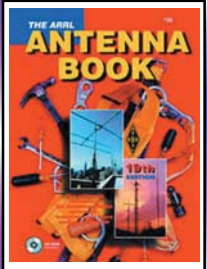

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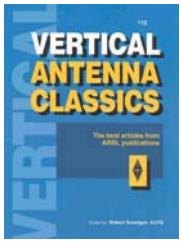

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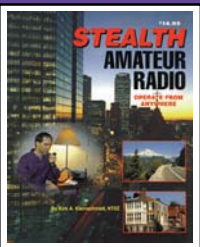

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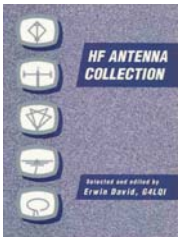

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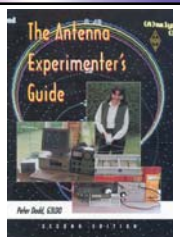

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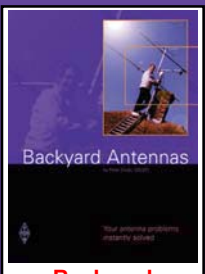

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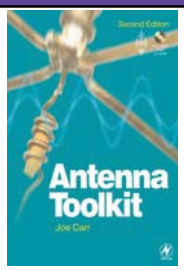

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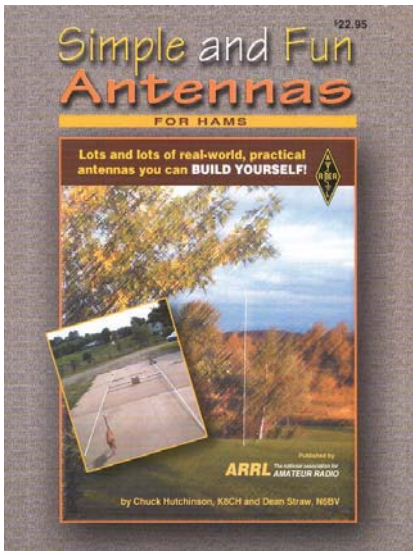

Simple and Fun Antennas for Hams

From the ARRL

Finally a no-nonsense, hands-on practical book about antennas

Simple and Fun Antennas for Hams is designed not only for newcomers to Amateur Radio, but also for anyone overwhelmed with the theory and technical details in most antenna "textbooks."

Retired ARRL technical editor Chuck Hutchinson, K8CH and the ARRL Antenna Book editor, Dean Straw, N6BV bring you more than 70 well-tested fun and entirely useful projects.
These antennas work! Hundreds of photos and illustrations make sure you can actually build working antennas yourself. The range of designs include dipoles, verticals & wire antennas across both VHF and HF bands.

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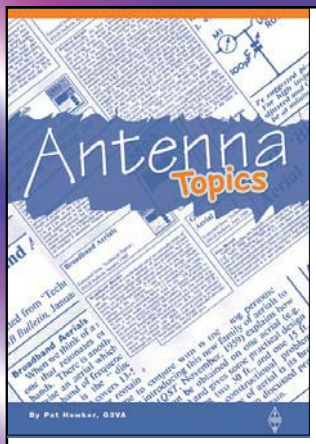

Antenna Topics

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.

297 x 210mm

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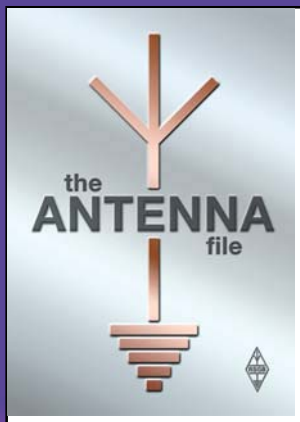

The Antenna File

The Radio Society of Great Britain produces some of the best works on antennas and this is a collection of that work from the last ten years. This book contains 288 pages of articles drawn from the Radcom magazine and includes:
50 HF antennas, 14 VHF/UHF/SHF antennas, 3 receiving antennas, 6 articles on masts and supports, 9 articles on tuning and measuring, 4 on antenna construction, 5 on design and theory, and 9 Peter Hart antenna reviews and much more. In fact everything you need to know about antennas and how to get the best out of them.

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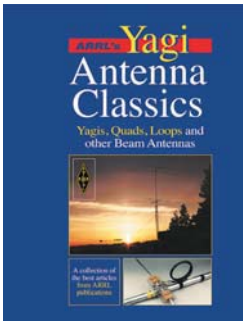

ARRL's Yagi Antenna Classics

— Yagis, Quads, Loops, and other Beam Antennas

Enjoy this collection of some of the very best articles from *QST*, *QEX*, *NCJ* and other ARRL publications. The beam antennas covered in this book will provide the reader with a historical perspective, new and ambitious ideas, and computer-optimized designs for all-around best performance. 208 pages

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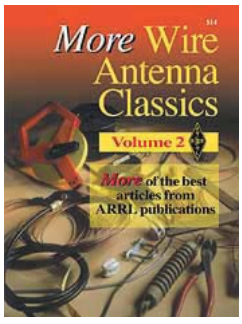

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WARNING: *Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement. The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the cash paid. Members' Ads also appear on the members-only website: www.rsgb.org/membersonly/membersads*

10M TENNAMAST Adapt-a-Mast, wall mounted with 2 winches, £175 ono, buyer collects. M1CAX, 01344 455 759 (Bracknell).

AEA PAKRATT MODEL PK-232MBX multimode data controller, complete with mans. All leads and Pakratt for Windows software. Exc cond, £105 post paid. Ken, G3RDG, 020 8455 8831 (London). E-mail: kennethb@btinternet.com

ALINCO DX-70TH all-mode station inc Timewave DSP9+ DSP unit, switched output to speaker, phones or fully isolating sound card interface for PSK31, RTTY etc. All interconnecting cable and AEC SWR meter. Reason for sale, upgraded to 7400, £450. Maplin 60W magnifying lamp, fitted 40W daylight bulb, £15. Postage extra on items. 01527 541 502 (Redditch).

AR88LF RCVR, Sommerkamp FL-200B tcvr, KW Viceroy transmitter, buyer collects. John Higgins, GM3ZXG, QTHR, 01475 781 568 (Greenock). E-mail: gm3zxg@higginsj31.freeserve.co.uk

ARCHITECT barn conversion with studio, garage, parking, garden, field for L.F. enthusiast, private lane 3_ miles from Penzance. Ideal radio site, 600ft ASL, below hill top for Moxon effect. Sloping south, good views over Mounts Bay, only one house nearby. G3GYE, QTHR. E-mail: peterpitts@aol.com

BEAMS AND TOWER, comprising Tennamast tiltover 25ft mast, Yaesu GL-650 rotator, Western Penetrator 10/15/20m trapped beam. Cushcraft ASWS 12/17m beam, Cushcraft A743 40m add-on. Exc cond, full instructions , buyer collects, £700. No offers, Bill Couse, MM0ABQ, QTHR, 01988 403 219 (Wigtown). E-mail: sirwilly@softhome.net

BIRD 4712A THRULINE RF wattmeter 5kW, 10kW, 20kW (might suit contest group); 144MHz linear, QY4-400s; 144MHz linear, QY3-125s; Heathkit SB610 transmitter monitor scope; Daiwa NS-448U thruline 20W 900-1300MHz; Ferrograph audio test set RTS2, ATU1. Roger, G3MEH, 01442 826 651 (Tring). E-mail: g3meh@supanet.com

COLLECTION of 50 generally immaculate domestic sets, including Ekco ACT96, Ekco U245, several DAC90 and 90A, Bush TV22 Bakelite, Zenith Transoceanic, Philips 17 TV 1954, ACL R209 surveillance rcvr with several plug-ins and spectrum display, Racal RA153 twin rcvr (no PSU). Wanted: reception set R101, £750 offered for example in exc cond. Many others available, list available by e-mail. 01252 782 932 (Farnham). E-mail: alan.ainslie@lineone.net

COLLINS 745A 4 FILTERS. 455J3.1, £70. 455JO.8, £100. 455J6.0, £85. 302CI, £90. Mans 635U2, £10. 136B2, £5. 75S3B/C, £10. Drake R4C, £10. Redifon R408, £15. Racal MA1110, £45. MA1107, £15. RA6790, £15. RA217, £10. Eddystone 1837, £10. EC958/12, £15. EC964, £6. 1830, £10. EP961 MkII, £5. 1590, £6. 1529, £5. 1004, £3. EA12, £5. Timestep WX frame store, £10. Carriage at cost. 01743 884 858 (Shrewsbury).

FREE TO GOOD HOME, space wanted, AR88 gone deaf needs TLC, elderly Cossor DB oscilloscope gwo. Heathkit mains GDO, BC-221 frequency meter, winner takes all, prefer club or school. Jack, G4FCA, QTHR, 01886 880 335 (Malvern). E-mail: jack.haddon@lineone.net

FT-101ZD VGC, any test, buyer collects, no offers. Ron, G0NXC, 0191 586 6383 (Peterlee).

G3JLB SILENT KEY. Icom IC-756PRO, boxed, man, £1300. MFJ-962D tuner 1.5kW, £170. MFJ-447 slimline memory keyer, £40. Cushcraft MA5B minibeam, £180. ZX 4-ele 6m Yagi, £60. Vectronics VC-300DLP tuner, £90. MFJ-784B DSP filter, £140. MFJ-752 Signal enhancer filter, £35. Daiwa NS-660 power meter, £30. 7A PSU, £18. Asahi SWR bridge, £5. G4BUO, QTHR, 01892 870 400 (Tonbridge). Email: g4buo@compuserve.com

HF LINEAR AMPLIFIER Ranger 811H as new with new valves fitted, £480 ovno. Buyer collects or courier, boxed with man. MM0GEQ, 0131 445 3928 (Edinburgh). E-mail: gm1geq@rsgb.org.uk

ICOM IC-4SET, 70cm, 5W h/held, £75. Icom IC-R1 100kHz to 1300MHz h/held AM/FM rcvr, £70. Sony ICF-2001D, 150kHz to 30MHz & airband rcvr, £70. All vgc and boxed. Dressler 144MHz mast head GAsFET pre-amp, £15. All items, postage extra. G8JAY, 01452 859 869 (Cheltenham). E-mail: tony@g8jay.fsnet.co.uk

ICOM IC-706 MkII DSP, £450. IC-AT180 auto-ATU, £200. Icom auto-ATU, £200. Yaesu FT-757GX, £250. Yaesu FC-902 ATU, £120. Icom I-AT150 auto-ATU, £125. Kenwood TS-440SAT, £350. Matching speaker, £45. Tokyo HL-110V amp, £100 . Yaesu rotator clamps, £15. TS-830S, £250. Kenwood LPF, £25. ERA Microreader, £65. Kenwood TM-241E, £95. Yaesu FT-23R plus extras, £75. Icom filtered powered unused, £40. Yaesu FC-420 tuner unused, £55. ProAm antennas, £75. Service mans TS-180S, FRG-7700, FRG-9600, £15 each. Front panels IC-575 (new), IC-728, TS-950SDX, IC-24ET. Kenwood filters, YK88C1, £45. YG455C1, YG455CN1, £50 each. Mosley TA-33JN 10-15-20 beam, £120. Mosley 2kW 10-15-20 vertical, £90. Sagant 40-80 wire antenna unused, £60. Watson dualband amp, switching fault hence, £25. 01953 884 305 or 07970 214 039 (Watton).

ICOM IC-728 tcvr, AM-FM unit fitted, one owner, £330. Kenwood TR-751E 144MHz all-mode tcvr, £290. Ameritron amp AL-811 600W output, £300. Sota 2m linear amplifier, 100W output £75. Yaesu FRG-7700 SW rcvr & FRG-7700 tuning unit & FRG-7700 HF-VHF unit, £180 ono (rcvr requires new mode switch). All itemas in vgc, non-smoker operator. Azden PCS-7000 2m FM tcvr, £75. 01592 757 831 (Glenrothes). E-mail: ken@mm0awj.freeserve.co.uk

ICOM IC-R75 little used, inc PSU and man. Reason for sale, owner deceased, only £395 + £10 p&p. 01934 712 988 (Wedmore). E-mail: pfbrookes@freeuk.com

ICOM IC-T3H h/held as new, original pack with all accessories plus two spare heavy duty batteries, £120. 01752 841 685 (Saltash).

ICOM R-9000 general coverage rcvr, 100kHz - 2GHz. SP-20 speaker, h/book good cond, property of Stratford upon Avon RS. G4OHJ, 01789 773 286 (Stratford upon Avon). E-mail: g4ohj@thersgb.net

KENWOOD TM-241E 2m tcvr, £70. PBX 100 portable antenna 80/6m, £70. 01327 350 632 (Northants). E-mail: g4dms@tinyonline.co.uk

KENWOOD TM-251E 2m FM mobile tcvr, exc cond, £200 ono. AOR AR2000 wideband scanner, with new Nicads, ideal first scanner, £130 ono. Geoff, G7UHE, QTHR, 01245 604 031 (Chelmsford). E-mail: geofftiller@blueyonder.co.uk

KENWOOD TS-2000, £1250. Yaesu FT-100, £525. G2DYM trap dipole anti-TVI aerial 160m to 10m, full kit including 1:1 balun, £70. Alan, G4YYD, 0161 797 7893 (Bury).

KENWOOD TS-450SAT, new cond, little used, original packing, mans etc (non-smoker), £580 ovno. G400 rotator and control box, professional rebuild (£70) and not used since, exc cond, £140 ovno. Anthony, 01964 612 806 (nr Hull).

KENWOOD TS-50 HF tcvr, £350. Zurich 30A PSU, £50. Vectronics VC-300DLP ATU, built-in dummy load, £60. Cushcraft R6000 6-band 6-20m vertical, requires no radials, £150. Selling due to ill health. All above items boxed with mans. 01772 633 808 (nr Preston).

KENWOOD TS-950SD, vgc, mans, £850. MFJ-989C 3kW Versatuner V, £290. NIR-12 JPS dual DSP noise/interference reduction unit, £70. Palomar M-827 automatic SWR and power meter, 20W to 2kW, £60. MFJ-490 memory keyer, £70. Drake L7 linear with some spares 2kW, £700. All vgc, huge list of ham eqpt from LF to sat freqs. Buyers must collect, Dorset. Call for details and list by e-mail (Yeovil). E-mail: viccopley@aol.com

LABGEAR LG300 tx, spare 813 & boxed 805s, £200. Collins KWM2A with PSU, £400. RA17 & RA117 in double Racal case, £350. Plessey PR-2250 rcvr, £700. ITT Mackay Marine 3010c, 0.01-30MHz rcvr, £500. HP 8640 sig gen, £250. Datron 1065 DVM, £50, Fluke

CONGRATULATIONS to the following, whom our records show as having reached 50 or 60 years' continuous RSGB membership this month:

60 years

G3AKU Mr R A Harding
G3IGM Mr R G Hindes

50 years

G3DSS Major G S Symons
G3IYF Mr D E Baker

We also wish to congratulate: Mr J L Hall, G3TOK, who joined the Society in 1951; Mr T D Jardine, GM2BMJ, who joined in 1939; Dorking and District Radio Society; which joined in 1950. All were omitted from the Old Timers' Honour Roll in February, for which we apologise.

SILENT KEYS

We regret to record the passing of the following radio amateurs:

G0FEC	Mr B Robinson	30/01/03
G0KHI	Mr W McEntee	07/02/03
G0TCR	Mr C E Savage	04/02/03
G0UIO	Mr T Bickell	03/01/03
G0WGD	Mr H E Ware	24/12/02
G1SIR	Mr D Burge	
G3AIN	Mr D Withers	19/02/03
G3BR	Mr S Hall	01/02/03
G3DXQ	Mr A J Adams	
G3IAL	Mr J D C Lawrie	21/12/02
G3JDK	Mr N Kirk	16/02/03
G3MPO	Mr J Robinson	23/02/03
G3YYF	Mr R Kemp	11/01/03
G3ZJH	Mr P J Brouder	11/02
G4SYP	Mr T G Morgan	05/02/03
G7VCH	Rev S Marsh	09/01/03
G8HKE	Mr M Holder	09/10/02
G8JCZ	Mr E Tootle	16/02/03
G8KPF	Mr S H Bandy	01/03
GM4IHJ	Mr J Branegan	09/02/03
GW3NWC	Mr A C Fry	01/01/03
M1ATD	Mr R T Burden	10/02/03
M1DMP	Mr R H Bettinson	
	Mr P White	18/12/02
RS116988	Mr R W Williams	08/02/03
RS182160	Mr D M Brookes	21/01/03
ZL3RW	Mr D Mackay	14/01/03

8505A digital mult (V, Ohms & A), £300. Solartron 7075 8-dig DVM & lead, £50. All vgc, most books. M0JEP, John Price, Oxted, Surrey, 01883 717 484.

LOWE HF150 rcvr in gwo with PSU, £150. Paul, G4VAM, QTHR, 01733 704 836 (Peterborough).

MAST PUMP-UP 45FT, £200. Linear 1_kW HF, £200. Aerial 4-ele HF beam 10-15-20m A4S Cushcraft, £300. 01924 408 440 (Liversedge).

MFJ-418 MORSE TUTOR, £50 for church funds. Roy, G3OZT, QTHR (Southampton). E-mail: rgerman@freeuk.com

PK-900 DATA CONTROLLER with man & software, dual ports multi-mode, it has capabilities to do packet HF & VHF, RTTY, AMTOR, Morse, HF weather fax, PACTOR, the list goes on, £150 + postage. Phil, G0BVD, QTHR. 01684 561 274 (Malvern). E-mail: p.oakley@btinternet.com

PSU for sale, 20A @ 13.8V. Now surplus to requirements has run faultlessly since owned (1992); make unknown (no label/identifier) but rugged & reliable, £70. Steve, G0UIH, 01832 274 831 (Northants). E-mail: g0uihsteve@aol.com

QTH for sale. Detached 5-bed house on 7 acres just over Welsh border. Four towers, full planning permission, no TVI, £360k. Check www.vinecom.co.uk/myqth.html for more. 01691 831 111 (Oswestry). E-mail: info@vinecom.co.uk

REDIFON transmitter drive unit model GK203N, £250. R&S Polyskop SWOB 1, £75. Marconi TF2008 signal generator, £40. Siemens T-100 teleprinter (mint) with mans, £200. Roller-coaster inductor and vacuum varable capacitor for high frequency ATU, £120. Nigel, G0UGD, 01323 486 822 (Eastbourne). E-mail: nigel@irisys.co.uk

SILENT key sale. Yaesu FRG-9600 VHF/UHF scanner, £140. Kenwood TS-440S HF tcvr, £270. Yaesu FT-5100 mobile VHF/UHF tcvr, £140. Yaesu FT-5200 mobile VHF/UHF tcvr, £140. Other smaller items also. For a list of details contact G7GHA, 01628 850 327 or G8RYW, 01628 628 463 (East Berkshire).

SPRINGCLEAN. MFJ-969 300W ATU, boxed, £130. MFJ-1026 noise canceller with active antenna, £125. Yaesu MD-100 desk mic, boxed, £75. 56K external fax modem, £20. Complete mobile outfit comprising of IC-207H 2m/70cm rig plus 2m/70cm mobile antenna plus hatchback antenna mounting kit, all boxed, unused as new, £225. M5ACR, 0118 941 6792 (Reading). E-mail: m5acr@btinternet.com

STRUMECH P60 TOWER, complete, gwo, dismantled, ready to collect, £275. GW8AWM, QTHR, 01291 672 466 (Usk). E-mail: frank@simplehappy.co.uk

TENNAMAST 3-section tower with Yaesu G600 rotator, 2m and 6m beams. All vgc. QTHR, 01626 204 488 (Newton Abbot). E-mail: mike@neptune9.demon.co.uk

TENNAMAST 42ft H/D winch, £250. Strumech Versatower H/D 80ft. New ropes no ground post, £400. Hygain TH5DX beam ant, new traps, £150. Hygain 204BA 20m mono, £150. Cue Dee 10m 4-ele beam, £50. FL-2100Z amp, £325. G3PJK, QTHR. 0161 654 6160 (Manchester).

TEST equip-HP8920A spectrum analyser, £1300. HP-8614A 0.8-2.4GHz sig gen, HP8616A 1.8-4.5GHz sig gen, Texas 6613E pulse gen, Tektronix 7403 100MHz scope (poss fault), Icom IC-R70 rcvr (new) £230. Systron 6053 freq counter 3GHz, 2 x var attenuator. GM8LMA, QTHR, 01651 882 283 (Aberdeen). E-mail: chas@cmac-sys.co.uk

THURLBY TTL TSA-1000 1GHz spectrum analyser adapter for oscilloscope, gwo, boxed, instructions, includes 2 near-field probes, £250. Chris, G0FJY, 01903 240 113 (Worthing). E-mail: chris@kentch.fsnet.co.uk

TRIO TS-130S 100W HF SSB/CW tcvr 80 to 10m inc WARC bands, perfect, £300. ATU Tokyo compact internal SWR meter, £40. 01902 847 296 (Wolverhampton). E-mail: con@g4evp.fsnet.co.uk

TRIO TS-700 2m all-mode 10W tx. Internal AC PSU or 12VDC, silent key sale, £150. Collection preferred. G3TWG, QTHR, 01628 525 275 (Maidenhead).

TS-50 and AT-60 auto-ATU, £525, good cond, buyer collects or carriage at cost. FT-1500 good cond, £90. GM6DVZ, 01473 692 525, 388 Wherstead Road, Ipswich.

W9GR DSPII AUDIO FILTER, SSB, CW, packet, auto notch, £95. Valves 4 – 40 checked 300/350W PEP lot of 3, £35. Global AT 2000 aerial tuner SWL not tx new, £60. Dow Key 6-way coax switch SO-239, £25. 2 Eddy ceramic formers 30.T 2.5in, £12. 4 panel meters, 100mA, 100microA, 2 1mA, £12 the lot. QRO ceramic switch 2-pole, 3-way also SP 3-way, £12. PSUs 12V 3A reg, 12V 3.4A reg, 1 to 30V stab, 1.5A, any one, £20. G3RHM, QTHR, 01404 850 461 (Honiton).

YAESU comms rcvr with memory option, 150kHz - 29.9MHz with matching FRT-7700 antenna tuner and FRV-7700 VHF converter 118 - 150MHz, all mans and circuit diagrams, exc cond, £150. Fred, G6IHB, 0121 744 0871 (Solihull). E-mail: frederick_norton@lineone.net

YAESU FT-101ZD (AM, FM modules), FV-101Z, FTV-901R (6m, 2m & 70cm modules fitted), FC-902, SP-901. Own a classic, buy the whole set. Perfect working order, immac cond, original boxes and mans. Very reluctant sale. Buyer collects or discuss shipping. Stuart, M3XTN, 07973 737 875 (Reading). E-mail: 101zd@crossover.uk.com

ZX15-3 21MHz beam, brand new, never erected (neighbours & anno domini). All parts and document available, free to collector. G8RW, QTHR, 020 8462 1592 (Bromley).

WANTED

16MM – 35MM cine film cameras and lenses, military examples sought. G0LJS, QTHR, 01380 859 088 (Bath). E-mail: h.j.sims@bath.ac.uk

AM/FM BOARD for FT-102 or faulty rig with working board; 4m tvtr (10MHz IF). G3RKZ, QTHR, 01332 883 035 (Derbys).

ANY RACAL OR WATKINS Johnson rcvrs, parts and accessories wanted. Especially looking for a backlit RA1792, also a WJ8888 (quad-8) and a HF multicoupler, prefer all in good working order, but anything considered. Can buy outright or have a quantity of Racal RA17 rcvrs for disposal if interested. G8WKA, QTHR, 01252 795 234 (Surrey). E-mail: richardreich@aol.com

BC312 or BC342 WWII rcvr also BC191 tx and dynamotor, any details of use in weapons carrier WC51 (Dodge). G0LJS, QTHR, 01380 859 088 (Devizes). E-mail: h.j.sims@bath.ac.uk

DISABLED fan of old days seeks pre-1975 QSL cards, logbooks, magazines etc. Mike, 8 Windsor Road, 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).

IC-2410H, IC-2410E preferably working OK; IC-2400, IC-2350 or IC-2700 may be OK . Laurie, G0MRL, 01204 697 023 or 07951 224 214 (Bolton). E-mail: g0mrl@ic24.net

ICOM IC-3E 2M H/HELD, plus man and schematic diagram. G0PSI, QTHR, 0115 946 0670.

JONES TWIN PADDLE with red base, mint cond, purchase or swap for new Bencher twin paddle with black base. G3RCU, 01202 475 048 (Christchurch). E-mail: chris@g3rcu.fsnet.co.uk

MODERN GERMAN HF rcvr by Rohde & Schwarz EK056, 070, 085 or later. Also interested in Telefunken or Dasa series dead or alive, also h/books. Racal RA3701 and RA1772 for disposal. 01743 884 858 or 260 253 (Shrewsbury).

MODULATION transformer, Woden UM3, Geloso VFO, KW Vanguard transmitter, 813 valve base and top cap connectors. Good cond please. G3VFO. 01435 882 245 (Burwash). E-mail: terry.hart@btinternet.com

PNEUMATIC mast, light/medium duty, about 10m for 3-ele HF beam. Man for Philips PM3207 scope. G3TTC, QTHR, 01926 490 897 (Warwick). E-mail: keith@g3ttc.freesrve.co.uk

RACAL RA3720 series rcvr, also modules or scrap set wanted, good price offered, cash and collect if you wish, thanks, Jake Adamson, 01304 373 788 (nr Dover).

REES Mace marine (Pye) rcvr type cat. Plessey TDMS70, TSG10, TSG20. Creed 75 teleprinters, unused spares and tools. Racal Speedrace MA275 oscillator coupling unit. Nigel, G0UGD, 01323 486 822 (Eastbourne). E-mail: nigel@irisys.co.uk

ROHDE & Schwarz ESM 2 operating and maintenance mans needed. Also interested in purchase of panoramic and digital frequency display units. 01823 413 842 (Taunton).

ROTATOR, prefer CDE/CDR make, but WHY? Dick, G4DJC, QTHR, 01245 256 416 (Chelmsford). E-mail: rjbaker@btopenworld.com

SAMLEX SEC-1223 PSU, must be in good cond. Call Steve, G0UIH, 01832 274 831(Northants). E-mail: g0uihsteve@aol.com

SPARES for Farnel FG1 Function Generator. Also AM module for Yaesu FT-101ZDI. G4DXT, QTHR, 01865 391 824 (Oxford). E-mail: talib@tshaman.fsnet.co.uk

VHF AIRBAND RCVR/scanner and h/book. DR600 made by Swinburne Electronics, Birmingham Airport over 20 years ago. 01443 437 345 (Tonypandy).

YAESU FT-225R or FT-225RD, must be in good cond, with or without Mutek board. G8PNM, QTHR, 01453 764 416 (Stroud).

YAESU FT-901DM or FT-901DE or FT-901SD working or not working, also FC-901 ATU, YR-901 CW-RTTY reader, YVM1 monitor, YK-901 keyboard, FTV tvtr and any advert brochures on the above series. Ian, 01829 760 072 (Tarporley).

RALLIES & EVENTS

6 APRIL 2003

LOUGH ERNE ARC 22nd Enniskillen Amateur Radio Show – Killyhevlin Hotel. OT 12 noon, £3 inc raffle ticket. CP, B&B (no fee), TS, LB, C, WIN. Herbie, GI6JPO, 028 6638 7761, h.graham@bigfoot.com

RIPON & DARS 46th Northern Mobile Rally - Sports Hall, Harrogate Ladies' College. OT 10.30am, £2.50. Gerald, G0UFI, 01765 640 695 or webmaster@harrogaterally.co.uk. [www.harrogaterally.co.uk]

13 APRIL 2003

CAMBRIDGESHIRE REPEATER GROUP Annual Rally - Bottisham Village College, Bottisham, 6 miles east of Cambridge. Access via A14 and A1303. OT 10.30am, £1.50. TS, B&B, CBS, CP, C, TI on S22. Paul, G0LUC, 01462 683 574, g0luc@btinternet.com [www.gb3pi.org.uk]

25–27 APRIL 2003

SCANDINAVIAN HAMVENTION 2003 Gothenburg, Sweden. Exhibition,

TS, FM, B&B, ham dinner, ladies' programme, AGM of Swedish Radio Association. [www.scandiham.com]

26 APRIL 2003

INTERNATIONAL MARCONI DAY - [www.gb4imd.co.uk]

27 APRIL 2003

ALDRIDGE & BARR BEACON ARC 4th Annual Radio & Electrical Sale - Aldridge Community Centre, Anchor Meadow, Middlemore Lane, Aldridge. OT 10.30am. £0.50. CP large park, C. Doug, G4LQY, 01543 571 269.

ANDOVER RAC Radio & Computer Spring Boot Sale – Village Hall, Wildhern, 5km N of Andover. OT 10am. TI on S22, CP, TS, CBS, MA, C, DF. Terry, G8ALR, 01980 629 346 or aracnews@ntlworld.com

WEST LONDON RADIO & ELECTRONICS RALLY - Kempton Park racecourse, Sunbury-on-Thames, Middx. £3.50 (£3 after midday), under 16s free. RSGB, TS, MT (plus free entry), CP for 2000, DF, C, LB, Ti on 2m, B&B, external seating & picnic areas. Paul, M0CJX, 01737 279 108, m0cjx@lineone.net

4 MAY 2003

SOUTH YORKSHIRE REPEATER GROUP Spring Great Northern Hamfest – Metrodome Leisure Complex, Queen's Road, Barnsley. Less than 2 miles from jn 37 M1. Five minutes' walk from train and bus station (follow the brown 'Metrodome' signs from all directions). OT 10am, £2.50. DF, TS, SIG, B&B. Ernie, G4LUE, 01226 716 339 or 07787 546 515.

5 MAY 2003

DARTMOOR RC Dartmoor Radio Rally - Pannier Market, Tavistock, Devon. OT 10.15/10.30am. TS, B&B, C, CP within five minutes' walk, DF, TI on S22, picnics - bring family. Ron, G7LLG, 01822 852 586.

MID-CHESHIRE ARS Rally - Civic Hall, Winsford. OT 10.30/11am. C, CP. David, G4XUV, 01606 77787.

11 MAY 2003

DUNSTABLE DOWN RC 20th Amateur Radio Car Boot Sale - Stockwood Park, Luton. OT 9am. Access via M1 jn 10. [www.ddrcbootsale.freeserve.co.uk]

16–18 MAY 2003

52nd DAYTON HAMVENTION – Dayton, Ohio, USA. [www.hamvention.org]

18 MAY 2003

MIDLAND ARS Drayton Manor Radio & Computer Rally - Drayton Manor Park, Fazeley, Tamworth, Staffs, on A4091 near jn 9 & 10 of M42. OT 10am. TS in 3 marquees, FM, SIG, CBS, clubs. Norman, G8BHE, 0121 422 9787 or 07730 132 726. [http://midamradio.members.beeb.net]

31 MAY/1 JUNE 2003

LONDON COMMUNICATION & COMPUTER SHOW – *** New venue *** – Stevenage Leisure Centre, Lytton Way, Stevenage. One minute's walk from mainline station. OT 9.45/10am. TS, B&B, TI (2m & 70cm), CP close by, SIG, MT, MA, LEC, LB, C, DF. RadioSport 01923 893 929. [www.radiosport.co.uk]

1 JUNE 2003

SPALDING & DARS Annual Rally - New venue - Sir John Gleed Technical School, Halmer Gardens, Spalding. OT 10am, £2. CP, TS, CBS, TI, but no camping this year. Ray, M0CTM, 01775 711 953, or John, G4NBR, 07946 302 815. [www.sdars.org.uk]

WEST MANCHESTER RC 7th Red Rose QRP Festival - Formby Hall, Alder Street (off High Street), Atherton, Manchester. OT 11am, £1.50. TS, RSGB, G QRP, B&B, CP free, DF, C, LB, TI on S22, construction competition. Les, G4HZJ, 01942 870 634, g4hzj1@ntlworld.com

8 JUNE 2003

NUNSFIELD HOUSE ARG 34th Elvaston Castle National Radio Rally - Elvaston Castle Country Park nr Derby. Les, G4CWD, 01332 559 965 or secretary@elvastonrally.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

15 JUNE 2003

NEWBURY & DARS Amateur Radio Boot Sale - Cold Ash, near Newbury. Free entry for buyers, but donations welcome. MA, MT, TI via GB4NBS on S22. [www.nadars.org.uk]

22 JUNE 2003

BANGOR & DARS Summer Radio Rally - Crawfordsburn Country Club, nr Bangor, Co Down. OT 12 noon. TS, B&B,

EPSOM RADIO & ELECTRONICS FAIR – Grandstand, Epsom Downs Racecourse. MT, B&B, CBS, RSGB, TS, FAM. Paul, M0CJX, m0cjx@lineone.net [www.epsomrally.co.uk]

28 JUNE 2003

REDDISH RALLY - St Mary's Parish Hall, South Reddish, Stockport. OT 11am, £1. John, G4ILA, 0161 477 6702, john@mckae.freeserve.co.uk

29 JUNE 2003

BRISTOL RSGB GROUP 46th Longleat Rally - *** CANCELLED ***.

1–3 JULY 2003

THE ROYAL SOCIETY Summer Science Exhibition - Tim Watson, 020 7451 2508, tim.watson@royalsoc.ac.uk [www.royalsoc.ac.uk]

6 JULY 2003

NORFOLK ARC Barford Radio Rally – David G7URP, 01953 457 322/458 844 or e-mail dpalmer@dcpmicro.com

YORK RADIO CLUB Rally - Arthur, G8IMZ, 01904 787 799 (office hours). [www.yorkradioclub.net]

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 – No details.

27 JULY 2003

COLCHESTER RA Amateur Radio Rally & Computer Fair – Gary, 01621 818 620 or James, 01255 242 748. E-mail cra2003@garycavie.com or cra2003@mcginty.net

RUGBY ATS Rally - *** CANCELLED***.

GB CALLS

These callsigns are valid for use from the date given, but the period of operation may vary from 1 – 28 days before or after the event date. Operating details are provided in an abbreviated form as follows: T = 160m; L = 80 or 40m; H = HF bands (30 - 10m); V = 6 and / or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet. Please send operational details of your special event station to the RadCom office at least five weeks before publication. The only QSL Bureau sub-manager for special event station callsigns is as follows: GBxAAA-MZZ – Mike Evans, 322 Heol Gwyrosydd, Penlan, Swansea SA5 7BR, e-mail mw0cna@ntlworld.com. Will organisers of special event stations please ensure that they lodge plenty of envelopes with their sub-manager?

1 Apr	GB0BTC: Belfast Titanic City. Belfast. LH2 (GI0VAB)
	GB2UOC: Union of the Crowns. Berwick-upon-Tweed. TLH2 (G3BRA)
7 Apr	GB2PK: Porthcurno. Porthcurno, Cornwall. LH (G3NRD)
11 Apr	GB2DID: Variation of HMS Ganges C/sign. Lowestoft. (G3DID)
	GB4YOU: Youlbury Scout & Guide Radio. Oxford. (G0REL)
	GB4YOU: Youlbury Scout & Guide Radio. Oxford. (G0RJX)
12 Apr	GB2MOF: Museum of Flight. East Fortune, East Lothian. LH (GM4UYZ)
18 Apr	GB2APL: Anvil Point Lighthouse. Swanage, Dorset. TLH (G0WZK)
	GB4HMD: Holyhead Marconi Day. Anglesey. LH2 (GW4WLZ)
23 Apr	GB4SGD: Saint Georges Day. Great Barr, Birmingham. L2 (G0KNM)
26 Apr	GB0MD: Marconi Day. Rochester, Kent. TLH (G3NZR)
	GB0MDI: Marconi Day International. Salisbury, Wilts. LH2 (M0BVO)
	GB2AAW: Arthritis Awareness Week. Weston Favell, Northampton. (G4FIN)
	GB2MDI: Marconi Day International. Whiteparish, Wilts. TLHV27 (M0CLI)
	GB4MBP: Marconi Bass Point. Lizard, Cornwall. TLH (G3MRT)
	GB4MD: Marconi Day. Caernarfon, Gwynedd. LH (GW0ETF)
	GB5AAW: Arthritis Awareness Week. Weston Favell, Northants. LH2 (G7NEG)
27 Apr	GB2SAM: Samuel Morse. Throsk, Stirling. TLH2 (GM4WLN)

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 'corner 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.

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Email: briansparks@dunnethead.co.uk

M VACATION QTH GRAN CANARIA www.bbelporche.com / BBKIWITT@terra.es

EA8 - Isla de La Palma. Renovated old countryside stone cottage with K2/100 and Sommer XP707 beam. http://www.8gh.com

NORTH WALES, CARAVAN, BUNK HOUSE, CAMPING. Elevated site. Use of shack and beam antenna. Open all year. Rural setting. "Tynrhos", Mynytho, Pwllheli LL53 7PS (01758 740712).
tynrhosdiving@btinternet.com

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The Last Word

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'Cancerous Erosion of Airwaves'

It is with interest that I read 'The Last Word' and much has been said about 'interference', especially on 80m. The EMC section makes fascinating, but equally, worrying reading. Like many hams I am being refused my privilege of using the airwaves – 80m is now so full of interference as to be unusable – 40m fairs a little better, but for how long? 2m and 70 cm – I have to pick my spot as again channels are full of noise. The overall effect is less time on my hobby – regular attendance on nets has become a distant memory in the log book. I seek advice and help but alas the situation here gets worse with no means of resolving or representation.

With the advent of a broadband UK and PLT is this the death knell for radio as we know it? Those away from the cities will not be immune to this cancerous erosion of the airwaves.

Mike Surplice, M0AZE

Putting the Spark Back into Amateur Radio

I read with interest the recent nostalgic letters concerning the early days of amateur radio. Well, my spark transmitter has laid proudly but forlornly in the corner of my shack, unused since 1922. No need for synthesisers or digital readouts in those days, by golly, in fact no need for a tuning knob at all! People heard me whatever frequency they were listening to. Let's bring these beauties of the bands back. Of course spark transmitters are not available commercially, which precludes their use by the M3s, gotcha! But us real amateurs can put the community spirit back into the hobby with these devices by letting all stations talk to each simultaneously. No one will ever feel left out again.

Tony White, G4IOQ / 8P9HW, ex 9M2WA, Member of London Wireless Club since year dot, mate of Marconi

Crystals Found

Just to let you know that the response from the amateur community has been magnificent after you published my request for a 1170kHz crystal ('RadCom News' February 2003). Could you please thank all those who contacted me? I am pleased to say that I have now got two boards with 1170kHz oscillators on board, so now have a spare. I really appreciate everyone's help and good wishes. Thank you very much all concerned!

Rev Dr William Burton, T88BA, Palau

AFS Contests – the Good and the Bad

As in past years I participated in both sections of the 80m Affiliated Societies (AFS) contests. The RSGB and HF Contests Committee are to be commended on a contest which encourages radio clubs to get their membership together on a team basis and get 'on the air'. It was most encouraging to hear numerous M3, M5, M0 and 2E calls having a go in both sections of AFS.

Unfortunately there is a down-side in my opinion, or certainly something which is in need of change, and that is the timing of the contest. For a prolonged period between 1600 and 1700 I was consistently and deliberately QRMd by stations from DJ and PA. This problem was also experienced by other G stations. There always will be an 'anti contest' group of people, and I can empathise with their ideology. However, the timing of the contest, which leads to favourable propagation into Europe when it gets dark only aggravates the problem. Stations demand that I move because "I have been here for two hours" only occurs due to the changing propagation with the onset of darkness. There are many local nets and chats taking place on 80m over the weekend and they tend to get obliterated and sometimes very angry! As AFS is primarily intended for clubs within the UK, why not start the contest at 1200 and finish at 1600? That would pacify Europe, as they would not hear us that well and make little difference to stations within the British Isles.

John Matthews, G3WZT

[...except those in GM, who require darkness to work stations in most of England! A thorny problem indeed – Ed.]

"Use it or Lose it"

I write concerning new software available on the Internet called Echolink. 100 years ago Marconi and others struggled to create a 'wireless' system of communication, yet here we are a century later re-creating the wheel – a system of communication connected by wires.

I went to evening classes for almost nine months before sitting and passing the RAE. followed by another course of Morse code. I have no intentions of throwing this effort away to talk to another amateur via my computer. When I tried Echolink, most of the 'contacts' I had were with people connecting to me direct without the use of any radio element at all.

There is a myriad of commercial enterprises out there waiting to purchase parts or all of our 70cm and 2m bands. Echolink is playing right into their hands. It is demonstrating that as amateurs we don't actually need radio waves to communicate - we can do it very well over wires. We are doing ourselves a great disservice by using such forms of communication.

I am worried that software such as Echolink dilutes our hobby. Like that man said "Use it or lose it". If we continue to decrease the amount of RF we radiate, it can only be a matter of time before much of the spectrum is taken from us.

Maybe I'm a dinosaur, but ham radio is ham radio – not ham computer...

Thomas G Wylie, GM4FDM

UK Licensing Structure

With the current restructuring of the UK amateur licence system I think we're missing a golden opportunity to make the hobby much more accessible to new blood. Whilst I fully agree that the Foundation Licence is proving to be a roaring success, and rightly so, it still requires a candidate to attend a recognised course over a weekend.

The Intermediate ticket seems to be an excuse to make people attend even more courses – even fewer candidates in the long-term I'm sure. With the proposed plan to make the UK system three-tiered, and mandatory passes at each level required, I feel certain that people will be dissuaded still further. For example my wife, who is a qualified electronics engineer like myself, wishes to become an amateur. She is keen to self-study and take the full RAE but not so keen to attend a weekend for the Foundation, then further courses for the Intermediate, no doubt having to attend further courses for the full RAE. This for someone who is qualified in electronics to degree level. In short, unless she takes the full RAE (and passes) before the three-tier system becomes effective the highest level she is likely to reach is Foundation.

I appreciate that we should then say "if she wants it badly enough, then she should attend the courses", however, we are talking about one individual here and, taking a stab in the dark, if 30% of potential amateurs have this attitude then it should be taken seriously. We should be encouraging, not discouraging, as many potential amateurs as possible.

Having recently studied for and

taken the FCC Technician and General exams I can vouch for the system as currently used by the ARRL/FCC. Having purchased the book required, studying is simply a case of reading and digesting the contents therein. The complete pool of questions for that level of exam are given together with their answers – allowing you to take as many mocks as you wish. You can even take mock exams on various Internet websites allowing you to prepare further for the exam. You can self-study, 'buddy-study' or course-study – the choice is yours. You still retain a three-tier system in that you must pass each exam in turn before moving up to the next, but make it far more accessible to new blood. In summary, I feel that a system that permits self-study is a must and the way forward. After all amateur radio is a hobby, not a formal academic qualification – you should be allowed to prepare in your own time and take the exam when you feel you are ready.

Martin J Stone, G0OXZ/KG4VUI

Time to Rethink GB Prefix?

Your callsign is supposed to tell others where you are. As G3TXF I am in England. As GM3TXF I would be in Scotland. Simple enough: two different prefixes indicating two different countries (or 'entities' in DXCC-speak). So why do we continue to use the ever-confusing GB prefix for special calls throughout the seven separate DXCC countries [G, GD, GI, GJ, GM, GU, GW] that make up the UK? DXers well know the irritation of working, say, a 'KL7' (prefix for Alaska) station only to find that he's in fact somewhere on the East Coast of the USA. Similarly, anyone working a GB station cannot immediately identify the DXCC country from the call. The use of GB-prefixed special calls by DXpeditioners, island operators or other special activities from any one of the seven DXCC countries is both illogical and unnecessarily confusing. Yes, keep GB as a special prefix for, say, England, but use other special prefixes for the other 'countries' in the UK. We're lucky to be one of the few places in the world to have three complete prefix-allocations (2, G and M). This gives plenty of scope in terms of available prefixes. It seems daft to continue using GB, when a non-confusing 'special prefix' could so easily be made available for each of our seven different DXCC countries.

Nigel Cawthorne, G3TXF

Working the Pile-Up

It was quite interesting to read 'How to Handle a Special Event Pile-Up' (RadCom January 2003). Some of the statements made by the authors (G0ACK and G4SSH) seem to be based on the authors' negative attitude towards stations with loud signals, referred to as 'big guns', and lack of appreciation of the investment, not only financial, made by the owners of these stations to improve their signal. Should the 'big guns' be punished and 'removed' from the pile-up as recommended by Don, G0ACK? Isn't there a way to work them all and make everybody happy?

In his quest to exclude strong signals from the pile-up G0ACK recommends making up a list of 10 stations to be then worked in a peaceful manner. As Don admits, this results in a slow process of handling the pile-up. Roy, G4SSH, has developed a more elaborate system. He requests full calls but still fails to refrain from the list operation.

In my opinion, there are some points that both these gentlemen are missing. First, a pile-up is just a pile-up, whether caused by a special event station or a very rare DXCC entity. The only difference is the size of the pile-up. The tactics of handling the pile-up remain the same. Everything that slows down the process of serving the pile-up is bad. Asking for "the last two" is bad because it causes an unnecessary transmission to be made while completing the callsign. List operation is bad because the operator of the rare station could have logged the full callsign and given the report during a single transmission. Furthermore, most people do not like to wait for their turn in a slow pile-up operation as they realise that they could be served much quicker if the operator used more effective techniques. This causes unnecessary frustration.

What are the key elements of effectively processing a pile-up caused by a DXpedition or a special event? Here are some of the answers:

- be loud, it is easier to control the pile-up if the pile-up can hear you.
- ask for full callsigns only
- use split, as well as spread, frequency technique if the pile-up is too big for a single frequency
- keep the operation synchronised with 'in phase' transmit-receive periods: your effective operation gives the pile-up a feeling of being served sooner or later
- if your main target audience are M3 stations you may well strictly listen for them from time to time but please be firm and keep the rest of the pile-up standing by while doing so. You are the boss, but you have to obey your own rules, too!

Some words of wisdom are due from a ham who has worked down the biggest pile-ups ever. Listen to what Martti Laine, OH2BH, has to say: "Whether it is a contest or DX, I want to have an optimum queue with smooth going. To me, a screaming, disorganised pile-up is uncivilised. There are ways to maintain full control of the audience at all times and create that wonderful feeling of everyone getting through in orderly fashion. Those who say that there are well-behaved pile-ups and badly behaved pile-ups are totally wrong! The pile-up behaviour is a mirror of the DXpeditioner. If one maintains control, the others are controlled – those two things go together." (DXCC Yearbook, 1995)

Jukka Heikinheimo, OH2BR

...In my first six month's experience as an M3 (+30 years an SWL) I have never had any real difficulty contacting a GB station but of course patience is the keyword. I do feel, however, that the CQ queuing system employed by Roy Clayton and many others is by far the better method than just calling CQ and waiting for the jumble that follows. Once your callsign is on the station's list you can then sit back and listen to the rest of the QSOs whilst waiting to be called; far more relaxing than trying to break through the normal chaos.

Martin Timms, M3UAC

...I tend to favour 'by the numbers' method, especially when trying to get through a DX pile-up. This tends to remove the incessant two-letter calling beloved by some who find listening somewhat of a chore. It takes longer, but patience has to be a quality for radio amateurs. Running a list is a good method for inter-UK work. Each list is small and worked efficiently so if missed first time it is not too long before another one comes along.

My personal gripe is with an operator who spends much of the time simply calling 'QRZ' without the benefit of even transmitting a callsign.

Mike Williams, M0MRW

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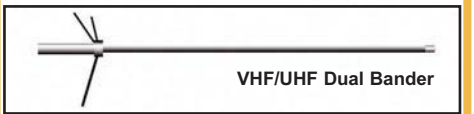

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