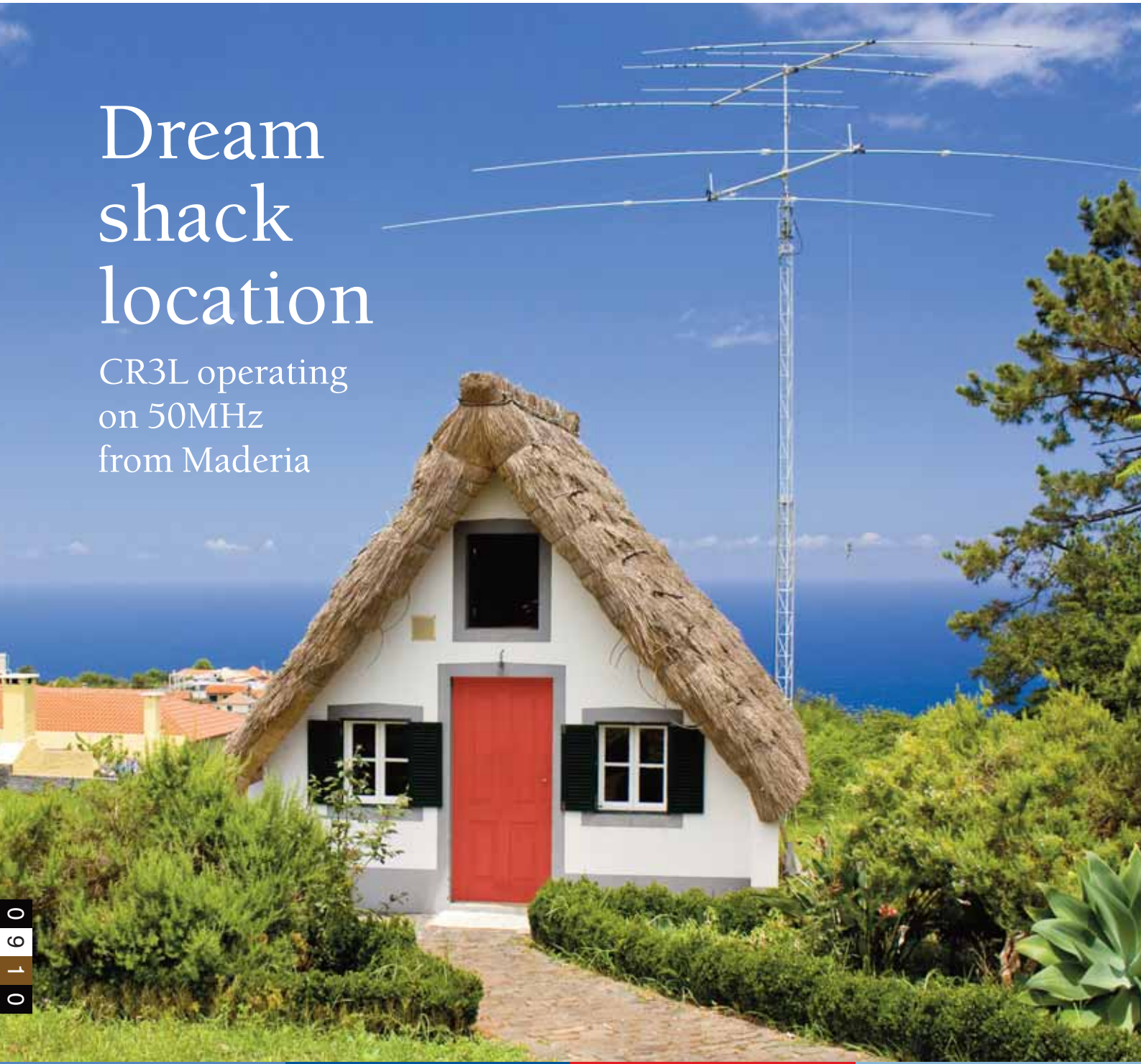
RadCom

THE RADIO SOCIETY OF GREAT BRITAIN MEMBERS' MAGAZINE. WWW.RSGB.ORG

SEPTEMBER 2010
VOLUME 86
NUMBER 09

£4.25



Dream shack location

CR3L operating on 50MHz from Maderia

0910

Homebrew
Designing and building bandpass filters

Wouxun handhelds
Low cost 2/70 dual band and 4m radios reviewed

Kanga FOXX 3
Compact CW transceiver kit reviewed

RSGB Yearbook 2011
Brand new 2011 Yearbook out this month

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New Web Site!

Check out our new look website! We have tried to make it more informative and more user friendly. Check it regularly and watch it grow!

DEAD or ALIVE!

We still offer great part exchange deals on your old radios - even dead ones! Turn your junk into cash by using it as part exchange payment. It may be worth more than you think. Call us today!

Work D-Star from PC / Mac direct or via your own DVAP Repeater!

The **DV-Dongle** connects to your PC / Mac via a USB, and provides encoding and decoding for D-Star communications. Just connect to an internet active repeater and you can work any station operating through that repeater. All you need is PC or Mac (with mic.), Dongle inserted in USB socket and an internet connection. **£179.95 C**

NEW

DV-ACCESS (DV-DC Access Point) contains a 10 mW transceiver that permits a 2 metre D-Star handheld to work into a PC from up to 100 metres. **£229.95 C**

Proset-Elite-6 NEW

The ProSet-Elite 6 uses the new HC6 element that is ideal for the latest transceivers with DSP tx audio EQ. Heil have published a list of recommended EQ settings for many popular radios.

Designed in the style of previous ProSets, you get dual headphones & adjustable boom mic. You need to add the appropriate AD-1 adaptor lead. Tell us your radio and we will supply correct one. **£179.95 C**

For Icom radios, **ProSet-Elite-6-IC** is available. You get the same functions but element is matched for Icom. **£194.95 C**

ProSet continues for those who don't have EQ in their radios and is offered at a great price.

ProSet-4 or 5 £114.95 C
This is fitted with HC-4(DX) or HC-5 (Normal) insert. Needs AD-1
ProSet-Plus £189.95 C
This has dual inserts switchable

ICOM

ID-E880 NEW

** 2m/70cm 50W Mobile*
** D-Star +D-Star Repeat Mode*
** Extensive GPS Compatability*
** CTCSS & DTCS + Airband Receive*
** 1000+ Memories*
** Detachable Head* **£429.95 D**

NEW IC-9100

VHF/UHF Satellite + HF + D-Star **£TBA**

Expected October
100W on HF-2m
75W on 70cms &
10W on 1296MHz
Some items optional

NEW FIND IT CHEAPER? We'll Match it!

IC-T70E

Dual Band 2m/70cm Handy **£159.95 D**

IC-E90

Triple band 6m, 2m, 70cms. **£234.95 D**

NEW IC-E80D

** 2m/70cm Handheld*
** D-Star +D-Star Repeat Mode*
** Extensive GPS Compatability*
** CTCSS & DTCS + Airband Receive*
** 1000+ Memories*
FREE software on Icom site
In Stock Now **£314.95 D**

IC-E92D

A great dual band handheld woth D-Star fitted. Wide receive **£369.95 D**

IC-E2820

Great dualband mobile. **£424.95 D**
Fitted with UT-123 D-Star module. **£579.95**

HF Transceivers

IC-7600 FREE USB keyboard!

This HF-6m transceiver is the successor to the IC-756 series. It takes features from the flagship IC-7800 and the more recent IC-7700, putting them into a package that brings the price within reach of many more hams. **£3379 D**

IC-7800	Deluxe HF / 50MHz All-Mode 200W Transceiver	£7999 D
IC-7700	1.8-54MHz 200W with built-in PSK-31 + keyboard	£5499 D
IC-7200	HF & 6m DSP 0.005-3335MHz wideband receive with USB port	£799 D
IC-7000	160m-70cm 100W (hf) Mobile, portable or base station	£1089 D
IC-718	160m-10m 100W transceiver that brings HF to those on a budget	£519 D

Other Radios

IC-910H	£1249 D	IC-R20	£389.95 C
IC-910HX	£1449 D	IC-R1500	£449.95 C
IC-2200H	£199 D	IC-R2500	£559.95 C
IC-R3	£385.95 C	IC-R8500	£1379.95 D
IC-R6	£172.95 C	IC-R9500	£9799.95 D

West Mountain

Rigblaster PLUS The standard for an automatic switching interface. Your mic always works, no manual switching, no unplugging. USB operation. **£159.95 C**

Rigblaster Pro Complete system designed to perfectly integrate PC & radio. Whatever the mode, this will provide the answer. Inc a complete set of leads. **£279.95 C**

Wouxon KG-UVD1P

2m & 70cms Transceiver

A 5 Watt 2m & 70cms handheld with DTMF, CTCSS and DCS. Also has WFM broadcast. This keypad entry radio with LCD display is supplied with LI-ion battery and AC charger. **£89.95 D**

NEW

SSB MastHead PreAmps

Range of high performance mast-head pre-amps with optional coax DC feed boxes. 6m - 13cms. Phone for prices.

FAST SAME DAY DESPATCH SERVICE!
Orders must be received before 3pm.

KENWOOD

TS-590E NEW

W&S are pleased to announce the new HF radio from Kenwood.
Expected November £TBA

HF Transceivers

TS-2000E £1489.95 D

The TS-2000E is the classic all-band, all-mode base station covering HF - 70cms at up to 100W. Includes dual channel receivers & DX-cluster monitor with built-in TNC.
TS-2000X +23cm **£1749 D**

TS-480HX Ideal for mobile, portable or base station. Gives a massive 200W on HF and 100W on 6m. **£849 D**

TS-480SAT This model gives 100 Watts on all bands up to 6m, but adds a built-in automatic ATU. **£749 D**

Handhelds

TH-F7E	2m/70cm 5W (2-pin Kenwood) SMA +FREE Clip Mic	£229.95 D
TH-K2E	2m 5W 4-Key Keypad (2-pin Ken) SMA +FREE Headset	£159.95 D
TH-K2ET	2m 5W 16-Key Keypad (2-pin Ken) SMA +FREE Headset	£165.95 D
TH-K4E	70cm 5W (2-pin Kenwood) SMA +FREE Headset	£159.95 D

VHF Mobiles

TM-V71E £289.95 D

2m/70cm Dualband Mobile Transceiver. Features;- *Wideband Receive, Built-In Echolink, Simultaneous 2 Frequency Receive, Removeable Control Head, CTCSS Encode / Decode, 1000+ Memories, DTMF Mic.*

TM-271E	2m FM 60W mobile. CTCSS, 200 Memories, DTMF Mic	£165.95 D
TM-D710E	2m/70cms 50/50W mobile. APRS +EchoLink, DTMF Mic	£429.95 D

Carriage Charges: A=£3, B=£4, C=£6.95, D=£10, E=£12

Orderline

01702 206835

Online Catalogue

www.wsplc.com

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Zero Interest

JAYCEE OPEN DAY 2010!

Saturday 18th September
10am -4pm

W&S Scottish Branch @ Jaycee Electronics, Glenrothes, Fife.
Icom, Kenwood & Yaesu In Attendance

Come & Grab A Bargain At Scotland's Premier Event!

NOW IN STOCK!
NEW AIRNAV RADARBOX-3D

RadarBox 3D - The world's ultimate virtual radar system with Google Earth as a map overlay & new 3D aircraft picture library.

Full Package **£489.95 C**

Current owners can upgrade to 3D with **RadarBox-UG** for just **£109.95 C**

RadarBox-Pro Basic Package - No 3D **£399.95 C**

MicroHam Interfaces

microKEYER

Multimode USB Interface gives you radio control, dual-channel USB sound card, hardware FSK, digital voice keyer, improved WinKey CW keyer, true all mode operation, unparalleled auxiliary control.

£229.95 C

MK2R+

Two radio Controller gives you radio control, hardware FSK, flexible receive audio switching, digital voice keyer, WinKey 2 CW keyer.

£699.95 C

Diamond Switch Mode Power Supplies

New Lower Prices!

GSV-3000

**Output voltage: 1 - 15V DC*
**Output current 30A continuous*
**Built-in cooling fan*
**Supply 230V AC 50Hz *Weight 9kg*
**Size 250x150x240mm*

£199.95 D

GZV-2500 £139.95 D
Output 25A, 5-15V DC, supply 230V AC Switch mode over volts protected.

GZV-4000 £189.95 D
Output 40A, 5-15V DC, supply 230V AC Switch mode over volts protected.

GZV-6000 £369.95 D
Output 60A, 1-15V DC, supply 230V AC Switch mode over volts protected.

Ameritron Amplifiers USA Manufactured

AL-811XCE 600 Watts 3x 811A 230V AC. **£899.95 E**

AL-82XCE 1.5kW QSK 2 x 3-500Z 230V AC. **£2729.95 E**

AL-800HXCE 1.25kW QSK 1 x 3CX800A7 230V AC. **£3179.95 E**

AL-1500XCE 1.5 kW 1 x 3CX1500 230V AC **£3469.95 E**

ALS-500MXCE 500W Solid State 12V @ 100A. **£949.95 D**

Exclusively Imported by Us

Ameritron amplifiers are rugged with typical USA engineering. Valves still give more watts to the £ and lower distortion.

MFJ *The World's Largest Range From Europe's Largest Stockist.*

MFJ-998
W&S £649.95 C

**Digital & Analogue x-needle VSWR*
**1.5kW SSB & CW *1.8 - 30MHz*
**20,000 memories*
**Built-in antenna selector*
**Auto bypass protection*

MFJ-925 Compact auto tuner £169.95 D
MFJ-927 200W remote auto atu £249.95 D
MFJ-928 Basic auto atu £199.95 D
MFJ-931 Artificial ground £112.95 C
MFJ-932 Mini loop tuner £139.95 C
MFJ-934 Artificial ground + ATU £199.95 C
MFJ-935B Portable loop system £199.95 C
MFJ-945E Mobile atu 300W £129.95 C

MFJ-929
AUTO TUNER 1.8-30MHz 200W

LCD readout, 20,000 memories, long wire & coax, radio interface.

W&S £209.95 C

MFJ-991B Auto atu 150W £209.95 D
MFJ-993B Auto atu 300W £249.95 D
MFJ-994B Auto atu 600W £339.95 D
MFJ-962D 1.5kW ATU £289.95 D
MFJ-969 160m - 6m 300W £209.95 D
MFJ-971 Portable atu £118.95 C
MFJ-974B Balanced ATU 3.5-30MHz £189.95 D
MFJ-986 3kW differential tuner £349.95 D

MFJ-112B

World map clock.
Was ~~£32.95~~ Now £22.95 A

MFJ-1260 Mic control 1 in/2 out £99.95 C
MFJ-1263 Mic control 2in/2 out £109.95 C
MFJ-1275 Sound card adaptor £109.95C
MFJ-1625 Window Ant + Tuner £199.45 D
MFJ-16B01 Dipole centre SO-239 £21.95 A
MFJ-16C06 6x dog-bone insulators £4.95 A
MFJ-16E01 300Ω end fed SO-239 £10.95 D
MFJ-1796 40m-2m vertical £239.95 D
MFJ-1798 80m-2m vertical £299.95 D
MFJ-1908H 43ft fibre glass mast £239.95 D
MFJ-1922 Digital screw driver control £99.95 D
MFJ-1924 Prog. screw drvr control £129.95 C
MFJ-1925 ATAS-100 controller £72.95 C
MFJ-202B Receiver noise bridge £79.95 C
MFJ-250X 1kW dummy load (x-oil) £55.95 C
MFJ-260C 300W dummy load £44.95 C
MFJ-261 100W dummy load £32.95 C
MFJ-265 2.5kW load fan cooled £199.95 C
MFJ-403 Micro CW keyer £66.95 C
MFJ-403P Micro travel iambic £79.95 C
MFJ-4103 PSU for FT-817 £52.95 C
MFJ-417 Pocket morse tutor £76.95 C
MFJ-4403 Trcvr volt conditioner £109.95 C
MFJ-442 Slim electronic keyer £199.95 C
MFJ-461 Pocket morse reader £99.95 C
MFJ-4714 4-way remote ant switch £87.95 C
MFJ-4726 6-way remote ant switch £159.95 C
MFJ-490 Memory keyer + paddle £244.95 C
MFJ-495 Memory keyer £189.95 C

VIBROPLEX UK Distributors

V-CM A compact straight key with super movement. **£63.95 C**

V-CW High quality iambic key in the style of Vibroplex **£154.95 C**

Watson Cross Needle Meters

These are high quality, accurate VSWR meters with large, clear display featuring X-needle movements.

WCN-200 £69.95 C
* 1.8 - 160MHz * 0 - 30 / 300 / 3000W
* 600W max above 30MHz * 2x SO-239

WCN-400 £69.95 C
* 140 - 525MHz * 0 - 30 / 300 / 600W
* 2x SO-239

WCN-600 £89.95 C
** 1.8 - 525MHz * 0 - 30 / 300 / 3000W*
** 600W max above 30MHz * 2x SO-239*

Butternut Vertical Antennas

These antennas are extremely efficient and use no traps. The large, air-spaced coils are the secret, and resonant adjtments can be made at ground level.

HF-2V 80, 40m DX vertical. 9.75m, Easy erect. £289.95 D
HF-6V 80,40,30,20,15,10m self support 7.9m £389.95 D
HF-9V As HF-6V but adds 17,12 & 6m. 7.9m £449.95 D

Watson Coax Switches

These Watson premium grade RF coax switches have been created to fulfil a cost effective need for RF switches that are able to cater for the ever widening commercial RF spectrum.

CX-SW4PL 4-way SO-239 £56.95 C
CX-SW4N 4-way N sockets £59.95 C
CX-SW3PL 3-way SO-239 £41.95 C
CX-SW3N 3-way N socket £49.95 C
CX-SW2PL 2-way SO-239 £26.95 C
CX-SW2N 2-way N sockets £32.95 C

Radio Works Carolina Windom Ants

G5RV-PLUS
Efficient All-Band Antenna, 80-10m with Balun. 102ft length.
£79.95 C

All windoms include WARC bands

CW-160 160-10m 252' l. £159.95 D
CW-80 80-10m 133' l. £129.95 D
CW-80LP 80-10m 133' l. £119.95 D
CW-40 40-6m 66' l. £119.95 D
CW-40LP 40-10m £116.95 D
CW-40PLUS 40-10m 66' l. £139.95 D
CW-620 20-6m 33' l. £119.95 D

Baluns

B1-2kPLUS 1:1 2kW £39.95 C
B4-2K 4:1 1.5kW £49.95 C
Y1-5KPLUS 1:1 1.8-50MHz £52.95 C

Carriage Charges: A=£3, B=£4, C=£6.95, D=£10, E=£12

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Present

YAESU
Choice of the World's top DX'ers

End of Summer Offer!

Buy any Yaesu HF radio and get FREE Heil adaptor lead and FREE 3-Year Warranty. Offer ends September 30th and limited to RadCom readers only

NEW ## FT-5000D & FT-5000MP Arrives!

We expect stock at end of August.
Phone for our "DEAL" Prices.

200 Watts Output - 3dB Gain over 100 Watts!

The most exciting radio this year. It embodies Yaesu's latest technology receiver performance and operating convenience very much at the forefront! This radio will carve a milestone in ham radio. Performance like this does not come cheap, but as an investment it is an absolute bargain.

The Dynamic Pair! FT-450 & FT-950

FT-450 £619.95 D

FT-950 £1289.95 D

The FT-450 represents amazing value for a 100 Watt radio and even includes 6m and a 10kHz roofing filter. You also get variable IF bandwidth and dynamic noise reduction. For even more features go for the FT-450AT with auto antenna tuner. Step up to the FT-950 and you enter the world of advanced £1000 class design. You get 30kHz - 56MHz Rx, Auto ATU, triple conversion Rx with 3 roofing filters, 32 bit floating point DSP, Superb dynamic range, Tx variable bandwidth and Mic EQ adjust, plus CW zero/spot feature, CW message storage etc.

NEW ## VR-160 *Receiver*

Yaesu's new Dual Receive Handheld receiver covers 100kHz to 1.3GHz FM WFM and AM. Includes CTCSS and DCS. Supplied with LI-ion battery it has current drain of less than 1mA in sleep mode & 24hrs operation on full charge!

£189.95 C

NOW IN STOCK

VX-8DE *Handheld*

This dual band handheld features APRS display (for Tx your position get optional GPS module). Dual receivers, plus FM and AM reception. This water resistant radio includes barometer.

£399.95 C

FT-897D *Transceiver*

This radio was conceived as a portable or base station. Covering 160m to 70cms, it is the ideal choice where size matters. There is even room inside for an optional FP-30 internal AC supply. With 100 Watts on all bands to 6m, 50W on 2m and 20W on 70cms, there's plenty of punch. It even has a beacon mode for propogation tests and a built-in CW trainer to teach you to read CW. To hold it is to appreciate how rugged it is. A great little radio with a big voice!

£759.95 D

You Don't Own an FT-817! Why Not?

Owning an FT-817 makes a lot of sense. It is the only self-contained portable transceiver covering 160m to 70cms. Take it anywhere in the world. It fits in hand baggage with ease. Use it as a staion monitor or receiver. Use it as a test transmitter. Drive a linear, use it mobile .....and all with built-in battery. So why don't you own one?

FT-817ND	HF - 70cms 5W all-mode transceiver	**£499.95 D**
FT-817BHIDSP	Fitted with DSP module	**£599.95 D**

FT-857D Transceiver - The Best Value Mobile?

£659.95 D

The FT-897D really is an incredible package. With a detachable front panel, it makes a great mobile installation that covers 160m to 70cms. You also get receive FM broadcast, AM airband and 100kHz to 56MHz. The 200 memories make band hopping and channel hopping easy and the excellent rx dynamic range has been crafted of the FT-1000MP. All in all a great radio. We reckon it is the best value in HF mobile.

^ FT-1900E

^ FT-7900E

^ FT-2900E

FTM-10SE	50/40W 2m/70cms stereo FM Mobile	**£299 D**
FT-1900E	NEW 2m Mobile 65W	**£129 D**
FT-2900E	NEW 2m Mobile 75W	**£139 D**
FT-7900E	NEW 2m/70cm Dualband Mobile 50/45W	**£229 D**
FT-8800E	Dualband Mobile 50W / 30W	**£299 D**
FT-8900R	10/6/2m & 70cm Mobile	**£359 D**
VX-3E	2m / 70cm Handheld Wideband receive	**£149 D**
VX-8DE	NEW Triple band 6m-70cms APRS etc	**£399 C**
VX-7R	Waterproof dualband handy (silver / black)	**£279 C**
VX-6E	2m/70cms handy, 5W Wideband Receive	**£229 C**
FT-60E	2m/70cms, 5W handy Wideband Receive	**£169 C**

FT-2000 - The Choice Of World DXpeditions

FT-2000 £2299.95 D **FT-2000D £2899.95 D**

The inescapable fact is that the FT-2000 160m - 6m radio just keeps on selling. Designed as a true DX machine, it has all the features that a serious operator needs, whether for contest work, DXpeditions, or serious weak signal work. Choose the FT-2000 for 100 Watt operation or the FT-2000D with its AC supply and 200 Watts of power. Extensive DSP gives you selectivity down to 25Hz whilst the variable Tx bandwidth and Mic EQ let you adjust for the perfect respondse for your voice and type of operation. The dynamic Rx range has proved itself in live operation whilst the 3 roofing filters help to avoid blocking in the IF section. You get dual receivers plus a digital 5-channel voice memory, And for those who want to use their PC, there is FREE downloadable software. It's a great rig with great capability.

RadCom

THE RADIO SOCIETY OF GREAT BRITAIN'S MEMBERS' MAGAZINE

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RadCom is published by the Radio Society of Great Britain as its official journal and is sent free and post paid to all members of the Society. **The October issue of *RadCom* is due to be delivered to UK addresses by Monday 27 September.**

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

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

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

Original concept, layout and design by Imotea Creative Mediadesign.
E-mail. radcom@imotea.com

RSGB MEMBERSHIP – Annual Rates

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(individual & club)

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P&P on RSGB orders:
£1.95 for 1 item, £3.50 for 2 or more items. Overseas rates on request.

Front cover image: This shack on Maderia has two fixed towers with a Mosley PRO 57, a TH6DX, 2-el 40m and a Tonna 5-el 6m on separate 12m towers (Field Day-style), a TH5DX and a 5-el monobander for 15m as well as a vertical for 80 and 160m.

Photo: DJ6QT

News and Reports

Reviews

Features

Another 47 more like this please – p16

An inexpensive LCD monitor for ATV – p44

Technical Features

Follow Peter Dodds' loop experiments – p34

Regulars

UK Headquarters station - GR2HQ 2010

Steve White, G3ZVW operating GR2HQ.

The UK Headquarters station GR2HQ (formerly GB5HQ and GB7HQ) was active in the IARU HF Championship on 10 & 11 July. This annual nationwide contest operation is the most complex amateur radio event in the UK, with 41 operators involved at 15 different locations, using an internet-linked logbook. This contest gives UK contesters a unique opportunity to work with other UK contesters as part of a team, instead of as rivals.

The GR2 prefix had never been used before and helped GR2HQ make nearly 16,000 QSOs in 24 hours on the 6 contest bands 160m to 10m on SSB and CW. Unfortunately conditions during the contest were poor on 15m and very poor on 10m, which reduced the chances of GR2HQ winning the HQ section of this contest. The stars of the show were 20m SSB and 20m CW, both of which worked record numbers of QSOs. Many rare HQ (eg TG0AA, JU1HQ, OC4HQ, DX1HQ) and rare ITU Zone multipliers were worked on the bands.

GR2HQ made 1732 QSOs with stations in the UK, whose support is greatly appreciated. Over 60 applications for award certificates have been received, including applications for the new HQ Club Challenge trophies. Your comments or feedback about GR2HQ 2010 are welcomed – please e-mail team@gr2hq.com. All QSLs for GR2HQ are via Charles M0OXO.

The GR2HQ 2010 operators (and support team) were: G4FKA, MD0CCE, GM0GAV, G4TSH, G4BAH, G0OPB, G0IVZ, G6PZ, G3PJT, GM3POI, GW0GEI, G3NKC, G0AEV, G0DVJ, G4XUM, G3BJ, G5LP, GM3WOJ, G3ZVW, GM0NAI, G4CLA, GM4YSN, G4IRN, G4MJS, GI0RTN, M5FUN, MI0LLL, G3TJE, GM4YXI, G4FNL, G4BYG, GW4VEQ, 2E0CVN, G7VJR, GW0ETF, G3SVL, G7TWC, GM0RLZ, GM4FAM, GM0ELP and G3LDI.

Chris Tran, GM3WOJ
GR2HQ 2010 Team leader

Bletchley Park – can you help?

Can you help provide content for the National Radio Centre at Bletchley Park? We are looking for the following:

- High quality digital still photos and videos of amateur radio activities in the following areas: emergency communications, moonbounce (EME), DXpeditions, DX operating, contest operating, amateur TV, ARDF, IOTA expeditions and satellite/ISS activity.
- Press cuttings on amateur radio matters and activities, particularly public service aspects.

Have you got any suitable material? Please contact Carlos Eavis, G0AKI, by e-mail to carlos.eavis@rsgb.org.uk to discuss the next steps. If your material is selected, it would be edited to form part of one of the multimedia displays currently being developed for Bletchley Park.

The entrance to the new National Radio Centre at Bletchley Park.

CONGRATULATIONS

To the following members whom our records show as having reached 50, 60 or 70 years' continuous membership of the RSGB.

70 years
Mr J O Brown, G3DVV

60 years
Mr J Jackson, GM3DDL
Mr E Prince, G3KPU
Mr J A Spicer, G3DNH

50 years
Mr G C Badger, G3OHC
Mr S R Chapple, G6SC
Mr P J Hart, G3SJX
Mr L P J Lethbridge, G3SXE
Mr R W L Limebear, G3RWL
Mr J C Moore, G3OGM
Mr G F Morrison, GM3MOU
Mr A D Prichard, G0CPA
Mr K Robbins, GW3PFV
Mr C D Tabor, G3UGR
Mr F C Thorogood, G8ORV

The Society would like to apologise to G3OCA who was incorrectly listed last month as having been a member for 50 years. We are pleased to confirm that Mr Frankcom has actually been a Member and loyal supporter of the RSGB for 60 years.

ERRATA

The listing of RSGB members who visited the book stand in Friedrichshafen should have read G6FSP not G6FJP. Apologies to Dave for the mistake.

Latest EMC News

A SMALL SUCCESS. The RSGB has learned that Cardiff Trading Standards officers obtained forfeiture through the courts of a stock of imported computer power supplies that did not have EMC suppression components. Trading Standards also delivered a formal caution to the company. A spokesman for Cardiff Trading Standards said: "This non-compliant item was found during a routine market surveillance exercise, purchasing power supply units from internet retailers. Once the importer was notified, they complied fully with the investigation and the seizure of the items was deemed a sufficient penalty. This case is another example of a failure to observe properly the statutory defence; to take reasonable steps and exercise all due diligence. The company had, and provided, reams of documentation and test results, but that documentation was out of date and the item tested bore little resemblance to the products purchased by my officers. This was a mistake that could, and should, have been avoided."

The RSGB continues to seek action on all aspects of EMC non-compliance and this case offers a small crumb of comfort.

BTVISION EMC UPGRADE. Without ceremony, BT has introduced a new version of the Power Line Telecommunications modem supplied with their BTVision product. The previous version has been the cause of many complaints of interference to short wave radio over the last three years. It has come to dominate Ofcom's interference statistics and has inspired the phrase "Greedy PLT".

The new modem – the Comtrend PowerGrid 9020 – replaced the previous 902 version at the BT shop (Quicklinx Code 4Z2J) in late June 2010 and it is understood that the 9020 is now part of the regular BTVision package offering.

The RSGB has obtained a pair of these modems and a quick look shows that although when carrying data the emission of interference is just as aggressive as the previous version, in the absence of any user data the interference level steps down every half-minute through 5 levels until it reaches a value only just in excess of the CISPR22 Class B conducted limit for mains emission.

No tests have yet been performed on a complete BTVision installation using these PLAs so it is not certain that BT's system software will allow this reduction to happen in practice. However, this does look like a serious attempt to minimise the needless interference generated by BTVision when it is plugged in but idle. For the last couple of years it has been clear that this emission-on-standby results from the thoughtless implementation of the Opera/UPA PLT protocol and RSGB has taken a major role in pressing for improvement. Current marketing figures suggest that BTVision installations are in use for only a few hours a day, so the present field population are generating interference 24/7 when they might reasonably be expected to produce their high level of interference for only a fraction of the time.

However, the PLT industry still has a long way to go to produce systems that are compatible with radio usage. The reduction now achieved by Comtrend is to an idle level that appears still to be above the International Standard limit, rather than at a margin below it as is customary for non-PLT products – and it is broadband across the whole HF spectrum. Furthermore it has to be accepted that all electronic communications channels eventually fill to capacity and so in the long term this improvement will make little difference. This recent technology update will delay the cumulative effects of the widespread use of PLT but will not affect the ultimate loss of radio services. It will actually complicate the tracking down of individual interferers since these may now drop their noise emission at any time.

It remains to be determined how these devices behave when embedded in a real entertainment system and real UK domestic wiring.

QSL Matters

DESPATCHES. Every now and again you get one of those months where many outgoing boxes are nearly full – but not quite. As the summer holiday season beckons, 20kg boxes went to Germany and Italy, plus 10kg each to Australia, Bulgaria, Canada, Japan, Netherlands and Russia. Smaller packages left us destined for Costa Rica, Hong Kong and Indonesia, but there are several more just waiting for those last few cards. 25,000 cards have just left us for UK users, as we begin then next round of UK despatches. Many more will be arriving with sub managers throughout August and September – everyone's holidays permitting.

OOPS! Only one person spotted a recent non-deliberate mistake in the July issue about sending cards to the former Soviet Union. Congratulations to Alan, 5B4AHJ who correctly spotted that EX is not Tajikistan, as printed. Alan was the only person to get in touch, which is a little worrying! There are now several former Soviet country bureaux and cards need to be pre-sorted by call group, before sending. The cut and paste gremlins got in and the last line should have read, 'EX–Kyrgyzstan has no bureau listing, EY Tajikistan and EZ Turkmenistan are open, but the 4J-Azerbaijan bureau is closed.'

QSL MANAGER CHANGES. *G3O-P.* Jack Brazill, G3WP may just about be the longest serving QSL volunteer, having sorted his first cards 38 years and five months ago, back in 1972. The RSGB is greatly indebted to Jack for his long voluntary service to the Society and to the many G3O-P's that have benefited from his efforts.

At age 92, Jack is taking a well earned rest and his place has now been taken by Frank G3PZS – see the RSGB website for details.

G2 CALLS. QSL sub manager for the G2 series, John Godfrey, M0JOH is currently in hospital recovering from a major operation. The RSGB team wishes to thank him for his service to his fellow amateurs, a speedy recovery and a prompt return to the bands. His place has been taken by Anthony Nowell, RS94177, now making G1 and G2 calls a combined QSL group.

M1 SERIES. There are also major changes to the handling of QSL cards for M1 callsigns due to changing levels of activity. Six groups have now been absorbed into a single M1 series under the former M1F-Z manager Martyn Wheal, 2E0MWW. The RSGB wishes to thank Anthony, RS94177, Mike, GM6OFO, Ted, G3DRN, Neville, G0DQJ and Chris, G7NRO for their invaluable help with the M1 series. Other call groups that are handled by some of these volunteers are unaffected.

For details of these and all other changes, please regularly check the QSL section in the members' area of the RSGB website.

GB2RS

John, G0NAJ is a GB2RS newsreader in NW England and would like to sincerely thank other newsreaders for their support and concern during his recent hospitalisation, which included major heart surgery.

In particular, John would like to thank Laurie,G0MRL, Mike, G4GSY, Hugh, M1NTO, Annick, M0HDE and Mark, G0VOF for filling the 'breach' during his absence, and to thank all who enquired by phone, QSO and even sent 'Get Well' QSL cards regarding his progress.

We are pleased to say all is well and he should be back in a few weeks.

John said, "To use an old cliché, 'its times like this when you know who your friends are' and, judging by communications my friends include most amateurs in NW England and N Wales, in the true spirit of amateur radio."

Be Part of the Team

The RSGB now has the keys to the new National Radio Centre at Bletchley Park and things are moving on quickly. Look for details in next month's *RadCom* on how you can become a Member of the NRC team at Bletchley Park.

Board and Regional Elections for 2010

It is formally announced that the following vacancies will arise in the Board and Regional Council for the 2010 elections.

The Board (1 vacancy)
If you are interested in serving as a Board member you must have been a corporate member of the RSGB for at least two years and need to obtain nominations and supporting signatures from 10 or more corporate members of the Society in good standing.

Nationally elected Board members all hold Portfolio responsibilities; they also serve as Directors of The Radio Society of Great Britain (a Company limited by guarantee) and their duties and responsibilities comply with the Companies Act 2006. Full briefing on these responsibilities will be given on request for election papers. Full training and briefing will be given to the successful candidate on taking up their appointment.

The Regional Council (5 vacancies)
There will be vacancies in the following regions:
Region 1: Scotland South & the Western Isles
Region 2: Scotland North & the Northern Isles
Region 4: North East
Region 6: North Wales
Region 12: East & East Anglia

All present incumbents come to the end of their terms of office on 31 December 2010 and are eligible to stand again. However, candidates are welcome for all vacant positions regardless of whether or not an incumbent is standing for re-election.

Members of the Society who wish to stand for the Regional Council and serve as a regional manager must reside in the relevant region and be prepared to play an active part in the region and as a member of the Regional Council. This commitment includes attending a minimum of six Regional Council meetings per annum.

You must have been a corporate member of the RSGB for at least two years and need to obtain the nominations and supporting signatures of at least five, but no more than 10, corporate members in good standing and residing in the region in which the candidate is standing.

Those members standing for election will be presented to the membership in the November 2010 edition of *RadCom*. The election count will take place on Thursday 2 December 2010. Successful candidates in the Regional elections will take up their appointments on 1 January 2011, and will serve a three year term of office.

Requests for election papers should be forwarded to Michelina Gramson, PA to the General Manager, telephone 01234 832700 or e-mail GM.Dept@rsgb.org.uk. The closing date for the submission of election papers is 1 October 2010.

Solar Panel Competition

We're delighted to announce that the winner of June's Solar Panel Competition was GM7OKX. The correct answers were 1 – C, 2 – B, 3 – C.

Do you owe your first career steps to amateur radio?

As part of the exhibits being developed for the National Radio Centre at Bletchley Park, the Society wants to give some examples of people who believe that their first (and perhaps subsequent) career steps owed a lot to amateur radio.

Are you someone who believes that amateur radio helped to get you on the career ladder?

If so, we'd like to hear from you. We will be asking a few of those who express an interest to agree to be filmed for a display at the centre – a short, one-minute interview, and we'll give you help in structuring it. Above all, we want it to be your own words and your own views about how amateur radio helped you.

If you can help, please send an e-mail to Carlos Eavis, G0AKI, carlos.eavis@rsgb.org.uk to start the ball rolling.

The National Radio Centre blends well into the surroundings at Bletchley Park.

Welcome

The RSGB would like to welcome to the RSGB family the following new Members who have joined their voice to ours and are helping to keep the RSGB strong.

2E0EPT	Mr R Paris
2E0GWI	Mr N Davies
2E0VXR	Mr T Murdoch
2E1HCM	Mr D Gilpin
AD7HA	Mr P Sandland
DK8JN	Mr D Hubert
DL9SAW	Mr E Stuber
EB2DJB	Mr R M Landa
EI8JB	Mr C Carolan
F5MNH	Mr D Paris
G0CRK	Mr D J Bowles
G0CRO	Mr R Crow
G0DUH	Mr P J Murrell
G0EUS	Mr G Reynards
G0KIW	Mr P D Walker
G0OEI	Mr M B Hopkins
G0PJC	Mr A M Jones
G0TMP	Mr M A Lane
G0VVF	Mr D E Turner
G1JZJ	Mr R Andrews
G1OOM	Mr B R Woodcock
G1VKN	Mr S Matthews
G1VWH	Mr W Kirk
G3SCJ	Mr D W Power
G3URJ	Mr A J Moss
G3XIA	Mr P B Bates
G3YLY	Mr B A Hawes
G3YTN	Mr R Hill
G4CEX	Mr C Durant
G4CMC	Mr P E Carr
G4HNB	Mr C B Hall
G4HZR	Mr DNN Saunders
G4NSC	Mr W Weatherspoons
G4WEO	Mr C A Gardner
G6FJO	Mr S Turner
G6FLK	Mr J P Walton
G6XFB	Mr B J Roe
G7GJT	Mr W R Everton
G8CZG	Lord DWG Bell
G8JAM	Mr M J Dainty
G8NVH	Mr S P Reynolds
G8YYC	Mr G E Miller
GI8DGB	Mr B Moore
GM0PRQ	Mr M J Shield
GM4BRB	Mr A G Stewart
GM4FAU	Mr J Walker
GM4HWS	Mr S J Roberts
GM4OAS	Mr G F Liddle
GM6SYC	Mr E G Tennant
GW0FZY	Mr J Woolgar
GW0VWD	Mr A R Ball
GW4NPC	Mr R M Blayney
HB9IQB	Mr P Monioudis
IK2EGL	Mr Donato
K5AWC	Mr R L Ferguson
KF9GS	Mr R L Harben
KZ5Q	Mr S Klingler
LA2OT	Mr JOH Riiser
M0GKD	Mr A Mockford
M0JCU	Mr J Underwood
M0MDR	Mr M Rast
M0MPM	Mr M Meerman
M0NEV	Mr L N Creek
M0ORO	Ossett Amateur Radio Operators
M1EJE	Mr D C Clarke
M1HFX	Mr R Ayres
M3AXZ	Mr K Wood
M3BFH	Mr M Moger
M3DEH	Mr M Dollin
M3ETH	Mr J Goodyear
M3HUB	Mr A Hubbard
M3YJW	Mr J B Williams
M3ZPN	Mr L Gibbs
M6ABT	Mr E S Johnston
M6AEE	Mr S J Hedgecock
M6AEI	Mr S Woodmore
M6BPF	Mr B Freeman
M6DOA	Mr D P Morris-Jones
M6DSL	Mr DPB Brogan
M6ELO	Mr D P Bolton
M6IXI	Mr R Forss
M6MOC	Mr T Forss
M6NDB	Mr N D Brown
M6PHM	Master P Meerman
M6PJE	Mr Elmore
M6PSP	Mr A Bolton
M6REG	Mr R Noquet
M6RPM	Mr D T Williams
M6TTL	Mr M Walker
M6YYY	S K Christofi
MI3FSX	Mr T J Mulholland
MI6JNU	Mr J Nelson
MI6STN	Mr S Nash
MM3VNW	Mr A Sim
MW3YYR	Mr K P Foster
MW6RWF	Mr T Mitchell
OE8GVK	Mr V Gert
PD2ADX	Mr P Polderman
RS206292	Mr P Donaghy
RS206304	Mr P Thomann
RS206305	Mr S Parker
RS206334	Mr M Joyson
RS206366	Mr L Brooks
RS206391	Mr P H Jones
RS206398	Mr D J Ingrey
RS206408	Mr R A Gripp
RS206418	Mr D Driver
RS206424	Mr A P Lambert
RS206431	Mr K Barlow
RS206433	Mr J Smith
RS206451	Cumbria Raynet Group
RS206465	Mr MWD Jaggard
RS206511	Mr R W Forbes
RS206521	Mr J Whiteside
RS52336	Mr M Kentell
SV1DP1	Mr K Stamatis
VE3NVK	Mr A L Hart
VK3MGP	Mr M Phillips
W7VPV	Mr R V Booth
WA0IUJ	Mr R Paskvan

RSGB shop

NEW

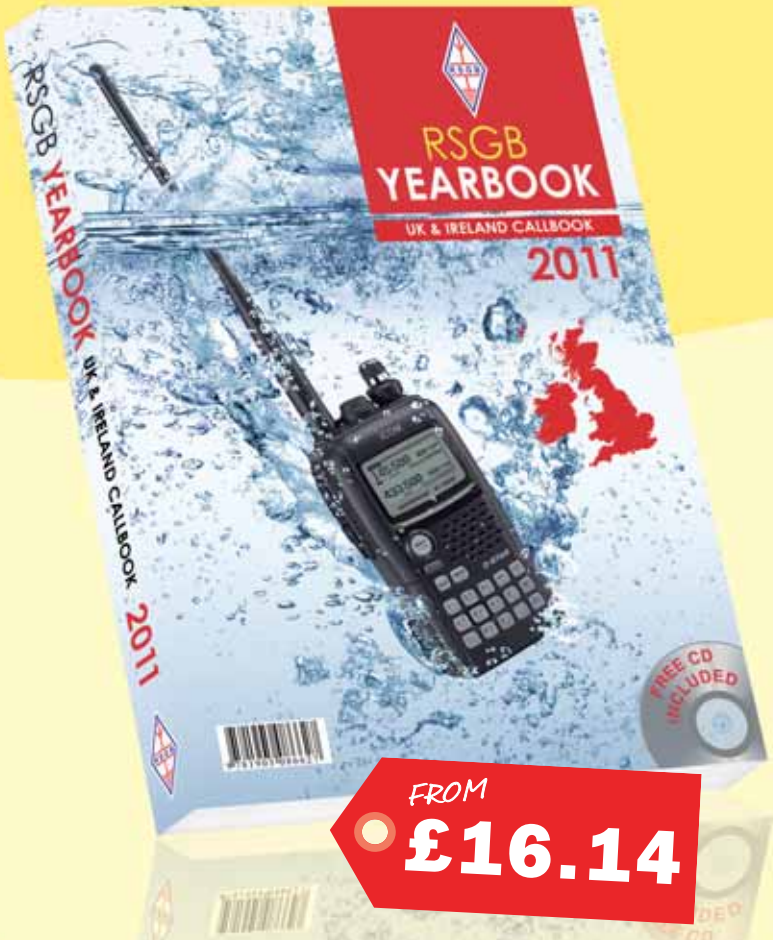
RSGB Yearbook 2011

Edited by Steve White, G3ZVW

With more calls and information than ever before!

There are now in excess of 72,500 amateur radio licences on issue in the UK, a number that has grown by over 15,000 in less than ten years. If you want to have the very latest listing of UK licences then the best source is as always the *RSGB Yearbook 2011*. With nearly 200 additional pages of the very latest amateur radio information from the UK and worldwide, the *RSGB Yearbook 2011* is an indispensable guide for everyone.

This book is more than the latest update of these callsigns. If you want details of the UK's D-Star repeaters, the dates of the 2011 RSGB contests, contact details of your local Regional manager and EMC help, only one book contains it all – the RSGB Yearbook 2011. There is all the latest information on the RSGB and amateur radio in the UK and beyond. There are details of how the Society is organised, the services it offers, committees, who to contact for assistance, etc. You will find all manner of local information organised into regions so you can find clubs, trainers and examination centres in the area alongside details of the RSGB Regional Manager Team. There are a wide range of features covering National Affiliated Societies, Local Clubs and even special features such as coverage of the Derby Wireless Club centenary. The *RSGB Yearbook 2011* also contains details on operating abroad, satellites, propagation and much more. As you would expect the latest licensing information is included along with a complete list of UK Special Contest callsigns, Irish callsigns, plus listings of UK licensees in surname and Postcode order.



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Crewe Update

The Crewe Heritage Centre Amateur Radio Society owes its formation *per se* to its affiliation to the Crewe Heritage Centre, which is a working railway museum. The radio club uses as its 'shack' the first class carriage of the Advanced Passenger Train Prototype Exhibit, which is permanently on display at the site. The club's Secretary, M0JCD, runs the local area GB2CW slow speed Morse (sometimes up to 20 wpm) service. Eventually the club hopes to set up a display of amateur radio equipment open to the public and to run courses for the Foundation and Intermediate licence. It already has two RSGB certified instructors.

The Crewe Heritage Centre is a great venue for anyone with an interest in railways; children in particular find it both interesting and educational, with the added advantage it leaves radio amateurs time to chat whilst on the Advanced Passenger Train. For further information of the club's activities visit www.GB4CHC.co.uk or call John on 01270 619034.

Club members Paul, G0UZP, John, M0JCD (Club Secretary), Eddie, M0DDG, Geoff, G3XHP and Digger, G8DHQ.

Another Foundation Pass

Another recent pass of the Foundation examination at Midlands Amateur Radio Society was Barry who now is the proud owner of the callsign M6KBF. His instructor was Ron Swinburne, M0WSN. A new course starts in September and anyone who is interested is asked to contact either Jim or Martin by e-mail to GX1MAR@live.co.uk. The course will run even if it only has one person taking it.

Lottery Money for Repeater Group

The East Yorkshire Repeater Group has been successful in winning £9,466 from the National Lottery, Big Lottery Fund. The award has come after many years of hard work by their committee. The EYRG was formed in 1974 and its first voice repeater, GB3HS (VHF) was converted from an old Marconi Argonaut transmitter salvaged from a sinking boat in the river Humber. Since then the Group has expanded with another four repeaters under its belt for UHF and ATV. The EYRG also has its very own RCF training team that has serves the local community well. The funding is being used for a new D-Star 70cm repeater, GB7HU, along with a continuing and enhanced RCF training programme. A cheque marking the event was presented to the EYRG Secretary Andy, G0VRM by the RSGB DRM for East Yorkshire Mario, G2DPA at LAM Communications, Barnsley.

RSGB DRM Mario, G2DPA, EYRG Secretary Andy, G0VRM and Lee Marsh, M0LAM of LAM Communications.

South Cheshire School Talk

In July members of the South Cheshire Amateur Radio Society visited Sir William Stanier Community School in Crewe, where they gave a talk about amateur radio to an audience of staff and students. The event was organised by club member Christian, M6CGT, who is also a student at the school.

The talk was followed by a practical demonstration of antennas and radios as well as making contact on the air conducted by Chris, G1PUV, Steve, 2E0VFR with Sean, M6TKS. Three antennas were erected outside the school covering HF, 6m, 2m/70cm, which provoked quite a bit of interest and numerous questions.

As a result of the event, three young people attended their first radio club night where they showed an interest in studying for the Foundation licence. They also met RSGB President Dave Wilson, M0OBW.

Muckleburgh Collection

An amateur radio, vintage radio, militaria and general boot sale will be held at the Muckleburgh Collection military museum, Weybourne, Norfolk on Sunday 12 September. For one day only, admission to the museum, restaurant and shop will be free.

The Radio Hut at the museum is home to North Norfolk Amateur Radio Group's unique collection of all-service vintage military, amateur and other communications equipment, which will also be open to visitors on the day. The Group will be offering surplus items from its collection for sale.

The Open Day presents an unusual opportunity to visit the country's largest privately owned military museum without charge, providing a great day out for groups, individuals and families. Radio clubs, radio amateurs, military enthusiasts and general stallholders welcomed. Pitches £5.00 payable on the day. Set-up is from 8am, free public admission from 10am. All enquiries to Bob Finch, G0HYZ, on 01263 838198.

Boatshed Open Day

On 24 July, The Eagle Radio Group held a very successful Open Day at The Boatshed, the group's meeting venue in Mablethorpe. There were demonstrations of D-Star, WSPR, digital radio (slow scan, PSK etc), HF radio and much more.

The event was supported by the RSGB Regional Team of Jim, G0EJQ and Steve, M5ZZZ who put up the display stand in the hall. The exhibition was attended by local dignitaries including the Mayor. Public interest was better than expected and five people showed keen interest in taking the Foundation licence. A donation from the group was presented to the RSGB towards the Spectrum Defence Fund.

Contest University UK

Icom UK will again be sponsoring Contest University UK on Saturday 9 October at this year's RSGB Convention to be held at the new venue of Horwood House near Milton Keynes. Contest University UK is the place where you can learn all the skills and secrets to start your journey in becoming a contester or even learn the secrets to stay ahead of your competitors. It is now in its 3rd year and is based on the highly successful international format that has seen many radio amateurs throughout the world learn about this exciting facet of amateur radio from experienced practitioners.

The main topics of Contest University will be antenna systems, preparing for a contest, propagation tools, reports on various contests around the world and how to improve your chances.

If you have any questions regarding Contest University, please contact course director Mark Haynes, M0DXR by e-mail to mark.haynes@yahoo.co.uk.

Foundation Success

Mid-Glamorgan ARC recently held a Foundation course and exam and both candidates passed. L-R Paul Stuckley, Elwyn Edwards (tutor) and David Barraclough. The club would like to congratulate both students and look forward to hearing them on the air.

Ayr ARG Intermediate Passes

In July, the Ayr Amateur Radio Group held an Intermediate exam and all six candidates were successful. From L to R: Jamie, 2M0LIK, Tom, 2M0MOF, Chris, 2M0YAF, Annemarie, 2M0CMA, Gordon, 2M0YET, lead instructor Dennis, GM3YDN and Raymond, 2M0SOE.

Photo by John Shankland, GM3CSO.

High Activity for East Kent Radio Societies

The Hilderstone, Dover and Maidstone YMCA Amateur Radio Societies have all been very active operating special event stations. First, Hilderstone at Ramsgate took part in the 70th Anniversary of Operation Dynamo and The Little Ships Event to Dunkirk. They operated GB2DLS and made many contacts around the world, informing them about this historic occasion. In addition to the radio activity, Ian, G3ROO displayed and demonstrated a fine collection of wartime military communications equipment, bringing back many memories to some of the old visiting heroes. Mike Howland, G4MIX reported that despite the weather it was a very successful occasion.

Following on from the Hilderstone ARS event, Dover ARS decided to join a further historic event to celebrate the success of Charles Rolls (of Rolls Royce fame) flying a round trip across the English Channel 100 years ago in a Wright biplane. Peter, G0KOK and others operated the special licensed station GB1CR using a kite antenna flown at a considerable height from the top of the cliffs near South Foreland. Morse transmissions were also made by the old operator Ian, G3ROO making several DX contacts.

Finally the Maidstone club, that has been in existence since 1937, entered this year's National VHF Field Day competition, again on the top of the cliffs at Capel-le-Ferne near Folkestone. The site of the Capel Battery has recently been acquired by club member John Button, G0XJB.

DXpedition to Aran

For the week starting 25 September, members of Sands Contest Group and Workington Radio Club along with Brendan Minish, EI6IZ will be visiting the Isle of Aran off the coast of south western Scotland, operating under the callsign MM0SCG. They plan to operate on VHF, HF, SSB, CW and data modes. The location is IOTA island number EU-123 and SCOTIA island number CS14.

A Great Day in the Country!

On Sunday 18 July Tim Walford, G3PCJ, opened up his farm for a new event called 'QRP in the country' and what a fine day it was. The weather had threatened to spoil everyone's fun but in the end it was a lovely summer's day for a really 'radio friendly' gathering. In addition to an extensive display of Walford Electronic kits there were sales of 'junk' parts, a Bring & Buy stall, an RSGB bookstall and members of the Yeovil ARC were on air with some vintage radios.

Blackmore Vale ARS loaned out 80m DF receivers for a bit of 'hide and seek' and Roger Stafford, G4ROJ, had his kite aerials up in the air all day. The catering had a village fete feel about it with local fruit, sausages and beer all on offer. Tim's good lady Janet was offering guided farm tours, which proved very popular.

Rob Mannion, editor of *Practical Wireless*, officiated with the prize giving, presenting certificates for the Bath Buildathon 80m contest (won by Tim, G4ARI), boxes of chocolates for the 'guess the weight of the transformer' competition (won by Peter, G4OST) and a good old raffle in aid of 'Send a cow to Africa' (won by Dave, M0SXZ). Gerald Stancey, G3MCK, judged the homebrew contest and awarded first prize to Steve Hartley, G0FUW, for his 'Pet Rock' transceiver.

'and the winner is...' Rob Mannion overseas the prize giving at 'QRP in the country'.

NEWS IN BRIEF

• Bletchley Park's annual Enigma Re-union will take place on Sunday 5 September. Around 100 Bletchley Park veterans will return to the Park to celebrate the breaking of the Enigma codes. There will be a memorial service and an opportunity for visitors to meet and talk to people who actually worked at the Park during World War Two. There will also be a special Lancaster flypast on both days by the Battle of Britain Memorial Flight (weather and serviceability permitting).

The cost of the annual season ticket is: adults £10, concessions £8 (OAPs and student with valid ID card), children £6 (aged 12 to 16 - children under 12 admitted free of charge) and a family ticket £22.50 (two adults and two children aged 12 to 16). Tickets include a guided tour (subject to availability) and/or the use of an audio guide. On-site parking is £3 per car.

Successful McMichael Rally

July saw yet another great turn out for the McMichael Rally at Reading Rugby Ground at Sonning, Reading Berkshire. The attendance was even higher than that of previous years – perhaps helped by the prize draw of a brand new FT-450 HF multimode transceiver donated by Yaesu UK and ML&S Ltd.

The lucky winner of the raffle was Mick Hunter, M6MMM of Stoke on Trent. The photo shows left Chris Taylor ML&S, Min Standen, M0JMS, Rally Chairman and RADARC Committee member, Mick Hunter M6MMM, Martin Lynch, ML&S, Tony Wiltshire, ML&S.

Region 11 Club of the Year

2009 Region 11 winners of the Club of the Year were recently presented with the winning trophy by the sponsor David Bowyer (the Land Rover Winch Man) of Goodwinch. Goodwinch.com supply both light duty and professional winch systems for Strumech Versatower radio masts.

The photo shows some of the members of the West Devon club, including the youngest, Bradley, standing in front of the chairman Jules Cuddy being presented with the trophy at a recent club meeting in Plymouth.

GB2CW Changes

At present GB2CW is transmitted by M0JCD from Nantwich at 7.30pm on Tuesday and Fridays. As from 27 July the time will change to 8.30pm local time on both nights. This is to avoid overlap with other GB2CW transmissions.

New Power Amplifier Kit

Kuhne Electronics has a new 60W power amplifier for 1240 - 1300MHz. Its high linearity makes this power amplifier suitable for all amateur radio applications. It needs an input power of 3W. Other features are a monitor output, current consumption of 5A and a voltage requirement of 12 – 14V.

Full details can be found on the Kuhne electronics website www.kuhne-electronic.de.

Air Cadets go Radio Ga Ga

In July, five Air Cadets from 2454 Warbreck Squadron took their first steps in amateur radio by passing their Foundation licence exam. This is by no means an easy task for these young people with an average age of 15. It took a lot of dedication to complete the 11 week training course as well as a number of practical tests that had to be passed from sending and receiving Morse code to assembling a radio station. All the Cadets pass with flying colours; however a special mention should go to Cadet Simms who passed with 24 out of 25 questions correct. The picture shows Flt Lt Browell awarding the Cadets with their pass certificates at final parade the same night. Pictured from left to right; Sgt Hughes, M6HUZ, Cadet McLachlan, M6ROS, Flt Lt Browell awarding Cadet Nickson, M6KSN with his certificate, Cadet Porter, M6JJP, Cadet Simms, M6HUA and finally radio instructor Brian Nuttall, M0OYG.

NEWS IN BRIEF

• Videos of the presentations given at the 25th AMSAT-UK International Space Colloquium, held 31 July-1 August, are now available on the web. They can be viewed and downloaded at www.batc.tv/. Click on the 'Film Archive' icon and then select a 2010 AMSAT video.

New Forest HF Picnic

The Waterside New Forest Radio Club held its traditional 'HF Picnic' in the New Forest at Yew Tree Heath. This site was used for anti-aircraft defence equipment during WWII, but it provides a useful base for present-day amateur radio activities with a flat open area and adjacent car parking facilities.

The annual picnic is an opportunity for club members and their friends and families to meet in the beautiful New Forest countryside, to set up radio stations, often experimental, in an open-air field setting, and, just as important, to socialise and exchange information.

Gordon, G1ZEC set up the main tent and they had three radio stations operating this year: Tim, G4YVY set up the club station, an FT-757 GX II HF transceiver into a G5RV aerial oriented roughly north - south, Tony, G6MNL, an FT-747 HF transceiver into a Carolina Windom aerial oriented roughly east - west and Geoff, G0SCX, an HF transceiver into a highly portable vertical aerial. All the stations made several successful contacts during the day, Geoff with a maximum of 50 watts, since he wished to spare the car battery that he was using as a power supply.

Many club members (including past RSGB President Colin, G3PSM), friends, and family members of all ages, arrived during the afternoon, and everyone enjoyed the sunny weather. Very welcome refreshments were provided by the ladies, with kind children helping to deliver them. Everyone clearly enjoyed the event and agreed that it was well worth the effort.

Course

Reading & District ARC is holding a Foundation course from 24 September to 2 October. If you are interested in taking part in the course, contact M0LUV by e-mail to m0luv@radarc.org.

An Advanced licence course is being run by Dr Alison Johnson, G8ROG from 24 September to 6 December. If you are interested in this course, send an e-mail to g3ngx@radarc.org.

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Spectrum Defence Fund

Yacht Club Field Station

In July, South Essex Amateur Radio Society successfully operated a radio field station at the Island Yacht Club, Canvey Island, Essex. Various aspects of amateur radio were demonstrated to IYC family members, who were encouraged to operate under supervision.

Foundation Licence Exam Success

The Cotswold Amateur Radio Group is pleased to announce the success of their first student candidate Peter Ind in passing the Foundation licence exam in July. Not content to rest on his laurels, Peter, M6IND is enrolling in the Intermediate course due to start this autumn, which tutored by the club instructor Roger, G3REB and will be held at the club QTH. The CARG radio club members wish to congratulate Peter on his passing the Foundation exam, and to gratefully thank the club instructor Roger, G3REB for giving up his time to run the course

Any prospective Foundation licence holders in the Gloucestershire area who are considering stepping up to the Intermediate licence level are welcome to contact Don, G4PLE by e-mail to G4PLE@aol.com or for further information.

NEWS IN BRIEF

• George Eddowes, G3NOH, became a silent key in June. He was a long time employee at ML&S and well know to many customers. George was a skilled engineer especially in HF linears and HF equipment in general. He was also king of cable making – many customers used to queue up in the store waiting for George to make up a custom lead! He will be missed by customers and staff alike.

Reading Foundation GB1RBP

In September at the public open days of Royal Air Force Bentley Priory, Radio Society of Harrow plans to be demonstrating amateur radio, ATV streaming via GB3BH and displaying some WWII communications equipment. Public open days will be held on 9 to 11 September with the 12th a fundraising ticket-only day for the Bentley Priory Battle of Brittan Trust in partnership with St Luke's Hospice. For further information nearer the time please see www.bentleypriory.org and www.g3efx.org.uk.

GB1RBP in May 2010 at the St Luke's Fund Raising Day at Bentley Priory. Photo by G0CAG.

Fund Raising Efforts

Two recent events in Norfolk have raised money for charity with prizes from a wide range of radio sources including the RSGB. Between the Norfolk Amateur Radio Club annual Radio Active event and the Norfolk Barford rally, £780 was raised for the Cancer Research and Big C Appeal charities. That's around twice the amount raised at last year's similar event. Well done to all concerned.

Railways on the Air

A new website has been launched to support this year's ROTA event on 25 and 26 September. The new website is at http://rota.m0php.net, or it can be accessed via the Bishop Auckland Radio Amateurs Club main site. The design has been undertaken by their web wizard, Craig, M0PHP, who also hosts the site. If you plan to operate from railways on that weekend please visit the site and register now. All amateurs are welcome and will receive a special certificate when they make contact on air that weekend.

SOS Radio Week

Since 2007, the SOS week event is a chance for amateur radio operators to raise funds for the Royal National Lifeboat Institute through operating sponsored radio stations. Some participants donate their sponsorship money to one of the 235 lifeboat stations around our coast and others donate direct to the national fund. In 2010, SOS radio week raised over £3600 for the RNLI.

For the second year running, Meirion Amateur Radio Society setup an amateur radio station and gathered sponsorship to raise funds for their local lifeboat station in Barmouth, on the Mid Wales coast. Early on Saturday morning, MARS members gathered at the lifeboat station to assemble the antennas and equipment. The HF antenna was an SRC X130 end fed long wire and the VHF antenna was a trusty Watson W-300. Radio equipment at the lifeboat station was a Trio TS-430 for HF and Yaesu FT-897 for VHF. Operating the special event callsign GB6BLB, MARS made many contacts during Saturday, mainly on 80m for inter-G and 20m for continental, mostly Europe, with a few from North America, all on SSB. 2m bought local contacts via the GB3DW repeater and some simplex FM contacts as far as Cornwall. On Saturday evening, the setup at the lifeboat station was taken down and members of MARS moved to the Barmouth Yacht Club to continue overnight and through until 4pm on Sunday afternoon, operating the club's callsign GC4LZP. The equipment in use there for HF was a Yaesu FT-897 for PSK31, a restored Yaesu FT-101ZDFM mk3, a Yaesu FT-897 and Kenwood TS-2000 operating SSB. For VHF/UHF there was a Yaesu FT-7800 with a Simoco FM1000 for 4m. The antennas at the yacht club were again a SRC X130 for HF and a SRC X80 for PSK31. 2m and 70cm were taken care of with a Diamond X300 and 4m went through a Sirio CX4-71.

Over 300 contacts were made. Much of the PSK31 operating was on 20m, with QSOs to all continents. 80m was open throughout the weekend and often resulted in pileups and long stints at the microphone for the operators. Even 4m came alive for a short while, with contacts into South Wales and England. The weekend raised £520 for the Barmouth lifeboat fund, which is getting close to the £1000 mark in just two years. For more information visit www.meirion-ars.co.uk or www.sosradioweek.org.uk - where registrations are now being taken for the 2011 event.

Spalding Exam Success

Spalding DARS have had three more students pass amateur radio exams. They are particularly proud of Alan who, at the age of 75, is the oldest candidate they have trained. Tutored by John, G4NBR and invigilated by John, M1CDL, Alan studied very hard to attain his Intermediate pass. His love of radio started at the age of 14 as an SWL in the YMCA and he has used radio in one form or the other ever since. He constructed various projects during the course including a MW receiver and two antennas.

All three students are now active on a daily basis on the air, so please give them a call if you stumble upon them. The photo shows Alan, 2E0ZAL, Paul, M0WAF and Pete, M0GTR.

Intermediate success in Scotland

In July, Kilmarnock and Loudoun ARC held an Intermediate exam and five candidates passed. Their thanks goes to the instructors and club members who assisted them on the study nights. They are now looking forward to studying for their Advanced exam. The photo shows in the back row Ian, MM6DOS and Brian, MM3YIO and in the front row Ian, MM6ISM, Allan, MM3VNW and James, MM6YOY.

Photo by MM0GHM.

NEWS IN BRIEF

• Mark, G1PIE, Jack, G0FQN and Pam, 2E1HQY will be operating GB4WLR from West Lancs railway near Preston on Sunday 26 September for Railways On The Air. Further details are on qrz.com.

GB70AAF

Special event station GB70AAF was on the air during June commemorating the 70th anniversary of airborne forces in the UK. The station was operated from The Muckleburgh Collection, the UK's largest privately owned working Military Collection, located Nr Weybourne in North Norfolk.

The station ran from 21 to 26 June and it attracted many visitors to the station and museum. Operating HF and VHF using both SSB and CW, the operators from left to right in picture are Ted, G4JKQ and Andy, 2E0AIV, both RSARS members.

IOTA Contest Participation

GM7A, which is the contest call of Kilmarnock and Loudoun ARC, was active in the IOTA contest this year from the Isle of Luing on the west coast of Scotland, just south of the town of Oban. The team was Graham, MM0GHM, Gordon, MM0GOR and Peter, GM7AAJ. They managed 480 QSOs on SSB only, which is a similar result to the past two years on Kerrera Island and not too bad considering there was a 50% reduction in team members this year.

The main station was an FT-840 and the multi was an FT-100D both running 100 watts and antennas were mono band resonant dipoles. The best DX worked was VK7ZE in Tasmania (by MM0GOR), JA1BPA in Japan (by MM0GHM) and CE1TT in Chile (by GM7AAJ).

Thanks go to the landlord at The Gorsten who let the team string up antennas around his property.

Last Chance to work GB70BRS!

During its time as a radar research centre and as an operational station for Chain Home radar, Bawdsey Manor was known by the acronym BRS – Bawdsey Research Station. In recognition of the historic events that took place in 1935 and 1940, which played a significant part in Britain's war effort, the site was activated in February (as GB75BRS) and June (as GB70BRS) this year.

Over the weekend of 11 and 12 September, BRS will be activated for the final time, as GB70BRS, to commemorate the contribution of radar to success in the Battle of Britain.

In the previous operations they have contacted around 700 stations each time across HF and 6m. They hope to make many more contacts in this final session.

Part of the aim of the operation is to raise funds for benevolent organisations working in the field of supporting families and members of the RAF. To this end, the Daventry and Bawdsey Certificates were established. Proceeds from the Daventry Certificate are going to the British Legion – this award is available to stations who worked all three active sites during the operation in February to commemorate the Daventry Experiment.

The Bawdsey Certificate is available to stations who worked the Bawdsey site as GB75BRS in February, and as GB70BRS in either June or September – so this is the final opportunity to complete that! Proceeds from the Bawdsey Certificate are going to the RAF Benevolent Fund.

More detail about the awards, including examples of the certificates and how to apply can be found on the BRS website, http://bawdseyreserachstation.org.uk – please help to support those working to make the lives of ex-servicemen and women, and their families a little more comfortable. You can also find details about the previous operations and the planned activity and preferred frequencies for September on the site.

Otley ARS Advanced Exam Success

Pictured here is a very proud Ron Schofield, M0UEZ (ex-2E0DOG), with the Otley Amateur Radio Society Chairman, Jack Worsnop, G0SNV, following his success at the recent Advanced exam. Well done Ron!

World Radiosport Team Championship

Our site manager Nick, RA3TT and his helpers Alex, RN3TT, Alex RA3TL and Gena, RV3TN with the UK team and our on-site referee Gena, UA9MA.

FIRST CHAMPIONSHIP. The first World Radiosport Team Championship was held in Seattle in 1990 in conjunction with Ted Turner's Goodwill Games. The UK was invited to send a two-man team; and I had the great honour of being on the team together with Steve Dove, G3YDV.

Unlike all other HF contests where entrants are separated geographically, the concept of WRTC has always been to bring two-man teams together in the same geographical region so that, as far as possible, differences in location are eliminated. In Seattle, however, the capabilities of the host stations differed considerably. Host stations were allocated randomly and we drew one of the less-good stations, so we were pretty pleased to finish in seventh place out of 22 international teams.

There was so much ham spirit and goodwill at the first championship that plans were made to continue with the series of WRTC events, with the aim of the event becoming the Olympics of amateur radio. In 1996 in California the UK was represented by G3OZF (now G3BJ) and GI0NWG. WRTC came to Europe in 2000, a superb piece of organisation by Slovenian hams. I returned to the UK team and was partnered by G3SXW. In Finland in 2002, the UK team was G4PIQ and G4BWP. The concept of on-site referees had been brought in and G0MTN and I both served as referees. G3SXW was on the judging panel; and G3LZQ and G4JVG also attended as visitors.

The competition moved to Brazil for 2006, but the only representation from the UK was G3XTT who attended as a referee. Soon after that event qualification criteria were announced for the 2010 Moscow event based on performance in a number of international contests. Andy Cook, G4PIQ made it his goal to qualify and ended at the top of our region of Europe, which included the UK, Ireland, France, Spain, Portugal and Italy. Andy chose me as his team-mate and we started to prepare for the competition.

The whole movement in WRTC over the last twenty years has been to iron out as many station differences as possible, and from early on it was clear that the Russians aimed to take this to a new level by modelling the contest on their own team championship event, where teams are located quite close together in a plain area at very similar heights and using identical antennas, so that competition really would be on a level playing field.

2010 IN MOSCOW. In the event, it was clear that the team led by Harry, RA3AUU achieved this goal and everyone who attended was thoroughly impressed by the degree of organisation – especially the dedication of approximately 180 volunteer helpers in addition to the hard work done by the organising committee.

There has always been some leeway for each WRTC's organising country to set their own rules, but under the overall agreement of the WRTC Sanctioning Committee which contains representatives from each previous event. As this is a test of contesting skills, not pointing and shooting, packet cluster is not allowed. Taking a lead from their own RRTC, this year the Russians allowed two transmitters to be used, but the transmitters had to be synchronised so that only one was transmitting at any given time. The exact nature of the interlock was left up to each team to implement.

Another technical innovation was the concept of using a triplexer on the feedline from the HF triband beam, making it possible to transmit on one HF band while simultaneously listening on another band *on the same antenna.* This initially seemed like a tall order but we found it to be perfectly achievable. Bob, 5B4AGN (UK callsign G3ZEM) came up with a design for a 10/15/20m triplexer for Team Cyprus, and I replicated his design in the unit I made for our use. Measurements showed that the triplexer reduced signals on the other band substantially, and together with single-band bandpass filters to the W3NQN design, we found with our unit that when transmitting with 100 watts on 20m, the second harmonic on 10m was only S9 on the other radio. The triplexer is quite an innovation and both Andy and I were very impressed when we first used it in a practice session during the WPX CW contest.

Computer logging is mandatory in order that all the logs can be processed and the winners declared at the closing ceremony about 30 hours after the end of the contest. Our choice of logging software was Win-Test by F5MZN. In fact, a majority of competitors used WT, other logging programs were Writelog, N1MM and TR4W. Andy built an audio switch box driven by Win-Test that allowed each operator to listen either to the audio from his own radio, or to listen to the other radio in one ear.

PRACTICE. The combination of the interlock and the audio switching enabled us to interleave QSOs so that while one station was 'running' – issuing CQs and making QSOs as fast as possible – the other station could 'search and pounce' and interleave QSOs with the main running station. This clearly required practice, and was an area in which we felt the Russians were likely to have an advantage as this is the technique they employ during their own RRTC championship event. Andy and I spent time practicing interleaving during three contests in the run-up to WRTC – CQ WPX Phone, CQ WPX CW, and NFD. The rules of field day specify one transmitter only so we had no alternative but to submit a very high-scoring entry as a checklog only! In any case, although we adhered to the 100W and height limitations of field day, our station was not in a tent and it ran off the mains. Our experience in these practice sessions proved to be invaluable when it came to the contest itself.

THE REAL THING. We arrived in Moscow on the Thursday before the contest reasonably well prepared, carrying lots of gear including spare laptop, rig and power supply, which thankfully were not needed. Meeting all our fellow competitors, referees and other visitors at the hotel was a great experience, with much swapping of stories. On Friday morning the opening ceremony took place, each country entered the hall bearing their country's sign.

The 10/15/20m triplexer designed by 5B4AGN.

Don, G3XTT was on the judging committee, and the other representative from the UK was Stuart, GM4AFF who was on-site referee for team Montenegro.

The opening ceremony was followed by the competitors' meeting, when Andy (as UK team leader) drew the envelope containing the callsign we would be using. This was handed, unopened, to our on-site referee Gena, UA9MA. All referees had strict instructions not to open the envelope until 15 minutes before the start of the contest. The aim was to preserve anonymity of all stations so that there would be no favouring a particular team by their home country. All the WRTC stations were to have four-character callsigns starting R3.

The draw process on Friday also determined each team's location. The Russians had gone to much trouble to ensure all stations were on the fabled level playing field, in this case 48 stations were used spread across eight field areas, all in the Demodedovo district south of Moscow. Coaches took all teams to their sites early on Saturday morning, where we were met by our site manager Nick, RA3TT and his helpers Alex, RN3TT, Alex RA3TL and Gena, RV3TN. These guys looked after us really well throughout the event. Each site had been set up with identical antennas – tribander (C3 style) on an 11m tower, and slung below those 80m and 40m inverted vee dipoles. Each station had a 2kW petrol generator and there was at least one spare available in each field, though we did not hear that any team needed to make use of the spare.

It took us a couple of hours to get the station all set up and ready to go, and to incorporate the WRTC power monitor device that would light to indicate to our referee Gena, UA9MA if either transmitter was exceeding the 100W limit or if both transmitters were keyed at once. I'm pleased to say that Gena had no transgressions to report at the end of the event. There were several hours to go before the contest kicked off at 4pm local time, so Nick kindly drove us the 20km back to the hotel where we got some welcome rest. Returning to the site, there was time for some last-minute checks and then with 15 minutes to go Gena opened the envelope and we at last found out what call we were to use in the contest – R37M. We decided we were pretty happy with Andy's choice of envelope and set to work putting the callsign into the computers and keyer memories.

We had discussed tactics and strategy and tried to run on 20m phone at the beginning, looking for a high rate, but with 100W and a modest tribander it was difficult to get a good QSO rate on phone, so we switched to CW. This would be the pattern for much of the contest and it turned out at the end that most competitors made about 70% of their QSOs on CW. Gena sat between us and listened throughout the contest with audio from Andy's FT1000MP in his left ear and audio from my Elecraft K3 in his right ear. We all agreed that without the excitement of being able to operate the radio, his was much the hardest job of all of us! It was a requirement in the WRTC rules that the audio streams were also recorded in case of any queries during the checking process.

Temperatures throughout our stay in Moscow were well into the 30s and it was 36° in the tent when we started. Nick and his team installed some reflective covering over the tent while we were operating, and with the flaps open at both ends it was just about tolerable. Later on the Saturday the QRN level increased and although our site had no lightning or rain, the wind whipped up violently at one point and Nick's team had to hang on to the tent while we carried on operating. The Austrian team were not so lucky and a near lightning strike took out both of their K3 radios. A local Russian ham provided two FT-857s as replacements. These are not high-end contest radios but the OEs were not deterred and turned in a very creditable performance using the substitute rigs.

Andy standing by the tribander installed at the hotel, with a typical operating tent behind to the right.

We continued operating and our theoretical understanding of great circle bearings and propagation from Moscow turned into practical reality. We knew that the bulk of the QSOs would be with Europe but there were greater points value in working stations outside of Europe. From the UK most of Europe is to the east, but from Moscow the main centres of EU activity are south-west. Openings to the States are shorter than from the UK but there is a very early opening to the States starting about 0230z when beaming due north. We knew about this opening and exploited it to gain higher-point QSOs, but the main source of contacts outside Europe was with the seemingly never-ending stream of UA9s. Of course they were not that far away and were generally worked off the back of the beam.

Before the contest we had said that 3,000 QSOs would be a good target, but we passed that with a little under two hours to go. We felt we were doing pretty well compared to the competition and at one point apparently we were seventh on the leader board, but we finished in ninth place. Although some places near the top changed during the checking process, Team UK remained in 9th position out of 48 teams. The winners were the very experienced Russian pair of RW1AC and RA1AIP, very closely followed by the Estonians ES5TV/ES2RR and then the top US team of N6MJ and KL9A. Typical of the competitive nature of radio contesters, Andy and I identified a few things that we could have done better and would have boosted our score, but overall we were pleased to be able to put the UK into the top ten box in this very tough competition.

When the contest ended at 4pm local time we packed our gear then helped Nick and his team take down the antennas, dismantle the station and got on the coach back to the hotel. There was much chatter and swapping of stories, though everyone was dead tired. Don, G3XTT and the rest of the judging team then spent the next 24 hours processing the logs. All teams lost points in the checking process. Our QSO loss was 3.46%, which was pretty low, though some of the leaders' figures were even lower – accuracy is important! The checking process was aided by e-mail submission of contest logs from around the world and we're grateful to the Gs who e-mailed their logs immediately the contest finished in order to assist the WRTC checking process.

The intense concentration of both of us: me to the back and Andy in the foreground, while Gena looks on.

We assembled for the closing banquet and awards ceremony and once again the Russian organisers pulled out all the stops and put on a great show, culminating in the award of trophies to the winning team. Tuesday was a day for packing and saying our farewells, after five days' intensive ham radio contest fun. There was general agreement that the Russians had done a superb job, with the most level playing field ever. Whichever country takes up the baton for 2014, this will be a hard act to follow.

Homebrew

Some homebrew VHF and UHF band pass filters

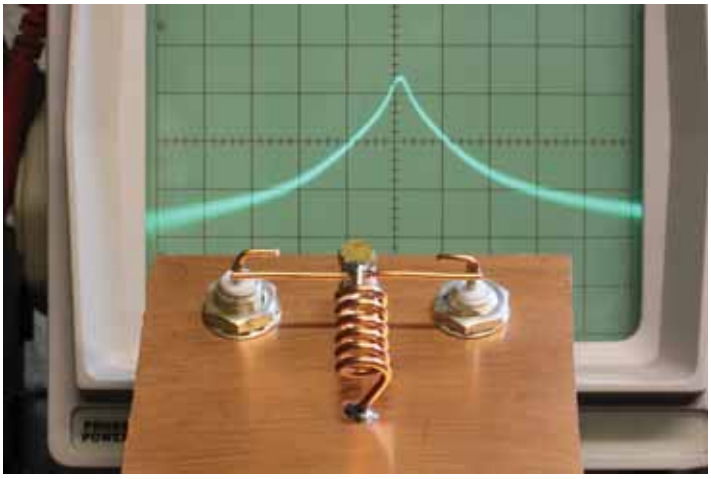

PHOTO 1: Test rig for measuring resonator Q.

BUILDING BLOCKS. Band pass filters (BPF) are one of the key building blocks of radio receivers and transmitters. In a typical amateur receiver or transmitter, one or more RF band pass filters are used to select (pass) a single amateur band and reject (stop) signals at all other frequencies. Superhet receivers convert the RF signals to an intermediate frequency (IF) where a narrower filter is used to select a single signal while rejecting all of the other signals within the band. Many receivers use several stages of frequency conversion to get from the RF frequency to the final IF. The narrowest filters are usually found in the final IF stage. Crystal filters, electromechanical filters and digital filters based on DSP (digital signal processing) are commonly used. A typical configuration for a 10m FM receiver would be:

RF frequency = 29MHz,
1st IF = 10.7MHz,
2nd IF = 455kHz.

These two IF frequencies are standard values and suitable filters are readily available.

Our VHF and UHF filters will be based on a parallel resonant LC circuit of the type shown in **Figure 1**. It would also be possible to design and build similar filters based on series resonant LC circuits. The filter components can be lumped inductors (L) and capacitors (C) or alternatively, resonant lengths of transmission line can be used instead. Transmission line components are unreasonably large at HF and low VHF, so lumped components are usually used at this end of the RF spectrum. UHF and microwave filters are usually made from transmission lines. Many filters use a combination of both types of component. For example: a VHF filter might use several coupled resonators made from resonant quarter-wave lines and lumped capacitors for inter-resonator and I/O coupling.

Many of our previous projects have used band pass filters. The subject was covered in some detail during the design and construction of the 4m transverter (see Homebrew June to August 2009). To design a filter, you will start with a list of the required specifications and then design the filter accordingly. A minimal list of specifications would include the filter centre frequency, filter bandwidth (BW) and optimum input and output (I/O) termination impedance. A more complete specification would also include details of acceptable passband ripple, stopband attenuation, transmission loss, I/O return loss etc...

The LC resonator in Figure 1 is based on a QUCS simulation of completely lossless components. Such a circuit is not possible in the real world. All practical filters will have some losses in the resonator. All of the filters and test circuits described here use high quality, air dielectric piston trimmer capacitors with a specified Qu (unloaded Q) of more than 1000 at VHF. For most practical filter designs, the losses in such capacitors are insignificant. This is not necessarily the case for the inductor in the resonator. Inductor Q values range from about 50 for low quality, slug tuned devices to several hundred for high quality air-core types. Happily, in the case of inductors for VHF, the performance is often inversely proportional to the price. High performance inductors are easily made at little or no cost while commercially-made VHF inductors can be difficult to find, expensive and nearly always have inferior performance to the home made alternative.

The LC resonator in Figure 1 has a pair of low value capacitors for input/output coupling (Ck). If the value of Ck is very small relative to the value of the resonator tuning capacitor, resonator Q will mostly depend on losses within the resonator rather than any external influences. **Photo 1** shows my test rig for measuring resonator Q. C is a 20pF piston trimmer. L, in this example, is 6 turns made from one core from some 2.5mm^2 twin and earth mains cable. The brown or blue insulation was stripped off before winding the coil. Input/output coupling is via a pair of 50Ω BNC sockets. The coupling capacitors are made from short and straight lengths of 1mm bare copper wire. Ck is a small fraction of 1pF and measured insertion loss is greater than 30dB. Resonator Q can be measured by using a signal generator and sensitive power meter to measure transmission loss through the filter. The generator is first tuned for peak output (which is at the resonant frequency) and then tuned above and below this frequency to find the -3dB points. At these 'half-power' points, the *voltage* is √(0.5) = 0.707 times the peak value. The frequency difference between these points is the -3dB bandwidth. The resonator Q is f/(3dB bandwidth). I used a spectrum analyser with tracking generator for the measurements. The resonator in the photograph has a Qu value of 400 at 145MHz, which is typical for a low loss resonator of this type. Testing a range of air cored inductors wound from bare and silver plated copper wire resulted in Qu measurements between 200 and 530. The LC resonator with a Q of 530 used an inductor wound from the 2.7mm bare copper centre core from Westflex 103 coaxial cable. The record high Q value measured with this

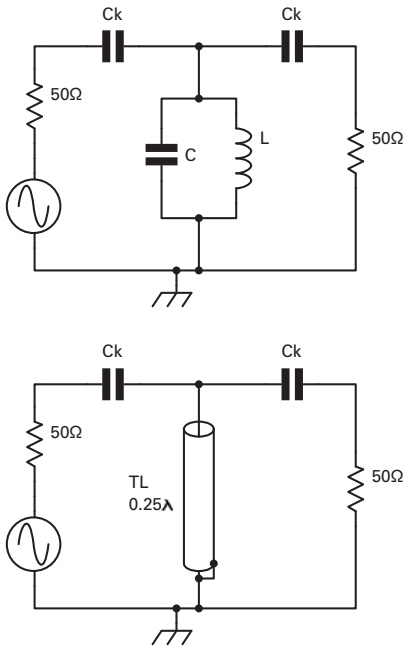

FIGURE 1: LC resonator and transmission line equivalent (see text).

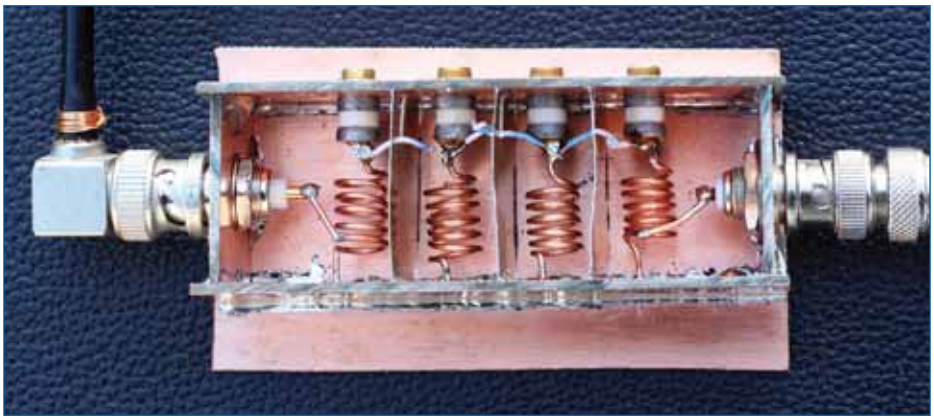

PHOTO 2: Prototype 2m bandpass filter.

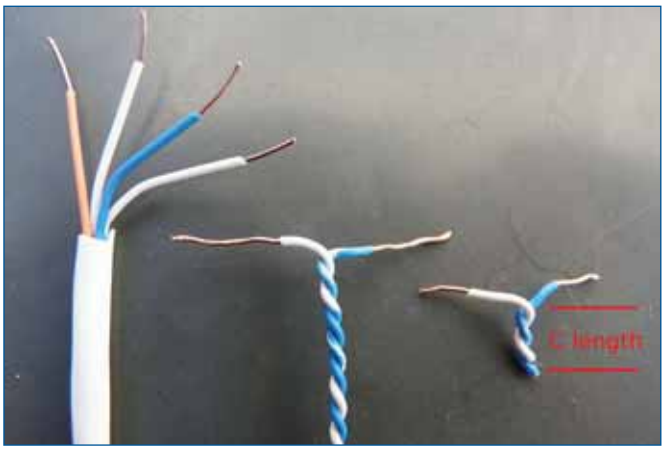

PHOTO 3: Making an 0.5pf 'gimmick' capacitor.

rig was just over 2100 for a quarter wave 432MHz resonator made from a short length of 51mm outside diameter 50Ω hardline. This cable has a 'Heliax' style of dielectric insulator (mostly air) and a hollow centre conductor (which alone has an outside diameter of almost 19mm!).

Last month's 2m receiver front-end project serves as a perfect example of a difficult filtering problem. This receiver uses a relatively low first IF of 10.7MHz, which places the IF image uncomfortably close to the filter passband. The front-end BPF must have a bandwidth of greater than 2MHz to accommodate the European 2m band and, ideally, greater than 4MHz so that the same design can also cover the North American 2m band. 3dB BW is used for Qu calculation, but a smaller value is usually used to specify the useful bandwidth of a filter. This is usually 1dB or sometimes even less. So our 2m receiver filter needs a 1dB bandwidth of about 4MHz. The -3dB BW will be slightly greater. This filter must provide extreme attenuation of signals in the stopband, particularly the IF image at 145-(2x10.7)MHz = 123.6MHz. Ideally, the stopband attenuation should be of the same order as the receiver two-tone dynamic range. This would guarantee that receiver performance would never be compromised by poor IF image rejection. This would call for stopband attenuation of 80-100dB. As we saw last month, a lower level of stopband attenuation can sometimes give satisfactory results. However, to cope with a worst case scenario where there is a strong interfering signal on the IF image, it is best to design a filter that has adequate stopband attenuation for any situation.

PROJECT WORK. This month's first project is a 4th order BPF with a centre frequency of 145MHz. This filter will be placed between the GaAsFET RF amplifier (Figure 4 from last month) and the receiver mixer. The filter will be designed for 50Ω input and output termination, a 1dB bandwidth of 4MHz, stopband attenuation as close as possible to the ideal figure of 70-100dB mentioned earlier and insertion loss (IL) as low as reasonably possible. As the measured gain of the RF amplifier is 23dB, filter IL of less than 3dB would leave the RF gain at around 20dB and would have no significant effect on overall system noise figure.

The filter was designed using the methods described by Zverev **[1]** and Wes Hayward W7ZOI in EMRFD **[2]**. There are several good filter design programs available but, at least on this occasion, I would urge the reader not to use them. I have learned a lot about filter design by working through the design process with the aid of a pencil and a pocket calculator. I hope that you will also gain from the experience.

Zverev's book has a useful nomograph for estimating the complexity of filter required for a given filter performance. Consulting this nomograph suggests that a 4th order (four resonators) Butterworth filter would provide stopband attenuation of up to 74dB. As the selectivity of the GaAsFET preamp already gives between 30 and 45dB of image suppression (depending on whether you use the original version or the modified version with double-tuned output), a 4th order filter should easily meet or exceed our requirements for IF image suppression. The next job is to choose suitable inductors. It is theoretically possible to use any arbitrary value of inductance, but an unwise choice is likely to call for impossible component values. For example: a choice of 10μH for L would call for Ck values in the 20fF (femptoFarad) or 0.02pF region. L values with an inductive reactance anywhere in the region of 50-100Ω should provide reasonable results. I used four coils made from 1mm bare copper wire. Each coil is 6 turns wound on a 6mm drill as a temporary former. The turns are spaced at slightly more than 1 wire diameter to give a total coil length of 15mm. The measured inductance is 100nH, which is in line with the value of 97nH predicted by the Handbook formula **[3]**. There is little point in trying to make very precise measurements of the value of small value inductors and capacitors. A combination of great skill and good luck will be required if you are to make components with a value within a few percent of the required value. As each resonator in our filter will be separately tuned by a variable capacitor, extreme accuracy is not required. Follow the construction details as closely as you can and try to ensure that all four inductors are as nearly identical as possible. Testing the coils in my Q test rig showed a VHF Qu of just over 350. As the capacitor in the test rig is identical to the capacitors used in the filter, this can be considered as a valid Qu value for calculating filter impedance and insertion loss.

As each of the four LC resonators will be tuned to the same frequency of 145MHz and all of the four inductors have exactly the same value, the nodal capacitance (C_0) will be the same for all four resonators. **Figure 2** shows the formula for calculating C_0. This can be simplified further to: $25330/(f^2*L) = 25330/(145^2*0.1) = 12.048$pF. This is the total value of C+Ck for each resonator.

$$\omega = 2 \pi f$$

$$C_0 = \frac{1}{\omega^2 L}$$

$$C_K = C_0 \frac{k B}{f}$$

$$Q_E = \frac{q f Q_u}{B Q_u - q f}$$

$$C_E = \frac{1}{\omega} \frac{1}{\sqrt{R_0 Q_E \omega L - R_0^2}}$$

$$Rp = \omega L Q_E$$

4th order Butterworth:

q = 0.7654
k12 = 0.8409
k23 = 0.5412
k34 = k12

FIGURE 2: Calculations for the filter. f = frequency, L = inductance, B= bandwidth.

RSGB shop

NEW

Homebrew Cookbook

By Eamon Skelton, EI9GQ

If you are interested in home construction, Eamon Skelton, EI9GQ is **the** acknowledged expert in this field. The *RadCom* columnist on the subject, Eamon brings his enthusiasm, common sense and easy to understand approach to the *Homebrew Cookbook*, such that readers will be reaching for their soldering iron with inspiration.

Homebrew Cookbook starts with the very basics of hombrew and progresses to advanced topics. There are construction methods that take you right through all the main techniques from dead-bug layouts through to dedicated printed circuit designs. The PCB section is packed with simple ideas that will allow you to make PCBs cheaply and easily without any specialist equipment. Eamon even shows you how to use sunshine or cheap halogen security lights as a UV source! Construction projects start with receiver designs and a simple direct conversion receiver, followed by a more sophisticated superhet receiver. *Homebrew Cookbook* also includes an SSB transmitter, PA and a VHF transverter. All the designs are modular, making it very easy to extract sections for other uses and adapt the designs to suit your needs. Where test equipment is required Eamon has simple circuits on hand to allow you to build your own rather than have to buy commercial equipment. Eamon also deals with homebrew antennas with lots of useful tips for making practical and effective antennas with junk-box components. Through the book is an adherence to homebrew principles as all projects use simple construction techniques with cheap, readily obtainable, components. Eamon even tells you how to make the most of eBay to find what you need.

The *Homebrew Cookbook* is an edited, updated book of Eamon's writings from the pages of *RadCom* and a fantastic reference with simple, well-proven solutions to most construction problems. *Homebrew Cookbook* will have you itching to dust off the soldering iron and start construction.

Size 174x240mm, 208 pages, ISBN 9781-9050-8657-3

Non Members' Price £12.99 **RSGB Members' Price £11.04**

Microwave Know How

for the Radio Amateur

By Andy Barter, G8ATD

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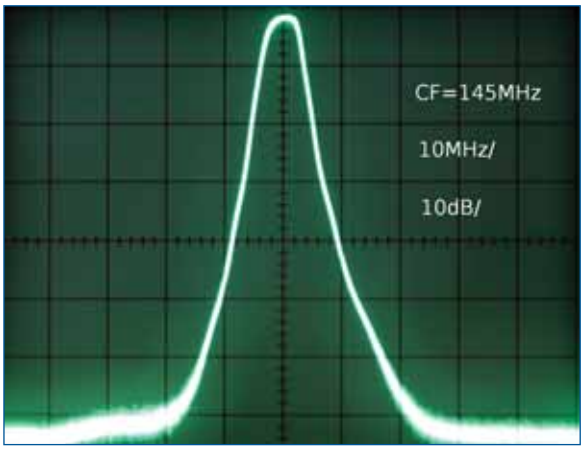

PHOTO 4: 2m filter transmission loss.

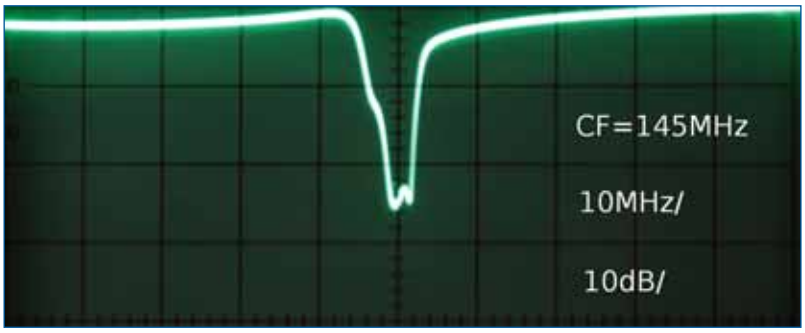

PHOTO 5: 2m filter return loss.

I used 20pF piston capacitors for C. 15pF air-dielectric trimmers would also be suitable. The filter is built into a box made from double sided PCB laminate. The box dimensions are H=30mm, W=30mm (internal), L=85mm. The finished filter is shown in **Photo 2** – as an aside, can you spot how I recycled a right-angle crimp style BNC plug for which I didn't have a replacement crimp collar?

The enclosure walls and base were seam-soldered before any components were fitted. I used a tin-plate screen between each resonator. A screen made from thin copper sheet or PCB laminate would be equally effective. A small notch is cut at the edge of each screen to allow the inter-resonator coupling capacitors to pass through the screen.

The coupling capacitor values were calculated using normalised k and q values from Zverev. Suitable values for a 4th order Butterworth are shown in Figure 2. These values assume an insertion loss of zero so that the filter is physically and electrically symmetrical. The Ck calculation must be done twice, once for C12/C34 and again for C23, which uses a different value of k. For a filter with f=145MHz, BW=4MHz, L=100nH the values are 0.28pF and 0.18pF.

These aren't the sort of values you are likely to find in the junkbox. It is quite easy to make small value capacitors from two lengths of insulated wire twisted together. I took two lengths of insulated wire from standard 4 core telephone cable and twisted then together at two turns per cm. A length of 20cm showed a measured capacitance of 16pF, 10cm = 8pF, 5cm = 4pF. This shows a consistent and predictable capacitance of about 0.8pF per cm. This type of construction is known a 'gimmick' capacitor. **Photo 3** shows the evolution of a length of telephone cable into a 0.5pF capacitor. Use lengths of 3.5mm (0.28pF) and 2.2mm (0.18pF). If you have a suitable generator and return loss bridge, make the capacitors slightly too long and trim them at the tuning stage, otherwise, use the recommended lengths.

The circuit diagram of the filter is shown in **Figure 3**. Exact values for C1 and C4 are C0–C12. C2 and C3 are C0–C12–C23. This is not particularly important as the coupling capacitors are very small when compared to the 20pF trimmers. However, exact values are useful if you want to evaluate the filter performance using simulation software. My QUCS files are available by e-mail if anyone wants them.

The filter source and load impedance was calculated from the formula at 2745Ω. To keep the component count and circuit losses a minimum, a simple inductive tap on L1 and L4 is used for I/O coupling. 2750/50 is an impedance ratio of 54.9 or a voltage transformation ratio of √(54.9)=7.4. For our six turn inductors, the tapping point is at 6/7.4= 0.8 turns from the grounded end. Rather that getting involved with something as complicated as fractional turns, I placed the tap at 1 turn and found that this works very well in practice.

TESTING THE FILTER. The filter was aligned using a signal generator and power meter. Peaking all four trimmers for maximum output at 145MHz resulted in a flat passband from below 144MHz to above 146MHz. I didn't need to make any adjustments to the gimmick coupling capacitors. Careful adjustment using a spectrum analyser and return-loss bridge resulted in a perfectly flat passband with a 1dB BW of almost exactly 4MHz and input/output return loss of better than 20dB (SWR=1.22:1) across the 2m band. Transmission and return loss plots are shown in **Photo 4** and **Photo 5**.

Insertion loss is 2dB. Stopband attenuation is greater than 70dB as predicted by Zverev. IF image rejection is more than 70dB. The filter provides 50dB of extra attenuation of the 133MHz local oscillator signal. This is not particularly significant for a receiver application, but could be very useful if the filter is used in a transmitter with a 10.7MHz IF. For a real world test, I placed the filter in the feedline for my 2m transverter. Reception of weak beacons was just as good with the filter in line. I made a few contacts using a maximum power output of 2W. The filter performed well in these tests. Input SWR was lower than 1.2:1 regardless of whether the output was terminated by the aerial feeder or a 50Ω dummy load. High power tests were not performed because of the risk of damaging the trimmer capacitors.

A UHF BPF. Our next project is a 432MHz BPF based on coaxial transmission line resonators. **Figure 4** illustrates how a quarter-wave line can be used as a parallel resonant circuit. There are some differences between a filter of this type and a filter made from lumped components. A quarter-wave resonant line will also have resonances at odd multiples of its resonant frequency. It will be a three quarter wave line at 3 x f, five quarter waves at 5x and so on. You should bear this in mind if you are using a transmission line filter in a transmitter. Your filter may have excellent stopband attenuation at frequencies close to the pass-band, but it might not make a good harmonic filter. Most practical designs are hybrid types using resonators that are shorter than a quarter wavelength and tuned to resonance using a lumped capacitor. At UHF and above, the capacitor may be a small screw protruding into the open end of a hollow line centre conductor, or a couple of small metal discs, one soldered to the end of the line, the other mounted at the end of the enclosure using a threaded tuning screw.

I used a small offcut of Westflex 103 coax to make the resonators. This cable has a characteristic impedance of 50Ω. The Westflex data sheet specifies the centre conductor

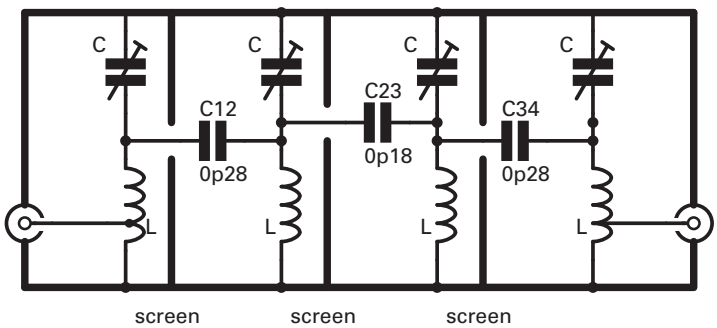

FIGURE 3: Circuit diagram of the 2m bandpass filter.

PHOTO 6: 70cm coaxial filter cable filter and (inset) how the coupling capacitors Ck were made from pieces of wire. The capacitance between the wires is all that's needed.

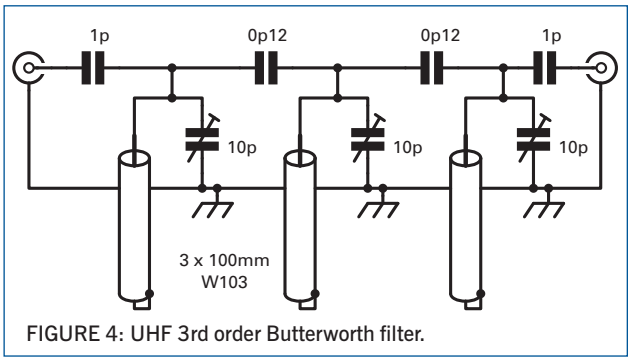

FIGURE 4: UHF 3rd order Butterworth filter.

diameter as 2.7mm, max voltage as 5kV, velocity ratio (VF) as 0.85 and capacitance as 78pF/m. Distributed inductance is not specified, but as we know that $Zo=\sqrt{(L/C)}$ we can calculate L as $Zo^2 \times C = 2500 \times 78 \times 10^{-12} = 0.000000195$, or 195nH per metre. Direct measurements of a 100mm open line using a low frequency LC meter shows a capacitance of 7.8pF. The measured inductance across the open end of a short circuit line is 0.02μH, which is as close as my simple meter can get to the expected value.

A 100mm shorted stub has a resonant frequency of (300/0.1)/4 = 750MHz. When the velocity factor is taken into account, the resonant frequency is 750 x 0.85 = 637.5MHz. Measured Q when tuned down to 432MHz in the test rig is around 400.

The filter is a 3rd order Butterworth type. I used the Figure 2 formulae to calculate Ck values of 0.12pF. Zverev's q and k values for a Butterworth filter with n=3 are q=1.000 and k=0.7071. Design centre frequency (CF) = 432MHz, BW = 10MHz and Qu=400. Three 10pF piston trimmers were used to tune the lines to 432MHz. Capacitive top coupling is used for the connections to the BNC I/O sockets. Standard 1pF ceramic capacitors were used for this purpose. The filter schematic is shown in Figure 4 and the finished project is in **Photo 6**. The inset at the bottom right of the photo shows details of the Ck capacitors. The filter shows almost ideal characteristics. IL is less than 2dB. The 1dB bandwidth is 10MHz and return loss is 20dB.

REFERENCES

[1] *Handbook of Filter Synthesis*, Anatol I Zverev, Wiley 1967. Chapter 6 Design Techniques for Polynomial Filters.
[2] *Experimental Methods in RF Design*, Hayward, Campbell, Larkin, ARRL 2003.
[3] *Radio Communication Handbook*, 10th edition, 2009, RSGB

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HAM WEEK UK 1-10 October 2010

Previewing What's On

National Hamfest

FRIDAY 1 AND SATURDAY 2 OCTOBER 2010, 10AM TO 4PM

George Stephenson Pavilion, Newark & Nottingham Showground, Lincoln Road, Winthorpe, Newark NG24 2NY

NATIONAL HAMFEST. Have you got some amateur equipment you'd like to sell? An extensive car boot area will available this year and pitches can now be booked on the National Hamfest website. The full details are available on the online sales tab. At last year's event the car boot area was always busy so if you've got something to sell at the right price bring it along.

BRING YOUR CAMERA. After the event, visitors are being asked to submit their photos that best capture the atmosphere of the National Hamfest. A prize will be offered for the best photo submitted and it will go up on the National Hamfest website for all to see. You never know, it might even get printed in *RadCom*! So see if you can get that shot that will catch the organisers' eye. Entries will need to be submitted in digital format to the organisers, not the RSGB. The closing date for entries will be in early November. An application form will be available in the information tent just beyond the main entrance. The tent will also be visitors' first port of call for information about the show, the layout and facilities. There will also be displays by the Lincoln Short Wave Club, RAF Waddington ARC and the Lincoln Repeater Group. Please bring a QSL card with you on the day and place it on our *who woz 'ere* display board.

2011 YEARBOOK. The *RSGB Yearbook 2011* is being launched at the National Hamfest this year. It will be one of the many RSGB publications available at the RSGB HQ Bookstall. Anyone purchasing a *2011 Yearbook* will receive a free goody bag while stocks last.

HAM WEEK UK. The National Hamfest marks the start of Ham Week UK and there will be a special event station on the air from the show. The station, GB10NH will be one of the stations that will need to be worked for the Ham Week UK award. If you would like to operate the station, bring a copy of your licence with you (no licence = no operate). Remember you can get a printout of your licence from the Ofcom website. The station is expected to be mainly on 80 and 40 with some forays onto 20, 15 and 10 on SSB and CW. Frequencies will be posted on dxwatch.com during the operation period, 28 September until 10 October.

To gain the attractive Ham Week UK award, stations must work GB10NH and four other special event or club callsigns. It is open to all amateurs and short wave listeners. It is hoped that as many clubs as possible will take part even if they can only get on the air once during the week. Participating special event stations and clubs are asked to forward check logs to the Awards Manager by 31 October 2010.

All claims must be submitted in a form acceptable to the Awards Manager. Listing DATE, TIME (UTC), BAND, MODE, STATION WORKED, RST RECEIVED and RST SENT. Each claim must include this signed statement: "I DECLARE THAT all the contacts were made by me personally in accordance with the terms of my radio transmitting licence. I accept that a breach of these rules may result in disqualification of my claim."

Each claim must be accompanied by a fee of £1 or US$2 (US$6 for airmail) per certificate. QSL cards are not required as claims will be checked against logs of participating stations. Send claims to: Lincoln Short Wave Club, BSA Social Club, Aisthorpe, Lincoln, LN1 2SG. Enquiries to chris@nationalhamfest.org.uk.

TICKET OFFERS. There are special advance prices available to visitors, especially anyone organising a group or club visit. If you buy 4 tickets you can get a 5th free. If you and a few friends are interested in visiting, why not think about filling up a car? Alternatively, buying 10 tickets gets you 3 more free. The details are on the National Hamfest website (www.nationalhamfest.org.uk).

LECTURE STREAM. The schedule is taking shape and will be published well in advance. So far, talks have been confirmed on subjects such as The Benefits of RSGB Membership by Jim, G0EJQ, Deliberate QRM by John, G3WKL, Inside *RadCom* by Elaine, G4LFM, The work of the EMC Committee by Alan, G0HIQ and Circuit Simulation by Dave, G4UGH.

RAFFLE PRIZES. This year there is a wide variety of prizes in the raffle. Icom UK has donated an IC-E2820 dual band transceiver and the Holiday Inn in Lincoln has donated a night's B&B stay for up to 2 adults and 2 children (to be taken on a Friday, Saturday or Sunday before 6 August 2011). There's the chance of winning a new TYT-800L 2m hand-held from Moonraker – complete with battery, belt clip, antenna and desktop charger. bhi and Kenwood have also offered amateur radio prizes and Waters Stanton have an AOR scanner as well as some TenTec kit waiting to go home with a lucky visitor.

HAM WEEK UK. Godfrey Manning, G4GLM is opening his aircraft museum as part of Ham Week UK. Godfrey runs a small but technical Aircraft Museum in the north-west London suburbs and this will be of interest to those who want to know how aircraft function, are flown and navigated. There are no whole aircraft as the site is too small; the emphasis is on practical demonstrations of what goes on in the cockpit. Radio plays an important part for navigation as well as Air Traffic Control and Godfrey also holds a Flight Radio Licence. Visitors are welcome on Sunday 3 October from 1pm until early evening. It's recommended to ring in advance to confirm, also to arrange talk-in if required on 2m. It's at 63 The Drive, Edgware, Middlesex HA8 8PS, 020 8958 5113.

Ian, G3ROO runs the B2 SPY Museum in Dover and is regularly on the air using the callsign GB2SPY, with CW on 160 through to 17m using the clandestine sets. Between 1 and 10 October he will be on the air as often as time allows. He is also open for operators to come and use the sets by appointment. Ian can be contacted by e-mail to ian.g3roo@gmail.com.

Operational sets at present include a Type 3 Mk 11 set (B2 suitcase wireless), a Mk 119 and Mk123, a reproduction Paraset and a MCR1 Receiver. Check out the Yahoo group for more of interest, http://uk.groups.yahoo.com/group/b2spy.

Previewing What's On

RSGB Convention

Friday 8 October to Sunday 10 October 2010

G4FAL visited Montserrat for the Commonwealth Contest, he describes the event in a Contest University lecture.

CONTEST UNIVERSITY UK. Icom UK will again be sponsoring Contest University UK on Saturday 9 October at this year's RSGB Convention. Contest University UK is the place where you can learn all the skills and secrets to start your journey to becoming a contester or even learn the secrets to stay ahead of your competitors. Contest University UK is now in its 3rd year and is based on the highly successful international format that has seen many radio amateurs throughout the world learn about this exciting facet of amateur radio from experienced practitioners.

Steve Knowles, G3UFY will be talking about home-constructed antenna systems for the smaller station. He will be looking primarily at the design and construction of wire antennas for contesting, with those new to the sport and/or with limited resources particularly in mind. There will be little or no maths, lots of pictures, some physical samples and examples to see and (hopefully) some laughs as well as learning for everyone. Steve says he will finish with a few tips on care and maintenance, accompanied by some 'chamber-of-horrors' images.

Preparing for the Contest by Roger Cooke, G3LDI will be aimed at the beginner to contesting and will be very basic to show where to start, what to do before a contest and how to make sure you're ready to begin at the start. Roger wants to encourage the nervous to have a go!

In the Contest Propagation talk, Steve Nichols, G0KYA will look at HF propagation planning for contests including a look at all the current prediction programs.

Dave Lawley, G4BUO will be talking about his experiences during the World RadioSport Team Championships in Russia (see pages 16 & 17).

RadCom Start Here author Jonathan Constable, M5FUN will be talking about a Year in Contesting. Operating in a contest is in reality only a small percentage of the work that goes into contesting. Jonathan will explain how to manage your contesting activities throughout the year; develop realistic plans and expectations, use the year to improve your contesting skills overall and learn from your past activities. There's no particular emphasis on HF or VHF, SSB or CW, instead he will consider three typical stations throughout the year to help you see how to get started but also to help you progress to the next level of contesting fun.

Travel with Nick Totterdell, G4FAL to the tiny Caribbean island of Montserrat. Get up close to a very active volcano whilst pursuing an (almost) winning strategy for the RSGB Commonwealth Contest. Nick will continue to develop the theme of contest preparation with the story of his operation as VP2MCC in March 2010.

Chris Colclough, G1VDP will talk about his Club's IOTA Contest DXpedition showing ways that other clubs can organise an IOTA/Contest expedition for their members too. Everything will be covered from looking for a site, getting suitable permissions to operate, planning, logistics and equipment. And it will include a small section by a non ham on feeding the group!

If you have any questions regarding Contest University, please contact course director Mark Haynes, M0DXR at mark.haynes@yahoo.co.uk.

DXing. French Polynesia is a vast territory with many thousands of islands in the Pacific, which includes three DXCC entities. Making contact with any of these exotic places from the UK is difficult enough on any band, but is particularly so on the low bands. In early 2010 a small international team travelled to Tahiti to operate with the DXpedition callsign TX4T. The presentation by Nigel, G3TXF will describe the planning and the efforts that were put into both the antennas and the operation from this far away location.

TECHNICAL. Leslie Butterfields, G0CIB will be giving a talk on practical antennas for the new radio amateur especially those that have just come into the hobby. The talk will explain how to put together basic antennas quickly and cheaply, with minimal theory. You don't even have to reach for the calculator! He'll also cover important points that the books very rarely mention but that the amateur should take into account. In addition, Richard Brett-Knowles, G3AAT and Leslie will giving a practical hands on demonstration with test equipment such as dip meter, noise meter, operation of antenna tuning units and antenna analysers. They will be only to happy to advise on any aspect of setting up a station for the first time and the test equipment.

VHF & UP. Deep Space Reception techniques, covering 2.2GHz, 8.4GHz and 32GHz bands, by Paul Marsh, M0EYT will give you an overview of what can be received with a modest ground station using a small dish. Since there are several downlink bands, he'll discuss each band in turn and show you what equipment you need to build in order to start detecting some good DX from other planets or distant space probes. There is also the matter of locating the deep space object and dish pointing. Paul will show you how to accurately point your antenna. The lecture should be of interest to weak signal microwavers, frequency and time fans, and software defined radio users.

BIRTHDAY CELEBRATIONS. Martin Lynch & Sons is one of the principal sponsors of the RSGB Convention. The company is celebrating the start of the 20th year of trading at the event and Martin will be hosting the Friday evening buffet. This will include a close up magician who will wander amongst the tables and do magic tricks for guests. Tickets for this event are available from the RSGB website.

PARTNERS PROGRAMME. There will be a Partners Programme available for those staying overnight who don't want to attend the various lecture streams and details will be available online soon.

BOOKINGS. Bookings for the RSGB Convention are up on this time last year but the increased capacity of Horwood House means that we have been able to negotiate an extension to the deadline for discounted bookings. The deadline has been extended until 1 September 2010.

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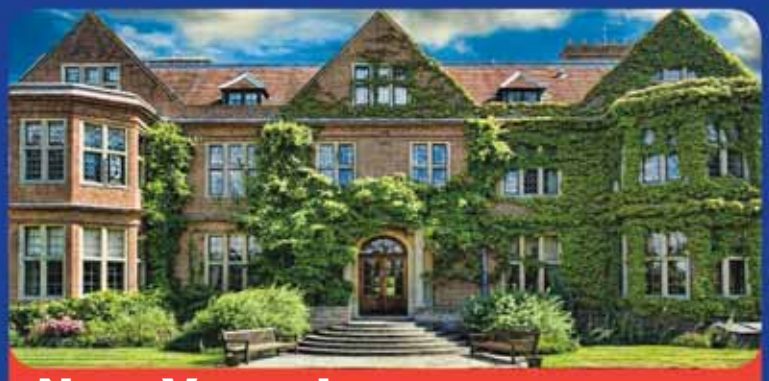

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MyDEL SB-2000 Radio Interface

Radio interfaces can transform your shack

Construction quality was very good with a decent quality double-sided PCB.

The SB-2000 comes in a smart white and black box.

WHY INTERFACE? With the ever growing use of PCs for logging, rig control and data modes the connections in the shack can get quite messy. The potential hotchpotch of leads can make problem solving a nightmare and there is also a risk of passing interference from the noisy PC into your transceiver. A commercial or homemade interface unit can bring all those problems under control in a single purpose built unit. The MyDEL SB-2000 does just that and more in its compact 135mm x 78mm x 48mm case.

WHAT DOES A RADIO INTERFACE DO? The majority of amateur radio rigs assume that the operator will have a spare RS-232 COM port on their PC to run remote control applications. Time as has marched on in the computer world and USB has largely replaced the old COM ports. It is possible to buy ready made USB to COM adaptors that can be used to overcome the problem but a good radio interface offers much more than that. Taking the SB-2000 as an example, this includes a USB to COM port adapter but also includes opto-isolation and additional links to connect to the rig's audio and CW key connections. When using the SB-2000 with suitable software, you can take complete control of your rig from the PC. The SB-2000 even takes its power from the USB port!

WHAT'S INSIDE? As you can see from the photo, the SB-2000 comes in a smart black and white plastic case that is easily taken apart by removing the four feet and the screws that are subsequently revealed. Construction quality was very good with a decent quality double-sided PCB and component spacing wide enough that you stand a chance of being able to complete your own repairs should they be needed. The components used were all industry standard devices, which again is encouraging. The USB to UART conversion was done with an FDI FT232LR and there was also a MAX232 chip to provide the correct RS-232 levels back to the rig. To help reduce interference and any coupling problems on the control leads the SB-2000 uses a selection of opto-isolators. There were two P521 photo-transistor isolators and two 6N137 opto-isolated gates. The SB-2000 also includes connections to take audio in and out feeds from the rig and these are coupled to the PC via 1:1 isolating transformers with static shields. Connections are straightforward with a standard 25-pin D-connector for the rig control leads (more on these later), two RAC phonos for the audio in/out to the PC and a USB-B socket for the USB lead. It might be better to use a powered USB hub (or one of the main ports on the PC) as the SB-2000 draws around 90mA from the USB.

INSTALLATION AND SET-UP. Before you can use the SB-2000 you will need the appropriate lead-set for your transceiver. The leads comprise a standard 25 pin D connector that attaches to the rear of the SB-2000, with flying leads to link with the appropriate Data, CAT and CW connectors on your rig. ML&S have leads available for all the popular rigs (at £18.95) but if you need a custom set-up it's easy to make your own leads as full pin out details are included in the SB-2000's user manual. For the review I was using the SB-2000 with a Yaesu FT-897 and its lead set came with three connecting leads, one for the CAT port another for the Data port and finally a 3.5mm jack for the Morse key. These three connections provide access to all the CAT controls plus audio ins/outs so you can operate most modes directly through the interface.

For the connection back to the PC there's a twin screened lead with RCA phonos for the SB-2000 and standard 3.5mm jacks for connection to the PC sound card line in and line out. Do make sure that you use the sound card's line in and not the mic input or you may run into overload problems. The final connection is the USB lead but before plugging in you need to load the SB-2000 software drivers. These drivers are supplied on an 8cm mini-CD which drops into a standard CD drive. With the CD loaded, Explore the disk and select your operating system from the Driver sub-directory then click on the exe file to start the install routine. Once the install has completed you can plug in the SB-2000. Windows will recognise the new hardware and complete the driver installation process. At the end of this process the driver info panel at the bottom right of the screen should tell you the COM port that's been allocated to the SB-2000 – make a note of this as you may need it to set up your CAT software. If you don't already have CAT or data modes software you'll be pleased to hear that the SB-2000 mini-CD is packed with copies of all the most popular software including the excellent *Ham Radio Deluxe*.

You're now ready to start operating!

OPERATION. Most of the operational testing was done using Simon Brown's *Ham Radio Deluxe* mainly because it's a very comprehensive software package that I use regularly. The initial task when the software starts is to set up the connection with the rig. The requirement here is to tell the software which COM port you are using to control the rig. This is where you will need the number of the COM port that was supplied by Windows when you first plugged the SB-2000 into the USB port. If you didn't make a note of the number it's not a problem as you can

Ham Radio Deluxe FT-987 Interface using the SB-2000.

go to Control Panel – Device Manager (for Vista/7) or Control Panel – System – Hardware – Device Manager (for XP) then click on COM ports and you should see the port numbers listed. However, when using *Ham Radio Deluxe* there's an easier option and that is to select Auto-detect for both the COM port and Speed settings – the software will then go off and scan through the COM ports and find the one connected to the chosen rig and hunt through the data speeds until it gets success. Once this process is complete, you can set *Ham Radio Deluxe* to automatically start with this new connection.

That completes all the preparation so it's time to get on the air! Just one tip – it's a good idea to make sure your rig is turned off whilst you power up the computer or connect the USB lead. During this start-up phase there will be various state changes on the CAT leads that can put the rig into transmit for a short period – it's not a problem with the SB-2000 but it could be irritating for other amateurs.

Operation with *HRD* is easy as virtually all the FT-897's controls were available via the HRD interface. Whilst the program is running the TX and RX LEDs on the SB-2000 front panel flicker to show the CAT communications so you know something's going on! There were also LEDS for CW/FSK and PTT that provided useful confirmation. The CAT interface was very responsive, with frequency changes tracked very rapidly – you could use the mouse wheel to scroll the tuning and when watching the rig, the change was near instantaneous. Another aspect of the hook-up that I particularly liked was the fact that you could switch between using the rig's controls or the PC – they both worked together so you have the best of both worlds. This meant that you could seamlessly change between using the rig controls and the PC and both would remain locked together via the software and the SB-2000. I found that fine-tuning when working under difficult condition was best done with the receiver's tuning knob – but that's a CAT issue rather than a failing of the interface.

The next step was to try some data mode work using the DM780 (part of the *Ham Radio Deluxe* suite). PSK-31 was really simple to use and with *HRD's* super browser to help spot all the activity the entire operation could be managed very smoothly with just keyboard and mouse. Other digital modes worked just as well and testament to the SB-2000 everything operated seamlessly. When operating digital modes the rig is operated as a black box and, other than switching it on, you don't need to touch any of the rig's controls.

SUMMARY. The SB-2000 is a great radio interface that does exactly what you want from an interface – it makes the link between PC and rig seamless. The construction quality was excellent with standard components used throughout and the provision of all the popular amateur software on the driver CD was very convenient. The SB-2000 did its job so well that I'm off to by one!

The MyDEL SB-2000 is available from Martin Lynch & Sons £102.12 (incl. VAT) and lead sets are available at £18.95 (inc. VAT). My thanks to Martin Lynch for the loan of the review model.

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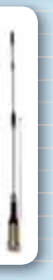

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YG11-2	2 metre 11 Element (Boom 185") (Gain 13dBd)	**£99.95**
YG3-4	4 metre 3 Element (Boom 45") (Gain 8dBd)	**£59.95**
YG5-4	4 metre 5 Element (Boom 104") (Gain 10dBd)	**£69.95**
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Tel: 01392 427269

Portable

Operating an amateur radio station whilst boating can bring interesting results

G0PEB's portable APRS set up. The beauty of this is that it adds hardly any weight to the gear that he would normally carry for a SOTA activation. Photo courtesy Robert Williams, G0PEB.

MESSING ABOUT ON THE RIVER. The chance to operate from a cruiser on the Norfolk Broads a few years ago was an opportunity to be seized. Being a little unsure what the operating conditions were likely to be, I packed an assortment of items so that I could use whatever opportunities arose.

Items included:

- Cable ties – reusable ones are best, take a selection of lengths as you never know what you will be doing
- Telescopic poles – I took two, one was 10m and the other about 5m when extended
- Nylon braid – 100m of 2.4mm diameter (always useful)
- Wire – thin insulated stranded wire (used for radials or for the radiating element)
- 40m dipole – ready made, lightweight
- Tools – side cutters, screwdrivers, adjustable spanner, wire strippers
- Insulating tape
- Gaffer tape
- Radios – I took two; one was a homebrew 40m CW transceiver (1W) and the other a 2m hand portable.
- Aerial tuning unit
- Batteries (allowing the radio system to be independent of the boat supply)

I was curious to see what, if any, difference there was in propagation from the boat compared to that with an aerial on the land. I would be the first to admit that this was not going to be very scientific but amateur radio can be done just for fun too!

INITIAL TESTS. The first tests were done while the boat was moored at night and using a dipole supported by the 10m telescopic pole on the river bank. I had arranged a nightly sked with a local radio club before leaving – something that I find especially useful for portable operating as it encourages you to actually deploy the equipment and also ensures that someone is actively looking for you. A contact was easily made.

GETTING MORE ADVENTUROUS. Having made a good contact the night before with the Stockport Radio Society, we arranged that I would drop a mud-weight (a sort of anchor) right in the centre of a small Broad and see if it made a difference. Having stopped, I had to rig an aerial. I used one pole fastened to the railings at the bow with a wire dangling off the end and another pole mounted more vertically towards the centre of the boat. This arrangement ensures that there was plenty of wire in the air even if the configuration was not like any text-book aerial system. While rigging the aerial another cruiser moored up about 150 metres away. I could see one of the occupants watching my progress with great interest and before long he shouted a greeting. Imagine my surprise when I found that he was also a radio amateur! Again, I made many successful contacts with just 1 watt on 40m. The results of my tests were inconclusive but it was fun and generated a lot of interest.

REALLY ADVENTUROUS. For the more adventurous, combining radio with sea kayaking seems to be quite possible, either operating from the kayak or using the kayak as transport to remote locations. This would be especially useful for Summits on the Air (SOTA) activations in some parts of Scotland where using a kayak could save a long walk in. The links at the end of this column give some guidance and perhaps some inspiration.

THE RISE OF SOTA. With a few words left I thought that I would look at the progress of the SOTA award programme. Based on an idea by John Linford, G3WGV, it started in 2002. Eight years on, the SOTA database has over 2,800 people registered and there are associations in most continents. I suspect that it now accounts for most of the portable operation in the UK: at the beginning of August there had been 2,076 UK activations in 2010, which averages to over ten each day of the year! Its appeal is such that it is highly addictive with participants sustaining active interest over many years.

In a future column I intend looking at why SOTA has succeeded when many other similar schemes have failed.

Comments and suggestions for future columns are always welcome.

WEBSEARCH

High altitude boating: www.n0lx.com
Kayak Portable Video: www.youtube.com/watch?v=PbmcttsJmos&feature=channel_page
Kayak Portable information: www.mv.com/ipusers/w1pid/articles/kayak.html

FORTHCOMING SOTA ACTIVATIONS

Friday 27 August

0800: MM1EYP/P on Mount Eagle (GM/NS-151), which is 256m ASL, although it may be a different summit depending on circumstances.
Latitude: 57° 36' 3" N,
Longitude: 4° 15' 45" W
Grid Reference: NH 649590
QTH Locator: IO77UO
Operating Frequency: 7.032MHz CW
0800: MM3EYP/P on Mount Eagle (GM/NS-151), which is 256m ASL.
Operating frequency: 145MHz FM with 2m SSB and 40m SSB back up.

Sunday 5 September

1100: M1EYP/P on Gun (G/SP-013), which is 385m ASL.
Latitude: 53° 9' 2" N,
Longitude: 2° 2' 47" W
Grid Reference: SJ 970615
QTH Locator: IO83XD
Operating Frequency: 144MHz CW & SSB, 145MHz FM. Operating during the 5th Backpackers Contest.
1100: M3EYP/P on Gun (G/SP-013), which is 385m ASL
Operating frequency: 145MHz FM, 144MHz SSB
1300: 2M0ETR/P on Ben Rinnes (GM/ES-021), which is 840m ASL.
Latitude: 57° 24' 14" N,
Longitude: 3° 14' 29" W
Grid Reference: NJ 255355
QTH Locator: IO87JJ
Operating frequency: 145MHz FM

Sunday 12 September

0800: F/VA2SG/P
Operating frequency: 14.060MHz CW, 7.030MHz CW, 146.52MHz FM
1-5 watts, 2m 3 ele Yagi (to be confirmed)

Saturday 25 September

14:00: GW4OWG/P on Hafod Ithel (GW/MW-029), which is 361m ASL.
Latitude: 52° 17' 27" N,
Longitude: 4° 2' 22" W
Grid Reference: SN 610678
QTH Locator: IO72XG
Operating frequency: 145MHz FM & SSB

Saturday 9 October

1400: VA2SG/P on Acropole des Draveurs (VE2/CV-001), which is 1048m ASL.
Latitude: 47° 54' 0" N,
Longitude: 70° 26' 60" W
Operating frequency: 14.060MHz CW, 10.116MHz CW, 146.52MHz FM
5 watts inv. vee, 2m Yagi

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Antennas

G3LDO's experiences with a small transmitting loop antenna

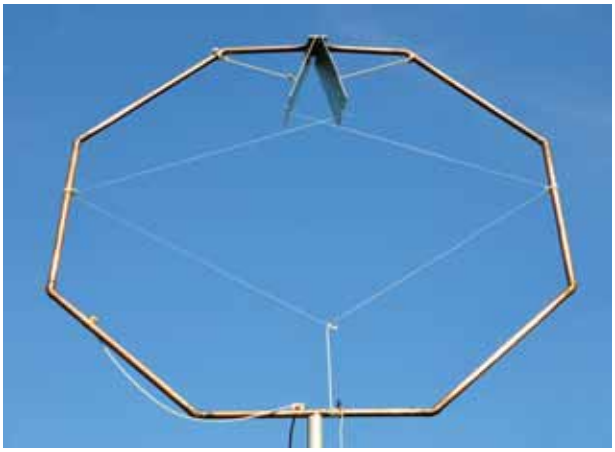

PHOTO 1: The G3LDO loop antenna with mechanical capacitor tuning.

SMALL TRANSMITTING LOOPS. I have talked about loop antenna several times but all this has been the work of other people. I had never actually built a small transmitting loop so I felt that it was high time this omission was rectified. This column is devoted to my experiences with this antenna.

The limiting factor in homebrewing a small transmitting loop is the tuning capacitor. You need a good quality two-ganged or butterfly transmitting capacitor or a fairly rugged vacuum capacitor. It also has to be well engineered into the loop. Because the bandwidth of the antenna is so small, a method varying the capacitor also has to be built into the system.

For the purposes of just trying out the transmitting loop I used a capacitor arrangement using hinged plates, as described by Martin Ehrenfried, G8JNJ **[1]**. I will describe its construction later.

COMPUTER MODELS. My first step was to make a computer model of the loop using EZNEC 5. I had heard that EZNEC did not model a transmitting loop accurately but this suggestion may have been propagated by someone whose theories on the loop did not match the modelled data. Part of this loop-building project was to investigate the suitability of a computer model.

The free-space model of a 1.5m diameter hexagonal loop made from 22mm diameter copper tube is shown in **Figure 1**. The model was brought into resonance with a 24pF capacitance load, giving a 2:1 SWR bandwidth 24kHz as shown in **Figure 2**. The model predicted a maximum gain of 1.34dBi (including 22mm copper losses) compared with 2.2dBi for a loss-less free-space dipole. This loop model predicts that my loop will be around 80% efficient compared with a dipole.

If you are considering constructing a small transmitting loop antenna, there are a few interactive computer programs on the Internet. The 66Pacific.com magnetic loop antenna calculator **[2]** shown in **Figure 3** is based on *ARRL Antenna Handbook* material and is the one used to calculate the parameters of the loop I intended to build.

LOOP CONSTRUCTION. The loop is made from 22mm copper tubing in an octagonal configuration as shown in **Photo 1**. The loop described by G8JNJ also used 22mm copper tubing but in a square loop and for this he used four 90° elbow soldered couplings to form the square.

Almost all of the material used to construct this loop was obtained from a local DIY shop except the eight 45° couplings that were not available locally and had to be sourced from a plumbers outlet. A Tee coupler was used at the base of the loop to provide a short stub mast for fixing the loop to an antenna support.

Most designs seem to use a 1m diameter loop for the bands 20 to 10 metres. In view of the state of the sunspots at the time of writing, I used a larger loop of 1.5m diameter loop to hopefully cover 7 to 22MHz.

CAPACITOR CONSTRUCTION. The capacitor is made from two aluminium plates fixed on hinges at the ends of the copper loop. I used 6 x 12in plates because that is what I happened to have to hand. A drawstring and bungee cord arrangement is used to adjust the angle of the capacitor plates relative to each other, which in turn adjusts the value of the capacitance. The ends of the loop were flattened, which made a convenient point onto which to solder the brass hinges.

All descriptions of small transmitting loop construction emphasise the importance of overcoming the RF resistance of the capacitance to loop connection. This arrangement is no exception – the hinge, although made of brass, would probably present a relatively high RF resistance, which is circumvented using coax cable braid as shown in **Photo 2**. Copper pads are used to make the connections to the aluminium capacitor plates.

The capacitor plates held in the open position with ¼ in (6mm) bungee cord. Capacitor variation is achieved using strimmer line and nylon cord to pull the capacitor plates together against tension created by the bungee cord, which is best seen in Photo 1. The bungee tension is found by trial and error. The strimmer cord is connected to the ends of the aluminium capacitance plates in a cross-diagonal manner using 22mm plastic tube clips as shown in Photo 1. The strimmer cord runs through small holes drilled in these plastic clips.

I calculated the maximum capacitance with the plates 4mm apart as 100pF, which

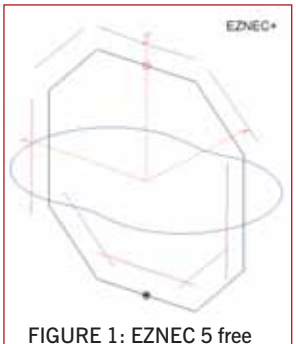

FIGURE 1: EZNEC 5 free space model of the proposed loop antenna.

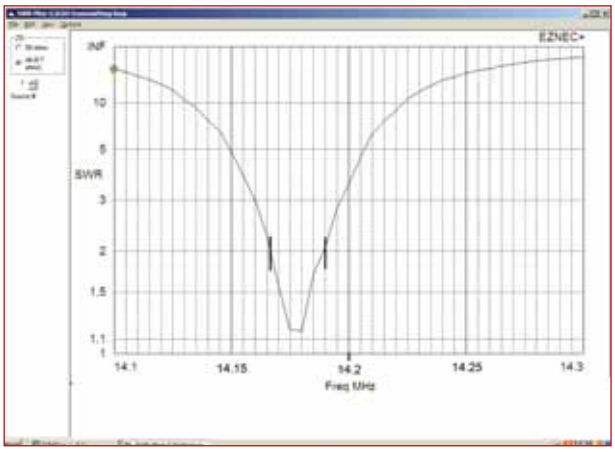

FIGURE 2: SWR curve the loop predicted by EZNEC.

PHOTO 2: Detail of the capacitor hinge.

PHOTO 3: Construction of the variable capacitor with an additional parallel fixed lower frequency capacitor made from a short length of RG213 (see text).

theoretically should tune my loop down to 10MHz. An insulator block is required to fix the distance between the two hinges. I used a block of dark coloured Perspex 10mm thick of unknown pedigree.

The complete capacitor is shown in **Photo 3**. A coax fixed capacitor stub shown in the photo was used during the experiments with this capacitor arrangement – I will describe the reason for this later.

Almost all loop capacitor methods use a motor/gear box arrangement to vary the capacitor and tune the loop. I used a simpler arrangement where the lower part of nylon cord section is wrapped around the lower part of the loop and secured with a plastic clip when the tuning point is found. This method of tuning was fine for testing the viability of the loop and was adopted because a suitable motor/gearbox was not available.

FEED METHOD AND TUNING. I chose the simple shunt feed (some call it a Gamma match) as shown in Photo 1. I made a guess as to where to connect the shunt feed clip to the loop, connected the MFJ 259 analyser (set to 14.2MHz) to the feed point and pulled the cord of the tuning mechanism. The MFJ 259 registered an SWR dip of 1.5:1 on the first attempt. A small position adjustment of the shunt feed clip to the loop reduced the SWR to a much lower value.

I also tried the G3LHZ 'twisted gamma' match described in my July Antennas column, using the centre conductor and insulation of a section of 75Ω coax (1mm conductor with 2.3mm thick insulation). The SWR and impedance matching results shown in Figure 3 showed no discernable difference between the short and long twisted gamma matches. G8JNJ is of the opinion that these gamma matches are a sort of loop rather than a shunt feed.

OPERATIONAL TESTS. Tuning was quite straightforward, particularly with an active SWR meter such as the MFJ 259/269 type of instrument. Otherwise you can tune for maximum noise and signals on receive and fine tune on low power transmit with an SWR meter. The tuning arrangement performed reasonably well with just a bit of friction where the strimmer cord goes through the plastic pipe clip holes.

The tuning range was not as great as the model suggested; the practical range covered only the 10, 14 and 18MHz bands. The reason is that the minimum capacitance of the hinged plate capacitor is greater than expected, although it was not possible to measure this capacitance with it connected to the loop. Adjustment of the capacitance at the lowest frequency range proved to be rather critical with this tuning arrangement. You can appreciate why when you consider that the difference in capacitance with plate spacings from 4 to 8mm results in a capacitance change of 50pF.

The solution is to add a fixed capacitor in parallel with the variable one when using the antenna on the lower frequencies. This has the effect of 'bandspreading' the tuning. I tried a short length of RG-213 coax as shown in Photo 3 and this worked quite well up to 100W; however, it flashed over at 200W. A better arrangement would be a fixed capacitance made from two aluminium plates fixed to the brass bolts and nuts seen in Photo 3. The minimum capacitance could be reduced by cutting off the two top (hinge) corners of each of the variable plates.

This loop was tested only on the 14 and 18MHz bands. My initial impressions were that it performed as well as a very good mobile antenna. The loop was mounted 2m above the ground well away from the house via a feeder comprising 43m of RG213 and 10m of RG58. The comparison antenna was an 11m high multiband rotary dipole on top of the house, fed via 15m of RG213.

There was very little difference between the two antennas on short skip contacts. Sometimes the loop gave the best results, other times the dipole did best. DX signals were a different matter, with the dipole 2 to 3 S-points ahead of the loop. On the other hand, the loop was often better on receive because it was so quiet.

Length of Conductor (antenna "circumference")
4.712 meters

Diameter of Conductor
(For efficiency, should be > 3/8" or 1 cm)
2.2 centimeters

Frequency
14 megahertz

Transmitter Power (optional)
100 Watts

Units of Measurement
English (feet and inches)
Metric (meters and centimeters)

Calculate

To use the calculator:
1. Choose the units of measurement, English or metric.

2. Enter the length of the antenna conductor, which is the distance around the loop. The length should be between 0.1 and 0.25 wavelength at the desired operating frequency.

3. Enter the diameter of the conductor.
Note: Small transmitting loops have very low radiation resistance and very high circulating current, so the diameter of the conductor must be large to assure reasonable efficiency—around 1" or 2.5 cm for the HF bands. #12 wire (for example) will *not* work.

4. Enter the frequency of operation.

5. Enter the transmitter power. This is optional, but it must be entered if you want to calculate the voltage at the capacitor and the circulating current.

6. Press **Calculate**.

RESULTS:
Antenna efficiency: 86% (-0.6 dB below 100%)
Antenna bandwidth: 41.3 kHz
Tuning Capacitance: 34 pF

Capacitor voltage: 3,350 volts RMS
Resonant circulating current: 10.1 A
Radiation resistance: 0.422 ohms
Loss Resistance: 0.067 ohms
Inductance: 3.77 microhenrys
Inductive Reactance: 331 ohms
Quality Factor (Q): 339
Distributed capacity: 13 pF

Antenna "circumference": 4.712 meters

Side length: 0.589 meters

Antenna diameter: 1.4 meters

Comments:
The specified conductor length of 4.712 meters is OK.

Conductor length should be between 2.60 and 5.20 meters at the specified frequency of 14 MHz.

For highest efficiency, the conductor length for a small transmitting loop antenna should be greater than 1/8 wavelength (greater than about 2.60 meters at the specified frequency of 14 MHz).

To avoid self-resonance, the conductor length for a small transmitting loop antenna should be less than 1/4 wavelength (less than about 5.20 meters at the specified frequency of 14 MHz).

Input Values:
Length of conductor: 4.712 meters
Diameter of conductor: 2.2 centimeters
Frequency: 14 MHz
Transmitter power: 100 watts

Source:
The ARRL Antenna Book: The Ultimate Reference for Amateur Radio Antennas, Transmission Lines And Propagation

References:
The ARRL Handbook for Radio Communications

Related Pages:
Design your own tuning capacitor for use with this antenna with the
Capacitance Calculator (Capacitor Design)

FIGURE 3: Calculations of the proposed loop antenna.

FIGURE 4: Measurements of SWR, Z magnitude and Theta of the finished loop. Compare the SWR with that predicted in Figure 2.

REFERENCES

[1] http://g8jnj.webs.com
[2] www.66pacific.com/calculators/small_tx_loop_calc.aspx

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Wouxun KG-699E 4m handheld transceiver

The 4m (70MHz) handheld.

MADE FOR 70MHz. New, dedicated 4m (70MHz) transceivers are very thin on the ground, but the Wouxun KG-699E from China aims to put that right. Chinese-made VHF/UHF transceivers have grown in popularity over the past few years. Offering great value for money, the Wouxun is one of the first to be available from a UK amateur radio dealer (Martin Lynch and Sons) and it seemed like a good opportunity to try one out.

A number of 4m enthusiasts have bought a Wouxun KG-669E, many for SOTA (Summits on the Air) use. Reports on the Four Metre website (www.70mhz.org) have been very favourable.

The CE-approved 4m handheld, which covers 66-88MHz, comes in a neat cardboard box, complete with a clip-on 7.4V 1400mAh Lithium Ion battery pack, helical rubber duck antenna designed for 66-88MHz, hand strap, a stand-in charger and mains lead, a belt clip and instructions. The mains lead has a proper UK 13 amp plug on the end so you don't need any special adaptors.

The handheld itself is compact, measuring 62 x 105 x 39mm (without the antenna), weighing 250g and with good build quality.

It offers a choice of 5 or 1 watt output and has 200 memory channels. It also has a 1750Hz tone burst and DCS/CTCSS. The Wouxun also has a whole host of other bells and whistles including a built-in personal attack alarm and an FM radio. The alarm mode is called a “stun, kill and emergency alarm” in the official literature, which made me laugh!

The handheld drops into the supplied charger and a full charge seemed to last about two days of casual listening and light operation.

The well-printed handbook is also good, although suffering a little bit from Chinese English, with expressions like “The transceiver will stop scanning when detect the frequency(memory channel) of signal”. Having said that it was easier to follow than some instruction books I have seen.

OPERATION. On switching the unit on you are met with a synthesised voice that says “frequency mode”. This is because you can operate the handheld in two modes – frequency or channel.

For UK use it probably makes sense to leave it in frequency mode so that you can see where you are listening. Or if you only use a couple of frequencies you could set these up as ‘channels’ or memories. This would stop you inadvertently transmitting out of band. The memory channels can be labelled with alphanumeric characters to display exactly what you want.

In frequency mode the radio effectively has two VFOs, showing two frequencies in the display. You can switch between these using the A/B button. You can also use a type of ‘dual mode’ watch called TDR.

You can input your desired frequency using the keypad or move up and down the band using the rotary knob on the top or the up/down buttons on the front.

I found it easiest to leave VFO A on 70.450MHz (the calling frequency) and leave VFO B free to step up and down the band. There isn't a lot of FM activity on 4m at the best of times, but you might also want to leave it on 70.260MHz, which is the AM/FM calling frequency.

User-adjustable functions (of which there are 52), such as channel step, pre-set squelch, TX power, VOX, are accessed by pressing the Menu button. After being greeted with the synthesised voice saying ‘function select’ you can then cycle through each menu item. Pressing menu again then lets you change the value for that parameter, while the voice announces which one it is.

The channel step is selectable between 5, 6.25, 10, 12.5 and 25kHz. This is quite handy as there is some internet gateway activity on 70.3875 and 70.4125MHz, plus the MB7FM ‘parrot’ repeater near Tring on 70.4375MHz.

The GB3CB repeater in Birmingham on 433.350MHz has also adopted the novel approach of having additional inputs/outputs in the 4m and 10 metre bands. If you transmit on 70.3625MHz it will output your audio on 433.350MHz and 29.530MHz. Likewise audio from the other bands is retransmitted on 70.3625MHz.

The radio comes with the squelch preset at level 5. I reset this to level 2, so that weak signals stood more chance of opening it (level one being too low). You can also defeat the squelch by pressing the lower button on the left-hand side. You can also select wide or narrow deviation via the menu and change the LCD background colour to none, orange, purple or blue.

I had it set up as blue, which changed to orange when you transmitted. A nice touch is that the display lights up briefly when the squelch opens, which could be helpful for spotting elusive band openings.

The FM radio is accessed by pressing a

button on the side and worked quite well, pulling in local stations on the supplied helical rubber duck antenna – at least as good as a cheap transistor radio. You can store commonly-used frequencies or click and up down the VHF broadcast band as required.

The radio can be used with a speaker/microphone (not supplied). This uses a dual 3.5mm/2.5mm jack plug on the side while the antenna connection is a reversed SMA, so you will need an adaptor for your BNC/PL259. Luckily, I had one which was bought to go with my own 2m Chinese radio so it was easy to connect the handheld up to a main antenna.

IN USE. So we've got this far, and the next question is how well does it work? I knew this was going to be the hard bit as apart from a weekly local net in Norfolk (Tuesday evenings at 7.30pm on 70.450MHz, moving to 70.400MHz) there is very little other activity. My fears were confirmed when, after calling CQ on 70.450MHz a few times (and listening all day), no-one had been raised on the supplied handheld antenna.

Not to be beaten, as the review took place in June (peak time for Sporadic-E) I installed a vertical half-wave dipole for 70MHz, connected it up and went hunting, hoping for contacts with the small number of European countries who have 70MHz FM allocations, such as Denmark and Slovenia – ever the optimist!

I eventually made contact with Peter, G0PJI who lives about five miles away from me. I was end-stop with him when using the half-wave antenna and five watts and Peter said that the audio was very good. I then switched to the supplied rubber duck and could still make the contact. I also heard Beno, S56KZ in Solvenia via Es on 70.450MHz using the dipole but was unable to get through with five watts.

Overall, I thought the KG-699E was a great little radio. If you have never tried 4m this is an excellent way to get going on FM, but I would seriously consider an external full-size antenna otherwise you might be disappointed. This will obviously depend on how much 4m is used in your area.

The Wouxun KG-699E costs £89.99 (inc. VAT). You can also buy it as a package with a battery eliminator, 'AA' battery pack, mic/speaker, leather case and antenna adapters (reversed SMA to BNC and SMA to SO239) for £139.95. There is also a Wouxon radio available for 2m (KG-679E) and a 2/70 dualband handheld (KG-UVD1P). My thanks go to Martin Lynch and Sons for supplying the radio for test.

RELEVANT PARTS OF 4m BANDPLAN

70.250-70.500MHz All modes, including:

70.260	AM/FM calling
70.300	RTTY/FAX calling/working
70.350	Can be used by RAYNET
70.375	Can be used by RAYNET
70.3875	Internet voice gateway
70.400	Can be used by RAYNET
70.4125	Internet voice gateway
70.425	FM simplex - used by GB2RS news broadcast
70.450	FM calling

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Wouxun KG-UVD1P dual band handheld

INTRODUCTION. I was astonished when I heard about the Wouxun KG-UVD1P. A dual band hand for under £90? Some mistake, surely – everyone knows that dual banders cost twice that much. But no, Martin Lynch has done it again and found a great product at an amazing price.

WHAT'S IN THE BOX? My out-of-the-box experience of the radio was reminiscent of getting a new mobile phone. It comes in a snazzy box with the goodies nicely presented on two plastic trays – the radio and Li-ion battery on top, the drop-in intelligent charger and aerial below. There was also a belt clip, hand strap and a documentation pack.

IN USE. Turning the radio on via the click off-on-volume control resulted in a fairly quick startup, four beeps and a female voice announcing "Frequency mode". The display's white backlight illuminated, clearly showing the VHF and UHF operating frequencies. The LCD was still easily readable when the light automatically timed out.

Frequencies have to be entered in full, except the last '5' for 12.5kHz channels. I entered 145.787 on the positive-click numeric keypad for the local Bedford repeater and was rewarded with each figure being spoken as I entered it. I had to refer to the manual to discover how to set the offset, CTCSS and narrow bandwidth but thanks to the good contents list and clear instructions this was quite easy. When switched to Narrow mode both the receive and transmit deviation are altered – a real boon for 12.5kHz channels, particularly on repeaters. There is a 1750Hz toneburst for non-CTCSS repeaters. On-air audio reports included "crisp and clean audio" and "you can definitely tell it's you". I thought the receive audio was good and clear, even at quite high volume.

The radio has two independent dual band receivers so I could listen to two frequencies at once, V/U, V/V or U/U. It isn't full duplex though, so it's not really suitable for satellite operations. I found basic use quite easy after a very short learning curve – it was much easier than some other handhelds I've played with. The voice synthesiser announces menu names but not menu settings, and I couldn't find a way to make it speak the current frequency. There doesn't appear to be a way to switch repeater shift on or off from the keypad; you need to delve into the menu system.

The aerial 'socket' is a male SMA plug. I suspect that if you drop it awkwardly the socket on the aerial is more likely to break than the plug. Replacing an aerial is cheaper and easier than sending the radio off to get its socket fixed! If you want to use a standard SMA aerial then you'll need a female to female SMA 'barrel', which will probably cost you £2 or so on eBay.

There is a high brightness white LED that acts as a torch and an FM broadcast radio that covers 76-108MHz. The torch can only be turned on or off when the squelch is closed and the only way I found to turn the FM radio on or off was to program the function key via the menu system. The drop-in charger is very easy to use and automatically switches the charge off when the battery is full. A red LED indicates charging; green shows full. The charger has a built-in switch mode PSU and operates from 100-240V; there is also a 12V DC input that can be used with an optional lead to recharge the battery when in a vehicle.

PHOTO 1: Wouxun KG-UVD1P dual band handheld. The slender, flexible whip aerial is rather longer than you see in some adverts.

PHOTO 2: The KG-UVD1P with the programming cable (bottom left) and Plus Pack accessory items.

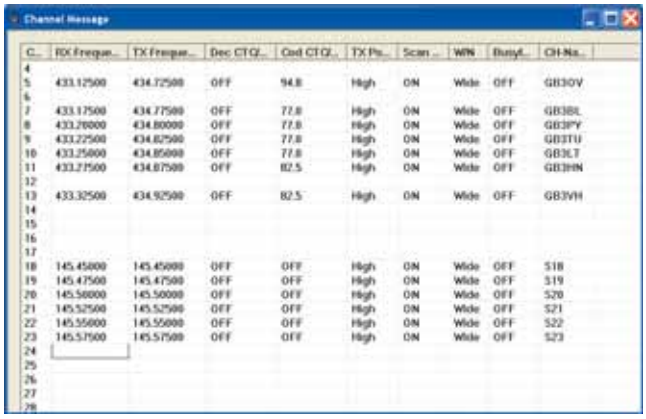

FIGURE 1: The programming software is quite intuitive.

TABLE 1: TEST RESULTS

	2m	70cm
Sensitivity	0.2μV	0.4μV
Power output	5.06W	4.03W
2nd harmonic	–62.3dBc	–57.4dBc
3rd harmonic	–61.7dBc	not tested
Tx deviation wide/narrow	3.72/1.89kHz	4.00/2.08kHz

MANUAL. This is concise and slender – 64 pages that are just over A6 size – yet it contains all the essential operating information. I found it easy to use, although there are a small number of minor mistranslations and a few phrases left me totally baffled. Not quite all of the functions quite agree with the manual; for instance, I could program memories easily enough but the instructions for memory channel naming didn't seem to work. I suspect this is a bug in the firmware.

TECHNICAL TESTING. Using a calibrated Marconi 2945 Radio Test Set we found performance was pretty much to specification except for 70cm Rx sensitivity, which is quoted as 0.2μV. Tests were carried out with a freshly charged battery, mid-band at 145.000MHz and 435.000MHz. Deviation was tested by transmitting the 1750Hz toneburst. Results are summarised in **Table 1**.

PROGRAMMING CABLE & SOFTWARE. The software came on two disks – a driver for the USB lead and the programming software itself. You must install the driver before plugging in the cable, which has a USB plug one end and a speaker/mic plug the other. Actual communication with the radio is via RS-232; there's a converter built into the USB plug.

I was easily able to set things like CTCSS and wide/narrow deviation and even name the memories, using a spreadsheet-like interface. Uploading initially failed; eventually I discovered (in XP's Manage Computer / Device Manager) that the USB RS-232 port had installed itself as COM40, which the programming software couldn't 'see'. Resetting it to COM2 succeeded and subsequent uploading, downloading and saving memories worked well. I found the programming software far easier and quicker than trying to edit the 128 memories directly on the radio.

PLUS PACK. The optional accessories pack was included for review – a speaker mic, AA cell case for 5 non-rechargeable batteries, battery eliminator 'cell case' with attached cigarette lighter lead, a leather case and aerial adapters to BNC and SO239. When bought as a pack with the radio there is a saving over buying the items individually. I think the most useful are the speaker mic, cell case and either the BNC or SO239 adapter, depending on your preference.

CONCLUSION. Would I buy this handheld? Definitely. Programming software and lead? Having used it, probably yes. The Plus Pack? Probably not; but I *would* buy the specific items I needed. That said, even if you buy *all* these options you'll only have spent about the same as a low-end 'traditional' dual-bander – and you'll have a lot more goodies.

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As reviewed in RadCom this issue!

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- ✓ Frequency Range: 144-146 & 430-440MHz (RX/TX) 136-174 & 420-470MHz Capable
- ✓ Work Mode: V/U or V/V or U/U can be set freely
- ✓ English Voice Guide
- ✓ SOS Function
- ✓ 1750Hz Tone
- ✓ DTMF Encoding Function
- ✓ CTCSS/DCS Scan (Digital/Analog)
- ✓ Bright Flashlight Illumination
- ✓ Band can be set freely on the same Channel VHF TX-UHF RX or UHF TX-VHF RX
- ✓ Built-in FM Radio (76-108MHz RX)
- ✓ Wide/Narrow Bandwidth Selection (25khz/12.5khz)
- ✓ Priority Scan, Add Scanning Channel
- ✓ High/Low Power Selection
- ✓ Channel Name Edit and Display
- ✓ 50 Groups CTSS/105Groups DCS
- ✓ Multi Step Frequency:(5K/6.25K/10K/25K/50K/100K)
- ✓ Multi Scan
- ✓ VOX Transmission
- ✓ Transmit Overtime Voice Prompt
- ✓ Begin/End Transmitting BEEP Prompt
- ✓ Auto/Manual Keypad Lock
- ✓ Wire Clone, Programmable By Computer
- ✓ Stopwatch Function
- ✓ Low Voltage VOICE prompt
- ✓ Busy Channel Lockout

Supplied accessories:
1.3Ah Li-Ion Battery Pack (5W)
Intelligent Base charger (110V-240V & 12V in input)
Belt-Clip
Dualband Antenna
Hand Strap
Handbook

Wouxun KG-699E/4M 4m FM Handie

- ✓ 5W RF output
- ✓ English voice guide to under 5W RF
- ✓ 70-70.500MHz 4m Amatuer Band (66-88MHz capable)
- ✓ Dual display and standby modes
- ✓ 128 Memory Channels
- ✓ 8 Groups Scrambler
- ✓ Channel Name Edit Available
- ✓ High/Low Power can be changeable by Top Key
- ✓ VOX (Level Adjustable)
- ✓ DTMF Encoding and DTMF Decoding
- ✓ 105 Groups D.C.S/50 Groups CTCSS
- ✓ DCS/CTCSS of RX and TX can be set respectively
- ✓ Reverse FrequencyFunction
- ✓ Busy Channel Lockout
- ✓ Distant Alarm
- ✓ ANI (Caller ID)
- ✓ Multi Scan Mode (TO/CO/SE)
- ✓ Inspection, Monitor, Stun, Kill and Emergency Alarm
- ✓ All Calls, Group Calls and Selective Calls
- ✓ Calling Ring and Ring Overtime Auto Answer
- ✓ Multi Silent Mode (QT/QTADT/QTXDT)
- ✓ Channel Steps (5K/6.25K/10K/12.5K/25K)
- ✓ Wide/Narrow bandwidth Selection (25KHz/12.5KHz)

ML&S Price: £89.99

Supplied accessories:
1.3Ah Li-Ion Battery Pack (5W)
Intelligent Base Charger (110V-240V & 12V in input)
Belt-Clip
Dualband Antenna
Hand Strap
Handbook

Wouxun KG-679E/2M 2m FM Handie

Also available for 70cm! See below.

- ✓ 5W RF output
- ✓ English voice guide to under 5W RF
- ✓ 144-146MHz 2m Amateur Band (136-174MHz capable)
- ✓ 8 groups scrambler
- ✓ Channel name edit available
- ✓ High/Low power can changeable by top key
- ✓ VOX (Level adjustable)
- ✓ DTMF encoding and DTMF decoding
- ✓ 105 groups D.C.S/50 groups CTCSS
- ✓ DCS/CTCSS of RX and TX can be set respectively
- ✓ Reverse frequency function
- ✓ Busy channel lockout
- ✓ Distant alarm
- ✓ NI (Caller ID)
- ✓ Multi scan mode (TO/CO/SE)
- ✓ Inspection, monitor, stun, kill and emergency alarm
- ✓ All calls, group calls and selective calls
- ✓ Calling ring and ring overtime auto answer
- ✓ Multi silent mode (QT/QTADT/QTXDT)
- ✓ Channel steps (5K/6.25K/10K/12.5K/25K)
- ✓ Wide/Narrow bandwidth selection (25KHz/12.5KHz)

Supplied accessories:
1.3Ah Li-Ion Battery pack (5W)
Intelligent Base Charger (110V-240V & 12V in input)
Belt-Clip
Dualband Antenna
Hand Strap
Handbook

ML&S Prices:

KG 679E/2M..... £58.99
KG-679E/U 70cm (400-470MHz)..... £58.99
or with Voice Scrambler KG-689E/U .. £69.99

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'AA' Battery Pack
£9.99

WO/ELO-001
Eliminator
£9.99

WO/CCO-001
Car charger
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WO/SMO-001
Mic/Speaker
£14.99

WO/PSO-110
Programming Software and USB Programming Cable
£19.99

WO/CASE
Leatherette case
£9.99

WO/AAO-002
BNC Socket to SMA plug antenna adapter
£4.99

WO/AAO-001
SO-239 socket to SMA plug antenna adapter
£4.99

WO/CHO-004
110-234v AC & 13.8v DC spare charger (allows radio & spare battery to bec harged at same time)
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Design Notes

Generating odd frequencies on the cheap

OLD LOGIC CHIPS NEVER DIE. Recently, on the LF Reflector, someone posted a question about how the output from a crystal oscillator could be divided by 26 to give an RF carrier. A low cost 3.579MHz crystal was to be used for a source of 137.67kHz. These days, with nearly all digital circuitry in consumer and professional applications being done with custom gate array or programmable logic arrays, the simple logic task needed here may not appear to be as straightforward as it once was. But that's not necessarily the case. There are several ways to do a job like this.

SOLUTION 1: DISCRETE LOGIC. The old logic families are not completely dead. The long-enduring 74 series of logic is still around, albeit constructed with fast modern CMOS technology and even in low voltage variants if you want it, but with only a subset of the wide variety of logic functions there used to be. Even some of the more useful devices in the old CMOS 4000 family have been reborn as 74HC4000 devices – like the 74HF4046 Phase Locked Loop used by Eamon in Homebrew recently. A lot of the nice simple asynchronous divider chips are no more and the only counters readily available are binary ones. However, interestingly, most of the simple logic gates seem to have survived. It appears there is still a need for a handful of logic inverters, or the occasional gate – sufficient for the manufacturers and suppliers to keep the stocks topped up.

For dividing a frequency by some obscure number, it's hard to beat a programmable divider. The 74HC161 is a basic four bit counter that can be made to divide by any value from 2 to 16 – but it does need an extra single inverter to complete the task. The beauty of this chip is that it is a fully synchronous counter and many of them can be cascaded for longer division ratios without compromising the maximum clocking speed. The divider works by loading a fixed value (which we'll very unoriginally call N) into the counter, which then counts up from this. When the count rolls over from 15 (or 255 for two devices, or 4095 for three etc) back to zero, the value is reloaded. The result is that a pulse is output for every 16 minus N input clocks (or 256 – N, 4096 – N etc). **Figure 1** shows how three 74xx161 devices are arranged with the inputs configured to divide by 3400. The number programmed in is given by N = 4096-3400 = 696. Expressed in hexadecimal this is 0x2B8 (by convention, numbers shown in hex are preceded by 0x, unless you're a *Basic* language programmer when its &H). To add a bit of confusion, the natural left to right flow of the circuit diagram in Figure 1 puts the most significant divider on the right hand side meaning that the hex values show in reverse order on the diagram – as '8' 'B' '2'. Trace the programming links to check.

The HC family will work at input clock speeds of several tens of MHz. If instead of these you use the AC (or ACT) family, or even the bipolar F devices or some even more modern variants, clocks speeds well into the low VHF range can be divided down. It is a bit irritating that one additional inverter – which has to be of the same speed rating – is needed for this configuration, but that's life! If you need a smaller count, say of 256 maximum, the middle of the three devices can be removed and the connections between the first and last linked in the same manner. Connections for a single device have the inverter feeding back to the load pin, the input signal being applied to both clock inputs.

The output from this circuit has a low duty cycle, consisting of one narrow pulse at the output repetition rate. If a square wave is needed, for example to drive a transmitter, a further divide by two flip-flop has to be included to give the symmetrical output waveform – another logic function that has survived the ravages of modernity. The total division now has to be an even number, but the original requirement of divide by 26 can now be met with three chips in total. A 74HC161, a 74HC04 (leaving five inverters spare for interfacing and the like) and a 74HC74.

SOLUTION 2: THE PHASE LOCKED LOOP. A PLL chip like the LMX2320 can be made to deliver the output from their internal programmable divider to a pin, although you will need to study the data sheet to find out how to do this – it's not usually the default state. A microcontroller will be needed to program the divider value into the device but, if one is already in use in the project, this just means allocating three programming lines. The PLL solution offers division ratios up to 16384 or higher at clock rates from UHF to several GHz, depending on the synthesiser chip used.

SOLUTION 3: MICROCONTROLLERS. Use a microcontroller like a PIC. Let the

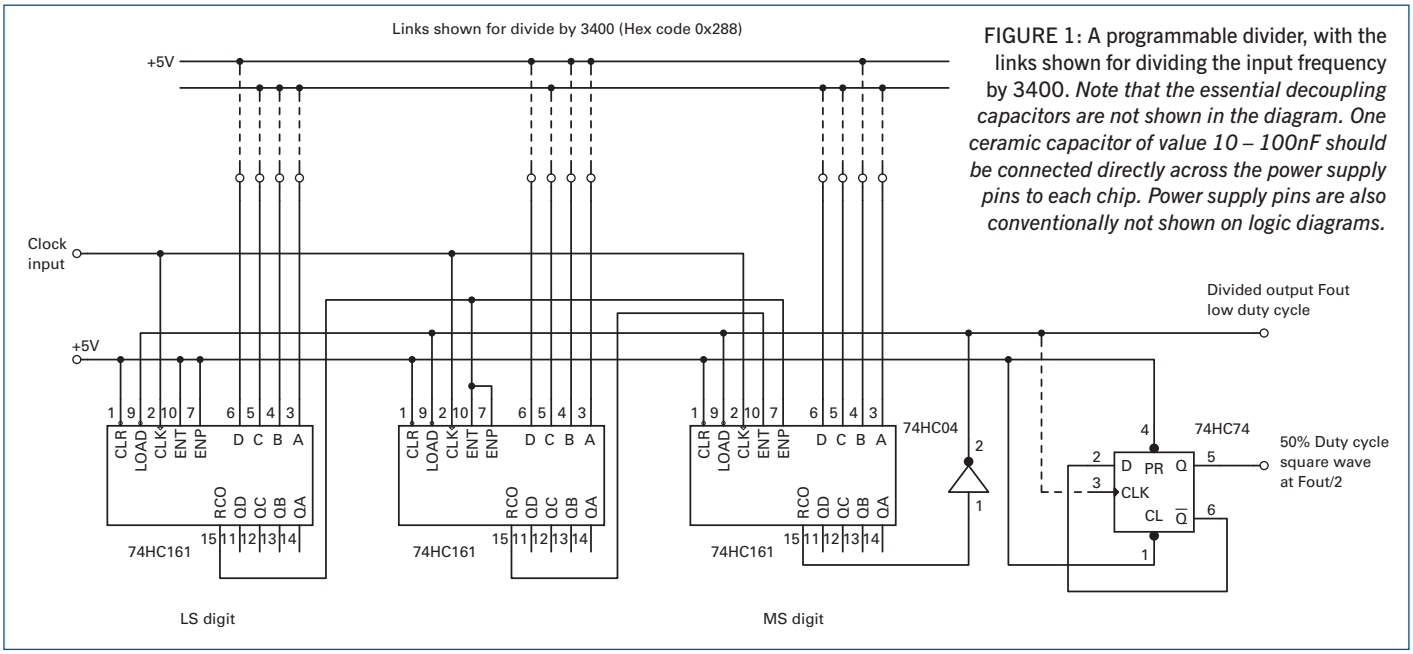


FIGURE 1: A programmable divider, with the links shown for dividing the input frequency by 3400. ***Note that the essential decoupling capacitors are not shown in the diagram. One ceramic capacitor of value 10 – 100nF should be connected directly across the power supply pins to each chip. Power supply pins are also conventionally not shown on logic diagrams.***

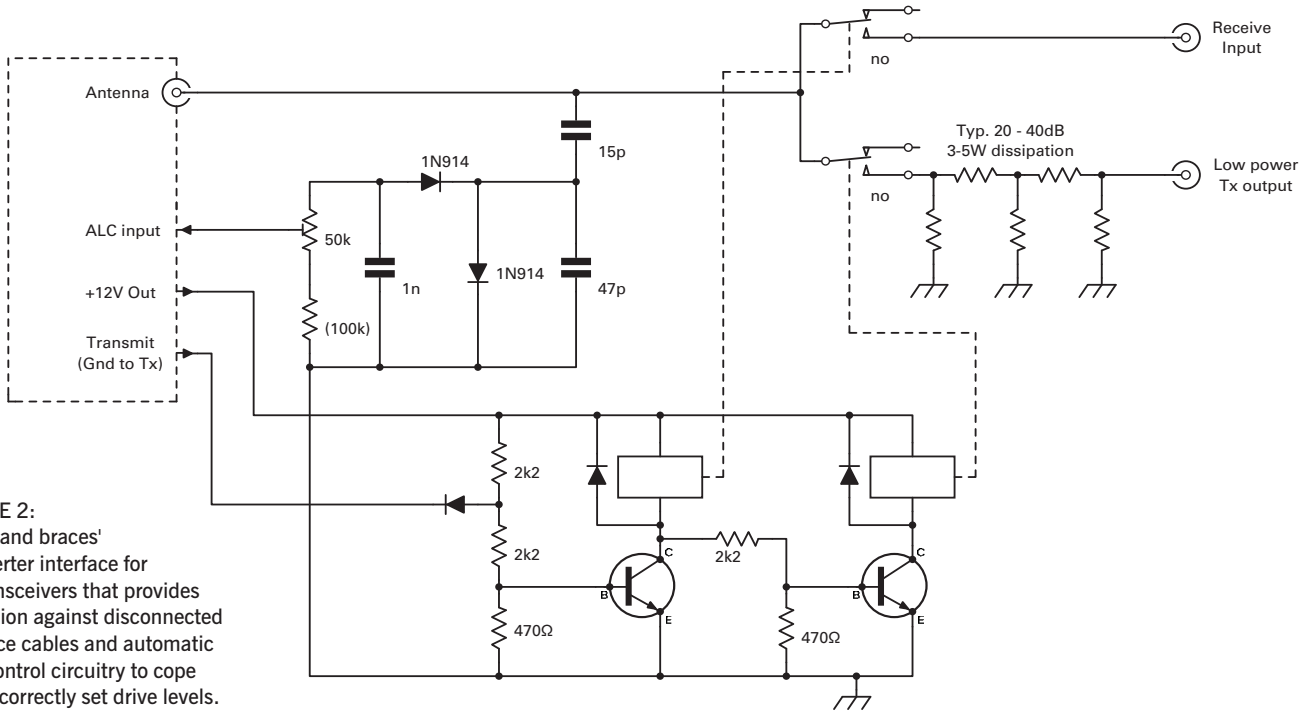


FIGURE 2:
A 'belt-and braces' transverter interface for HF transceivers that provides protection against disconnected interface cables and automatic level control circuitry to cope with incorrectly set drive levels.

input frequency provide the clock for the chip, and write code in assembler to just toggle an I/O line with suitable delays. This is a lower speed solution and, in the case of a PIC, can only offer division ratios that are a multiple of 4 (the processor clock is a quarter of the input frequency). It therefore isn't viable for the divide by 26 needed here. However, in terms of chip count it is the simplest solution of all – needing only one low cost chip, the processor itself, plus a little programming effort.

TRANSVERTER INTERFACING. Transverters are often the only route to operation on the higher bands. They are still frequently found for adding a 70MHz, 144MHz or 432MHz capability to HF rigs. They work by mixing up the transmitted RF (often generated at 28MHz) to the wanted band, and mixing down for receive using the same local oscillator. 144MHz transceivers frequently form the drive for units designed for the microwave bands. The problem comes when interfacing the transmitter output to the transverter. The Tx mixer typically needs no more than a milliwatt or so of drive; HF transceivers typically put out many tens of watts. Even small portable transceivers like the FT-817 or FT-290, a favourite for microwave use, put out several watts. Bigger transceivers can usually be wound back to a few watts, but there is always the danger of the power control being tweaked in the field and overdriving the mixer, with consequent damage.

An attenuator of several tens of dB has to be inserted to drop the Tx drive power down to the level needed, but this attenuator has to be removed when going to receive as the resulting signal loss would be unacceptable. And here is where big danger lies. If the switching circuitry fails, it is quite possible that transmit power could end up getting applied to the receive mixer – resulting in its instant death. And Tx/Rx switching always presents problems of different leads, polarity and just general uncertainty. We need a plug-and-play solution that gives protection if leads or connectors get forgotten and that can ideally cope with a range of drive power levels – all automatically.

The circuit in **Figure 2** shows a belt and braces approach for interfacing a typical base station HF-VHF transceiver (capable of delivering damaging power levels) safely to a transverter's low power input/output ports. There are several levels of protection in use.

You can use two separate normally open relays to switch the transceiver between the Rx port of the transverter and the power attenuator supplying the low power Tx input port. Now, if a connection breaks or a connector is left unplugged, no DC power can be supplied to pull in these relays. RF from the transceiver hits the open contacts and goes nowhere. All modern rigs can operate safely into open circuits – their automatic level control (ALC) circuitry and SWR protection looks after that. Additional security is provided by using the 12V power that is often available on one of the pins on the accessory socket on the transceiver. Ideally this same multiway connector will carry PTT or a Tx/Rx signal so one multiway connector can be used for all transverter control interfacing. If the connector is left unplugged, nothing happens.

These accessory connectors often carry an ALC input pin as well, needed for interfacing HF transceivers to big linear amplifiers. These feed back a voltage derived from the rectified RF output and use it to control the final output level. A sort of *de-facto* standard has been in use between manufacturers for many years. The voltage is (somewhat annoyingly) negative – it usually biasses off a FET in the driver stages – and typically sits at around −3 to −5V when the RF output from the power amplifier is at its specified level. The voltage is not exactly defined, but as the feedback is all part of a closed control loop this usually doesn't matter too much. Preset resistors are used to adjust for the correct setting and are then left alone. We can use this ALC input to optimise transverter drive levels.

Figure 2 shows an RF detector on the output from the transceiver. The component values have been optimised to give about 4V rectified output with about two to three watts of RF input, which is a convenient level for a subsequent attenuator. It is also within the control range of most HF transceivers' ALC range. So now, whatever the power control on the HF transceiver is set to, it will always deliver the correct RF into the Tx attenuator, preventing damage from overdrive. The power attenuator is designed to accept this power level, with a small margin of safety. The ALC prevents it rising higher.

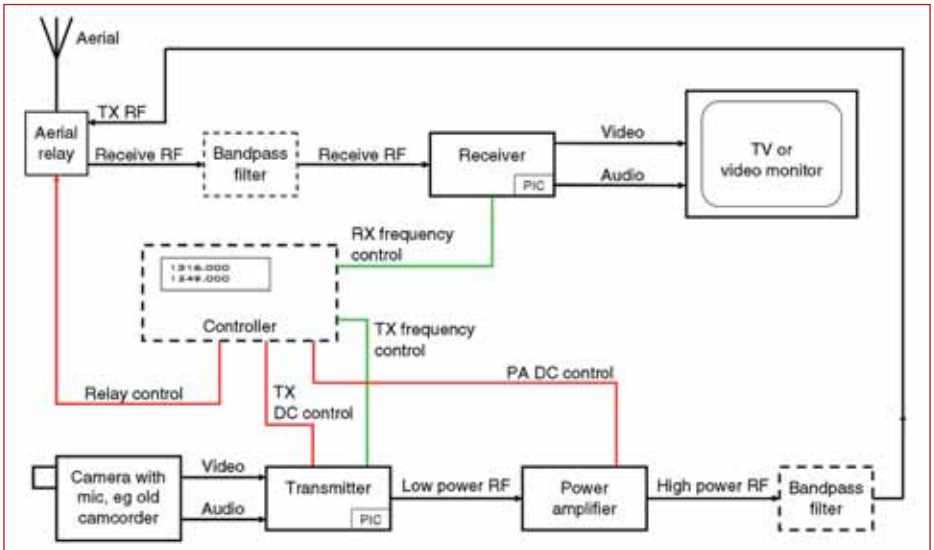
For an even greater level of protection, an additional comparator circuit could be built into the transverter interface that prevents the relays from being activated if too high a level of RF is detected – this could also sound an audible alarm. In the January 2000 *RadCom* I published a transverter interface for the IC-746 that used this approach and many of these modules have been in use to this day. The overdrive alarm proved unnecessary in practice because a single DIN connector is used on this transceiver for all control signals.

REFERENCE

[1] RF components supplier with a wide range of RF power modules - www.rfmicrowave.it/home.php?lang=eng

ATV

Building an ATV station from scratch



An ATV station can be built up in stages and several parts (dashed) are optional.

CORRECTION. The audio subcarrier resistor value for the Comtech 13cm 200mW TX module (FM2350TSIMP) given in the previous column is incorrect. The current units have a 120k and 15k SMD resistor in series from the 6MHz oscillator. I suggest you remove the 120k resistor and replace with an 0805 size 33k, giving a total value of 48k. The 00 resistor from the 6.5MHz oscillator can be 'popped out' to disconnect the other unwanted subcarrier.

To remove all trace of the second subcarrier, lift the 2k7 in the oscillator transistor emitter circuit. This also applies to the lower power 13cm and the 23cm transmit modules. Make sure you have chosen the correct oscillator before removing the 2k7 resistor!

A PAUSE FOR THOUGHT. When I took over the ATV column it was decided to have a rolling technical theme along with any available amateur television news and events of interest. After the initial introduction to ATV there has been a taste of getting some of the basic transmission and reception parameter set up to give good performance and best practice. Now is a good time to consider all the building blocks required to set up a complete ATV station and present some suggestions for each block, in particular for items that are not readily available off the shelf but can, with a little help, easily be built.

THE BASIC ATV STATION. I will start with the building blocks for a 23cm analogue station, as this (or possibly 13cm) is the most likely start point for a newcomer to ATV. A 13cm station is almost identical to one for 23cm. ATV systems for higher frequencies can often be 'piggy-backed' onto (or transverted from) for 23, 13 and 70cm. (70cm stations in the UK are now normally digital.)

Whilst there are one or two sources of kits, the Comtech transmit and receive modules are good, in my opinion, because they're relatively cheap, immediately useable and offer good performance. They have all of the basic requirements and, for the more adventurous, can be significantly improved. So these will be part of my suggestion for a complete 23 and 13cm ATV station. There are fairly standard ways of raising transmitter power and there are several good antenna designs available particularly for the home constructor. These and suggestions for the best RF cables will be included.

BLOCK DIAGRAM. The prerequisites for an ATV station are an aerial, receiver and some form of display device (often an analogue TV fed through the SCART socket). Frequency control is by way of the Comtech demo PCB's on-board PIC microcontroller. Later, a transmitter can be added, along with a power amplifier. Serious consideration should be given to a good aerial changeover relay, although as ATV 'overs' tend to be long you can get away with plug-swapping … for a while. An alternative is to use separate transmit and receive aerials, but this takes extra mast space and yet more high quality coax.

The luxury item is a controller that makes frequency changing a bit easier and perhaps includes a sequencer to fire up the aerial relay, transmitter and power amplifier in the right order with suitable time delays. Finally, particularly if you are thinking of multi- or cross-band operation, input and output filters can help clean up your signal.

Next time I will go into more detail about the individual units in this block diagram.

A LITTLE GEM. A new range of 3.5" monitors is now available. Some are for vehicle reversing systems and come with mini cameras. The specification for the Inesun ET-350 looked promising, particularly with the delivered sample costing under £35.

When I checked it out I was pleasantly surprised. The power requirement with a picture is only ~1.2W at 12V. Picture quality is extremely good thanks to its 960x468 pixel resolution and 350:1 contrast ratio. It copes well with high ambient light. Azimuth viewing angle is virtually ±90° and almost identical in the vertical plane with the exception of a null at about -45°. Sync lock is very good; if I switch off the 'no signal-blank screen' facility it will be useful for monitoring weak (DX) signals when /P.

END OF AN ERA. "I feel rather lost now," writes Mike, G8LES. "Canal + has gone from VHF channel 09 to digital UHF, along with the Caen analogue transmitter for TDF1 etc - channels 22, 25, 28 have also gone over to digital, so my guide to UHF and VHF conditions has ceased. This now means I have antenna hardware up in the air, a UHF multi element and a 12-ele Band 3 antenna that aren't much use. The same applies to Band 1 DXTV: Poland and South Africa appear to be the last ones to go. I used to enjoy seeing Iceland in the morning, then Sverige in Sweden, then Poland about midday, Italy mid afternoon and Spain in the evening.

"Perhaps a digital set top box on the UHF DXTV antenna would be a good idea. I will also have to find something else to monitor for conditions, such as amateur beacons, providing they don't go off for different reasons like site costs…"

IN THE NEWS. The latest BATC magazine *CQ-TV* 230 has more on 3D video and the use of 2.4 and 5GHz wireless LANs for digital ATV. The Australian 70cm band is under threat too – their ATV repeaters have 23cm inputs with 70cm outputs.

Inesun ET-350 3.5" monitor.

Open six days a week. Mon - Fri: 9.30am - 5.30pm Sat: 9.00am - 5.00pm

ML&S martin lynch & sons
The World's Favourite Ham Store

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Web: www.hamradio.co.uk
E-mail: sales@hamradio.co.uk

YAESU

PRICE INCREASES on YAESU and ICOM products introduced July 2010. Call now for availability and latest prices. ML&S have the largest stock of Yaesu in the country but will not last forever. Prices quoted are for current stock. Please call now and beat the price rise.

FT-817ND

First Batch Arriving end August!

After almost 9 years you would think there would be competition for the FT-817. Still the ONLY truly hand-portable 160m-70cm all mode transceiver available today.

£469.95

FT-817ND-DSP £579.95

NEW! Yaesu FTdx5000D

HF/6M Transceiver with 112dB Dynamic Range & IP3 of +40dBm

See www.FTdx5000.com for more details.

Yaesu FT-857D & ATAS-120A Package

Still our best selling HF Mobile Radio.

FT-857D only £599.95 or with ATAS-120A £859.95

By adding the remarkable ATAS-120A Auto Antenna you have 40-10M at the press of a button without getting out of your car! No other manufacturer has been able to offer this unique feature together with their mobile radio. Having used the ATAS on 40m I was amazed how a mobile antenna so small performs so effectively. My single band whips have been consigned to the garage ever since!

Yaesu FTM-350E

Latest Dual-Band APRS Mobile from Yaesu!

Available NOW! £529.95

Yaesu FT-897D

The best multi-purpose multi-band transceiver on the market!

ML&S: £759.95

FT-897D with AT-897Plus Auto ATU £924.95

Yaesu FT-450 HF Base Transceiver with & without ATU. HF & 6m, full DSP

FT-450 shown with optional Bail Stand.

The Yaesu FT-450 is a major new HF & 6m transceiver offering full a 400MHz IF DSP design at a very low price. Available with or without internal ATU, this new rig offers serious performance for those who are not bothered about the upper V/U bands.

Yaesu FT-450 without ATU: £619.95
Yaesu FT-450AT with ATU: £699.95

Options:

MyDEL MP-8230 23Amp PSU	£69.95
Stand-FT450 Bail Stand	£19.95
ATU-450 Optional internal ATU	£163.43
MMB-90 Mobile Bracket	£19.36
MHG-1 Carry Handle	£10.17
MH-36E8J DTMF Mic	£71.48
MD-100A8X Desk Mic	£119.95
MD-200A8X Super Deluxe Desk Mic	£209.95
YH-77STA Headphones	£56.14
MLS-200 High Power weatherproof speaker	£28.55
ATAS-120A Fully Auto Mobile 7.50MHz Antenna	£279.95

Yaesu FT-2000 PEP

Performance, Excitement, Perfection!

The DX choice of 3B7C.
Always in stock. Always on demo. Two flavours, 100W or 200W, you choose.

FT-2000: £2199.95
FT-2000D: £2795.95

FT-2000 Accessories

Yaesu MD-200A8X The Yaesu MD-200A8X is a ultra high-fidelity desk top microphone £209.95
Yaesu MD-100A8X Yaesu MD-100A8X is a desk top microphone £119.95
Yaesu FH-2 The FH-2 is a Remote Control Keypad built for the FT-2000 ..... £43.89
Yaesu FT-2000 & FT-2000D Mini-Manual. Size, 4.5x8 inches. Twenty high-quality laminated pages, loaded with detailed instructions covering all aspects of using these superb HF rigs £19.99
Yaesu MTU-160 The MTU-160 is an external µ-tuning unit for the FT-2000 on the 160 meter band. Price includes Base Unit Kit. £529.95
Yaesu MTU-80/40 The MTU-80/40 is an external µ-tuning unit for the FT-2000 on the 80 and 40 meter band. Price includes Base Unit Kit. £529.95
Yaesu MTU-30/20 The MTU-30/20 is an external µ-tuning unit for the FT-2000 on the 30/20 meter band. This MTU unit requires the external µ-tuning base kit. £529.95
Yaesu YF-122C 7-pole Collins CW Filter (500Hz/2Khz: -6db/-60db) for FT-817, FT-857, FT-897 and FT-2000 ..... £118.48
Yaesu YF-122CN 7-pole Collins Narrow CW Filter (300Hz/2Khz: -6db/-60db) for FT-857 and FT-2000. ..... £129.71

FT-950 HF Base Transceiver

Yaesu's "Midship Radio"
All FT-950s supplied by ML&S are latest PEP factory

Only £1129.95 Available from stock

FT-950 Accessories

CABPC-YAESU-USB USB Cables for FT-450/950 & FT-2000 ..... £25.49
Yaesu FT-950 (Mini-Manual) £16.99
Yaesu Com Port Control and Programming Kit £25.54
DVS-6 Voice Memory Unit £44.90
MD-100A8X Desk top microphone £119.95
MD-200A8X Ultra high-fidelity desk top microphone £209.95
MTU-160 External µ-tuning unit for the FT-2000 on the 160 meter band.Price includes Base Unit Kit £529.95
MTU-30/20 External µ-tuning unit for the FT-2000 on the 30/20 meter band. Price includes Base Unit Kit. £529.95
FP-1030A Microprocessor-controlled antenna impedance matching network designed to provide all-amateur-band transmitting capability with the FT-897/857 series of transceivers, when used with an end-fed random wire or long whip antenna. £175.95
FH-2 Remote Control Keypad built for the FT-2000 ..... £43.89
Quadra - VL-1000 1 kW, HF & 6M Solid State Linear Amplifier and PSU (VL1000 & VP1000) ..... £CALL!
SP-2000 Base station external speaker built for the FT-2000. ..... £136.87
YA-30 Broadband folded dipole antenna working between 1.5-30Mhz, which comes with 30 meters of cable. £250.28

NEW Yaesu VX-8DE

With Enhanced APRS

£399.95

VX-8 Accessories

Maldol MMG-SM Minimag Quality, stable, Maldol miniature magnetic mount. £20.39
Yaesu BH-1 Stereo Bluetooth Headset £159.96
Yaesu BH-2 Bluetooth Headset £179.96
Yaesu BU-1 Internal Bluetooth Unit £90.43
Yaesu CD-40 Charger Cradle for BH-1/BH-2 ..... £10.96
Yaesu CD-41 Rapid Charger Requires NC-86U £18.96
Yaesu CN-3 SMA to BNC Adaptor £9.96
Yaesu CSC-93 Soft Case £15.95
Yaesu CT-131 Microphone Adaptor Cable £29.96
Yaesu CT-134 Cloning Cable £36.96
Yaesu CT-136 GPS Antenna adapter for FGPS-2 ..... £30.95
Yaesu E-DC-5B DC Cable with Cigarette Plug £29.58
Yaesu E-DC-6 DC Cable for Handhelds £7.10
Yaesu FBA-39 Dry Cell Battery Case £22.44
Yaesu FEP-4 Earpiece for BH-1 Bluetooth Headset £16.95
Yaesu FGPS-2 GPS Unit Requires CT-136 or MH-74A7A £82.95
Yaesu FNB-101LI 7.4V 1100mAh Lithium Ion Battery .. £45.94
Yaesu FNB-102LI 7.4V 1800mAh Lithium Ion Battery .. £61.26
Yaesu MH-74A7A Waterproof Speaker Microphone £43.89
Yaesu NC-85U AC Charger for BH-1/BH-2 ..... £22.44
Yaesu NC-86U AC Charger for VX-8 ..... £10.17
Yaesu VX-8E (Mini-Manual) Sixteen high-quality laminated pages, loaded with detailed instructions. Ideal for setting-up and operating the VX-8R quad-band transceiver £14.99

Yaesu VX-3E. ML&S £159.95
Micro Handie 2/70 with scanner. Complete with Li-ion battery, charger & antenna.

Yaesu FT-60R. ML&S £1179.94
Latest twin band handie complete and ready to go.

Yaesu VX-6R. ML&S £234.94
Yet another 2/70 handie from Yaesu.

Yaesu VX-7R. ML&S £289.95
The UKs best selling Triple Band Handie.

FT-7900 with FREE YSK7800. £239.95

FT-1900 Replacement for the FT-1802.
Rugged 50W 2m FM. £129.95

FT-270E Replacement for the VX-170 2M 5W Handie. £109.95

FT-2900 NEW! Replacement for FT-2800.
MiL spec, high performance. £134.95

See Website for details of these new Yaesu mobiles

Yaesu FTM-10R. ML&S £269.95

Yaesu FT-8800. ML&S £329.95
Similar to the FT-7800 but can receive on 2 & 70 simultaneously.

Yaesu FT-8900. ML&S £379.95
High-power FM on 10m, 6m, 2m & 70cm. When your local repeater is busy, slip onto 10m & work DX!

Yaesu FT-897D
High Power version of the FT-897. Use as a transportable, (20W) or as a base/mobile (100W) Bundle Price: £CALL (Rig only: £759.95)

Yaesu FT-857D The Ultimate HF Mobile Installation! Plus ATAS-120D 40m-70cm Auto Antenna
Bundle Price: £869.95 (Rig only: £599.95)

Yaesu FT-817ND Only £469.95
The world's only all-band portable transceiver.

See www.hamradio.co.uk for more details on all of these items ... and much, much more! E&OE

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New Icom Models!

ICOM

New! ID-E880E
D-Star Mobile, D-Star as standard
£439.95

The E880 has been improved with a larger LCD display and a high speed scan capability of up to 50 channels a second.

New! IC-V80E
2m Handie 5W simple to use
~~£119.00~~
NOW ONLY £99.95

New! IC-E80D
D-Star Handie, 500kHz-1GHz RX built in **£369.95**

The IC-E80D handheld is capable of providing GPS position reporting functions in DV mode by utilising the optional HM-189GPS and has wideband receiver coverage with 5W output power on both VHF and UHF band.

New! IC-T70E
2/70 Dual band handie 5W, compact
Only £179.00

Icom HF Products

IC-718	Basic HF Radio, 12V, 100W output	**£529.95**
IC-7200	Mr T's choice for tough HF/6M Operation	**£819.94**
IC-7000	Full DSP, TFT Screen, 100W HF/6m + 2/70	**£1099.95**
IC-7600	100W, Twin RX, Huge Display. No psu	**£Call Today!**
IC-7700	Superb 200W HF/6M Base, PSU/ATU **New RRP £5499.95**	**ML&S £5395**
IC-7800	Icom's Flagship radio has gone up again **New RRP £7995.95**	**£Call!!**
IC-PW1Euro	1kW Fully automatic HF/6m Linear Amp	**£Call!!**

Icom Receivers

IC-R9500	Flagship Base Receiver, 50kHz-3335MHz	**£Call!!**
	Totally mint used example in stock	**£6999**

Icom V/U Products

IC-E90	6/2/70 FM handie	**£299.95**
IC-E90/4m	6/4/2/70 version of this popular handie	**£339.94**
IC-E92ED	As above c/w D-Star fitted & splash–proof	**£379.95**
IC-E880	NEW! Latest D-Star Dual-Bander. Now in stock	**£439.95**
IC-E2820	Proper dual band, dual display, remote etc	**£425.95**
IC-E2820+D	Supplied with UT-123 D-Star board	**£589.95**
IC-910H	Multimode 2/70 Base Station	**£1269.95**
IC-910X	As above but with optional 23cm UX-910	**£1469.95**

Icom PC Controlled Receivers

Icom IC-R1500 & IC-PCR2500
All Windows XP, Vista or Windows 7 Controlled via USB

IC-R1500	10kHz-3300MHz All Mode with remote head	**£459.95**
IC-R2500	Identical to the above but with twin independent speakers	**£589.95**

NEW Icom IC-9100 All-Rounder HF through to 23cms Base Transceiver

V/UHF Satellite + HF/50MHz bands + D-STAR DV mode

Click on our website to see a video from Tokyo Hamfair August 2009!

GB7ML NOW ON 2m!

GB7ML Now on 2m! We thought our NEW D-STAR Repeater would give better coverage on 2m so thanks to G0RDI, G7LWT, G4MDC & others who put many hours of time and effort into the project. For more info including coverage map see: http://www.ukrepeater.net/repeaters/gb7ml.htm

ICOM IC-7600 £CALL TODAY

Have a rig to part exchange? Ring the ML&S Sales team and get an instant part ex price. You could have the 7600 in your shack sooner than you think.

The successor to the IC-7565Pro111, the eagerly awaited new mid-range HF/6M Transceiver will try and set another bench mark like that of its predecessor.

KENWOOD

Kenwood HF Products

TS-480SAT	Remote head HF/6m 100W inc ATU Transceiver	**£749.95**
TS-480HX	200Watt version of above, no auto-ATU	**£849.95**
TS-2000E	100Watt all mode HF/2/6M with auto-ATU etc FREE HS-5 HEADPHONES (while stocks last)	**£1499.95**
TS-2000X	As above but fitted with 10Watts on 23cm (all mode)	**£1799.95**

Kenwood V/U Products

TH-F7E	The only 2/70 FM Handie with SSB/CW WB Receiver	**£229.95**
TM-V71E	First Class 2/70 FM Mobile with remote head	**£289.95**
TM-D710E	The only 2/70 FM Mobile/Base with APRS/TNC etc	**£429.95**
TM-D710E+AvMap	Bundle. Personal Navigator for GPS located APRS	**£Call!!**

ARRIVING END OF 2010
Ideal Christmas present to yourself!

New TS-590S HF/6m Transceiver

Full specifications and details will be issued by Kenwood prior to release.

For further information see our website: www.hamradio.co.uk

MicroBit Remote Rig Interface

Imagine going on holiday but missing your HF system back home. Well no more! Using the RRC-1258 system all that is required is for you to take the head unit of say your IC-706 or TS-480 together with one half of the RRC-1258, plug into a LAN connection connected to the web and within seconds you are "ON AIR" as if you were sitting in your shack at home. (Minus the cat, TV and any other external interference!)

ML&S are the sole UK & Ireland distributor for Microbit.

Microbit-1258 mkII £399.95. Leads included
For more info see **www.hamradio.co.uk/rrc-1258.shtml**

Latest version of the Remote Rig. One version for ALL radio models.

Like the original RRC-1258, the MkII is sold in pairs, assembled and tested but not configured. Included in the package is one USB cable, Power cables (2 pc), Cat 5 cable for making IC-706 cable and a 2xRJ-45 extender.

A complete remote control system for Amateur radio

Using Microbit's advanced technology, full remote control of your rig is available today.

Alinco DJ-G7E

2m/70cm/23cm Handie Transceiver. Simultaneous full duplex operation between any two bands. £299.95

See www.hamradio.co.uk for more details on all of these items ... and much, much more! E&OE

Come and celebrate Martin's twentieth year in business at the forthcoming RSGB Convention starting Friday 8th to 10th October. Friday night in particular is the ML&S 20th Birthday Buffet – see RSGB for further details.

WE WANT YOUR USED EQUIPMENT!

Used equipment sitting at home gathering dust?

MAXIMUM PRICES PAID

For genuine good condition equipment

Call us now and get an instant quote to buy & collect from your home. Or send your list to: sales@MLandS.co.uk

NISSEI *One of the oldest names in Ham Radio*

Compact metal body Cross Needle Meters. Fantastic value all PEP & Average reading.

Nissei	RX-103	1.6-60MHz, 20/200/2kW	£49.95
Nissei	RX-203	1.8-200MHz, 2/20/200W	£49.95
Nissei	RX-403	125-525MHz, 2/20/200W	£49.95
Nissei	RX-503	1.8-525MHz, 2/20/200W	£69.95

New Range to ML&S, HUGE DISPLAY, PEP & Average reading.

Nissei	TX-102	1.6-200MHz, 2/20/200W	£59.95
Nissei	TX-402	125-525MHz, 2/20/200W	£59.95
Nissei	TX-101A	1.6-60MHz, 20/200/2kW	£84.95
Nissei	TX-502	1.6-525MHz, 2/20/200W	£89.95

DAIWA

Beautifully constructed. Benchmark performance.

Cross Needle SWR Power Meters

Daiwa	CN-801S	900MHz-2.5GHz, 2/20W	£99.95
Daiwa	CN-801VN	140-525MHz, 20/200W	£99.95
Daiwa	CN-801HP	1.8-200MHz, 20/200/2kW	£99.95
Daiwa	CN-101L	1.8-150MHz, 15/150/1.5kW	£89.95
Daiwa	CN-103LN	140-525MHz, 20/200W	£89.95

NEW Mini VNAPro Now with Bluetooth! Only £349.95

The new miniVNA PRO, the big brother of the well-known miniVNA, is an extraordinary and unique handheld vector network analyzer that makes available a multitude of new features and capabilities which are perfect for checking antennas and RF circuits for hams and commercial users. Together with your PC/Laptop, you can add to your laboratory the further advantages of having this first-class VNA instrument. This is the first world's wireless analyzer able of scanning and sending the data using an integrated Bluetooth module to a remote PC/Notebook up to 100 meters from the miniVNA PRO's location. This makes real-time antenna setup easy!

MiniVNA original still available (without Bluetooth): £259.95

MyDEL *CG-3000 £289.95*

CG-3000 shown with optional remote switch.

With 200W and 200 memory channels

● Tunable frequency: 1.8 - 30 Mhz with long wire antenna from 8 meters ● Input impendence: 50 ohms ● Input power: 10 - 200W PEP ● SWR: <2:1 ● Power supply voltage: 12V +/- 10% ● Current consumption: <0.8A ● Auto tuning time: Approx. 2 seconds (first time tuning) Less than 1 second (return to memory frequency) ● Memory channels: 200 ● Weight: 1.8 KG ● Size: 310 x 240 x 72mm (L - W - H)

NEW! Remote control for the CG-3000 and CG-5000. £39.95

CG-5000MkII £559.95

At last! 600W PEP High Speed Remote Tuner from MyDEL

● Tuneable frequency: 1.8 - 30Mhz with long wire antenna from 8 meters ● Input impendence: 45-55 ohms ● Input power: 10 - 600W PEP ● SWR: <2:1 ● Power supply voltage: DC 13.8V ● Current consumption: <1.5A ● Memory channels: 800 ● Auto tuning time: 0.5-6 seconds (first time tuning), less than 0.2 second (return to memory frequency) ● Weight: 3 Kg. ● Size: 385mm x 280mm x 110mm (L - W - H)

Palstar

New! Palstar Commander HF-2500 1.5kW Amplifier

Palstar are pleased to announce a new range of HF Linear Amplifiers built to the highest standard. We have started with the "Commander HF-2500" which is available from stock. The 2m & 6m versions will be available during early 2010.

ML&S: £3499.95

AT-500 600W PEP Antenna Tuner	Special Price £349.95
NEW AT-Auto Now handles a massive 1500W	£1099.95
AT-1500DT 1500W Differential Antenna Tuner	£449.95
AT-2KP (2000W) Antenna Tuner	£459.95
NEW AT-2KD The AT-1500DT and the AT-1KP have been combined into a new 2Kw Tuner	£429.95
AT-4K (2.5kW) Antenna Tuner	£769.95
AT-5K (3.5kW) Antenna Tuner	£999.95
BT-1500A Balanced Antenna Tuner	£599.95
PM-2000AM Power/SWR Meter	£159.95
Palstar Dummy Loads	
DL-1500 (1.5KW)	£119.95
DL-2K (2kW)	£229.95
DL-5K (5kW)	£349.95
Palstar R30A Receiver	
Palstar R30A, fitted Collins filters for SSB & AM	£649.95
MW550P Active Preselector & ATU for AM & 160M reception	£259.95
SP30 Matching Desk Speaker	£69.95
AA30 Active Antenna Matcher 300kHz-30MHz	£109.95

Flex SDR Radio

Flex 5000A Ultimate, fitted Second Receiver & Internal Auto ATU	£3395.95
Flex 5000A Basic	£2495.95
Flex 3000	£1399.95
Flex 1500 New!	£549.95

Miracle Antenna

Miracle Antenna is back!

With some important Hot New products.

Introducing the New MMD Mixed Mode dipole.

The first and only electrically centre-fed mechanically end-fed dipole ever offered to the Ham Radio market, the MMD provides a host of benefits never available in an end-fed dipole.

** Tunes its main band with no tuner - tunes other bands with a regular tuner*
** Feedline not frequency-dependant - may be lengthened or shortened at will*
** Feedline currents and RF in shack eliminated without extra chokes or baluns*
** No tension required to support feedline - opens endless installation possibilities*
** Common-mode noise eliminated for the quietest receiver performance ever*
** Connector and 16-ft feedline included - ready to operate right out of the box*

MMD-17	17M MIXED MODE DIPOLE, + 5 BANDS WITH ATU	£89.95
MMD-20	20M MIXED MODE DIPOLE, OTHER BANDS WITH ATU	£89.95
MMD-30	30M MIXED MODE DIPOLE	£99.95
MMD-40	40M MIXED MODE DIPOLE	£99.95
Miracle Ducker iL	HF-70cm Mini ATU with BNC	£109.95
Miracle Ducker	HF-70cm with PL-259	£109.95
Miracle Antenna	HF-70cm fitted with telescopic	£109.95

WonderWand Antennas U.K.

The UK's favourite rig-mounted antenna system

NEW! WonderWand Widebander
1.8-460MHz with Monster 1.8M Whip! £119.95

NEW! WonderWand Mk4
7-432MHz antenna with 1.8m Whip £89.95

Wonder-TCP
40-10m Tuneable Counterpoise £59.95

HF Linear Amplifiers

Yaesu VL-1000 Quadra	£3999.95
Icom IC-PW1Euro	£3979.95
Ameritron ALH-811HXCE	£999.95
Linear Amp Ranger 572B	£1275.00
Linear Amp Challenger Mk1V	£2295.95

LDG

LDG Auto Tuner Range

NEW AT-600pro	600W Auto ATU	£329.95
AT-100proII NEW	Desktop tuner covering all frequencies from 1.8-54 MHz	£199.95
AT-200pro	Designed for new generation of rigs	£214.95
AT-1000Pro	1kw 160m-6m (1.8-54MHz) High speed Auto ATU, tuning range 6-1000Ohms	£510.95
AT-897Plus	Bolt-on Alternative Auto Tuner for the FT-897. Wider tuning range and cheaper too!	£183.95
IT-100	New version of the AT-7000	£159.95
YT-100	NEW AUTO ATU for FT-897/857 or FT-100 with additional Cat Port Control	£173.95
Z-817	Ultimate autotuner for QRP radios, including the Yaesu FT-817D	£122.95
Z-100Plus	Ultimate autotuner for Yaesu FT-817D	£143.95
Z-11ProII NEW	Portable compact & tunes 100mW to 125W	£159.95
RCA-14	4-way DC Breakout Box	£49.95
KT-100	Dedicated tuner for Kenwood radios	£173.95
RBA-1:1	Probably the best 1:1balun out there	£35.71
RBA 4:1	Probably the best 4:1 balun out there	£35.71
FT-Meter	Neat Analogue back-lit Meter for FT-897/857. S-meter, TX Pwr, ALC Etc	£45.95
NEW FTL- Meter Jumbo version of the famous FT-Meter		£79.95

See www.hamradio.co.uk for more details on all of these items ... and much, much more! E&OE

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E-mail: sales@hamradio.co.uk

ISOTRON!

The most compact 1kW HF Antenna ever!

After 30 years of manufacture and Hot from the USA, these very clever compact antennas are available for all the HF bands. They are easy, quick and simple to install. Tunes & performs without radials or antenna tuners.

Unlike other compact designs (that aren't actually that compact) Isotron even offer multi-band versions for 80/40 and 20/15/10m.

- Solve Virtually Any Restricted Space Problem - 40 Metre Isotron only 22 inches x 16 inches x 15 inches!
- Easy, Quick, and Simple Installation
- Tunes & Performs Without Radials or Antenna Tuners
- Handles Up to 1000 Watts PEP
- Durable Construction, Can be Used in Extreme Weather Conditions
- Excellent For Portable Operation - Emergencies, RV's, Field Day, Motels
- Multi-Band Operation on One Feedline with Back-to-Back Mounting & NO Loss of Performance
- Can be mounted in ANY Position Without Loss of Performance
- Maritime Operation - Uncluttered Setup, with Stainless-Steel Fasteners & Not Dependent Upon Grounding for Performance
- SO-239 Connector on All Models

Mark, G8AWO showing off the assembled 10/15/20 & 40/80m Combo Isotron's before mounting on the roof at ML&S HQ.

The full range can be viewed on our web-site and prices start from only £100 through to £200 for the "Combo's".

Yaesu Rotators

The best available at very special prices.

For the full range of the worlds most reliable Yaesu Rotator products, see our website.

G-250 Ideal simple to use remote control Antenna rotator for light weight antenna installations. Ideal use for turning 4/6/9 element Tonna 2m antennas, 9/19/21 element 70cm antennas. Also V/U Log periodic (i.e. Maldol LP-1300) and small single and HF dipoles **£129.95**

G-450C The most popular medium duty rotator available today. ML&S always guarantee to have the largest stocks in the UK and of course the best prices. **£319.95**

G-650 Medium duty with higher brake torque than the G-450 ..... **£359.95**

G-1000DXC This new, high-performance rotator is ideal for heavy-duty applications. Its slim-line constructions is ideal for many crank-up tower installations. Rotation range: 450°, with presets..... **£429.95**

G-2800DXC Yaesu's top-of-the-line rotator is for extra-heavy-duty antenna installations... **£819.95**

G-550 Elevation rotator for satellite operation **£299.95**

G-5500 Heavy-Duty PC Controlled Vertical rotator for satellite and EME applications..... **£499.95**

25m Control cable extra at £69.95

MyDEL CG SB-2000 USB Radio Interface

A one stop solution to your data and radio control. It employs a CAT/CIV interface as standard and supports CAT with RS232 protocol.

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HF

All the latest news on DXpeditions and band conditions

All the latest news on DXpeditions and band conditions.

PROPAGATION STILL POOR. The summer doldrums continue, with nothing especially exciting to report on the HF bands, but hopefully all that will be changing by the time this column appears. The September equinox is usually a good time for LF DX and effectively signals the start of the DX season in the northern hemisphere. That said, I was in Moscow for the World Radio Teamsport Championships (which will no doubt be reported elsewhere) and it was fascinating to see several of the two-man teams, each restricted to 100 watts, plus a tribander and dipoles for 40 and 80, all at 10m high, working 3000+ stations in the 24-hour contest period. And make no mistake, Moscow is far from an ideal location, being a very long way from the nearest saltwater. Many of those contacts were around Europe, but a surprising amount of DX was worked too, including an excellent, if short-lived 20m opening to the US West Coast.

DX NEWS. As I have said before, there are several major expeditions scheduled for the October/November timeframe and I will give further details of these nearer the time. To add to those, it now looks as though we have a slew of new DXCC entities as of 10 October (10/10/10) as the status of the various islands in the Netherlands Antilles changes. Unsurprisingly, several groups have already announced their intention to activate the various islands concerned with, for example, a large team scheduled to activate Sint Maarten (currently PJ7/PJ8) for 10 days. We await details of how exactly the ARRL will deal with the changes, and what the new prefixes will be.

Four Australians amateurs will be on Vanuatu, YJ, from 27 August to 2 September. This will be a fairly low-key operation, running just 100 watts to verticals and dipoles, but is one of the few expeditions slated for September.

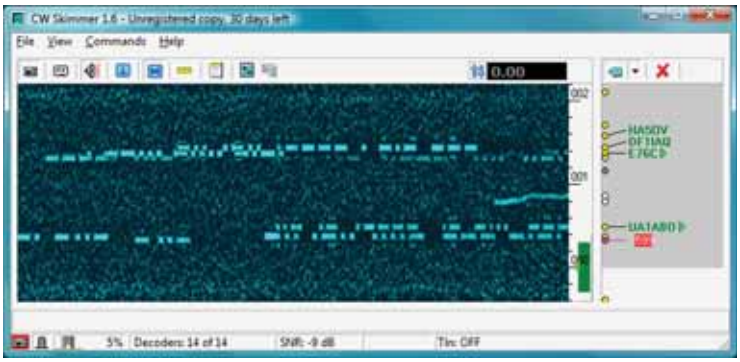
KENYA NEWS. Sig (recently ZS6SIG, but also NV7E, WA9INK, C31IL, DA1SI, F0ZR, F00ZR, TU4CN, ZB2DA, etc.), is moving to Kenya and will be active as 5Z4EE, the same call he held back in the 1980s. Sig will be in Kenya for four years this time around and plans to be active on 160-10. "Sorry, no 6m yet in Kenya," he says. Sig adds, "I prefer CW, which is why I originally asked for the 5Z4EE call. I was also 9Q5EE in Kinshasa from 1989-91 and SU1EE in Cairo 1988-89." Sig will use Flex 5000 and 3000 transceivers and an Elecraft K3. He has a Superantennas YP-3 and will be putting up a Hex-beam on 60ft mast and maybe later go to a Spiderbeam if he can fit it amongst the trees. He says the backyard is small but faces a forest with a clear shot to both Europe and North America. He hopes the monkeys don't "monkey with his antennas". "They have already visited my backyard several times." QSL via NV7E or the DPO address listed on qrz.com. He will respond to Kenya bureau QSLs but it will take a while. Sig notes that another new Kenyan licensee is 5Z4ZD, operator Andy, KI4THF, now his next door neighbour in Nairobi. QSL Andy to his qrz.com info. He will operate from his own QTH and sometimes from Sig's. And Andy's XYL, Liz, is KI4THL.

60m REPORT (from G4TRA). Several stations were lucky enough to work TI5/W8JK this month when Dewey in Costa Rica was accompanied by a group of young amateurs for the summer of 2010 Youth DX Adventure trip. This was a very exciting trip to encourage, train, and give youth amateur operators experience DXing from the "other end". 60m signals were, however, weak in the UK. V31YY (San, K5YY) was on from Belize for a short period before his IC7000 expired with blown finals, which was a real shame as V31 is a rare one on the band and many of us were listening out for his signals.

Static levels in summer are that much higher so good noise reduction and low noise antennas are important if you are going to hear the DX stations. But why not use that new 60m NoV to chase the UK SOTA stations that are so popular during the warmer weather. Any NVIS radiator will be fine and most popular lower band antennas can be persuaded to put a good signal out around the UK on 60m. Try 5.3985MHz with a CQ call; there are plenty of stations just waiting to work you.

DXCC. Bill Moore, NC1L, ARRL's Awards Branch Manager, reports the ARRL DXCC Desk is currently not accepting QSL cards from the March 2010 operations of 9Q0AR and 9Q0HQ. Bill is waiting for paperwork and until then any submissions for these two will be marked as "No Documentation Rec". 9Q0AR operations from 2001 to early 2004 are good for DXCC. 9Q/DK3MO is also on hold, pending paperwork.

SKIMMER. CW Skimmer is becoming more and more of a hot topic, particularly among contesters. If you aren't familiar with the technology, CW Skimmer is a piece of software which decodes CW signals from an audio stream which can be simply the bandwidth of your CW filter or, if you are able to take the audio from an earlier stage in your receiver, a much wider bandwidth, indeed



Contest organisers are struggling with how best to deal with Skimmer.

possibly a whole band (or several bands) if you are using a modern SDR receiver.

Contest organisers are struggling with how best to deal with CW Skimmer. Is it similar to using a Cluster connection (hence making you "Assisted") or, because it uses your own receiver, is it simply another tool in the Single Operator's armoury. This isn't the column in which to explore those issues, but rather to question whether CW Skimmer (and similar technologies) has a role in day-to-day HF operation and DX chasing.

There are several aspects to this. Firstly, without you having to invest in any technology other than an internet connection, you can tap into the "Reverse Beacon Network" (RBN) which draws decodes from a network of skimmer-enabled receivers around the world. So even if a DXpedition isn't currently being heard in the UK, you can see if it is being copied elsewhere. This, though, isn't really any different to the existing Cluster network (over 20 years old), which draws spots from all over. But there is another use for the RBN which is to see where your own signal is being heard. Put out a CQ call and it is possible to see which skimmers around the world are copying you. Misused, one can imagine the bands being full of signals from people checking propagation but never making any contacts! But as an occasional tool, to check openings on the edge bands, it is easy to see how useful it can be.

Install a CW Skimmer facility in your own station, though, and you are into a quite different scenario. Now you have a tool which is checking what can be heard at your location, via your antennas. No more of those false DX alerts, when you rush home from work after a Cluster spot, only to find that, propagation being what it is, the station is inaudible at your location. Or maybe you can be operating on, say, 20m, but leaving CW Skimmer running on a separate receiver and antenna on 10m, to see when the band opens, again very specific to your location.

It is no leap of imagination to see DXpeditions using CW Skimmer, too, to decode callers from the big pile-ups. Something similar has been happening for years with datamaodes, especially PSK31, where there can be many discrete callers in a 3kHz filter bandwidth. The DXpedition operator simply clicks on one signal to initiate a contact.

The downside of all the above, and it has been true ever since even basic CW decoding programs arrived on the scene some years ago now, is that the software doesn't always get it right, and you still need to be able to copy CW by ear to check the callsign and, it has to be said, to know what else the other station is sending (which could, for example, be something like "USA only"). Otherwise you could easily make a fool of yourself (unfortunately, too many would-be DX chasers already seem to be falling into this trap).

The other downside with any of these tools is that they reduce the incentive for good old-fashioned tuning and listening which, many would argue, is what amateur radio should be about. That said, VHF alerting nets were around long before packet radio or the internet, whereby a club member who heard or worked some rare DX on HF would announce the call and frequency on a VHF meeting channel. Many readers will recall those days.

Anyway, to find out more about CW Skimmer and the RBN, start by following the links at the end of the column.

CORRESPONDENCE AND TABLES. Peter, G4XEX notes that 30 and 20m seemed to be open pretty much around the clock during the summer. He played in the IARU and IOTA contests and mentions that in the latter, he gave up on what seemed an uncrackable pile-up for a station in the UAE, only to light on BX5AA calling CQ with no takers, who came back to Paul's first call for an all-time new one. Going back to the piece about CW Skimmer, this is an interesting example of what happens currently. I would assume that the UAE station had been spotted on the Cluster system, whereas the BX5 hadn't. CW Skimmer should be more "democratic" in that it collects whatever is on the band, whereas Cluster relies on what is spotted by a handful of individuals. But bear in mind that we are unlikely to have an SSB version of CW Skimmer for some time yet, so Cluster-generated pile-ups will be with us for some time yet and the trick is to do as Peter mentions, and find the DX yourself before the masses get there. Apart from the BX5, Peter is another who mentions lots of European contacts on 10 and 12m, while on 20 he worked YV1GIY, YV5JDT, CO2GG, VK3JWC, TI7/AA2UP and CE2WZ. "OK, so not great DX" he says, "but not bad for a FT857 and a G5RV". Indeed.

Peter, G3HQT has been spending more time in the garden than in the shack and says the flower garden this year has been the best he can recall! The only DX he reports was all on 30m: 4B2S, 7X2ARA, ZX8W, FP/K9OT, OD5/DL6SN and VK100WIA on CW plus VR2XLN on PSK.

Kerry, GW1SXT dropped me a line to say that, while on holiday in Santurzi, Bilbao, he found a group of local amateurs set up in the middle of the town square, working on HF. It happens here too, of course, but usually under cover as British weather is somewhat less reliable!

Terry, G1UGH mentions a bunch of European contacts on 10 and 12m, plus 5N7M and 9M2ODY on 20, all SSB. Jim, MM0DXH worked XT2EME on 40, plus C56E, T6MB (Afghanistan) and ZF1A on 20, all SSB.

Graeme, G6CSY found several new band slots during the IARU contest, including A71A and 8N3HQ (Japan) on 20 CW, along with CR5HQ and E7HQ on 80 CW. He also worked GR2HQ on all slots, although the 15m SSB and CW stations were both hard going. Graeme also collected several new IOTAs during the IOTA contest but notes that, unfortunately, there was very little Sporadic E around in this year's event, which meant little activity on 15 and 10m.

Simon, M0VKY notes recent contacts as follows (he has mainly just mentioned country prefixes rather than full calls): PY, HR, YV, A7, A6, C9, 4Z, HJ on 40, VP8MDH, JT1BV, PY, LU, 9K, A7, KP2, CE, T6, D4, H7, YV, P4, WP3, HR, HL on 20, OD, PY, LU, 9K, A7, KP2, CE on 15, plus PY, LU, 4X, CE on 10. Quite a haul. These were all on SSB though Simon says he is slowly managing to master CW.

Jon, G6UWK says that after the IARU contest had finished he was tuning around and worked 9M2ODY first call, using an FT-450 to an off-centre-fed dipole. He says, "It was as if the band had gone silent and he just was excellent copy. Sorry but I had to tell someone and the XYL just says "lovely"!". This is another case of being in the right place at the right time. I can recall similar instances in years gone by, when a contest has ended but one or two of the DX stations stick around and are easy catches. There is no substitute for actually listening around the bands!

Finally, I have omitted the table this month as there have been very few updates, presumably due to holidays and the general lack of activity.

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 **November** issue by **Friday 24 September**.

WEBSEARCH

CW Skimmer: http://www.dxatlas.com/CwSkimmer/
Reverse Beacon Network: http://www.reversebeacon.net/

VHF/UHF

A significant decline in Sporadic-E openings on the VHF bands

PHOTO: 1 The unique 50MHz antenna mount at the QTH of 5J0BV.

PROPAGATION SYNOPSIS. A significant decline in Sporadic-E (Es) openings were reported on the VHF bands during much of July. It literally was just like a switch had been thrown into the off position with very little European activity being noted throughout the month. Curiously, although European activity was significantly depressed there were some excellent DX openings on the lower VHF bands during the first week of July with two openings to North America on the 50MHz band, two extraordinary openings to the Cape Verde Islands on the 70MHz band and surprisingly two events into southern Europe on the 144MHz band. Openings on the 50MHz and 70MHz bands continued to be reported on an almost daily basis through to the end of the month but most lacked any real substance. It is difficult to state with any great accuracy why ionospheric conditions were so poor during July but there were a significant number of high latitude auroral warnings issued during the month. Experience tells me that this type of geomagnetic activity often leads to a reduction in temperate zone Es activity but, on the flip side, provide an increase in Auroral-Es and auroral back-scatter openings. This was particularly true during July with many reports of northerly contacts being made on the 50MHz band 'in the midnight hour!' Tropospheric propagation on the 144MHz and higher frequency bands was not, in general, particularly enhanced although some occasional paths to Scandinavia and the nearer European countries were available at times. However the sea path to Spain and Portugal was open on many days during the period as was the excellent 3000km marine path to the Canary Islands.

THE 50MHz BAND. Although Es propagation was generally very poor throughout the month there were some reasonable DX openings during the first week of July. Transatlantic openings to North America were reported on 3, 4, 5, 6 and 10 July but after that date it became very tedious looking for transitory DX paths outside of Europe. The station of Tom Wylie, GJ4FDM, holidaying in Jersey, reported working many USA stations in the W1, W2, W3 and W4 call areas in an opening on 3 July. Some of his CW contacts made between 1230-1430UTC included the stations of K1HTV, W1JJ, K2ZD, K3RK, W3LPL, KC4PX and W4SO. John Butrovich, W5UWB (Texas EL17) spent some considerable time during the opening making contacts via the digital JT6M mode. Running a Kenwood TS-2000 transceiver, 1.5kW amplifier and a 7-element Yagi he contacted G4ZFJ, GM4WJA, MM0AMW, GU8FBO, GW3ORL and stations in Andorra, Austria, Balearic Islands, Italy, Netherlands, Poland, Sicily and Spain.

Other DX stations outside of Europe reported during the period included A92IO (Bahrain), CO8LY/P (Cuba), C56E (Gambia), FS/W6JKV (French St. Martin), J8/W8IF (St. Vincent), JH0RNN, JA2WW (Japan), ST2AR (Sudan), PV8ADI (Brazil), XT2EME (Burkina Faso), XV9DT (Vietnam), 5J0BV (San Andres, see **Photo 1**) and 9K2YM (Jordan). Signals from these stations were generally quite weak and needed the use of CW and much patience waiting for signals to come out of the noise.

A number of special event and contest call signs were heard being aired during July. Amongst those operating on the 50MHz band were 3Z0RADIO celebrating 80 years of PZK, the Polish Amateur Radio Society, EG3LD celebrating Spain winning the FIFA 2010 World Football Championship, HG60VOTT at the 60th National Electricity Nature Meeting organised by the Hungarian power industry, LY600GV marking the 600th anniversary of the Battle of Grunwald and Zalgiris, SX8SI the Aegean DX Group and SZ8S Radio Club operating from Samos Island (Greece KM37) and SY8VHF (Othonoi Island, JM99) who made over 1800 contacts on the 50MHz and 144MHz bands between 1-6 July. Another station reported by many UK stations was CR3L operating from the island of Madeira. The group owns a little cottage (see **Photo 2**) that is used as the shack for various HF and 50MHz contests.

Commencing from 8 July there were a total of 11 evening Auroral-Es (Au-Es) openings and one auroral back-scatter opening reported on the 50MHz band. Incidentally these are two completely different types of propagation modes, signals heard via Au-Es having a pure T9 tone whereas those reflected back from the aurora are very rough sounding just like a hissing sound on CW. This is caused by the rapid Doppler shift of the auroral ionisation. Stations in Scotland and northern England often encounter both propagation modes that enable 50MHz contacts to be made into countries such as Denmark (OZ), Estonia (ES), Faroe Islands (OY), Finland (OH), Norway (LA) and Sweden (SM). During larger events, such as occurred on 13, 22 and 29 July, stations situated in the south of England were also able to participate. Amongst the DX worked from the UK during July were the stations of JW7QIA, JW/OZ1IKY (Svalbard), OH0RJ, OH0/DK1MAX, (Aland Islands), OJ0VR (Market Reef), OX3KQ (Greenland), TF3EE, TF8GX and TF/DJ2VO (Iceland). During the evening of 29 July the beacon station VE8BY (Canada FP53) was heard by Scottish stations over 3500km away as were the Svalbard beacons of JW5SIX (Hopen Island KQ26), JW7SIX (Longyearbyen JQ68) and JW9SIX (Bear Island JQ94).

THE 70MHz BAND. Last month I mentioned that authorisation for Spanish radio amateurs to access the 70MHz band came to an end during June. The good news however is that Spain and its territories (EA, EA6, EA8, EA9) are back on the band with a new allocation that continues until 1 July 2011. The 50kHz frequency slot between 70.150-70.200MHz is far greater than the previous very small segmented allocations. Other countries to recently gain access to the band are the United Arab Emirates (A6) and Bahrain (A9). Unfortunately it appears that there are no 70MHz stations active from there at the present time although Dave Court, A92IO (EI3IO) expects to be QRV in early 2011.

Sporadic-E openings on the 70MHz band were reported on 17 days during July but many events were quite short lived and lacked any real intensity. However there was

still DX to be found and this included stations such as 9A2RK, 9A3LN (Croatia), CT1DHM, CT1QP (Portugal), DL3YEE, DH8WE (Germany), EA1HMK, EA5/G3XGS (Spain), A06VQ, EA6CA (Balearic Islands), EA8BYM (Canary Islands), ES1CW (Estonia), IF9/I2ADN, IZ8DWF (Italy), IS0AWZ (Sardinia), LA4ANA, LA4LN (Norway), LX1JX (Luxembourg), OH1LT, OH1ND (Finland), OK1MP, OK1VEC (Czech Republic), OM3PV, OM5KM (Slovakia), OZ2PBS, OZ7DX (Denmark), S50WA, S52AU (Slovenia), SV1DH, SV1OH (Greece) and YO2IS (Romania).

An excellent opening occurred on 5 July to the station of D44TD (Cape Verde, HK86) located in the central Atlantic Ocean off the west coast of Africa. From 1115UTC stations in southern England reported hearing the CS3BFM beacon (Madeira, IM12) operating on 70.163MHz, peaking up to 579 in strength. At 1130UTC the station of Xara Costa, D44TD, located about 2000km south of Madeira, also reported hearing the CS3BFM beacon peaking 599. Over the next hour the beacon, some 2400km distant from the UK, increased significantly in strength with stations in southern and western England hearing it well over the S9 level. The stage was therefore set for something quite remarkable. At 1230UTC, acting on a hunch, the station of Graham Taylor, G8HVY (Hampshire, IO90) put out a CQ call on 70.200MHz, the SSB calling frequency, and was very pleased to hear D44TD replying. During the following 25 minutes Xara then went on to contact the stations of G3LVP (IO81), G3WOS (IO91), G4ASR (IO81), G4IGO (IO80), G4PBP (IO82) and G7CNF (IO81). He also contacted Bryn Llewellyn, G4DEZ (JO03) for best UK DX at 4530km. Surprisingly, that wasn't his furthest distance, for at 1645UTC he worked the Danish stations of OZ3ZW (JO54) at 5157km and OZ2LD (JO54) at 5171km distant. That, I suspect, must be a 70MHz two-way distance record.

A few hours after the UK opening to Cape Verde had faded out the 70MHz band opened up to the Azores, an archipelago in the Atlantic Ocean. From 1420UTC the station of CU4/DL3GCS (Graciosa Island, HM59) contacted GW3LEW (IO71), G3LVP (IO81), G3LQR (JO02), G3WOS (IO91), G3ZVW (IO80), G4ASR (IO81), G4BAO (JO02), G4IGO (IO80), G4MKF (IO91), G7CNF (IO81) and G8HVY (IO90). All contacts with one exception were made on CW, the furthest distance contacts being with the stations of G3LQR at 2687km and G4BAO at 2612km. Stephan Senz, CU4/DL3GCS mentions that the opening between 1420-1615UTC on 5 July was the only one that he experienced to the UK. Between 1-9 July he did make other contacts on the 70MHz band with stations that included amongst others CT1HZE, DL3YEE, EA5EF, EA6SX, IS0AWZ, IW0FFK, OK2POI, OM3CLS, ON4PS, S57A, SV2DCD and 9A6R. On 1 July and 3 July Stephan heard the experimental beacon station WE9XFT (70.005MHz) over a 4437km path. On the following day a 50MHz/70MHz cross-band contact was achieved over a 3665km path to the station of K1SIX (USA FN43).

PHOTO 2: The QTH on Madeira of the contest station CR3L.

Xara Costa, D44TD (Cape Verde) reports that on 9 July he was surprised to spot yet another 70MHz opening to the UK. Between 1930-2000UTC he contacted G0CHE (IO90), G2KF (IO70), G3SHK (IO90), G3VYF (JO01), G4IGO (IO80), G4ZFJ (JO01), G7RAU (IO90), G8HVY (IO90), G8XZO (IO90) and GD0TEP (IO74) at 4467km distant. The DX possibilities on the 70MHz band are quite extraordinary and it will be really interesting to see if UK stations can achieve a contact next year with A92IO, situated over 5000km away. Fingers crossed!

THE 144MHz BAND. The first 144MHz Es opening of the month occurred on 6 July between 1600-1700UTC. Operators in central and southern England and Wales reported making SSB contacts around 144.300MHz with stations in Croatia (9A), Hungary (HA), Italy (I), Serbia (YU) and Slovenia (S5) as shown in **Figure 1**. Some of the DX worked from the UK included the stations of 9A1WW, 9A6R, HA1FV, HA8TKS, IK0BZY, IV3GTH S540, S59GS, YU1EV and YU1IO.

Paul Pasquet, G4RRA (Devon, IO80) reports that at his QTH the opening only lasted 19 minutes, during which time he managed to work a total of 24 stations. His SSB contacts included 11 stations in Serbia, 7 in Croatia, 5 in Hungary and S57GM in Slovenia. The best DX, worked at the beginning of the opening, was the station of YU7TRI some 1948km distant. To work and log stations quickly during short-lived Es opening Paul now uses VQlog (www.vhfdx.info) rather than frantic scribbling. Personally I prefer scribbling and then entering it all into the laptop after the event.

Dule Ljubovic, YU7TRI (Serbia, KN04) mentions that he managed to contact 5 UK stations in a 10-minute period between 1604-1614UTC. Running an Icom IC-821H transceiver, a 250W amplifier and an array of four 9-element Yagis he worked G8VOI (1756km), M0DEP (1803km), G4RRA (1948km), MW0CXH (1991km) and G4LOH, for best DX at 2031km.

A station with a similar sounding callsign, Gary Tuppeny, G4LOE (West Midlands, IO92) reports that he had been working many European stations on the 50MHz band with a simple 160m wire doublet antenna. Signals were quite strong so he decided to have a listen on the 144MHz band. Using an Icom IC-706 transceiver running 8W into a dual-band collinear antenna he was amazed to contact the station of IV3GTH (Italy JN65) some 1323km distant. Right time – right place! Incidentally, to tune his 160m doublet onto the 6m band, Gary modified an SEM Tranzmatch ATU by reducing two of the balanced inner coils by 2 turns each. The doublet is fed with 600Ω feeder that goes into a balun and a short length of UR67 coaxial cable into the shack. The antenna seems to squirt RF all over Europe, except into Scandinavia (which is end-on to the doublet).

The Italian station of Gigi Sartori, IV3GTH mentions working EI2JD (IO63), 2E0XTL (IO82), G0LGS (IO81), G0ORG (IO82), G4CRW (IO83), G4KWQ (IO92), G4LOE (IO92), G8HGN (JO01), G8TIC (IO82) and GW8ASD (IO82) during the intense 9-minute 144MHz opening. He uses an FT-897 transceiver, a 300W amplifier and an 8-element Jaybeam Quad antenna.

Three days later on 9 July another Es opening took place to exactly the same geographical area as in the previous opening. Contacts between 1720-1800UTC were

TOP VHF DX CONTACTS MADE FROM THE UK DURING 2010

Band	Mode	Date	UK/Locator	DX/Locator	Distance
6m	Es	31 May	G0JHC (IO83)	9M2TO (OJ05)	10,370km
4m	Es	5 July	G4DEZ (JO03)	D44TD (HM86)	4530km
2m	Es	11 June	G4LOH (IO70)	SV9CVY (KM25)	2947km
2m	Au	2 May	G4RRA (IO80)	LY2WR (KO24)	1943km
2m	Tropo	18 July	G4CBW (IO83)	EA8TX (IL18)	2989km

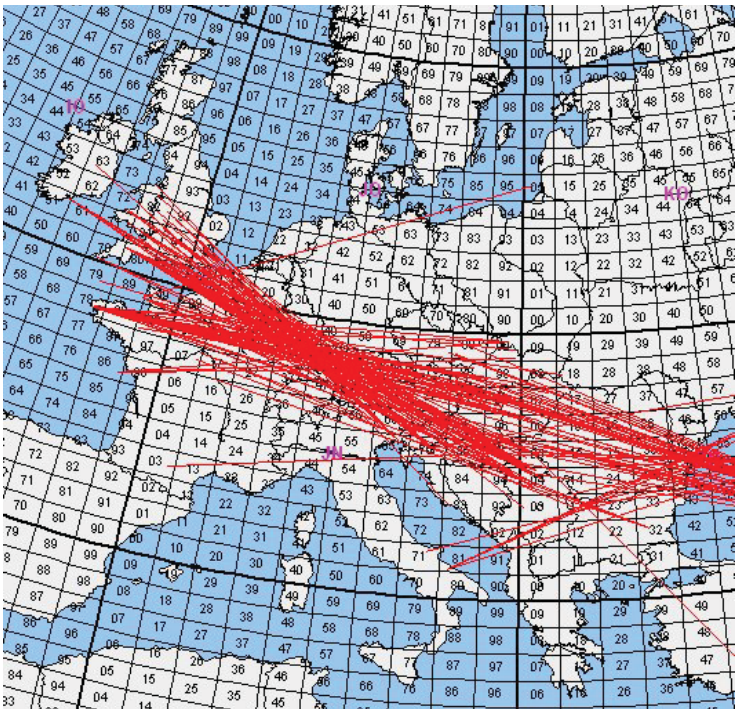


FIGURE 1: 144MHz Es opening on 6 July.
Diagram courtesy of Make More Miles on VHF (www.mmmonvhf.de).

made by SSB operators in southern England and Wales with stations such as 9A2SB (Croatia), HA1VQ (Hungary), IV3DXW (Italy), S540 (Slovenia) and YU7ON (Serbia).

Darrell Moody, G0HVQ (Gloucestershire, IO81) mentions that he had been away for much of the summer and was really pleased to catch his first 144MHz Es this year. Running an Icom IC-7400 transceiver he contacted 9A5CY/P (JN74), 9A6R (JN83), 9A9SF (JN65) and IZ3LCJ (JN65).

TROPO PATHS. Interestingly, Es propagation is not the only way of working very long distances on the 144MHz band. At many times during the year, tropospheric (tropo) paths form that allow contacts up to 1000km or considerably more to be established at 144MHz and higher frequencies. As the UK is surrounded by water it is useful to note that tropo paths over the sea are much more efficient than those over land. That is because the ground topography often disrupts the enhancements caused typically by temperature inversions. There are two main long-distance sea paths from the UK, either across the North Sea to Scandinavia and the Baltic region or in a south-westerly direction to Portugal, Spain and beyond. The latter path offers more DX capabilities as many stations in southern England, Wales and Ireland have a pretty clear take-off towards the Iberian Peninsular (CT, EA), the Azores Islands (CU), Madeira (CT3), Canary Islands (EA8) and Cape Verde Islands (D44).

The marine path that produces regular long distance tropo contacts into the UK is associated with the Azores High. The Azores High (also known as the Azores anticyclone) is a semi-permanent anti-cyclonic region with relatively consistent high pressure and subsiding air over the Atlantic Ocean. In the summer months it moves northwards and has a major impact upon the climate of Europe. The pressure centre shifts towards the Iberian Peninsula and a ridge may build across France, northern Germany and even the south-eastern UK. This is when stations in southern England, Wales and Ireland often make contact with stations in the Azores and Canary Islands over 3000 kilometres distant. In winter, the Azores High moves to the south of the Azores and fluctuations in pressure result in more variable weather and disruption to this long-distance propagation path.

Many of you may be surprised to learn that this DX path actually forms quite often, for example in 2009 the sea path to CU and EA8 was open every month during the six month period between April to September. Of course, not every 144MHz operator in the UK can reliably contact these countries as the optimum location is to be situated close to the coast in south-western England, Wales and Ireland. Occasionally though, at least once or twice a year, the tropo signals will extend a considerable distance inland into central and northern England, even as far as the west coast of Scotland. Recent 144MHz openings have been reported on 2, 17, 28, 30 June and 5, 18, 19, 23, 25, 29 July with the event on 18 July being particularly extensive.

Tim Fern, G4LOH (Cornwall IO70) reports that the opening on 18 July was one of the strongest he has ever heard as all stations were 59+ and he even copied FM mobile stations driving around Tenerife using simple vertical antennas. His 144MHz SSB contacts, up to 2600km distant, included the stations of CT3DZ/P, CT3KJ, CT3KY/P (Madeira), EA8AJC, EA8BPX, EA8CSG, EA8CTK, EA8CQW, EA8TJ, EA8TX, EA8YT, EB8AYA, EB8BRZ, EA8/HB9MFW (all in locator square IL18), EA8ACW/P, EA8AVI (both in IL28) and EA8BFK (IL38).

Other well placed coastal stations such as G4CQM (Devon, IO70), GW6TEO (Pembrokeshire, IO71) and M0VRL (Cornwall, IO70) also reported very strong signals from stations in the Canary Islands during the opening that started mid-morning and continued through to midnight. During the latter phase of the opening, as the ground cooled, the propagation path extended much further into the UK. The 144MHz station of Fernando Dominguez, EA8TX (Tenerife, IL18) reported that between 2250-2305UTC he worked the stations of G4PBP (West Midlands, IO82) at 2950km, G4KWQ (Staffordshire, IO92) at 2963km and G4CBW (Staffordshire, IO83) at 2989km.

During the same evening Tim, G4LOH attempted an SSB contact with the station of D44TD but nothing was heard on this occasion. He did however hear the station in the Cape Verde Islands during the evening of 29 July peaking 52 but although D44TD also heard G4LOH at the same signal strength later that night, no two-way contact over the 4048km path was established. You may be interested to note that on 4 August 2008, during another excellent opening to the Canary Islands, the station of G4LOH attempted his first tropo test with D44TD. Weak but intermittent signals were heard almost immediately but it took over 30 minutes before G4LOH had received both call signs and a 419 report. Immediately he started to send a R319 report and then 20 minutes later he copied a series of RRR's that signified that the QSO was complete. This amazing CW contact over a path of 4048km was thought at the time to have been achieved via tropospheric propagation with meteor enhancements. I've got doubts that a surface duct can couple effectively into a meteor trail some 90km above the surface of the Earth. In my opinion it may have been a tropo duct with aircraft scatter reflections. More about this another month.

DEADLINES. Good luck and if you do hear or work any DX stations on the VHF or UHF bands then please send your reports to g4asr@btinternet.com to reach me *by the end of each month*. Alternatively you can send letters to Yew Tree Cottage, Lower Maescoed, Herefordshire, HR2 0HP.

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GHz Bands

A new 10GHz world distance record takes top spot in the band activity news this month.

PHOTO 1: The French team set up in Portugal, showing the dishes for various microwave bands and the 14MHz dipole for liaison. Photo: Andre, F1PYR.

BAND ACTIVITY. On 10 July at 10:46UTC a new 10GHz world distance record was established between a Swiss team located on the Cape Verde Islands (HK86NU) and a French team located in southern Portugal (IM57OR). The distance was 2692km, beating the previous 10GHz distance record of 2079km established in 2000 **[1]**. The propagation mode was sea evaporation ducting.

The French team, consisting of Philippe Millet, CT7/F6DPH and Andre Esnault CT7/F1PYR, operated from southern Portugal. The Swiss team, consisting of Paul-Andre Schmid, HB9RXV/D44TXV, Pierre-Andre Probst, HB9AZN/D44TZN, Michel Berger, HB9BOI/D44TOI, Frederic Bonfils, HB9EOF/D44TEF, Alain Bussard, HB9RHD/D44TRD and Bernard Decaunes, HB9AYX/D44TAX operated from the Cape Verde Islands.

Photo 1 shows the portable set up of the French team in Portugal.

Several minutes before the successful CT7 contact, the D44 team worked Guy Gervais, CN2CT (F2CT). Guy was located in Morocco (IM52JH), a distance of more than 2196km, setting what was to become an interim new record (beating the previous record set in 2000). They also worked Hannes Griebel, CT3/DG1GGH who was on Madeira (IM12IP) at 1852km. Liaison was on 14MHz and 144MHz.

This is a remarkable set of results from the two teams as well as Guy and Hannes and undoubtedly compensates for the failed 2009 attempt when the 'annual' Atlantic evaporation duct failed to appear over this path.

All Hyperatlantic team members are to be congratulated on a fine achievement. More details will no doubt be forthcoming in the near future including some further information on attempts made on at least one other path and on other bands. Brief details are available at **[2]**.

5.7, 10 AND 24GHz CUMULATIVE CONTEST. I have received a few reports on the 27 June Cumulative. The first report comes from Martyn Vincent, G3UKV, of the Telford group. Martyn reports this as the best session for some time. They had 19 QSOs on 10GHz and 10 on 5.7GHz. Their best DX was Bart, PA/ON4BV/P on both bands using SSB. Martyn is pleased to report that they also made it both ways with Ralph, G4ALY (IO70), after a disappointing May Cumulative. They didn't manage any contacts on 24GHz in this Cumulative and were looking forward to the 24, 47 and 76GHz Cumulative in July to redress the balance.

In a short report from Bart, ON7BV (JO11), he says it was a good day out with sun, sea and radio hobby! He made some nice contacts, all of them using 144MHz talkback. He ended the day with five contacts on 10GHz and three on 5.7GHz. He reports he heard one UK 10GHz beacon, and several French and German ones.

1296MHz ACTIVITY. John Cooke, GM8OTI, e-mailed to say he is now QRV (active) on this band. On 14 June he had a successful QSO with Jon, GM4JTJ, using just 400mW and a 15 element beam whilst operating portable from Hillend near Edinburgh. The 90km path to Jon, near Arbroath, is much obstructed.

John's 1296MHz station is homebrew and intended for portable operation, which is how he does most of his operating. The transverter uses a 70cm IF. His PA is currently a BFG591 giving the 400mW output reported. His IF radio is an FT817. He eventually hopes to have up to 10W from his portable station.

One of his biggest problems – and it is not unique to John – is the difficulty of establishing a reliable ON4KST connection from some of our more remote high hills. He suggests a microwaver's version of *SOTAwatch* 'lite' with an SMS-based self-spotting facility similar to that produced by Andy Sinclair, MM0FMF, to run on his mobile phone. Anyone interested in looking at this solution? It doesn't overcome the problem of finding a mobile signal in the first place, but 'real' mobile phones, ie not smart phones, seem to have better 'radios', with higher performance due to more attention to the antennas than is usually the case within the confines of a compact mobile computer.

John is clearly pleased to be QRV on 1296MHz. He used a minimum of test equipment to build and align his 1296MHz system, showing it can be done with enough determination and a will to get onto the band(s). Thanks for the report, John.

GETTING STARTED ON 24GHz. In the next few columns I am going to discuss the options for getting going on 24GHz. I will provide some suggestions about what is available and look at how to put it all together.

Our UK 24GHz amateur band extends from 24.000GHz to 24.250GHz. The range 24.000GHz to 24.050GHz is our lowest frequency microwave exclusive allocation.

24GHz is a 'difficult' band to work for several reasons. Propagation is affected by water vapour in the atmosphere, leading to higher than expected path losses; equipment

PHOTO 2: Thales 24GHz 'transverter' fitted with waveguide to coaxial adapters on the RF input and output.

must be home built, although these days that usually means connecting together commercial or surplus modules into the required configuration. Finally, antenna pointing is critical, compared with the lower bands, necessitating a good spatial awareness – ie you need to know accurately where to point the dish and what obstructions the signal might encounter.

Operating on 24GHz is like operating in smoke. You can see just so far, but then on occasions the smoke will clear and you can see much farther. This happens on 24GHz where a 'normal' range much beyond 150 to 200km is unusual. Occasionally, often during cold weather, when the volume of water in the atmosphere falls sharply, or occasionally during an evaporation duct or thermal inversion, signals levels will increase such that remote beacons can be heard. Even so, the range is often limited to no more than 300km to 400km. During some rain scatter events the range may increase to over 600km, but these are rare. More accurately, we probably don't test enough during these events to know if propagation is possible. Of course moon bounce on 24GHz opens up the band to worldwide contacts. Higher radiated power levels should increase range as it allows us to overcome the additional path losses during normal relative humidity conditions.

PHOTO 3: DB6NT transverter and local oscillator with 4 pole filter from a retuned surplus Telettra 23GHz system. This forms a basic 24GHz transverter system.

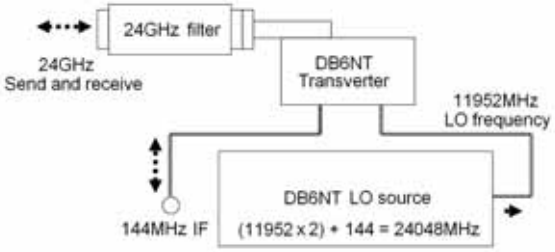

FIGURE 1: Block diagram of a basic 24GHz transverter with 144MHz IF. The transverter is bi-directional and requires no additional antenna changeover relay. Output power is up to about -6dBm with a 10dB noise figure.

WHAT IS REQUIRED FOR A 24GHz STATION? Invariably, a transverter is used to translate the frequency coverage of a 144 or 432MHz transceiver to the frequency range 24048 to 24050MHz by mixing with a suitable local oscillator signal. Possibly the most common kit and ready-built transverter design is that by DB6NT **[3]**. There have been alternative designs published by CT1DMK **[4]** and W5LUA **[5]** among others but, although most of these are quite effective, they have not reached the popularity of the DB6NT design. A few commercial surplus 'transverters' have also been pressed into use. The most popular of these is the Thales unit, recently available from at least one dealer on eBay. John, G4BAO, wrote an informative article on using the Thales unit in *Scatterpoint*. Predictably, demand for the Thales units quickly depleted existing supplies. However, more could appear at any time. My own Thales unit is shown in **Photo 2**. I refer you to the *Scatterpoint* article **[6]** and John's web page **[7]** for more details of this unit.

Many of these transverters share a common requirement for a local oscillator at half frequency because they use a harmonic mixer. This is a common technique at microwave frequencies because it eases the oscillator frequency generating requirements and, if well designed, provides increased local oscillator rejection in the transmitter output spectrum.

Of course low level harmonic mixers usually only generate low output power and exhibit receiver noise figures in the 8 to 10dB range. Although this would now be considered as a very modest system, it is often enough for hill-top to hill-top operation and even then some remarkable distances have been worked using line of sight mode and 'barefoot' mixer-only transverters.

It is essential that an RF band pass filter is used with such a system since the image frequency is generated on transmit with equal power at both the wanted frequency and at the unwanted out-of-band image frequency. The bandpass filter passes the wanted signal whilst providing many dB of rejection of the image frequency. Suitable filters can be made in the home workshop **[8]** or by retuning surplus ex-commercial filters.

The filter may be more of a hindrance than a help on receive since it will represent an unwanted extra loss. Since the mixer noise figure is so high, there is no noticeable noise contribution from the image frequency unless there is a commercial user on that frequency.

A local oscillator (LO) is required to provide the conversion frequency for the transverter. There are a number of options here. Possibly the most popular is to use the DB6NT 11/12GHz LO **[9]**. This will provide around 40mW output at the required frequency and the latest versions can be phase locked to a 10MHz reference such as a GPS disciplined oscillator for absolute frequency accuracy (a very valuable asset at 24GHz as it is one less variable when looking for a weak signal). A DB6NT 11952MHz LO source with transverter and filter (suitable for 144MHz IF), is shown in **Photo 3**.

Recently a number of surplus ex-commercial sources have become available. One of these has appeared in some numbers in the UK. It is the Elcom DFS1295 **[10]**. This operates on 12.600GHz as powered up. However, WW2R **[11]** has shown how it can be commanded to a more useful frequency by means of a simple add-on PCB containing a PIC suitably programmed for the wanted frequency.

The Elcom unit is particularly suitable for use with the Thales transverter. It really needs to be used with a 432MHz IF and high side injection. This pair of units will allow you to assemble a moderately sensitive transverter system with a power output of a little over 1W.

Figure 1 shows a 24GHz system block diagram of a simple low power mixer transverter and local oscillator based on modules like the DB6NT ones discussed above.

Next time I will be discussing 24GHz low noise amplifiers and power amplifiers to use with the basic transverter.

FORTHCOMING MICROWAVE EVENTS - 2010

55th UKW Tagung (Weinheim), 11 - 12 September 2010. Details: www.ukw-tagung.de

Crawley Microwave Round Table, 12 September 2010. Details: www.carc.org.uk/modes/microwave.shtml

RSGB Convention (with VHF and Microwave stream), Horwood House, Milton Keynes, 10 - 12 October 2010. Details: www.rsgb.org/rsgbconvention

Microwave Update, Cerritos, California, 21 - 24 October 2010. Details: www.microwaveupdate.org

Martlesham Microwave Round Table, 13 and 14 November. Details: John Quarmby, G3XDY, G3XDY@btinternet.com and http://mmrt.homedns.org

WEBSEARCH AND REFERENCES

[1] IARU VHF distance records - www.ham.se/vhf/dxrecord/dxrec.htm
[2] New 10GHz record information - http://tinyurl.com/RC-sep10-GHZ-1 or www.hb9mm.com/news/felicitation-a-lequipe-d44td-pour-le-nouveau-record-du-monde-sur-10-ghz-2692-km
[3] DB6NT 24GHz Transverter - *DUBUS* article 1/1993
[4] CT1DMK 24GHz modules - *DUBUS* articles 3/1998 & 4/1999
[5] W5LUA 24GHz Modules - *Proceedings of Microwave Update 1998*, Estes Park, Colorado
[6] *Scatterpoint* - www.microwavers.org/indexs.htm
[7] G4BAO web page - http://homepage.ntlworld.com/john.g4bao/index.htm
[8] Home made 24GHz filters - *RSGB Microwave Handbook*, Volume 3, Bands and Equipment, Chapter 19, pages 19.18 and 19.23
[9] DB6NT 11/12GHz LO, *DUBUS Technik V* Page 166
[10] Elcom - www.rfdesign.co.uk/microwave/Content/Elcom%20Synth%20article.pdf
[11] WW2R Elcom controller - www.g4fre.com/dfs1201.htm

Making metal boxes

Part 2: A practical example for the High Performance Software Defined Radio

PHOTO 1: Two homebrew boxes made using techniques described in this article.

INTRODUCTION. Having looked at the basics of chassis and box making last month, it's time to turn our attention to some practical examples for the real world.

In their final Software Defined Radio *RadCom* column, VK6APH and VK6VZ announced that I was working on a suitable case for the High Performance Software Defined Radio (HPSDR). This article shows the results. (The HPSDR was described during 2006 - 2008 and details of it can also be found in the Software Defined Radio chapter of the 10th edition of the *Radio Communication Handbook* [1]).

The resulting case has space for the four HPSDR boards – Atlas, Ozy, Penelope and Mercury – which form a basic HPSDR transceiver. One channel section carries all of the component boards and a second similar section fits over the top.

The case can be made without the aid of a sheet metal folder. How to carry out these folds will be described in detail and then we'll briefly look at other useful box types amenable to home building.

COMPACT HPSDR BOX. This box of is made from 1mm aluminium sheet and is a nominal 293mm (11.5 inches) wide, 127mm (5 inches) high and 178mm (7 inches) deep. Although it was designed for the HPSDR it can easily be adapted to other projects.

Two similar boxes were made using a fairly basic tool kit - a vice, clamp, tin snips, scribe, rule, square, half-round file, hammer, drill, angle iron (3mm by 25mm by 300mm or similar), a 3mm tap and small blocks of 9mm ply. A second clamp, a drill press and left and right-handed aviation snips will be helpful but not essential. **Figure 1** shows the general structure.

The cover is screwed to the lip around all edges of the base of the box. This lip is of double thickness to take 3mm screw threads and is formed in three operations - see **Figure 2**.

Sometimes when making a lip of this kind it is easier to hold the lip in the vice and push the larger area, but for this project I strongly recommend holding the body and bending the lip to obtain consistent, uniform bends. Take care to place the ply blocks or angle iron used to help folding (see part 1 of this article) exactly on the scribed folding line for the first fold – see Figure 2 (a). The second fold will be governed by the thickness of ply (or other former you have on hand).

If the only material available for a former is 12mm thick, then make the first fold 24mm from the edge; if the former is 10mm thick then make the first fold 20mm from the edge; and so on.

Decide on the former you are going to use and the fold distance before marking out the shape of the case and cutting your sheet of aluminium. The ply I used was 8.5mm thick and the scribed line 18mm from the edge. The 'missing' millimetre was absorbed by the stretch around the 180° fold of the lip. This brought the 'cut edge' of the VK6CG boxes right back to the line of the first fold.

Before commencing work on any case, draw a working diagram with the case's dimensions on it. The dimensions shown in the working diagram in **Figure 3** are for 9mm ply formers. For formers of other thickness, keep to the basic length, breadth and height

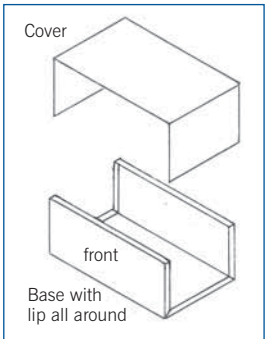

FIGURE 1: General view of the compact HPSDR box.

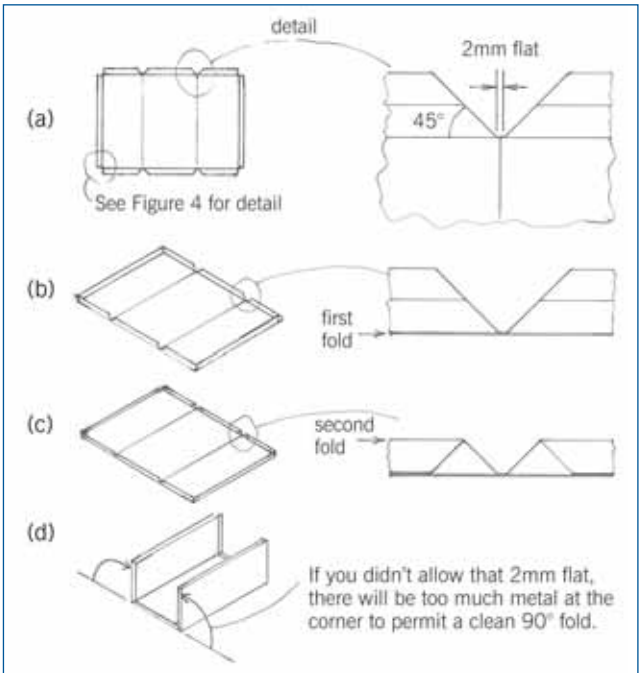

FIGURE 2: Folding. (a) how to prepare at each corner. (b) and (c) the order of folds is important. (d) the 2mm flat in (a) means you can get a clean 90° fold.

PHOTO 2: You don't need much more than this to make your own boxes.

PHOTO 3: Clamping the sheet metal before bending.

of the case and adjust the lip widths.

Starting from a square corner, scribe the lines that make up the shape of the case on 1mm sheet aluminium. Mark out the corner allowances (see **Figure 4**) and snip off. File all edges smooth and flatten the sheet out if necessary.

A squared block of ply or any tough, rigid material that measures 292mm by 127mm (and of your chosen thickness) will be a useful former for the first and second folds - see **Figure 2(a) and (b)**. Do the three folds at one end, the three at the other and then turn the former through 90° for the remaining two central flaps.

In any order, complete the folds as shown in **Figure 2 (c)**. It may help to do the ends before the centre. Tap the flaps down using a straight flat-edged piece of ply and 'nip' them in the vice to achieve neat, even folds. Use the ply former with 3mm removed from one end so it will fit inside.

Now use this former to help fold the end sections up 90° to complete the channel. These sections will be the front and back of the box - see **Figure 5**.

Hold one end of the angle iron/aluminium/former 'sandwich' in the vice and the other with a clamp. These two folds will be easier to make, as the lips provide rigidity. Nevertheless, take care to ensure that the former is exactly on the folding line. Make both folds by holding the centre section with a vice and clamp (symmetry of operations always gives a neater result).

Only now that the base section of the box has been made, measure up the material for making the cover - see **Figure 6**. The width of the cover must be carefully measured and marked out. Note that the depth and height of the cover can be up to a millimetre less than measured and still make a neat box, but don't make them oversize.

Hold the centre section when making the two folds in it, with the former exactly on the scribed line (if you hold the end sections, the cover will be about 2mm too short). Now try the cover on the base of the box. It should fit but, if not, a few taps with a hammer at the corners should persuade it to fit perfectly.

Now, let's marry the cover and the base. The screws fastening the cover to the base can be self-tapping or metal thread screws. Lightly mark out the screw positions on the cover. Remember, this is the cover and any superfluous marks will show. I use a pencil for this kind of marking.

For strength and RF-tightness of a cover, I like to put a fastener every 5cm (2") or so, just to be sure. This is probably excessive and certainly time-consuming, but you can fit just a few fasteners if you do need to frequently remove the cover.

At the vee cut-out corners, stay about 20mm from the corners as the screws must go into the double thickness of the 'turn-in' on the base. Mark the positions for the screw holes in from the edge of the cover, one half of the base lip width. This will place the fasteners near the centre of the lip width. If you have an engineer's square, set it to this distance and use it as a depth gauge – see **Figure 7**.

Centre-punch and drill all the holes needed in the cover. Use scrap wood as backing when carrying out the drilling to

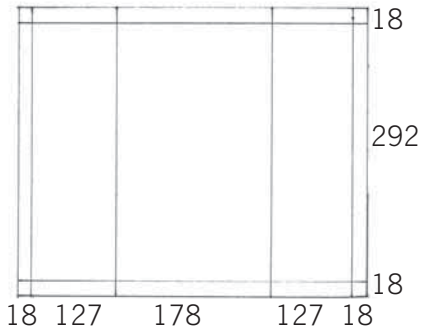

FIGURE 3: Working diagram, in this case allowing for 9mm ply formers (see text).

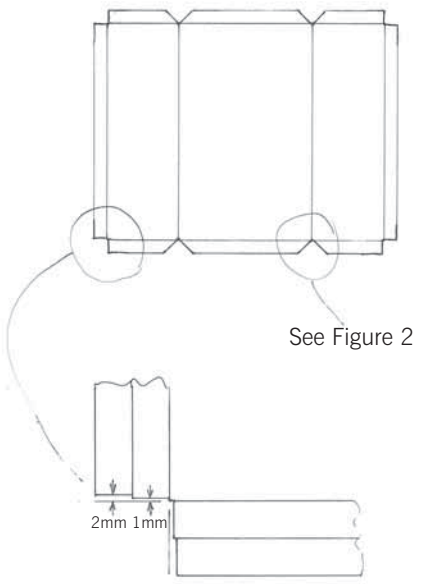

FIGURE 4: Corner allowances.

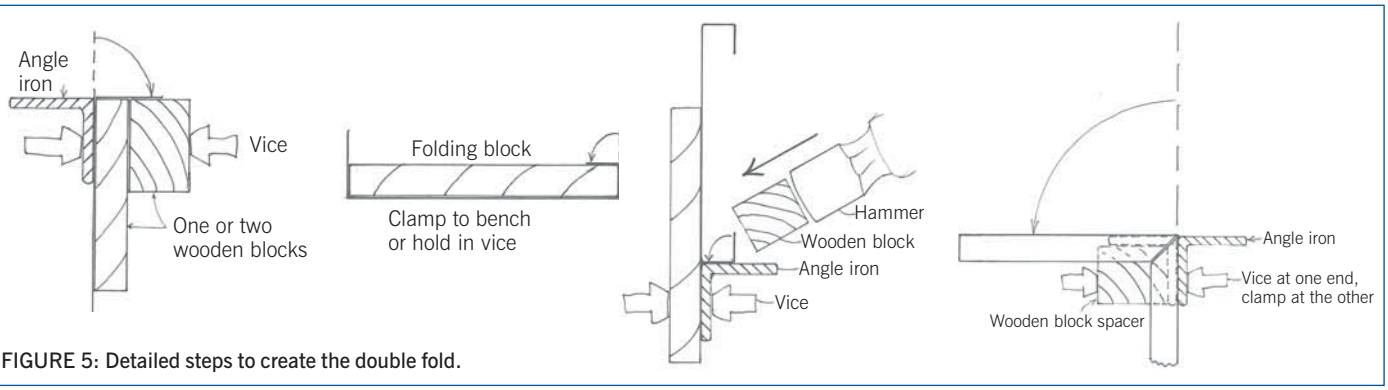

FIGURE 5: Detailed steps to create the double fold.

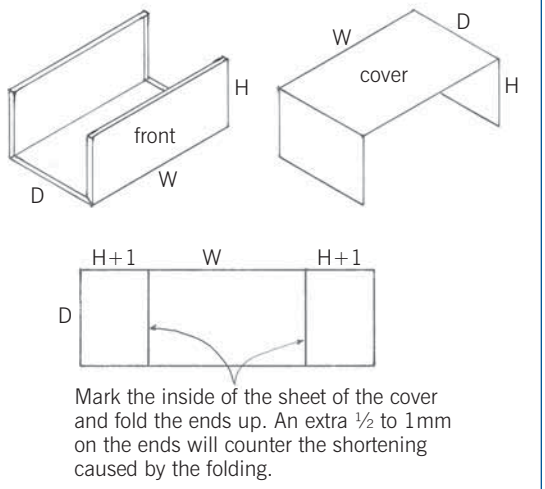

FIGURE 6: Mark the cover after making the chassis – it's much easier.

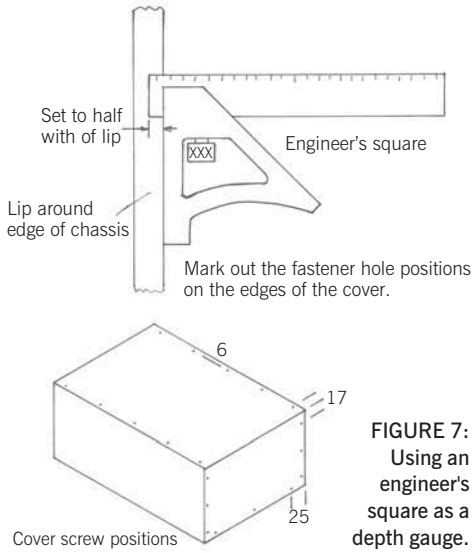

FIGURE 7: Using an engineer's square as a depth gauge.

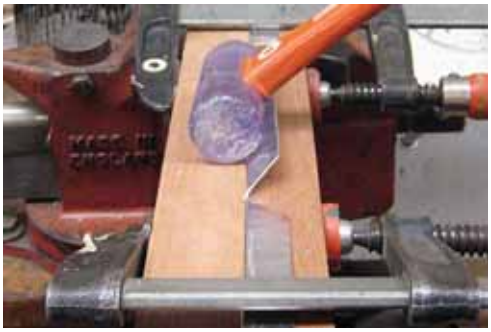

PHOTO 4: Creating the first folds.

PHOTO 5: Creating a double fold (see Figure 5).

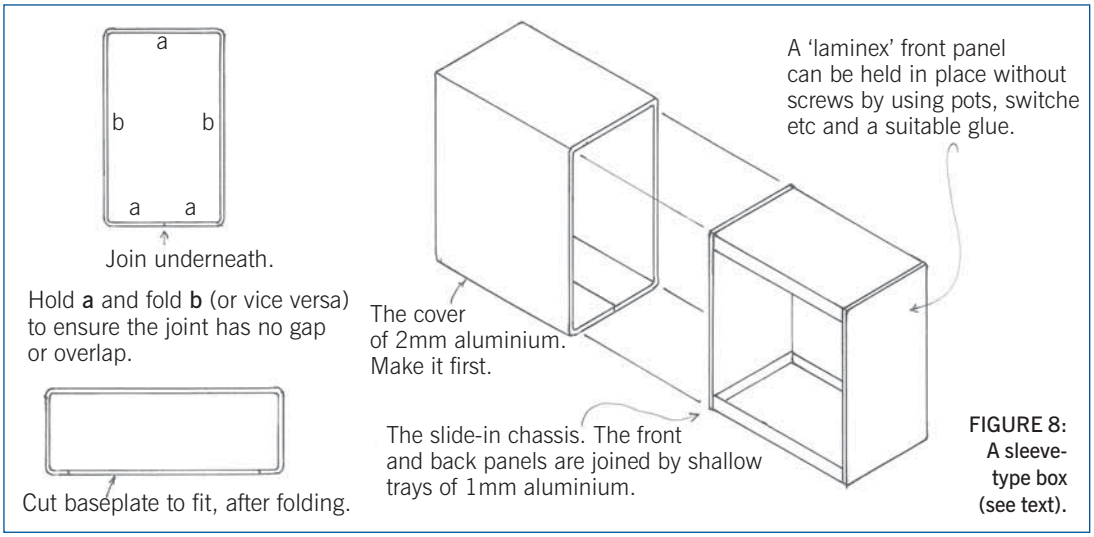

FIGURE 8: A sleeve-type box (see text).

keep the backs of the holes clean. Hold the wood in the vice or use a drill press. If the lips of the holes need de-burring, clean them up with a hand-held 10mm drill bit or similar.

Now refit the cover and position it exactly. Hold it with clamps and drill the eight corner holes using a 2mm bit (for 3mm threads). If you're short of clamps, drill and thread the holes one at a time if necessary. All the other holes will automatically be in the right place if these eight are correctly positioned.

To get the 2mm hole centred in the 3mm hole, first lightly drill with the 3mm bit – just a touch – to establish the centre. To fasten the cover to the base, self-tappers are the easiest way. Just screw them in, enlarging the holes if necessary.

If you wish to use machine screws, more finesse is required. The 3mm tap may be held in a proper tap holder or with locking pliers, but it is much easier to thread at right angles to the surface by holding tap in a hand drill, cordless drill or woodworking brace (an unorthodox method but it gives the finest control and feel).

Lubricate the tap with thin oil (WD-40 etc). This is especially important when threading aluminium, as it is so easily stripped (as someone once said: "One does not know what is enough until one knows what is too much"). Start the thread, just a turn or two, back-off, clean the tap and then go back in again for two or three more turns, and so on. Keep the tap clean and lubricated and don't let it wobble sideways.

If you run the tap straight through, the screw may end up being too loose in the hole. If this is the first time you have threaded aluminium, first make a practice thread in a scrap of aluminium of the same thickness as the one you wish to tap to get the feel of what you're doing.

Fit the eight screws and then drill, thread and fit the remainder. Now turn the box over and fit the feet. If they are 3mm or a little more from the edge, they'll do the job without being obvious (set your depth gauge to 3mm more than the radius of the feet).

The HPSDR box is now made and it's time to decide exactly where to position the holes for the circuit boards and fan. These holes could have been made earlier, but now you can mark out precisely where they are to go. Also, it is more difficult to make a neat bend close to a large hole so now is the best time.

OTHER USEFUL BOXES.

A box type I have used quite often for test gear and small power supplies has a wrap-around cover and slide-through front, back and chassis – see **Figure 8**. The front face of this box can be made from tough plastic and should be constructed to be a snug fit just inside the cover. All the holes in the front piece of aluminium will need to be made in this sheet as well.

Most plastics take rub-on Letraset-type letters well. A coat of spray-on fixative will help them stay put. Allow for the thickness of this extra sheet when making the chassis.

Four screws underneath hold the chassis in place and the cover together. When they're removed, it's easy to slide the front/chassis/back assembly out. The front edge of the cover protects the edge of the face and looks neat.

Well, that's it. Happy boxmaking!

Start Here

Software defined radios on the web

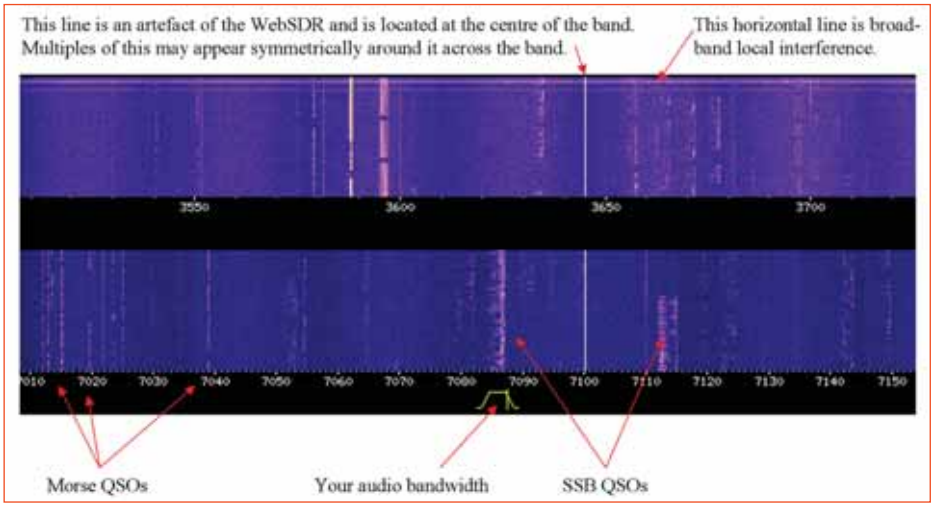

FIGURE 1: A snapshot of the 80 and 40m waterfall displays on PA3FWM's WebSDRs. The actual signal heard is an LSB signal on 7087kHz.

INTRODUCTION. Software defined radios (SDR) have now become fairly commonplace; indeed anyone with a reasonable soundcard and computer can create their own receiver using (for instance) a SoftRock kit. An exciting new development in this area is WebSDR, where an amateur allows access to their SDR receiver over the internet for others around the world to benefit from. In this article we explore WebSDR and see how it can aid your day-to-day operations.

WHAT AND WHERE? WebSDR consists of a software defined radio connected to some form of antenna and a computer with a high speed internet connection. The SDR converts signals from the antenna to a stream of data that the computer can work with. The amount of bandwidth that you can then tune across is directly proportional to the rate at which their soundcard is sampling the data stream. The greater the sampling rate (eg 48, 96 or 192kHz) the more bandwidth you can observe. Once the software has done its job, the result is then streamed 'live' to the internet. Currently, Dr Pieter-Tjerk de Boer, PA3FWM, maintains an excellent starting point for locating WebSDRs at www.websdr.org. Navigating to this site presents you with a map of locations of WebSDRs, a description of their respective setups and a link to go and listen to each. In almost all cases an up-to-date version of both Java and JavaScript is required to listen to a WebSDR, but this is available free online.

HOW DO I USE WEBSDR? Let's suppose you have navigated your way to a WebSDR site. If your computer is not so modern and you've chosen a site that has multiple bands available, you can improve performance by selecting 'Freeze all but one' from the menu controls that appear below the waterfall displays. This permits you to monitor a single band at a time. By this we mean you will only see a single band's waterfall, displaying the signals of just that band live, rather than seeing all bands live at once.

Tuning is performed by your mouse. Simply click on waterfall to get the signal you want or click and drag the slider at the base of the waterfall to tune stations. If you do not hear any sounds despite signals showing, it is worth checking that your speakers are turned on and that your computer volume control is turned up!

To change modes, use the menu controls below the waterfall display(s) to select the appropriate mode such as USB or CW. You can even change the size of the bandwidth that you want to listen to. This is possible since all of the 'tuning' is done by software rather than hardware, giving much greater flexibility over traditional receivers. In fact this is what makes it possible for multiple users around the world to use the WebSDR simultaneously yet listening to different parts of the band.

Note: When trying to drag the slider to navigate across a band, you need to click fairly centrally as clicking an edge of the slider allows you to vary the bandwidth received. There are fine tuning controls in the menu panel for those small adjustments.

ADVANTAGES OF USING WEBSDR. For many amateurs who are limited in terms of antennas or equipment or even time, WebSDR allows you to enjoy our wireless hobby with a minimal number of wires involved. However, WebSDR opens up more than that. For instance, it allows you to listen in a different country to see how conditions vary over there and perhaps help you to tell when the band is open enough to hear yourself. This could be because you can hear other stations local to you or you may even be able to hear your own CQ call in a different country. WebSDR can also be invaluable for testing. Whilst you can monitor your own signal, or ask someone else to, being able to hear exactly what you sound like some distance away is particularly useful for improving your audio or seeing if a different antenna makes a change. It can also help you to indirectly evaluate your station's performance by noting what beacons/stations you can hear at your own QTH compared to those audible at the WebSDR location.

LATENCY. Despite signals travelling across the internet at nearly the speed of light, there can still be significant delays experienced with WebSDR. Typically, the delay between the signal being received at the WebSDR and reaching your computer is generally a half to one second. This is fine for SSB but may cause problems with fast CW or data modes as the leading characters may be missing or, if you attempt to reply from your own station to a station you're listening to via WebSDR, you may find yourself slightly out of sync with them. A good way to measure the delay is to find a signal you can hear at your own station and via WebSDR, then compare the two signals. Any significant delay should be audible. Alternatively, you could find a WebSDR where you can hear your own transmissions and see if you can detect a delay in receiving your own signals. In general, the latency of a WebSDR tends to increase if it has a very large number of users listening for the upload bandwidth available. It also tends to increase if your own internet connection isn't fast enough to receive all of the data from the WebSDR at once.

A WORD OF CAUTION. It is very easy to use a WebSDR in another country, however before you start using one to help you with those weak calls/QRM in contests and for DXing, you must check the rules carefully as most contests have restrictions on where all the hardware (antennas, radios, computers etc) must be located. For instance, if you're a loud European signal on 40m in a busy contest, you may be audible at times in Australia. However if you monitor an Australian WebSDR to help you pick out those weak calls, you aren't really making a two way contact as you can't hear them well enough to make contact under the circumstances at your own station.

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Book review

It's Yearbook time! Out this month.

Callseeker Plus 2011 CD

Callseeker Plus is the callbook with a difference. It is fully searchable and contains a vast number of callsigns – not just the full UK set, but the callsign data from over 20 additional European radio societies. Prefixes include 2, 9A, DL, EA, EI, ES, F, G, HA, HB9, I, LX, LY, M, OE, OH, ON, OZ, SM, SP, SV Z3 and ZB2.

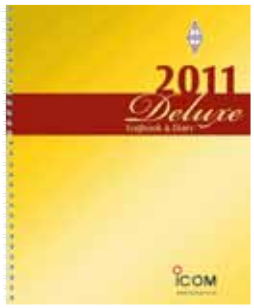
There is no software to install; the no nonsense, easy-to-use Eurocall interface just simply works. Type in a callsign and presto! up comes the information. No internet connection is required, so it's also ideal for field use and there are no horrid, bandwidth-sapping animations flashing all over the place, either.

But that's not all. The CD also contains a wealth of bonus information including the Information (front) section of the *RSGB Yearbook 2011* and the same selection of software as the *Yearbook* CD. There is also further information and software from five other countries.

Overall, this CD is packed with fantastically useful information and should never be far from your computer.

CD, published by RSGB & ITfM GmbH
Non members' price £15.99
Members' price £13.54

Deluxe Logbook & Diary 2011



So much more than just a logbook, the *Deluxe Logbook and Diary* contains a wealth of carefully-selected information that you need at your fingertips when operating. Reference material like the DXCC prefix list, a locator map, band plans, major contests – it's all here.

There is, of course, a full logbook section. Unlike some other logbooks, the spiral binding means that the pages lie perfectly flat on your work surface. And the handy diary makes it easy to make a note of skeds or any other pertinent information.

I have always thought that you can tell a lot about an amateur from their log book; there is no better quiet statement of competence than the RSGB *Deluxe Logbook and Diary*.

Published by RSGB
Non members' price £4.99
Members' price £4.24

RSGB Yearbook 2011

Edited by Steve White, G3ZVW

One of the year's big events is the launch of the *RSGB Yearbook* at the National Hamfest. It is so popular that an entire pallet of copies will be taken to the event!

The *RSGB Yearbook 2011*, incorporating the UK & Ireland Callbook, has been fully revised. Not only does it contain a complete listing of UK and Irish callsigns, it also has a huge section of information on the RSGB, amateur radio clubs, licensing details and operating information. Within the RSGB there is a wealth of knowledge and experience that can be tapped into – if only you know where to look. The Yearbook has the detail you require to access that information with everything from planning to EMC and QSLs to Intruder Watch.

The *RSGB Yearbook* is an invaluable resource in many areas. It has a list of all known Foundation, Intermediate and Advanced courses, exam centres and clubs that organise the training. Clubs are the lifeblood of the amateur radio community. There are hundreds of radio clubs up and down the country, many of which appear in the Featured Clubs section, where you can read more of what they have been getting involved in recently. Of particular note is the Derby Wireless Club, which celebrates its centenary in 2011. Details of many more are included on the CD that accompanies the Yearbook.

Talking of the CD, it is a real treasure-trove of information. It has a complete copy of the front section of the *Yearbook*, sample chapters from several RSGB books (including the Stealth Antennas chapter from my own *HF Antennas For Everyone*), club details and a huge software section. There is over 340 megabytes of software, comprising over 30 programs including *Contest Trainer*, *CW Skimmer*, the *DXLab suite*, *Ham Radio Deluxe*, logging programs, *UI-View* and *AGW packet*, *WinDRM* and *WSJT* – to name but a few. A full list can be found on the RSGB Shop description of the *Yearbook*. Many people find the software content alone a good enough reason to get their copy of the *Yearbook*!

Returning to the printed page, the *RSGB Yearbook 2011* deals with every aspect of amateur radio operating you could wish for. Repeaters (with coverage maps, including D-Star repeaters), data comms, weak signal work, CW, satellites – and many more. There are around 200 pages of detailed information that will keep you in reading matter for ages!

The second part of the *Yearbook* is devoted to the UK & Ireland callsign list – and runs to over a million words! It contains the latest database information from the UK licensing authority, a complete list of UK Special Contest callsigns, the Irish callsigns listing, plus listings of UK licensees in surname and postcode order.

ISBN 978-1-90508-662-7
210 x 275mm
Published by RSGB
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BAND	ACTIVE ELEMENTS
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15m	3
12m	3
10m	3
6m	3

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BS7H
W6RGG on Scarborough reef DXpedition.
Picture is an artistic rendition to show scale and portability of antenna.

QRP PSK31 beacon

Generate PSK31 without tying up a computer!

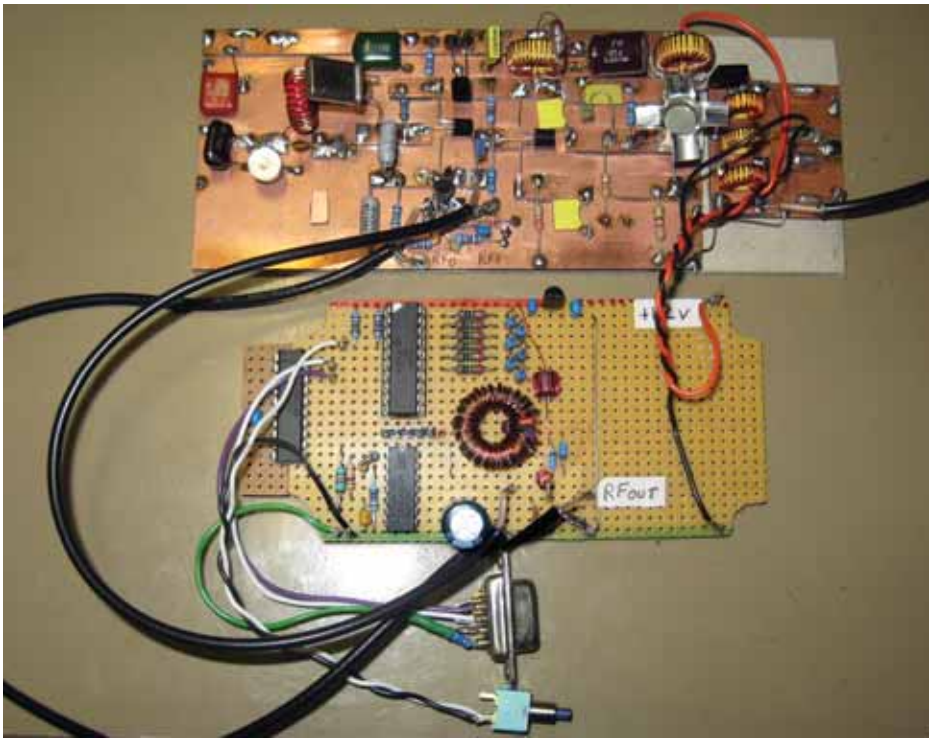


PHOTO 1: Simple construction is the watchword for this project.

INTRODUCTION. I have been interested in QRP and PSK31 for a few years. I thought that it would be useful to send PSK31 without the need for a PC. This project divides into two halves: a PIC microprocessor that generates the PSK31 baseband signal and a simple QRP transmitter for 30m. As presented, the design is a complete working unit, however if you already possess a QRP transmitter it will be easy to build just the modulator circuit and incorporate it into your kit. A built-in RS232 interface makes it easy to set the user message, callsign and so on. The project could be extended to send external data such as temperature and barometric pressure etc. I have tried to use easily obtainable components and hope you enjoy building the beacon.

GENERAL DESCRIPTION. The circuit has been kept as simple as possible; refer to the block diagram (**Figure 1**). A PIC microprocessor stores the beacon message and calculates the PSK31 waveform in real time. Its output is a 6 bit digital cosine waveform that is converted to analogue by a simple digital to analogue converter (DAC). This signal phase modulates the buffered output of a 10.140MHz crystal oscillator. The resulting low-level RF is amplified and passed via a low pass filter to the aerial socket.

A simple RS232 interface is provided to communicate with the PIC to set the beacon message and repetition rate. A run/program push switch interrupts normal operation and enters programming mode.

CIRCUIT DESCRIPTION. The circuit diagram is shown in **Figure 2**. The 16F690 PIC IC2 is the heart of the circuit. The PIC calculates the instantaneous PSK31 signal (see sidebar) and outputs this as a 6 bit binary number on port C (pins RC0-RC5). The associated resistors form an R-2R ladder, a simple digital to analogue converter (DAC). The output is a cosine waveform with an amplitude of 5V. Opamp IC1a is configured for a gain of 2, giving a peak signal of 10V. R28 and C31 smooth out the steps from the DAC. IC1b acts as a buffer and drives the phase modulator **[1]**. The RF carrier is generated by a crystal controlled oscillator, the frequency of which can be adjusted slightly by altering the trimmer capacitor C60.

The modulator consists of a trifilar wound T68-6 toroid and 2 hot carrier diodes D3 & D4. 10.140MHz RF from oscillator Q3 is amplified and buffered by Q2 (which has some feedback to make it linear) and fed to winding L1. Windings L2 and L3 are connected out of phase via the diodes, with the other end of the windings connected to a 5V reference. As the buffered DAC voltage rises from 5.5 to 10V, D3 will conduct and the IN phase appears at the junction of the diodes. However, when the voltage falls from 4.5 to 0V, D4 conducts and the OUT phase appears at the junction of the diodes. One of the requirements is that the RF carrier should be close to zero when a phase change takes place. This is conveniently handled by the modulator when the voltage traverses the 5V region and neither diode is conducting.

The output from the phase modulator is again amplified by a 2N3904 and finally the signal is sent to the 2N3866 which forms the PA. The low pass filter consists of three T37-6 toroids L6, L7 and L8, wound with 18, 20 and 18 turns respectively. The capacitors are polystyrene. The final output from PL19 can be connected directly to an antenna or via an antenna matching unit.

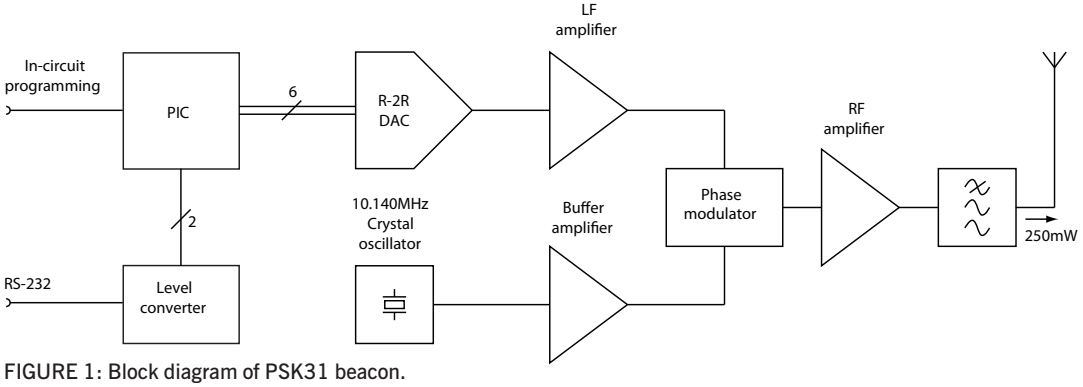


FIGURE 1: Block diagram of PSK31 beacon.

Output power is about 250mW.

Run/program switch S1 interrupts the PIC program and enables RS232 communications. IC5 provides the necessary level-shifting to drive a standard RS232 interface. It has a built in charge pump and creates the correct RS232 voltages to drive a PC.

If you already have a QRP transmitter then the modulator can be connected between two suitable existing stages. Feed RF into L1 and take the output from the junction of D3 and D4. Coupling capacitors will probably be necessary in view of the DC voltages in the circuit. I used this approach in the prototype shown in **Photo 1**.

USER INTERFACE. The transmit message and rate are stored in the PIC EEPROM, with a maximum length of 78 characters. The message can be modified via an RS232 interface by using a terminal emulator program such as Hterm or Hyperterminal. The data format is (9600 baud, 8 bits, no parity). I realise that most modern PCs do not have a serial interface but this project would be a lot more complicated if I used alternatives such as USB, keyboard and display etc. USB to RS232 converters are readily available at low cost.
Pressing S1 interrupts the PIC processor, changing it from PSK mode to menu mode. The screen will show:

```
PSK stopped
M-message R-repetition E-exit
```

If you press M <return> the current PSK message is displayed and you are prompted for a new message. The character # is used to represent a carriage return/line feed in the PSK message.

M <return>

```
<CQ CQ CQ DE G0VXG 250MW QRPP
TEST PSE QSL #>
New message=
```

This is the prompt to enter your new message, for instance

```
CQ CQ CQ My Callsign # <return>
```

You are then asked whether you want to save the message; the default is Y(es) so press Return:

```
Save data? Y <return>
PSK running
```

The PSK generation then resumes. Press S1 once more to activate the menu:

```
PSK stopped
M-message R-repetition E-exit
```

Press R <return> to set the repetition rate,

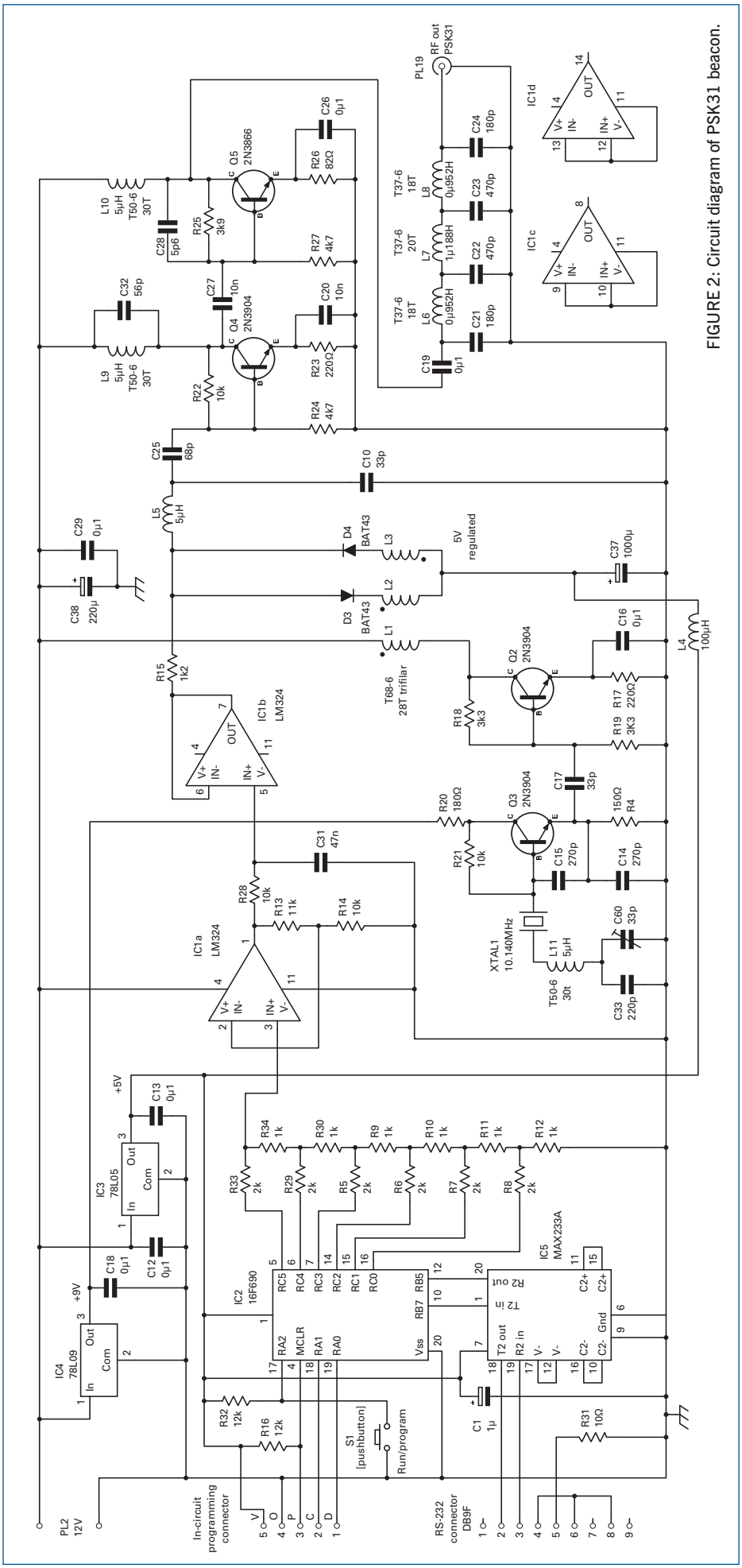


FIGURE 2: Circuit diagram of PSK31 beacon.

ABOUT PSK31 AND THE PIC SOFTWARE

PSK31, or bi phase shift keying to give its full name, is used to send and receive data over the amateur bands. The transmission of data is very efficient and, providing that reasonable power and good filtering is used, the bandwidth is only 31.5Hz. The original work was by Peter, G3PLX and is both simple and elegant in concept. Data is sent by changing the phase of the carrier (this differs from FSK, eg RTTY, where the frequency is changed; that occupies a greater bandwidth).

PSK31 uses the Varicode **[2]** character set, where the more common characters in English text are coded with the shortest binary codes. In some ways this resembles the variable length of Morse code characters. Varicode characters range from 1 to 10 bits and never contain two consecutive zeros. The bits are transmitted serially, with a phase change indicating when a zero bit is to be sent. A double zero is sent (2 phase changes) to indicate the end of a character.

To send the characters "ezo" the carrier would be modulated as follows, with the bits being sent from left to right:

e	1100
z	11101010100
o	11100

PIC PROGRAM. The message to be sent is stored within the PIC internal EEPROM. The program loops round continuously, reading the ASCII message string and converting each character to Varicode, which is then output to the DAC.

The program uses the 4MHz internal clock of the 16F690 for all its timings. The clock is used to produce a 0.5ms interrupt for the DAC data output routine and other related timing events. A timer controls the transmission of the message. The timer value is in the range 0 to 255 multiples of 10 seconds. Zero means that the message will be sent continuously; 255 gives 2550 seconds (or around one message every 42 minutes). The message is repeated five times during each delay period.

In order to synchronise the data in the receiving program a preamble of 40 alternating phases are sent at the beginning of each transmission period. The program then starts reading the message from the EEPROM (if no message is programmed then a default string is sent).

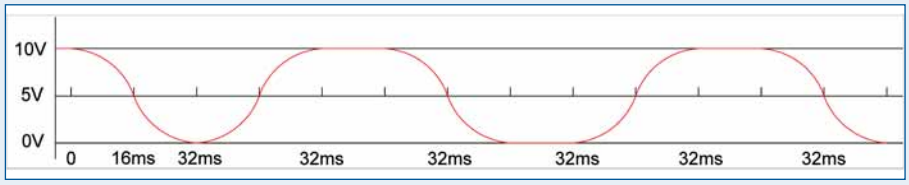
The program uses lookup tables to convert the ASCII message characters to Varicode bits. The bits are sent at 32ms intervals and this period is handled by the interrupt subroutine in the PIC. As each bit is processed, a check is made to see if two consecutive zeros have been sent. If so, the program fetches the next character of the message.

To change phase, a 6 bit count is triggered at a rate of one count per 0.5ms. The count looks up values from a 64-point half cosine (180°) lookup table and output to the DAC. By using a cosine output the sidebands are kept to a reasonable level. To change the slope of the waveform the count is inverted when it drives the cosine table. So to produce one complete cosine cycle the counter would be triggered twice – the first producing a signal from 10V to 0V and the second, inverted count from 0V to 10V, thus forming a complete cycle.

The period of the phase change is 64 x 0.5ms = 32ms. To send a phase change at the right point it must start approximately 16ms before the 5V crossover point and end 16ms after. This means that the phase change actually starts half way through the proceeding bit. This only happens when a 0 bit is to be sent; 1 bits do not require a phase change.

The graph here shows what this looks like. The first two curves indicate the end of the previous character, ie two consecutive phase changes. The next curve indicates that the character starts with a 0 followed by 1, 0, 1, 0. The slightly odd point is that the phase change starts half way through the preceding bit.

You can download the PIC code from the RadCom Plus website.



PSK32 waveform (see text).

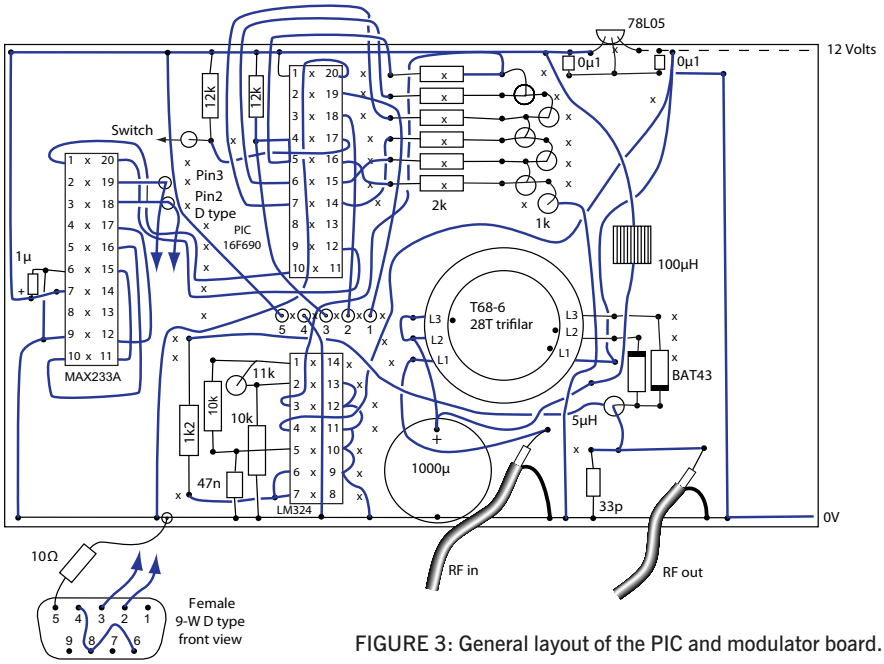


FIGURE 3: General layout of the PIC and modulator board.

in multiples of 10 seconds (eg 3 = every 30 seconds).

```
R <return>
<008> "old value"
New rate=5 <return>

Save data? Y <return>
PSK running
```

CONSTRUCTION. As these circuits operate at relatively low frequencies and power levels, no special construction techniques are necessary.

I made my prototype PIC and modulator circuit on a piece of stripboard approximately 100mm by 60mm. All parts including ICs are soldered in except the PIC, which is socketed. **Figure 3** gives you an idea how I laid out my prototype. The 5 pin connector allows the PIC to be reprogrammed in situ if you have the appropriate programmer.

Continued on page 71

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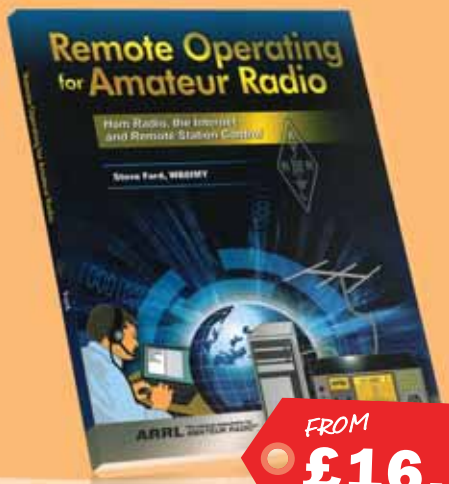

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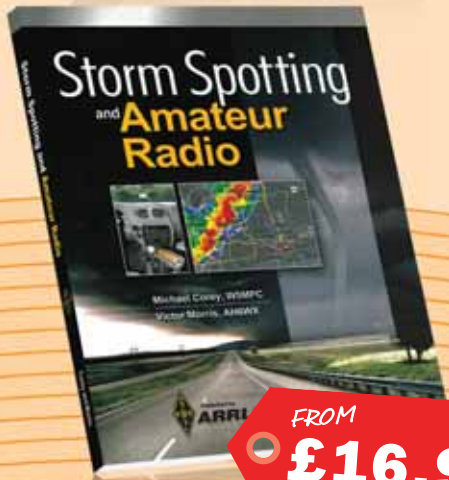

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FOXX3 Transceiver

A new version of this compact CW transceiver kit

PHOTO 1: The completed transceiver and an Altoids tin.

HISTORY. Some time or another, everyone has had that moment of *déjà vu*. Imagine my surprise when I was asked to review a small – very small – transceiver for *RadCom*. "OK" I said "what is it?" I was then told that it was the FOXX transceiver. Not the original one from the early 1990s but a later version.

What has this got to do with *déjà vu*, you may ask? This FOXX3 transceiver is sold by Kanga Products, which is now owned and run by Dennis Anderson, G6YBC. The original FOXX I knew intimately, as I had sold it back in the 1990s when I owned and ran Kanga Products!

The original FOXX was designed by that inimitable builder and one watt man George Burt, GM3OXX, (hence the name) way back in 1983. It was one of the first kits I produced in any numbers when I owned Kanga. The original FOXX used just five transistors and used the power amplifier transistor in a novel way as the detector for the receiver.

WHAT'S NEW. So, what has changed? To start with, the outer packaging looked very similar, all paperwork and components inside a sealed plastic bag but that is where the similarity stopped. I had supplied the components and the PCB in a single bag, Dennis has put each section into its own bag (see **Photo 2**). The original PCB was plain, the new one has the parts layout clearly marked on the top. The new FOXX has a few refinements: automatic QSK, built in sidetone and an on board low pass filter. To cap it all, it has been designed to fit neatly inside an Altoids tin (**Photo 1**). For those not familiar with these tins, they contain the 'curiously strong mint' and are loved by American hams not so much for their flavor(!) but because of the size of the tin and what can be built into it.

BUILDING THE KIT. First, ignore your first thoughts and do actually read the manual. It is essential to get you started as parts placement is sometimes critical. Many of the components are packed into small spaces and, because of this, the sections of building should be carried out exactly as per the manual.

Secondly, make sure you have good quality fine solder to hand and a soldering iron with a fine tip. In case of errors, a good solder sucker is useful too. You WILL need a good quality magnifying glass, side cutters, a multimeter and a sharp knife.

If it is intended to bolt the PCB inside an Altoids tin it is essential to mark the holes first. To do this, place the board inside the tin and mark the holes. Drill using a fine drill of about 3mm and then a larger one to deburr the holes when complete. I also used a fine pin hammer on my large metal vice to ensure the base of the tin was still flat.

Because of the closeness of some of the components it is easy to fit a resistor or capacitor lead into the wrong hole and solder it in place. But if the PCB is held up to the light or a white sheet, the holes become clearer.

The version of the manual I received had the parts placement guide and parts list (complete with identifications) on opposite sides of the same sheet of paper. After flipping the paper a few times I copied the parts layout and had both on the bench as I worked. (Dennis has promised to change this ASAP).

The instructions are VERY comprehensive, in that you complete a section at a time and then test it. I tend to solder two or three components at a time and then check the solder joints using the magnifying glass.

There are a few options with this kit, where you can select a 3.5mm socket for the key line and the audio out or use the twin

PHOTO 2: The kit comes neatly arranged in plastic bags.

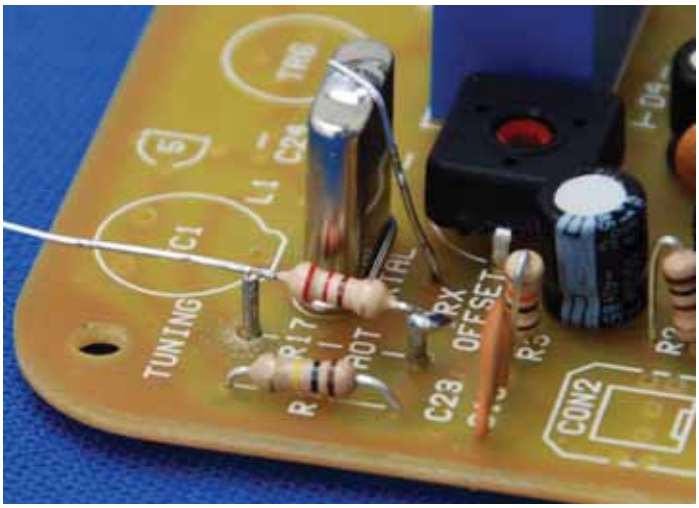

PHOTO 3: Clear screen printing on the PCB makes assembly easier. I left a long lead on the adjust on test resistor – see text.

plug also supplied. At one point you are told to fit two pins to support the 'adjust on test' resistor. In this situation I cut one leg of the resistor close to the body and left the other in place. That way if I have to change it I have something to get hold of. After all tests have been done the extra leg can be removed at leisure (see **Photo 3**).

One of the fiddly jobs in and construction project involving receivers or transmitters is winding coils. (The one thing many people get wrong is not counting the first pass through the middle of the core as a turn). Each of the wires was enamelled so I had to use a fine blade to scrape some off and then use a blob of solder to finish the job. This is one area where problems can occur. If the enamelling is not correctly removed you will get a dry joint. I spent some time on this to get it right.

The final part of building was the low pass filter. I always drip some molten beeswax over the toroids when building VFOs or filters such as this. (I never use candle wax as it is too brittle). The wax helps keep them in place and stops the flexing that will eventually make the wire break. More importantly, it stops any change in inductance as the coils move. The instructions don't mention this hint. You can see the beeswax on the PCB in Photo 1.

FINAL TESTING. I switched on my regular FT-847 and listened for the oscillator, which I heard OK. I pressed the key and watched the meter on the 847 kick high. Wow, we have a transmitted signal. Now to the power meter. The lowest FSD scale on mine is 20W. It definitely kicked as I hit the key but I was unable to measure exactly the power output.

What I can say is that there was RF reaching the antenna. Here at G0BPS I have an 80m doublet as well as a GAP Titan Vertical so used my Z11 ATU to fire up the vertical. Tests with local amateur G4YFP showed that it was actually transmitting.

So, to the bands: not easy with under one watt but the exploits of George, GM3OXX spurred me on. I managed three QSOs before bedtime called. None was over 300 miles but two were into France and one into Germany brought a smile to my face. The best report was 549 (from Germany) so this happy bunny went to bed.

The next day I fitted the board into the Altoids tin and tested again. I didn't have access to stand-offs for the board so I resorted to the old trick of cutting up a ballpoint pen. After removing the ink part I hacksawed off four pieces about 2mm long; a twist drill cleaned up the ends and the 6BA nuts and bolts from the junk box completed the job.

CONCLUSION. This kit is suitable for a newcomer if the instructions are closely followed. The built-in key was difficult to use but, with practice, I was sending reasonable (though not good) CW. Great fun to build and operate, I shall be taking this one to SV9 on my next visit and see what DX that brings.

Thanks to Dennis at Kanga Products for the kit and the very fast service, check out their temporary website at www.kanga-products.co.uk or e-mail Dennis at sales@kanga-products.co.uk

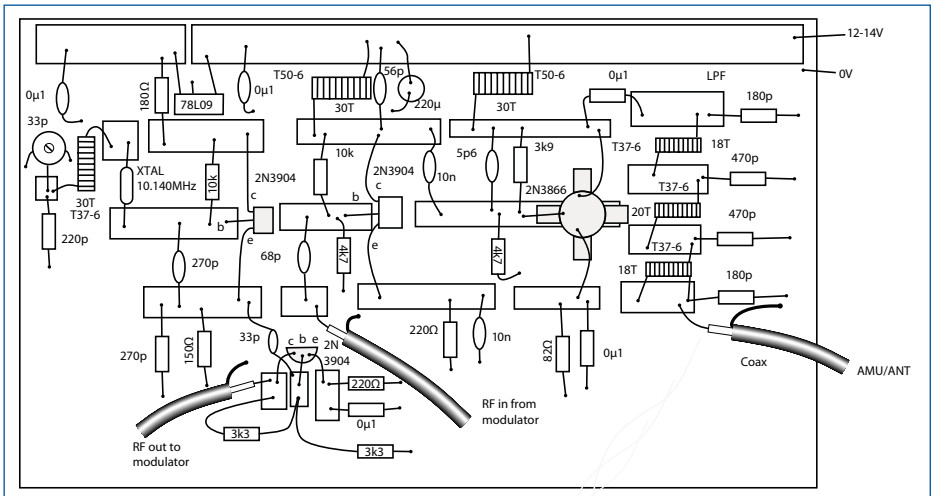

FIGURE 4: General layout of the RF board, constructed using 'Manhattan'-style construction.

▸▸ The modulator coil consists of 28 turns of thin wire trifilar wound on a T68-6 toroid. I found that slipping short pieces of coloured wire insulation over the ends made life a bit easier during construction. All connections are made on the copper side of the board using self fluxing wire; however the actual method is purely up to the constructor.

The RF circuit was constructed Manhattan-style on a piece of plain copper clad PCB 150mm by 60mm, as shown in Photo 1 and **Figure 4**. The PCB acts as a ground plane and small strips of PCB are cut to the size for connecting the components together. I always seem to get consistent results a by using this method and it makes changing components a lot easier. The three coils L9, L10 and L11 are wound with 30 turns of thin wire on yellow T50-6 toroids.

As can be seen from Photo 1 the construction it is quite straightforward and should not cause any problems. The power required is 12 volts and the circuit should produce about 250mW at 10MHz.

CONCLUSION. This project is unpretentious and does what it says on the tin. In my early tests I got signal reports from around 1000km away, making a range of roughly 4000km per watt. I would like to thank David, G0MRF, Hans, G0UPL, Andy, G4JNT and David, G4EIX for their advice and help while I was developing this project.

WEBSEARCH

[1] See G0MRF site, www.g0mrf.com
[2] http://en.wikipedia.org/wiki/Varicode

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USB digital modes interface

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PHOTO 1: The finished interface.

INTRODUCTION. For several years I have been using a pair of transformer isolated 3.5mm audio leads and a simple one-transistor serial port keying arrangement for SSTV, PSK, RTTY and other soundcard data modes. The upgrade of the shack computer threw a spanner in the works because I now had only one serial port to share between my KAM TNC and the TX switch. The easy solution of course was a USB to serial adapter, which did the job well. However, I soon felt limited by having to change audio connections if I wanted to listen to audio from the PC, so a second sound card seemed the way to go. I thought about buying a commercial amateur radio rig interface but then reconsidered: I was sure I could make one myself!

An interface wish list was quickly turned into a list of requirements and how to fulfil them. The important points were that the project should:

- be easily transferable between different computers, which really meant a USB connection
- have a built-in sound device, ie it would be an external sound card of some sort
- be transformer isolated
- be easy to set up, with accessible level and TX delay controls
- include an audio VOX circuit with an adjustable delay so there is no need for COM or LPT or radio VOX for the PTT.

GATHERING THE BITS. The first step was to find a suitable USB sound card. I was amazed to find memory stick style USB sound cards (**Photo 2**) on eBay for less than £3 including the postage from Hong Kong. Even if it proved totally unsuitable I decided it was a price worth paying in the pursuit of knowledge if nothing else!

A week later I was the proud owner of said device. A quick test was done by connecting the headphone output of the HF radio to the soundcard mic input, the new soundcard selected in the *Digipan* setup menu. QSOs then started to appear on the screen. The waterfall seemed a little noisy but that could be investigated later.

A dip into the shack library of notes and circuits came up with an audio VOX circuit for which I can claim no originality. It's one I found somewhere and butchered for my own use.

PROTOTYPING. The first prototype was built on stripboard as a proof of concept project. This was the ideal way forward as it allowed several changes of component value and also changes of layout and circuit. As any visitor to my shack will tell you there are always many different projects around in various states of construction/repair/redeign and this was no different. When I made my first QSO with the interface it was housed in a stylish enclosure - a padded envelope!

Happy in the knowledge of having made a QSO with the interface, it was boxed up – still in its stripboard incarnation - in a small case that I had handy (**Photo 3**). The small board tucked away at the left side of the unit is the unboxed USB soundcard. I removed its USB plug and replaced it with the lead from a pound shop USB mouse. Any USB lead could be used, including a USB extension lead if you don't fancy stripping the sound card down. The audio transformers are available from many of the regular component dealers, such as Rapid

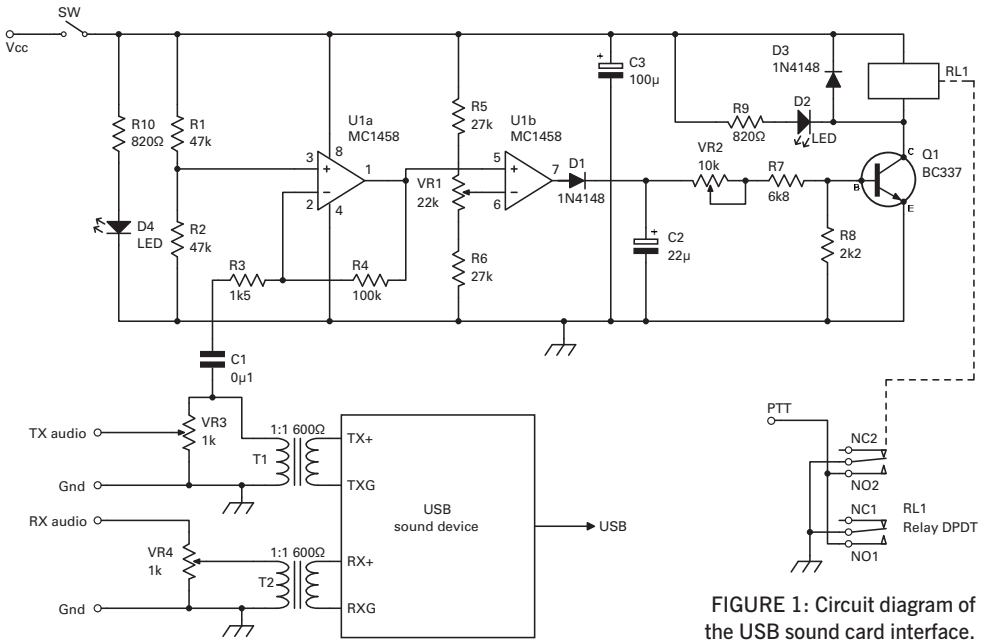


FIGURE 1: Circuit diagram of the USB sound card interface.

COMPONENT LIST

R1, R2	47k
R3	1k5
R4	100k
R5, R6	27k
R7	6k8
R8	2k2
R9, R10	820R
VR1	22k preset
VR2	10k lin
VR3, VR4	1k log
C1	100n
C2	22µF 25V
C3	100µF 25V
D1, D3	1N4148
D2	Red LED
D4	Green LED
Q1	BC337
U1	MC1458 or TL072 dual opamp
RL1	DIL DPDT relay, 12V coil
T1, T2	1:1 600Ω audio transformer, for example Rapid 88-2112 (see text)

PHOTO 2: USB sound card.

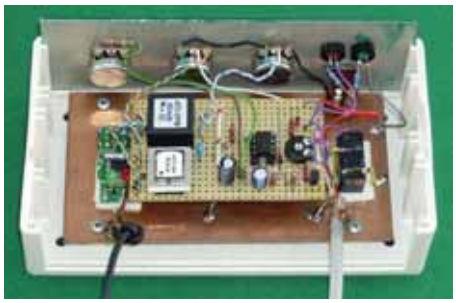


PHOTO 3: Prototype built on stripboard.

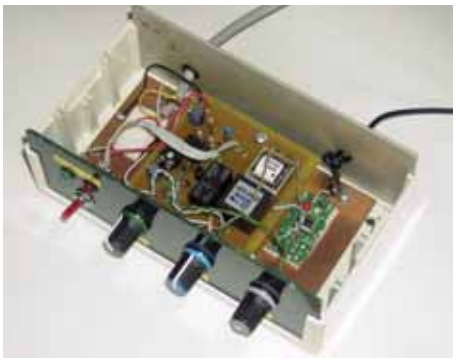


PHOTO 4: Inside the finished unit.

FIGURE 2: PCB foil pattern of the USB sound card interface, reproduced at 1:1.

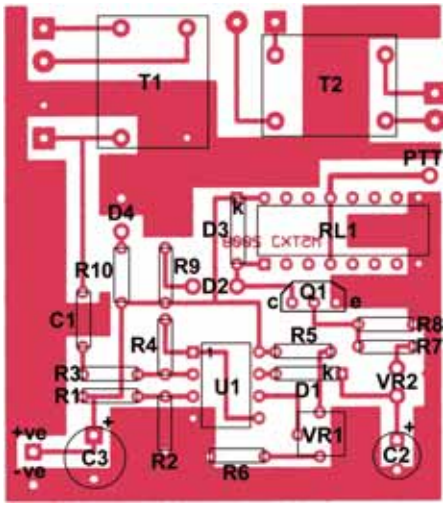


FIGURE 3: Component overlay.

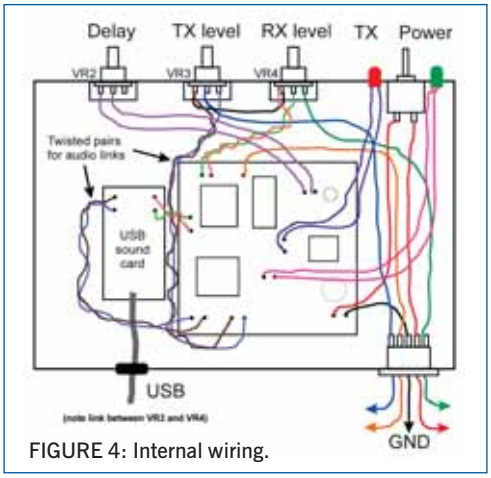


FIGURE 4: Internal wiring.

Electronics part no 88-2112, although I used ones salvaged from internal ISA modem cards that I bought for £1 each from a rally. (These also provided a supply of other valuable components including relays, opto-isolators and bridge rectifiers.)

The final circuit diagram is shown in **Figure 1**.

I now had a working USB interface, but as I often have to come up with ideas for my local radio club meetings **[1]**, I decided to design a printed circuit board (**Figures 2** and **3**) so that the design was easily reproducible. The board was produced using the inkjet photo paper, laser printer and iron method then etched and the final version was produced (**Photo 4**).

Since taking that photo I have installed a DIN socket in place of the flying lead to the radio. Different radios can be accommodated just by changing the lead. **Figure 4** shows the internal wiring of the unit, including the DIN socket. I also recommend fitting a series diode such as a 1N4001 and a 315mA picofuse in series with the +13.8V feed from the socket to the on/off switch.

IN USE. As mentioned earlier, when I use this interface the waterfall display is a little noisy (**Figure 5**). In particular there are lines about every 1kHz across the spectrum. I've tried several different versions of the sound card (one advantage of their low price!) and found varying quality. This doesn't however seem to affect decoding ability. Following extended testing I've found that even using the 'worst' device I've got, I can still decode even the weakest of signals. If a really weak signal coincides with one of the 1kHz lines it can sometimes affect reception, but the very simple cure is just to re-tune the radio slightly.

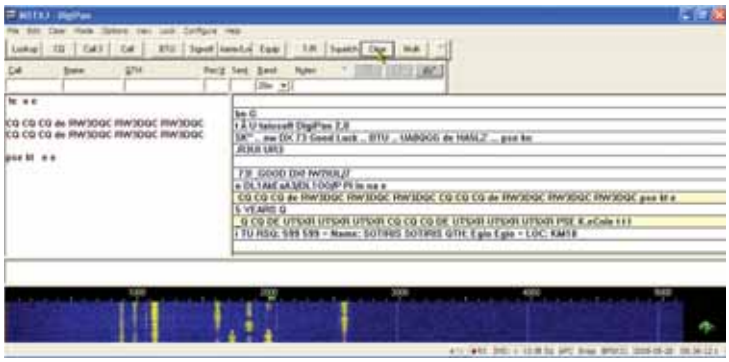


FIGURE 5: Typical *DigiPan* display using the 'worst' USB sound card.

CONSTRUCTION.

So how do you build your own? Layout is uncritical and you can use stripboard as I did for the prototype. It is good practice mount the transformers at 90° to each other. This may not be obvious from the photos as different models of transformer were used as they were what were to hand. The other thing to watch is hum-inducing ground loops. If you decide to make a PCB using the design printed here then this aspect is mainly taken care of.

My transceiver, an IC-735, has a 13.8V output on its accessory socket and I use this to power the interface. Since adding a DIN socket for the radio connection I have also added a standard 2.5mm DC input socket for use when the transceiver doesn't have this facility.

Setting up the interface is very simple and entails adjusting the preset potentiometer until the VOX circuit triggers the PTT in response to the audio output of the sound device. This is indicated by the red LED illuminating.

In use, set the RX audio level to give a clearly defined waterfall without excessive noise. As an aside, I find *Digipan* very tolerant of wide-ranging audio levels. On transmit, set the TX level to give sufficient drive to your transmitter whilst keeping ALC to a minimum (thereby improving your IMD performance). You will find that for PSK31 and similar modes you can set the delay control to minimum; other modes such as audio CW need the delay increasing. Of course if you do not need a USB interface, the board can be fed with audio direct from your computers' soundcard, possibly via a pair of 3.5mm sockets.

I've found this a very satisfying project, even as one of my simpler jobs, but must give many thanks to Chris, M0JKQ and Seamus, G7ITT for their assistance during testing of the interface.

REFERENCE

[1] Eden Valley Radio Society – www.qsl.net/m5txj/evrs.htm

Technical feedback

Last month's article on using Wi-Fi instead of PLT brought some interesting feedback

Recycle a WRT54G to replace a PLT adapter!

RECAP. In the August issue I reported how I'd found an inexpensive Belkin Wireless Gaming Adapter on eBay and used it very successfully to link my TV set-top box to my BT Home Hub internet point. It was a simple demonstration of how mature Wi-Fi technology can easily achieve a good quality internet link without the HF interference problems that can be caused by internet-over-the-mains PLT adapters such as Comtrend.

After the article appeared I received several phone calls and e-mails from people saying that they hadn't realised you could get such a device and that they had successfully replaced a PLT adapter. This month's Last Word has a letter from Peter Ebsworth that describes a typical experience.

ANOTHER SOLUTION. One of the most interesting pieces of feedback was that from Simon Jude, G7SOZ. He says that he also uses a wireless bridge to access his internet system but, rather than buying a new Gaming Adapter like me, he used a much cheaper option.

There are an increasing number of old broadband wireless routers around these days that have been replaced by newer devices. Simon explained that he had an old Linksys WRT54 [1], which (like many routers) is in fact a small Linux-based computer in its own right. Using suitable software it is possible to re-program many of these devices for new functions. Users have apparently added extra flash memory using SD cards, one wire sensors, serial ports and much more.

The good news is that you don't have to be a super computer geek to do this sort of thing. There are at least two different sets of free software available, *dd-wrt* [2] and *openwrt* [3] that are reasonably easy to use. I must confess I found the *dd-wrt* site somewhat more straightforward. I refer you to those sites for details of how to check if your old router is compatible and, if so, what to do next. A word of caution, though – only play with old hardware that you don't rely on!

WHAT ELSE? For the more experimentally-minded there are a whole host of other things that can be done with and to old routers. Simon helpfully provided a list of links [4] through [9] that may make interesting reading.

REFERENCE

[1] Wikipedia entry on the Linksys WRT54 series: http://en.wikipedia.org/wiki/Wrt54
[2] dd-wrt: www.dd-wrt.com/site/index
[3] openwrt: http://openwrt.org
[4] www.powco.net/wrt
[5] http://hackaday.com/2006/09/12/floppy-connector-mmc-card-slot/
[6] www.dd-wrt.com/wiki/index.php/WRT54GL_MAX232_Serial
[7] http://www.aprs4r.org/cgi-bin/trac.cgi/wiki/WikiStart
[8] www.dimebank.com/cak/k6dbg/k6dbg_igate.html
[9] http://owfs.sourceforge.net/WRT54G.html

Sport Radio

Inclusive operating and feedback on a suggested QSO format

PHOTO 1: With the help and encouragement of his dad, M6RPM was contesting as soon as he received his licence.

STARTING 'EM YOUNG. I received an interesting news item recently from Nigel Williams, G0RPM that reminded me how nervous newly-licensed operators can be when going on the air for the first time. What do you say? Will anyone want to talk to you? Well, if your first QSOs are in a contest the answers to those questions are: (1) Contest QSOs are very straightforward, so you don't need to think much about what to say; and (2) Contesters will always want to talk to you if you can give them some points!

As Nigel says; "You may be forgiven for thinking contesting is not for the beginner, but this is definitely not the case. **Photo 1** shows my son Daniel, M6RPM (aged 13), operating my station. Daniel tried his first contest just a few days after getting his Foundation licence. He practised the exchange a few times and, with me doing the logging, took the plunge in the King of Spain Contest. Later he tried RTTY in the Ukraine Digimode contest. Daniel had 25 QSOs with 9 DXCC entities across both contests and said of his experience "I feel much more confident to go on the air now". Keep at it!"

INCLUSIVE CONTESTING. Graham Bubloz, G4FNL, was kind enough to send me some photos of the Worthing ARC operating in SSB Field Day last year. One of them (**Photo 2**) caught my eye because it contained something you don't see every day on a contest station – a hotel reception bell. I questioned Graham about this and he replied; "So, you spotted the hotel reception bell! This is a 'mult bell'. The idea is that whenever the operator worked a new DXCC country (ie a new multiplier to the score), we would press the bell, announcing to those near the shack that we had bagged a new one. This was intended to keep the other members of the club that were on site involved and interested with the activity, even if they weren't actually operating themselves. As you can imagine, with the bell being rung almost every QSO at the beginning of the contest it was quite a noisy affair, but as things progressed the mults started to get rarer. The occasional 'ding!' of the bell would be greeted with a great cheer and round of applause, so it had the desired effect.

"We also had a two-operator seating arrangement. The idea of this, as can be seen in the photo, is that there is continuity of operating. So, for example, when one operator has finished his shift, the second guy can take over, knowing what band conditions and stations have already been worked. This makes things more efficient. Also, and importantly for the Worthing club, we were keen to have an environment where a seasoned operator would be accompanied by a less experienced operator. Both were able to operate if required, as they each had a headset and a footswitch, leaving hands free for computer logging. It was easy to swap operators to allow the newcomer to be 'at the sharp end', with someone alongside to take over if the need arose. It proved to be a successful arrangement, with many newly licensed radio amateurs commenting that they would be back again next [this] year."

I'm very much in favour of encouraging new participants to contesting and partner working is a good way for an experienced contester to show a new contester how it is done. But there is a proviso – the new contester needs to be allowed to operate live, even if only for a short time. Many years ago there was a contest station I know of that repeatedly excluded operators on the grounds that they didn't have sufficient experience and would hold back the effort. That being the case, how were the excluded ops ever going to get experience? I suspect myopic behaviour such as this still happens in places, so if you have been on the receiving end of the cold shoulder you might like to do what the operators I know did all those years ago – they set themselves up, operated independently and did almost as well as the station that had excluded them.

THE (UN)HAPPY MEDIUM. The item 'Less is More' in the July column, in which I gave a suggested format for a QSO in a contest, resulted in a couple of e-mails from readers – one for being too verbose and the other for being too brief.

David, G3YYD, said; "Read your *RadCom* column this month. Well done on telling people how to make a contest QSO exchange. There are so many poor contesters, who could easily be good ones. I often call CQ over the wafflers when they waffle after giving me the exchange details, especially on VHF where waffling is worse.

"However, what's this 'QSL' stuff? If you are S&P there's no need to send 'QSL' or 'TU', 'roger' or whatever. '599001' says it all. If you did not get his exchange you send 'NR?' or the voice/RTTY equivalent. When you have it right you send the exchange. That is all that is needed.

"The Run station needs to send 'TU' ('QSL' or 'CFM' is too long) so the S&P guy can QSY or else Run sends 'NR?' and the S&P sends the exchange again. So the final bit is Run's 'TU callsign', hoping some one else will then call, else it is back to 'CQ'.

"If I have a pile-up in an SSB contest often I just say my call and ignore the 'thank you' bit, as that is sufficient to let the station I just worked know I am happy and the others to call now. I never use 'QSL' or 'CFM' on any mode. 'TU' on CW/RTTY, 'thank you' on SSB is sufficient and effective. I tried using 'R' on CW in place of 'TU', but found it not as effective in contests, but OK for DXing."

I agree completely that it isn't appropriate to send 'QSL' or 'CFM' in CW or datamode QSOs, because the name of the game in them is to send the least number of characters (so 'TU' for Thank U is better), but in my preamble I did say that this was a phone QSO, so I still think 'QSL' or 'thanks' or 'thank you' are fine. Having said that, I occasionally hear run stations end a phone QSO by only giving their callsign. It certainly shaves a second off a QSO, but I just find it a bit abrupt.

Godfrey Manning, G4GLM, had an entirely different take on the subject, saying; "I'm questioning the first column of p81 that states 'Note that I do not give the CQing station's callsign.' Yes, he knows who he is, but can he be sure you're calling him? Sometimes, depending on beam headings and/or propagation effects, three stations are involved and one of them thinks they participated in the contact that was really between the other two. Flinging your details into the ether, not addressed to a particular station, is broadcasting not communicating.

"Yes, I know it meets the artificial requirements of a pressured contest, but it

RSGB HF EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange
Sep 4-5	SSB Field Day	1300-1300	SSB	3.5-28	RS + SN
Sep 9	80m Club Sprint	1900-2030	SSB	3.5	SN + name
Sep 22	80m Club Sprint	1900-2030	CW	3.5	SN + name

RSGB VHF EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange
Sep 4-5	144MHz Trophy	1400-1400	All	144	RS(T) + SN + Locator
Sep 5	5th 144MHz Backpacker	1100-1500	All	144	RS(T) + SN + Locator
Sep 7	144MHz UKAC	1900-2130	All	144	RS(T) + SN + Locator
Sep 12	2nd 70MHz	0900-1200	All	70	RS(T) + SN + Locator
Sep 14	432MHz UKAC	1900-2130	All	432	RS(T) + SN + Locator
Sep 21	UHF UKAC	1900-2130	All	1.3/2.3	RS(T) + SN + Locator
Sep 28	50MHz UKAC	1900-2130	All	50	RS(T) + SN + Locator

BEST OF THE REST EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange/info
Sep 4-5	*All Asian DX*	*0000-2359*	*SSB*	*3.5-28*	*RS + age (YLs send 00)*
Sep 5	WAB 144MHz QRP Phone	1000-1400	SSB/FM	144	RS + SN + WAB square
Sep11-12	WAE DX SSB	0000-2359	SSB	3.5-28	RST + SN (Eu works non-Eu only)
Sep 11-12	BATC International ATV	1800-1200	FSTV	70cm up	see text
Sep 25-26	CQWW RTTY DX	0000-2359	RTTY	3.5-28	RST + Zone (UK=14)

Italics indicate that only provisional information was available.
For all the latest RSGB contest information and results, visit www.rsgbcc.org.

exemplifies the objections of the anti-contest lobby and even raises a question of non-compliance with licence conditions.

"Why do we promote amateur radio and expect to retain our undoubted privileges? In order to maintain a body of capable, self-trained licensees who contribute to the development of radio and if necessary, in emergency, could accurately handle communications under adverse conditions if all else has failed. The artificial constraints of a contest do nothing to demonstrate that capability and, in fact, give the authorities the impression that our procedures are sloppy. Note I didn't say 'amateurish'. If I operated with such poor technique with either my aviation or marine radio licences, I would be regarded as incompetent – but I'm neither a professional pilot nor skipper."

What I would say on this subject is that contest operating is not the same as everyday operating, so it isn't appropriate for the same procedures to be used. In fact I would argue that most serious contesters would make extremely good operators in emergency situations, because they are accustomed to making accurate written/typed notes extremely quickly. People don't need to give me their callsign more than once, and if more than one station engages me in a contest QSO simultaneously I simply make it clear who I am working and ask any others to wait.

THIS MONTH'S EVENTS. The ever-popular SSB Field Day on 4-5 September starts the month's HF contesting. There are Open and Restricted sections, the Restricted having become slightly more popular than the Open over the past decade. In recent times the winning team in the Open section has generally logged well over 1000 QSOs, while the winning Restricted team has generally logged about 1000 QSOs. A spot of advice to participants… have a suitable number ready to give participants in the All Asia DX Contest that runs concurrently. The Asians will be looking for your age, rather than a serial number. After that we have the second month of the 80m Club Sprints. This month its SSB first (on the 9th) and CW second (on the 22nd).

PHOTO 2: John Slater, G8FMJ and Edmund Spicer, 2E0MDO operating the Worthing ARC station in SSB Field Day 2009. Note the hotel reception bell on the table.

On VHF the first weekend of the month is a busy one, with the 144MHz Trophy on 4-5 September and the final 144MHz Backpacker of 2011 on the 5th. To ensure there is some time during which weak-signal QSOs can take place between Backpacker entrants, there's a period of peace and calm in the final hour, after the 144MHz Trophy ends. After that we're into the UKACs, with 2m on the 7th, 70cm on the 14th, 1.3/2.3GHz on the 21st and 6m on the 28th. Tucked in between the first two UKACs, the 2nd 70MHz Contest takes place on Sunday 12th. For most of the years in the first decade of the century this contest typically attracted between 16 and 21 entries, but last year it shot up to 28. A sign of the times perhaps, with more and more people in more and more countries coming onto the band.

Moving on to non-RSGB events, the All Asian DX SSB contest kicks us off on the 4-5th. Exchange a signal report plus your age. If shy about their age, YL ops can send '00'. Overlapping the two RSGB 2m events taking place on Sunday 5th is the WAB 144MHz QRP (10 watts) Phone Contest. Multipliers are WAB squares and DXCC countries. The DARC-organised Worked All Europe DX SSB Contest takes place on 11-12th. Europeans work non-Europeans only. There are Low Power (100W max), High Power (>100W), Multi-op and SWL categories to enter. For European stations, every non-European DXCC entity counts as a multiplier. Additional points can be achieved by QTCs, which is the report of a contest QSO back to a European station. See the online rules for details. The BATC International ATV Contest also takes place on 11-12th. Operation is fast scan, on all bands from 70cm upwards. The exchange is callsign plus the sum of four digits shown onscreen by the other station. Further details and full rules are on the Internet. The final event of September is the first of this year's CQWW DX Contests – the RTTY leg. It takes place for the entire 48 hours of 25-26th. Exchange a signal report and CQ Zone (Britain is 14), and expect to work some rare countries. There are numerous entry categories.

ARDF

Come and try ARDF

RSGB team captain David Williams, M3WDD and Robert Vickers, G3ORI (foreground) pictured at the opening ceremony of the 2008 World Championships in Korea.

OUTDOORS. By no means all amateurs fit the often held public image of a 'radio ham', which is that of a seriously overweight individual jammed into a chair and yelling into a microphone! The SOTA programme is evidence of this and many amateurs are quite happy walking the hills or indulging in some sort of active participative sport. ARDF is attractive to active amateurs who enjoy friendly competitive situations. It is also a motivation to get out in the open air after the weekly grind is over, to participate in another aspect of our radio hobby.

Now that ARDF is featured bi-monthly in *RadCom*, readers might have thought about trying this aspect of sport radio for themselves. If you live in the south of England, there will be an opportunity for you to come to an event on 12 September – borrow some kit and have the help of a mentor to get you started.

Translating an interest into actual participation is always the hardest step and by organising an event at which there will be tuition, support and equipment available, there is every reason to take that crucial first step. Your mentor will be able to accompany you for as long as you want. It may be that having help to find the first transmitter is all you need to get into the swing of things and master the basic techniques. After that you could be off on your own.

The planned event is at Sherrardspark Wood near Welwyn Garden City on Sunday 12 September and it is being organised in conjunction with an orienteering event. The 'come and try ARDF' session starts at 1200 (there will be snacks and drinks available for purchase). The venue is off the B197 which runs alongside the A1(M) between junctions 5 and 6. Parking is at grid reference TL228142. Final details will be posted at www.rsgb.org.uk/radiosport/ardf.

WORLD CHAMPIONSHIP PREVIEW. Last October at the National Hamfest, Andrew, G4KWQ was wandering around looking at the various RSGB Committee stands when he fell into conversation with the enthusiasts manning the ARDF stand. One thing led to another and Andrew revealed that he was a sub three hour marathon runner. Today, ten months later, he is on track to go out to Croatia to represent the RSGB in the 15th ARDF World Championships.

The RSGB team, with eleven competitors, is the largest ever to go to a World Championships. There are a total of eleven age groups, including the newly introduced M70 and W60 categories, with three members for a full team in each category. Hence thirty three competitors are required to make up a full team.

Our best prospects are in the M40 class where Andrew competes. He joins the very experienced RSGB team captain David Williams, M3WDD, and ex-pat Steve Chalk, RS203106 who lives and works in Prague. Steve has the advantage of training in one of the foremost countries as far as ARDF is concerned. The Czech team has had a lot of international success for a country of that size. Frequent competition with members of the Czech team is an excellent way of honing the skills needed for success. A podium place is realistically out of reach for the M40 team since competition from eastern Europe is fierce but they should manage a top ten place and the real marker is just how close they can get to a podium place.

We also have a full team in the M60 class where the experienced Robert Vickers, G3ORI and Bob Titterington, G3ORY are joined by relative newcomer John Marriott, RS205838, the current British 144MHz champion. Robert and Bob are now well up in the M60 age group and, as a result, not as competitive as they once were. John brings an element of youth to the M60 team and could well pull us up the results table. A top ten team place would be a good outcome.

There are two runners in the M50 class: Vlad Boev, 2E0VLB who is coming back from injury and Rod Mansel, G6AWO. Vlad started his ARDF when he was an M21 in Bulgaria but today he has a British passport and represents the RSGB. He is by far the most experienced member of the RSGB team and can be relied on to have a solid competition result. Rod, on the other hand, is a relative newcomer, gaining experience all the time and he now goes out for his first World Championship.

Our only lady competitor is Jillian, M6JIL who goes in the W35 class. This is another important first for the RSGB to take a lady to a World Championship.

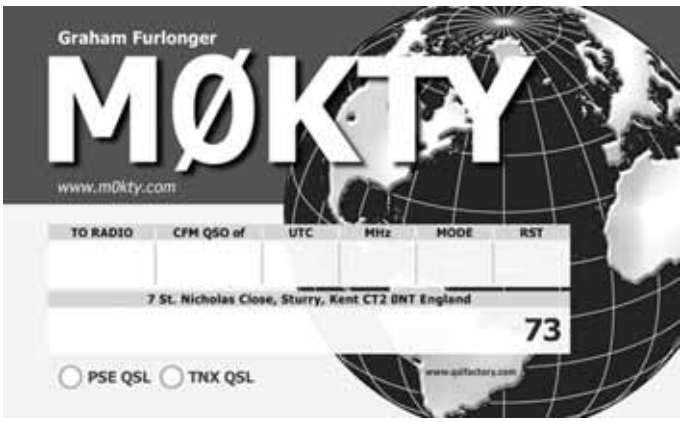
The final team members are David Heale, G6HGE and Evan Duffield, 2E0TJU both of whom compete in the M21 class.

The championships start on Monday 13 September with races on Wednesday 15th and Friday 17th. For the first time both frequency bands will be in use on both days. The older categories hunt closely spaced transmitters on one band while the younger age groups have to find widely spaced transmitters on the other band. On the second day the frequency bands are swapped over. This arrangement makes the task of the planner in setting appropriate courses for each age group much easier. Check out the results on line at www.ardf2010.com on the competition days.

M40 team members: left newcomer Andrew Soltysik, G4KWQ pictured with RSGB team captain David Williams, M3WDD.

Foundation to Full Licence

Following the journey of one radio amateur to his M0 callsign



M0KTY's QSL card.

A FULL LICENCE. To quote some well-known song lyrics 'the road is long, with many a winding turn' and that describes my journey from becoming an M6 in December 2008 to a Full licence holder in May 2010. In April 2009 I wrote to *RadCom* telling how I started in amateur radio and the letter was published in The Last Word.

After passing the Foundation exam, it was obvious that I had the bug. I contacted Steve, M0SSR at Brede Steam Amateur Radio Society (BSARS) and enrolled on the next available Intermediate course. My practical project was a Morse keyer and it taught me a lot about basic electronics – and how to annoy my partner with bleeping noises late at night! Fortunately for her the batteries soon run out and I was concentrating on studying with the Intermediate examination book.

After many nights of studying and asking lots of fellow operators' questions I was relieved to achieve a good pass mark in the April 2009 exams. I'm not quite sure who decided to set the exam date for 1 April 2009, but having a sense of humour became essential when telling fellow amateurs that I'd passed!

The next few months I made good use of the additional power and privileges that the new call sign 2E0GLF had granted and commenced learning the basic Morse code characters, trying my hand at PSK and taking part in a few field days. I tried to contact the ISS satellite but was unsuccessful. I built a Yagi antenna for 2m using one of G0KSC's proven designs and enjoyed many new contacts with this antenna.

The hobby had now become my main pastime interest and I was curious about the Advanced examination and obtaining a Full Licence. I purchased Advance! – The Full Licence Manual and also the Exam Secrets book by Alan Betts, G0HIQ, which was instrumental in helping with the learning process. I can't recommend this book enough for anyone thinking of taking any of the three exams.

In September 2009 I started the Advanced course with Dover Amateur Radio Club and completed the course two weeks prior to the exam date on 21 April 2010. Thank you to Tony Phillpott, G4IMP and the other course instructors who gave their valuable time to instruct the syllabus. Unfortunately the snow gave us some changes to the planned programme but all was resolved and in place prior to the 21st.

I went into the exam apprehensive but confident that I had prepared enough to do my best on the night. The questions were reasonable, nothing that we hadn't been taught and I managed to relax at the end and review my answers before the time expired. Leaving the room I felt glad that it was done and hoped that I had done enough to achieve a pass.

The next few weeks passed very slowly, with practice I learnt to beat our English springer spaniel to the letterbox! Eventually a phone call came from a fellow student saying he had passed and having checked home, my pink piece of paper with two signatures in the pass box was confirmed. I had achieved my promise to Ron, G3KTZ, who gave me the courage from his hospital bed to start the journey. In less than 18 months I was able to telephone Ron and tell him my news.

I now have the call M0KTY in honour of my daughter Katie. I am delighted to hear that she is curious about my radio hobby and wants to take the Foundation course!

I can't begin to express my thanks as deserved to so many fellow amateur operators who have given me much support, assistance and advice over the last 18 months. You all know who you are and I will always be in your debt.

I now want to concentrate on becoming proficient at CW and may take the RSGB Certificate of Competency later this year.

The more I learn about our hobby the more depth of opportunities I discover.

I hope this update helps others take comfort that the present licensing system works and is achievable.

I look forward to a QSO with you on air.

RSGB shop

the latest Amat

ANTENNA BOOKS			
HFAE	HF Antennas for Everyone	£14.99	**£12.74**
ADNB	ARRL Antenna Designer's Notebook	£27.99	**£23.79**
AFVA	Antennas for VHF and above	£12.99	**£11.04**
UBAN	ARRL Basic Antennas	£24.99	**£21.24**
BSHA	Building Successful HF Antennas	£14.99	**£12.74**
AB2I	ARRL Antenna Book	£30.99	**£26.34**
MVAC	More Vertical Antenna Classics	£13.99	**£11.89**
PWA2	Practical Wire Antennas 2	£11.99	**£10.19**
INAC	International Antenna Collection	£12.99	**£11.04**
INA2	International Antenna Collection 2	£12.99	**£11.04**
ANTO	Antenna Topics	£18.99	**£16.14**
BKYA	Backyard Antennas	£18.99	**£16.14**
NACO	HF Antenna Collection	£19.99	**£16.99**
HFAL	HF Antennas for all Locations	£19.99	**£16.99**
TAEG	The Antenna Experimenters Guide	£17.99	**£15.29**
SAFA	ARRL Simple & Fun Antennas for Hams	£16.99	**£14.44**
YAAC	ARRL Yagi Antenna Classics	£13.99	**£11.89**
ACV1	ARRL Antenna Compendium VOL 1	£10.99	**£9.34**
ACV2	ARRL Antenna Compendium VOL 2	£12.99	**£11.04**
ACV3	ARRL Antenna Compendium VOL 3	£12.99	**£11.04**
ACV4	ARRL Antenna Compendium VOL 4	£14.99	**£12.74**
ACV5	ARRL Antenna Compendium VOL 5	£14.99	**£12.74**
ACV6	ARRL Antenna Compendium VOL 6	£15.99	**£13.59**
ACV7	ARRL Antenna Compendium VOL 7	£16.99	**£14.44**
WACS	ARRL Wire Antenna Classics	£12.99	**£11.04**
MWAC	ARRL More Wire Antenna Classics VOL 2	£12.99	**£11.04**
VACS	ARRL Vertical Antenna Classics	£12.99	**£11.04**
VUCS	ARRL VHF/UHF Antenna Classics	£12.99	**£11.04**
BEGINNERS			
AREX	Amateur Radio Explained	£5.79	**£4.92**
HRFD	Ham Radio for Dummies	£14.99	**£12.74**
PAFN	Practical Antennas for Novices	£7.99	**£6.79**
CALLBOOKS			
CB11	RSGB Yearbook 2011 Edition	£18.99	**£16.14**
CS11	Callseeker Plus 2011 (CD)	£15.99	**£13.59**
WC10	World Call CD – Winter 2010	£44.99	**£38.24**
EMC & RFI			
RFI2	ARRL RFI Book	£19.99	**£16.99**
RAGE	The RSGB Guide to EMC	£19.99	**£16.99**
FRIN	Single Ferrite Ring	£2.25	**£1.91**
FIL3	Filter 3	£10.00	**£8.50**
FIL2	Filter 2	£10.00	**£8.50**
FIL7	Filter 7	£10.00	**£8.50**
FIL8	Filter 8	£29.99	**£25.29**
FL15	Filter 15	£10.00	**£8.50**
OPERATING & DX			
HBCB	Homebrew Cookbook	£12.99	**£11.04**
ROAR	ARRL Remote Operating for Amateur Radio	£19.99	**£16.99**
SSAR	Storm Spotting for Radio Amateurs	£19.99	**£16.99**
WLOD	World Licensing and Operating Directory	£12.99	**£11.04**
PRE8	RSGB Prefix Guide 8th Edition	£8.99	**£7.64**
SDXH	Shortwave DX Handbook	£18.99	**£16.14**
DXCH	ARRL DXCC Handbook	£14.99	**£12.74**
RADO	Radio Orienteering – ARDF Handbook	£9.99	**£8.49**
MOVE	ARRL's Amateur Radio on the Move	£14.99	**£12.74**
LDX4	ARRL Low Band DXing 4th Edition	£30.99	**£26.34**
DOTE	ARRL DXing on the Edge	£18.99	**£16.14**
WHOS	Who's who in Amateur Radio	£14.99	**£12.74**
IOTA			
ID09	IOTA Directory	£9.99	**£8.49**

TECHNICAL BOOKS			
UNB2	ARRL Understanding Basic Electronics	£26.99	**£22.94**
RH10	The Radio Comms Handbook	£29.99	**£25.49**
RG09	The Rig Guide (including p&p)		**£4.99**
PPEG	125 Physics Projects for the Evil Genius	£14.99	**£12.74**
HORE	ARRL Hands-On Radio Experiments	£14.99	**£12.74**
WEEK	Weekend Projects	£13.99	**£11.89**
RADN	Radio Nature	£13.99	**£11.89**
HFA2	HF Amateur Radio	£12.99	**£11.04**
RFDB	RF Design Basics	£17.99	**£15.29**
LPAR	ARRL Low Profile Amateur Radio	£14.99	**£12.74**
PSHB	Power Supply Handbook	£15.99	**£13.59**
PICB	Pic Basics	£16.99	**£14.44**
CIRO	Circuit Overload	£14.99	**£12.74**
RREG	22 Radio & Receiver Projects for the Evil Genius	£14.99	**£12.74**
EGEG	Electronic Gadgets for the Evil Genius	£14.99	**£12.74**
MEGE	More Electronic Gadgets for the Evil Genius	£14.99	**£12.74**
ARES	Amateur Radio Essentials	£15.99	**£13.59**
EPRC	ARRL Emergency Power for Radio Comms	£14.99	**£12.74**
HART	25 years of Hart Reviews	£14.99	**£12.74**
RFAC	ARRL's RF Amplifier Classics	£14.99	**£12.74**
DMFO	Digital Modes for all Occasions	£16.99	**£14.44**
TEC1	RSGB Technical Compendium	£17.99	**£15.29**
TT50	Technical Topics Scrapbook - All 50 years	£14.99	**£12.74**
TTSB3	Technical Topics Scrapbook 1995-99	£14.99	**£12.74**
TTSB2	Technical Topics Scrapbook 1990-94	£13.99	**£11.89**
TTSB	Technical Topics Scrapbook 1985-89	£9.99	**£8.49**
EMRD	ARRL Experimental Methods in RF Design	£34.99	**£29.74**
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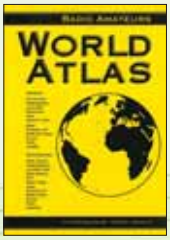

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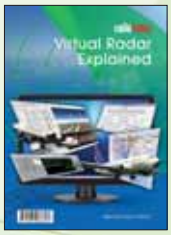

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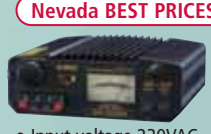

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HF F-Layer Propagation Predictions for September 2010

Compiled by Gwyn Williams, G4FKH

	3.5MHz	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe								
Moscow	83.....2778	57.....38878	..633357883.	..37777783..	...678877...	.....	.....	.....
*** Asia								
Yakutsk	.....	3653	..3...45776.	...6563.....	....5.....	.....	.....	.....
Tokyo	.....23..	.....577..	.....	.....	.....	.....	.....	.....
Singapore	.....121.	.....6885 2	.....463..	.....33...	.....3....	.....	.....	.....
Hyderabad	.....	3543	.....453.	.....4....	.....	.....	.....	.....
Tel Aviv	99.....7899	887....59999	..6....6883.	...644678...	.....3445...	.....	.....	.....
*** Oceania								
Wellington	.....	.....3...	.....	.....	.....	.....	.....	.....
Well (ZL) (LP)	.....	.68.....	679.....865	5.8.....875	.....	.....	.....	.....
Perth	.....	.....2665.	.....564..	.....	.....	.....	.....	.....
Sydney	.....	.....566..	.....3655..	.....33....	.....	.....	.....	.....
Melbourne (LP)	.....	.389.....	57896.....	5..96.....45	...7.....6.	.....	.....	.....
Honolulu	.....	..32.....	..353.....	.....	.....	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.....7...	.....	.....	.....	.....
W. Samoa	.....	.....	...5542.....	....554.....	....454.....	.....	.....	.....
*** Africa								
Mauritius	2.....222	6.....7877	3.....68874	.....787..	.....66...	.....44...	.....	.....
Johanesburg	.....	.3.....2652	.7.....9997	.....7997.	.....375..	.....6...	.....4...	.....
Ibadan	12.....	672.....466	777.....3666	..73....67..	...6544677..	...7666776..	....44457...	.....5...
Nairobi	.....	32.....1223	54.....4455	.....2662.	.....566..	...4..466...	.....	.....
Canary Isles	776.....767	8872....4888	8686...47888	..3565468 77.	....789999..	.....98898..	.....4456...	.....4...
*** S. America								
Buenos Aires	.....	322.....2	535.....65	.....53.	.....	.....	.....	.....
Rio de Janeiro	.....	323.....43	636.....886	.....85.	.....	.....	.....	.....
Lima	.....	21.....1	52.5.....65	.....3.	.....	.....	.....	.....
Caracas	.....	333.....3	7457.....77	....6....67.	.....3..	.....	.....	.....
*** N. America								
Guatemala	.....	2.....	3..6.....5	.....	.....	.....	.....	.....
New Orleans	23.....	766.....5	3.....6	.....	.....	.....	.....	.....
Washington	453.....2	7773.....7	5.....57	.....355.	.....445..	.....	.....	.....
Quebec	673.....5	747.....66	...3....56.	.....456..	.....	.....	.....	.....
Anchorage	.....	.3.....	..6.....5.	.....46..	.....5..	.....	.....	.....
Vancouver	.....	.3.....	.....	.....	.....	.....	.....	.....
San Francisco	.....	.....	.....	.....	.....	.....	.....	.....
San Fran (LP)	.....	.....	.....	.....	.....5....	.....5....	.....	.....

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 30% of days, etc. No signal is expected when a '.' is shown. **Black** is shown when the signal strength is expected to be low to very low, **blue** when it is expected to be fair and **red** when it is expected to be strong. The RSGB Propagation Studies Committee provides propagation predictions on the internet at www.rsgb.org.uk/propagation/index.php. An input power of 100W and a dipole aerial has been used in the preparation of these predictions; therefore a better equipped station should expect better results. The predicted smoothed sunspot numbers for September, October and November are respectively (SIDC classical method – Waldmeier's standard) 22, 24 & 26 and (combined method) 42, 47 & 52. The provisional mean sunspot number for July was 16.1. The daily maximum / minimum numbers were 30 on 24 July and 8 on 1-3, 7 & 8 July.

Getting listed here and on GB2RS is easy. E-mail details of your meetings as early as possible to GB2RS@RSGB.org.uk and we'll do the rest. We need to know your club name, RSGB Region number, contact name & phone number, date of meeting and detail of meeting. Example: South Bristol ARS, Region 11, Len, G4RZY, 01275 834 282, 29 October, On the Air. It's that simple. The deadline for the October *RadCom* is 1 September and for the November edition it's 1 October. For GB2RS, the deadline is 10am on the Tuesday for the week of broadcast.

1 SCOTLAND SOUTH & WESTERN ISLES

REGIONAL REP: LEN PAGET, GM0ONX, GM0ONX@RSGB.ORG.UK

BORDERS ARS
Ray, GM0CDV, 01573 228730
10 Final preparations for the special event station GB2BCL

COCKENZIE & PORT SETON ARC
Bob, GM4UYZ, 01875 811 723
3 Normal Club Night
24 2nd 144MHz DF Hunt. Meet in The Old Ship Inn Car Park (East)

KILMARNOCK & LOUDOUN ARC
Graham, MM3GDC, mm3gdc@btinternet.com
14, 28 Club Night

LOTHIANS RS
Andy Sinclair, lrs_secretary@moosedata.com
8 President's address by Dr John Cooke, GM8OTI
22 Visit to the Museum of Communication, Burntisland

WEST OF SCOTLAND (GLASGOW) ARS
Fred Coombes, 2M0BIN, 01415715512, www.wosars.org.uk
1, 8, 15, 22, 29 Construction projects & licence training
3, 10, 27, 24 Presentations, guest speakers, raffle & quiz

2 SCOTLAND NORTH & NORTHERN ISLES

REGIONAL REP: DENNY MORRISON, GM1BAN, GM1BAN@RSGB.ORG.UK

ABERDEEN ARS
Lewis, GM4AJR, 01224 575 663, www.radioclubs.net/aars/
2 Junk sale
9 OTA and beginners' CW lessons
16 Discussion night
23 Talk
30 Introduction to the club antenna analyser project

3 NORTH WEST

REGIONAL REP: KATH WILSON, M1CNY, M1CNY@RSGB.ORG.UK

BOLTON WIRELESS CLUB
boltonwireless@gmail.com
13 DXpeditions on HF by G1SWH & M0LTT
27 Show and tell evening

CHESTER & DARS
Barbara Green, 07957 870770, www.chesterdars.org.uk
7 Bring and tell evening
21 Surplus equipment sale
28 OTA

MORECAMBE BAY ARS
Martin Hazel, M0ZIF, 01524 581381, martin@mbars.internationalham.com
7, 21 Social Evening
14 TBA
28 Film night

SOUTH MANCHESTER R&CC
Ron, G3SVW, 0161 969 3999
2 WSPR by Ron, G3SVW
9 Open subject forum
16 Canadian Adventures by Chris, G3UAU
23 Analysing antenna analysers by Dave, G4UGM
27 Monthly Technical Forum
30 Talk on railways

WORKINGTON & DAR&IT GROUP
Barry Easdon, G0RZI, 01946 812092
13 Yagi antennas by Norman, G7MRL
27 Club meeting and OTA

4 NORTH EAST

REGIONAL REP: HAROLD SCRIVENS, G0UGE, G0UGE@RSGB.ORG.UK

ANGEL OF THE NORTH ARC
Nancy Bone, G7UUR, 0191 477 0036, nancybone2001@yahoo.co.uk
6 OTA. Prep for Churches and Chapels on the Air
11 Churches and Chapels on the Air
10 Heritage Open Days Whitehall Road Methodist Church
13 Prep for joint rally with STARS club
18 Fog on the Tyne Rally
20 Rally debrief, discussion of future projects
27 OTA, natter night

EAST CLEVELAND ARC
Alistair, G4OLK, 01642 475 671, alistair.mackay@talk21.com
3, 17 OTA
10 Technical forum
24 Radio magazines evening

HALIFAX & DARS
Anthony Vinters, 01422 822636, tony@g0wfg.demon.co.uk
1 AGM

HORNSEA ARC
Gordon MacNaught, G3WOV, 01377 240573, gmacnaughtwov@yahoo.co.uk
1 Audio sig gen project, Bob, M0GAP
3 Prep for SSB FD
4 SSB FD
8 SSB FD washup
9 80m Club Sprint - SSB
15 Foxhunt, 1st call at 7:15pm
22 80m Club Sprint - CW
29 Club of the Year Award, Baz, G2PDA

OTLEY ARS
Paul, 2E0PAK, 07768 996370, m6wat@pekae.co.uk
7 144MHz UKAC & Foundation exam
12 2nd 70MHz Contest (TBC)
14 432MHz UKAC
21 Presentation on GB3WF (TBC)
28 50MHz UKAC

SHEFFIELD ARC
Trevor Wood, M0TWS, trevorwood6@yahoo.co.uk
4 SSB Field Day (G2AS/P) at Sports Club fields
6 Social evening & Foundation 'taster' course 1
13 Early pioneers in amateur radio, G3PHO; 2nd Foundation 'taster'
20 History of Sheffield ARC, G3PHO
27 Video evening: wartime amateur radio

5 WEST MIDLANDS

REGIONAL REP: TREVOR BAILEY, M0KMB, M0KMB@RSGB.ORG.UK

CHELTENHAM ARA
Derek Thom, G3NKS, 01242 241099, G3NKS@blueyonder.co.uk
16 Three short talks by members

COVENTRY ARS
John, G8SEQ, 07958 777363
3 Military radio, Ivan Thomas, M0IRT
10 4th Round G2FDC Trophy
17 Video night
24 Radio workshop, VHF/UHF Operating 6m, 4m, satellites

GLOUCESTER AR&ES
Anne, 2E1GKY, 01452 548478, daytime, www.g4aym.org.uk
6 AGM
13 DF hunt
20 HF operating
27 Informal meeting

MIDLAND ARS
Norman, G8BHE, 01214 229 787
1 OTA, ragchew & training classes
5 Visiting Telford Hamfest
8 Committee meeting, training classes & summer social
15 Laptop computer evening, Foundation & Morse classes
22 Open meeting, ragchew & training classes
29 Table top sale, Foundation & Morse classes

MID-WARWICKSHIRE ARS
Don, G4CYG, 019 2642 4465
14 Homebrew and amateur construction
28 APRS, Dave, G8UIO

SOUTH BIRMINGHAM RS
Don, 0121 458 1603, www.radioclubs.net/southbirmingham
1 Lecture in main hall
3, 10, 17, 24 Construction evening and ragchew
5 Club stand at the Telford Hamfest
6 Unpacking trailer & rally debrief
13 OTA and contest meeting
20 Committee meeting
27 Aerial working party and ragchew

STRATFORD UPON AVON DRS
G0CHO, 01608 664488, cousbey@theiet.org
13 Opening meeting and silent key sale
27 Contest University DVD, HF Propagation and Contest DXpeditioning sections

TELFORD & DARS
Mike, G3JKX, 01952 299 677, mjstreetg3jkx@blueyonder.co.uk
1 Final prep for Hamfest
4 Telford Hamfest setup from 5pm
5 Telford Hamfest
8 Next members' project. What is your idea?
15 Video night
21 Microwave FM demo, G8VZT
29 Picoscope demo, M1RKH

WYTHALL RADIO CLUB
Christopher Pettitt, G0EYO, g0eyo@blueyonder.co.uk
4, 6, 13, 20 Advanced course
7 2m UKAC contest
14 Committee meeting
18 Weekend event, Hanbury Steam Rally

6 NORTH WALES

REGIONAL REP: MARK HARPER, MW1MDH, MW1MDH@RSGB.ORG.UK

DRAGON ARC
Stewart Rolfe, GW0ETF, 07833 620733
6 Discussion night
20 Fuel cells by Stan Hulme, GW3SRM

MEIRION ARS
John, MW0VTK, 07772 720099 tawelfan@talk21.com
2 Visit by RSGB President Dave Wilson, M0OBW
25 Weekend event GB0WHR for Railways OTA

7 SOUTH WALES

REGIONAL REP: JIMMY SNEDDON, MW0EQL, MW0EQL@RSGB.ORG.UK

LLANELLI ARS
Craig, MW0MXT, 01269 840292, craig@mw0mxt.co.uk
6 OTA
13 Raffle
20 DVD night
27 Junk sale and raffle

NEWPORT ARS
Ross Clare, GW3NWS, 01633 880146
3 Welcome back; start of Foundation & Advanced courses
17 Using the club station with Logger 32
24 OTA as GB4RC for Ryder cup

8 NORTHERN IRELAND

REGIONAL REP: PETER LOWRIE, MI5JYK, MI5JYK@RSGB.ORG.UK

No entries received this month. Please send all information to GB2RS@RSGB.org.uk.

9 LONDON & THAMES VALLEY

REGIONAL REP: ALISON JOHNSTON, G8ROG, G8ROG@RSGB.ORG.UK

AYLESBURY VALE RS
Roger, G3MEH, 01442 826 651
8 Discussion evening

BROMLEY & DARS
Andy, G4WGZ, 01689 878089
21 Radio astronomy

BURNHAM BEECHES RC
Dave, G4XDU, 01628 625 720
6 Foxhunt
20 CW, G3XTT

CRYSTAL PALACE R&EC
Bob, G3OOU, 01737 552 170
3 Three mini talks by Don, G3XTT

DORKING & DRS
Garth, G3NPC, 01737 359472, www.ddrs.org.uk
28 Using antenna analysers by Peter Dodd, G3LDO

ECHELFORD ARS
John, G4GSC, 01784 451898
9 Solar powered shacks, Paul, G4AWZ
23 Natter night, bring & buy, CW practice

EDGWARE & DRS
Mike, G4RNW, 020 8950 0658, michael.stewart5@ntlworld.com
9 John, G3SJE on his journey through the ICE age
21 Operating 40m for Edgware Activity Period (EAP)
22 Operating 10m for EAP
23 "I have a good idea" by Steve, G0PQB
24 Operating 80m for EAP
28 Operating 15m for EAP
29 Operating 160m for EAP

NEWBURY & DARS
Richard, G3ZGC, 01635 46241, richard.jolliffe@vodafone.com
4 SSB field day
22 History of Bletchley Park by Ray, G4FON

RADIO SOCIETY OF HARROW
Linda, G7RJL, 0208 386 8586, www.g3efx.org.uk
9 Bentley Priory, GB1RBP (4 day event)
15 Proposed Foundation course
24 G/ F6KRK twined club visit

READING & DARC
Pete, G8FRC, 01189 695 697
9 Flying at its hair-raising best, Colin, M0XSM
23 WSPR Dave, G4BOO & Dick, M0POQ

SHEFFORD & DARS
David, G8UOD, 01234 742 757, www.sadars.co.uk
9 Welcome back
16 Continuous ink jet printing, Ian, G3ORG
23 Baldock Radio Station by Dez Watson
30 WW2 Wireless intelligence & secret stations in Herts, Stan, G4OAV

SOUTHGATE ARC
David Sharp, M0XDS, david.sharp1@tesco.net
8 The Great Erg Race

SURREY RADIO CONTACT CLUB
Ray, G4FFY, 01732357474
6 Club talk
20 Fix-it and natter night

SUTTON & CHEAM RS
John, G0BWV, 020 8644 9945, info@scrs.org.uk
16 Radio fox hunts, Terry, G4CDY

VERULAM ARC
Ralph, 01923 265572, g1bsz@aol.com
2 Social at Queens Head, Sandridge
4 Weekend event SSB HF Field Day
5 National Trust Dunstable Downs demo station
6 Committee meeting
21 Club night & prep for club's 50th anniversary
25 Weekend event CQ WWW RTTY contest

WEY VALLEY ARG
www.weyvalleyarg.org.uk
3 Beacons and how to benefit from them, Andy, G4JNT
17 Club night

WIMBLEDON & DARS
Jim, M0CON, 020 8874 7456, www.gx3wim.org.uk
10 Summer Camp Debrief
24 Talk on Radio Susy by John Stockley, G8MNY

10 SOUTH & SOUTH EAST

REGIONAL REP: GAVIN KEEGAN, G6DGK, G6DGK@RSGB.ORG.UK

ANDOVER RAC
Martin, M0MWS, 07776181646, www.arac.co.uk
7 Club night
21 Video evening

BASINGSTOKE ARC
Clive, G4ODM, 01256 326050
4 Weekend event SSB Field day
20 Short wave listening

FARNBOROUGH & DRS
Derek, G3OFA, mail@farnboroughradio.org.uk
8 Club night
22 Visit to Martin Lynch & Sons

HARWELL ARS
Malcolm, G8NRP, 01235 524844, info@g3pia.org.uk
14 Natter night
28 Shack activity night

HASTINGS E&RC
Gordon, 01424 431 909, www.herc.uk.net
22 Baird TV demo, John, M1BAI

HORNDEAN & DARC
Stuart, G0FYX, 023 9247 2846, www.hdarc.co.uk
7 Natter night/social evening
28 RAYNET by Steve, G4SAC & Mark, 2E0EFA

HORSHAM ARC
www.harc.org.uk
2 The G3NPF Lecture
16 Social, The Greets Inn, Warnham

ITCHEN VALLEY ARC
Charlie, M0WYM, 02380 439560, secretary@ivarc.org.uk
10, 24 Club night

MID-SUSSEX ARS
Peter, G4AKG, 01444 239371
3 Talk on Belle Toute Lighthouse
10 Radio night
17 The Land Army by Iris Hobby
24 Radio night & table top sale

SOUTHDOWN ARS
John, G3DQY, 01424 424 319
6 Talk & DVD at Chaseley on 70 years of TV at Ally Pally
8 Operating at Hailsham shack

TROWBRIDGE & DARC
Ian, G0GRI, 01225 864 698, E/W
1 TBC
15 Natter night

WATERLOOVILLE ARC
Rich, G4IBW, 02392680852, g4ibw1@ntlworld.com
24 Talk on Police helicopter service

WORTHING & DARC
Roy, G4GPX, 01903 753 893
1 Plans for SSB Field Day
4 SSB Field Day
8 SSB FD debrief
15 DVD evening
22 80m CW Sprint contest
29 GX3WOR OTA

11 SOUTH WEST & CHANNEL ISLANDS

REGIONAL REP: PAM HELLIWELL, G7SME, G7SME@RSGB.ORG.UK

APPLEDORE & DARC
Brian Jewell, M0BRB, 01237 473251
20 Secret Codes - an enigma? G4HXK

BRISTOL RSGB GROUP
Robin, G3TKF, 01225 420442
27 Millimetre waves, not only for communications, Ian, G4FSU

CALLINGTON ARS
Chris Harris, G7UDX, 07973 418 371, g7udx@me.com
1 Oscilloscopes, Mike, M0XGG

NORTH BRISTOL ARC
Dick 01454 218362, www.nbarc.org.uk
3 2m fox hunt
10 Underground Affairs, Paul, G8YMM
17 Operating evening, HF
24 Skittles match

SOUTH BRISTOL ARC
Len, G4RZY, 01275 834 282
2 Broadband internet operation, David, G7PKJ
9 Military wireless, Luke, M3VHV
16 Members' photographs, Len, G4RZY
23 Stories from Lundy by the Lundy Group
30 OTA

TAUNTON & DARC
William, G3WNI, 01823 666 234, g3wni@btinternet.com
1 Preparing for NFD
4, 5 SSB NFD
8 NFD debrief
15, 22, 29 Operating club station

THORNBURY & SOUTH GLOUCESTERSHIRE ARC
Tony, G0WMB, 01454 417048, tonytsgarc@btinternet.com
1 Juke box restoration, Mike, M1DPB
8, 22, 29 OTA
15 Video night

TORBAY ARS
Dave, G6FSP, g6fsp@tars.org.uk
12 TARS Communications Fair

WEST DEVON RC
Jules Cuddy, M1AGY, 01752 291588
7 Review night. Discussing winter events & project
21 Second hand radio purchasing, Zoli, M0ZOL & Jules, M1AGY

YEOVIL ARC
Steve Crask, G7AHP, steve@g7ahp.co.uk
2 Comms, Barry, M3ZUR
9 Heathkit, M1SAN
16 Power Supplies, G7LNJ
23 Crystal set practical evening
30 Committee meeting & OTA

12 EAST & EAST ANGLIA

REGIONAL REP: PHILLIP BROOKS, G4NZQ, G4NZQ@RSGB.ORG.UK

BITTERN DX GROUP
Linda, G0AJJ, 01692 404154, secretary@bittern-dxers.org.uk
4 Weekend event SSB field day
9 Informal meeting
24 Weekend event GB2NNR, North Norfolk Railway for Railways on the Air
26 Planning for October meetings

CHELMSFORD ARS
Martyn, G1EFL, 01245 469 008, www.g0mwt.org.uk
2 Foundation course starts
7 WWII Arnhem Op. radio failure, Peter, G8BLS
26 Science & Discovery Day, Sandford Mill

COLCHESTER RADIO AMATEURS
Kevan, 2E0WMG, 07766543784, kevan2e0wmg@live.co.uk
16 Island Activations, Kevan, 2E0WMG

DARENTH VALLEY RADIO SOCIETY
Ray, G0FDU@G0KDV.com
8, 22 OTA & natter night
12 Visit to Bletchley Park

GORLESTON ARS
David, G3OEP, QTHR, 01493 662 323
25 Lunch time meeting at the Short Blue Hotel, Gorleston

HARWICH ARIG
Kevan, 2E0WMG, 07766 543784 kevan2e0wmg@live.co.uk
8 Talk by Paul Howe of Trinity House

LEISTON ARC
Dave, G4HUP, 0777 764 8448, g4hup@btinternet.com
7 Intro to PIC programming by Dave, G4HUP

LOUGHTON & EPPING FOREST ARS
Marc Litchman, G0TOC, 020 8502 1645
5 GB2EFF (Epping Forest Festival), Chingford Plain
10 Visit by Mark Francis, G0GBY, of Waters & Stanton
18 Weekend event Foundation licence course & exam
24 And now the Shipping Forecast, Marc, G0TOC
25 Autumn get-together weekend, Aylmers Farm

LOWESTOFT & DISTRICT ARC
Phil, G0JSG, 01502 585448, pholden433@btinternet.com
2, 9, 16, 23, 30 Club night at shack

NORFOLK ARC
Chris Danby, G0DWV, 01603 898678, cmdanby@btinternet.com
1 ATUs, Peter Chadwick
5 Gala day / SSB FD
8 Informal, construction & workshop evening
15 HF Air Traffic Control, John, G3XLL
22 Informal, construction, workshop & Bright Sparks
29 Members forum

SOUTH ESSEX ARS
Norman, M0FZW, 01268 692776, secretary@southessex-ars.co.uk
8 Marine & Offshore Radio, Dave, G4UVJ

Continued on page 86

FREE MEMBERS' ADS

Charges are waived for Members' Ads submitted by e-mail to memads@rsgb.org.uk. One ad per member per month; other important terms & conditions apply (see grey box on page 89).

FOR SALE

2X15" OFFSET DISHES fitted with 10GHz ATV Tx and Rx, £30. 500Hz CW filters for Kenwood TS-940 xcvr, £50. 2x4CX250 valves+bases and chimneys, £30. Racal Modulation Meter type 9009, AM & FM, £40. Wanted: 1.6MHz and 455kHz valve IF transformers. John, G3WFM, 01707 651532, g3wfm@yahoo.co.uk (Potters Bar).

50FT WINCH UP, TILT-OVER MAST for VHF. Basic Tennamast has 15ft pole above top bearing for antennas. Heavy duty rotator and 6 guys included. Buyer to dismantle and arrange transport, £100. Please e-mail for full details and photos. Jeremy, G3IMW, 01392 833647, jwcornloft@tiscali.co.uk (Exeter).

ACOMM 1000 AMPLIFIER, £1100. Icom power supply PS 60, £40. Ten-Tec Omni V1 PLUS, all filters fitted, £525. Nevada 1000 ATU £90. Paul, G8IYG, 01785 259898, paulgobey@tiscali.co.uk (Stafford).

ADVANCE INSTRUMENTS oscilloscope OS3000. Dual trace, manuals & leads, £50. Advance wide range LF oscillator SG67A, 1Hz-1MHz sine/square wave, 1mV-1V, £20. Collect or carriage extra. Mike Birch, G3KMO, 01603 754302, mickg3kmo@btinternet.com (Norwich).

AMATEUR RADIO WORLD PREFIX MAPS. Brand New World Prefix Maps 39" x 27", I will post rolled up in a postal tube so it will arrive uncreased and in pristine condition. £6.50 + £3.50 recorded delivery postage, which includes insurance. M Whitehead, GM0PHW, 01501 822016, GM0PHW@hamcall.co.uk (Strathclyde).

ATU MFJ 949e as new, boxed, manuals, no scratches, non smoker, hardly used, cost £180, sell at £140 plus delivery. Try before you buy. M0CVS, 01629 823025 (Matlock, Derbyshire).

bhi DESK TOP NOISE AWAY amplified DSP noise cancelling speaker, new condx. Reason for sale: no longer needed as purchased new radio. £100 ovno. Alan, G4PPW, 01933 388443 (QTHR, Northants).

COLLINS CP1 xtal packet. Boxed, £100. Collins SM3 boxed, MM1, £100. Collins KWM2A PM2A £400. Collins 75s 3B 32S 3.516F £500. Eddystone 958 £500. Eddystone 770R mk 2 £100. Eddystone EB35, £100. Eddystone 40A £200 mint. S Rees, GW0NLB, 01269 871 382 (Llanelli).

COMPUTERS – Atari ST520, monitor. Sord, CGLM5, Sinclair ZX81, faulty membrane. Around 1000 valves. Eddystone 670 Rx. WWII IR scanner. 24V Aldis lamp dry charged battery. Offers? Buyer collects. Mr Jackson, GM3DDL, 0141 884 2314 (Paisley).

EDDYSTONE 730 very rare Mk 6, £150. Racal RA218 ISB converter with manual, £180. Racal RA17L, £60. Eddystone 770U Mk2, £55. Sailor RT144C Marine TX/RX with manual, £175. Sailor76D HF TX with manual, £40. C Young, 01637 875848, rcry100@yahoo.com (Newquay).

EX-CDXC FORCE 12 EF-230 2 ele linear loaded Yagi, 30m, £200. Cushcraft A3S with balun 10/15/20m, £295. Cushcraft A3S+A743 add on kit + balun 10/15/20/40m, £395. There are also a number of Yagis for sale - see www.cdxc.org.uk. Neville, G3NUG, 01568 750560, g3nug@btinternet.com (collect from Portsmouth).

JRC135 + matching PSU NBD520 + NVA 88 speaker. Nice station line up, in good working order, cosmetically good, non-smoking home, £400. Also JRC 525G +NVA88 speaker, VGC, £300. Buyer collects. G0CMF, 01841 532620 (Padstow, Cornwall).

MARCONI HR24 diversity SSB receiver, FREE to good home. Excellent condition, ex Somerton Radio Station, large and heavy, collection only. Derek, M0WOB, 01935 414452 after 6.30 pm (Yeovil).

MFJ 993 AUTO ATU 300W 1.8-30MHz, inc instructions & box. Hardly used, £130. MFJ974H balanced line tuner, 300W, 1.8-54MHz. Light surface scratches top and sides. Works a treat. £110, postage £9. Rex, M0REX, 01962 863784 (Winchester).

R107 RECEIVER inc handbook, FREE (small contribution to Marie Curie Foundation would be appreciated). Ken Hircock, G4KFE, 01427 752851 kenneth.hircock@btinternet.com (Doncaster).

SHACK CLEARANCE: LDG FT-Meter £30. Spectrum receive preamps for 2m, 6m - £25 each. Radio Shack PRO-63 scanner, £25. Watson W30 2m/70cm vertical, £25. Diamond NR-22L 2m mobile whip, 2x5/8 stacked, £25. Lucas 20/50 CB converted to 29MHz FM, £15. Tony, G3XKT, 01159 170082 (Nottingham).

SILENT KEY GARAGE SALE DE G3IOZ. Sunday 26 September at his former home, 31 Shelley Road, High Wycombe, Bucks HP11 2UW. The sale will comprise the results of over 50 years of amateur radio and includes an extensive valve collection as well as WW2 and vintage equipment and parts spanning the decades. There is limited parking available in nearby streets and the location is close to the M40 so it's easily accessible. More details can be obtained by e-mailing g4gzg@yahoo.com.

SILENT KEY SALE of equipment and accessories from the late M0HOD. Details at www.g0jlx.co.uk. Contact Andy, G0JLX, on 07768 282880 (Winchester).

STRUMECH VERSATOWER 60ft, 3 section tilt over mast with base mounting post, head unit and two self braking winches, £400 ono. Buyer to dismantle and remove. Also 25ft tilt over mast, offers? Masts at Lyme Regis. G3FFH, 01452 810763, jon.g3ffh@btinternet.com (Painswick).

TRIO/KENWOOD TS711E VHF multimode transceiver, VGC, manual etc. £285. Yaesu FC-10 automatic antenna tuner, boxed, manual etc, VGC, £95. Both plus carriage cost. Ray, G4OWY, 0777 649 5381, g4owy6@gmail.com (Weymouth).

UNIDEN BEARCAT UBC800XLT scanner £200 complete, boxed, mint. G3XXO, 01909 472316, eric.birks@virgin.net (Worksop).

YAESU FT 840 ex condition, FM board fitted, original fist mic and handbook. Surplus to requirements downsizing shack. £285 ovno, + carriage. Dave Brunton, G1XWX, 01502 578105 (Beccles, Suffolk).

YAESU FRG7700 receiver in nice condition fully working. Original handbook but no box. Buyer collect - £80. Bert, G3HNC, 01977 511824, bert@wf103hn.wanadoo.co.uk (Castleford).

YAESU FT2000 PEP HF/6m base. Mint condition, with MH-31B8 mic, box and manuals. £1250, no offers or time wasters please. Bill, G0EOL, 01606 594205 or 0754 889 1222, Billg0eol@o2.co.uk (QTHR, Winsford Cheshire).

YAESU FT70-G, all filters, workshop manual, original packing, £20. Trio R1000 receiver, with manual, original packing, £5. Hanimex amphibian 35mm camera, specified 45m, excellent lens, £10. BNOS linear 13.8V/25A PSU, not functioning, good rebuild project, FREE. All items buyer collects. G3ZHZ, 01323 484189, alastair@macfadyen.plus.com (QTHR, East Sussex).

YAESU FT-920 HF plus 6m, good condition, £550 ono. Pete, MM1FEO, 01546 510355, pete@tftelectronics.co.uk (Argyll).

YAESU VX-7R, 50/144/430, wideband receive inc. air band, with manual and charger, £175. FRG-100 receiver, VGC, manual, power supply, £195. Vic, G4UON, 01726 813278 (St. Austell, Cornwall).

Continued on page 88

13 EAST MIDLANDS

REGIONAL REP: JIM STEVENSON, G0EJQ, G0EJQ@RSGB.ORG.UK

BOLSOVER ARS
postmaster@g4rsb.org.uk, www.g4rsb.org.uk
1 Natter night
8 TBC
15 Broadcast radio, David, M0VKS
22 Colin's quiz
29 Committee meeting

BRIGG & DARC
John, 2E0III, 01652 632938, info@bdarc.co.uk, www.bdarc.co.uk
2 Moonbounce experience, Howard, G4CCH

DERBY & DARS
Richard Buckby, radio@dadars.org.uk
7 Junk sale
14 Committee meeting

EAGLE RG
Terry, G0SWS, 01507 478590
14 Tracking down interference in our receivers by Charles, G0CBM

FRISKNEY AND EAST LINCOLNSHIRE COMMS CLUB
Chris, M0MFP, 01507 442240
7 Low power QRP, M0MFP

LINCOLN SHORT-WAVE CLUB
Pam Rose, G4STO, 01427 788356, pamelagrose@tiscali.co.uk
1 SSB Field Day briefing
8, 15, 22, 29 G5FZ and G6COL OTA

LOUGHBOROUGH & DARC
Chris, G1ETZ, 01509 504 319
7 Skittle evening at Griffin Inn, Swithland
14 Practical computer night
21 Rescheduled ZN414 project judging
28 Practical evening

SOUTH NOTTS ARC
Terry, M0RIA, www.radioclubs.net/snarc
1 Inductors, G4EDX
7 2m contest
8 Construction project
12 S/E Heritage Building weekend
15 OTA & Morse
22 Video night
29 Forum (members only)

SPALDING & DARS
Graham Boor G8NWC, 07947 764481, www.sdars.org.uk
5 BBQ & fun day at the Portakabin
7 144UKAC at the Portakabin

STENIGOT CHAIN HOME ARC
Steve Burke, M5ZZZ, 01507 600202, m5zzz@btinternet.com
17 CW fun night

WELLAND VALLEY ARS
Peter D Rivers, G4XEX, 01858 432105, g4xex@fsmail.net
20 Operating night, QRP Top Band

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2000	160-6	2000W o/p	Manual tune	TBA

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WANTED

BACKWARD WAVE OSCILLATOR type SE213 urgently required. This is used in a HP 8551B spectrum analyser and a scrap 8551 with working BWO would be acceptable. Tony, G3NPF, 01903 746959, Pulborough RH20 3HG or a.wadsworth@tesco.net

BNOS LP144-10-50 circuit or service manual please for my failed 144MHz 50W linear amplifier. Doug, G8ILW, 0161 962 2217, doug.couse@talktalk.net (QTHR, Cheshire).

HF LINEAR AMPLIFIER, 100W, solid state, in GWO, 13.8V supply. Homebuilt, kit, rig salvage or WHY. Also HRO receiver Model 5 or 5T with metal octal valves with PSU and HF coils in GWO. John, G3GTJ, 01963 240319 (Somerset).

HRO KNOBS please. BFO knob, RF Gain knob. Do you have the switch for the BFO and/or its capacitor? I have a tuning gang going spare… swap? What have you? Geoff, G3YVF, 01634 891017 (Chatham, Kent).

TEN TEC ORION II HF transceiver in very good condition. Colyn, GD4EIP, 07624 413036, gd4eip@manx.net (Isle of Man).

YAESU FT-401B, working or nonworking, would prefer complete but any considered. Details to Austin, G4DEN, 01942 323318, austin4den@o2.co.uk (QTHR, Lancashire).

YAESU FT847 must be in VGC, preferably boxed. No mods done to 4mtr section. Late-ish serial no. Terry, G4OXD, 07787 316759, tm.rose@tiscali.co.uk (Herts).

RALLIES & EVENTS

Members of the RSGB Regional Team will be present with a bookstall at the rallies this month marked with an RSGB diamond.

5 SEPTEMBER – TELFORD HAMFEST – Enginuity Technology Centre, Coalbrookdale, Telford TF8 7DU. OT 10.30. TI S22 & GB3TF 433.200MHz. TS, SIG, discounted admission to Enginuity Centre. Details from Martyn, G3UKV, 01952 255 416 [www.telfordhamfest.co.uk].

11/12 SEPTEMBER – GATWICK FAMILY RADIO WEEKEND – Hunters Moon, close to Gatwick on the A217, RH6 0HU, TQ262438. Bring some vintage(ish) radio; military vehicles of all radio types welcome. SIG, CS, FAM. Saturday night BBQ and large bonfire. Mike, M1CCF, 0208 654 2582, m1ccf@talktalk.net [www.radioclubs.net/m0vog].

12 SEPTEMBER – BOOT FAIR/OPEN DAY AT THE MUCKLEBURGH COLLECTION – Muckleburgh Collection military museum, Weybourne, Norfolk. Admission to the museum, restaurant and shop free today only. Visit the country's largest privately owned military museum. Radio clubs, groups, individual amateurs and families, military enthusiasts and general stallholders all welcomed. Pitches £5.00 payable on the day. No traders. All enquiries to Bob Finch, G0HYZ, 01263 838 198.

12 SEPTEMBER – TORBAY ANNUAL COMMUNICATIONS FAIR – Newton Abbot Racecourse, Newton Abbot, Devon TQ12 3AF. TS, B&B, C, DF. Details by e-mail to rally@tars.org.uk.

13 – 18 SEPTEMBER – 15th WORLD ARDF CHAMPIONSHIPS – Opatija, Croatia [www.ardf2010.com].

18 SEPTEMBER – NEW RALLY – FOG ON THE TYNE RALLY – Whitehall Road Methodist Church Hall, Bensham, Gateshead NE8 4LH, organised by Angel of the North ARC & South Tyneside ARS. £1.50, C. Nancy Bone, G7UUR, 0191 477 0036 (eves).

19 SEPTEMBER – NEW DATE – 20th GREAT NORTHERN HAMFEST – Metrodome Leisure Complex, Barnsley S71 1AN. OT 11.00, DF, TS, SIG, LB, C, FAM. Details Ernie, G4LUE, 01226 716 339 [www.greatnorthernhamfest.co.uk].

26 SEPTEMBER – HOLSWORTHY AMATEUR RADIO RALLY – Holsworthy Community College, Victoria Hill, Holsworthy EX22 6JD. TI V36 (S18). Details Roger Williams, 07773 983 691, e-mail g8yrw@yahoo.co.uk.

26 SEPTEMBER – 50 YEARS OF AMATEUR RADIO HISTORY GARAGE SALE – from the estate of G3IOZ (SK). Extensive valve collection, WW2 and vintage equipment, parts. Close to M40 J4 (High Wycombe). Details from Larry, G4GZG, by e-mail to g4gzg@yahoo.com.

26 SEPTEMBER – BELGIAN NATIONAL AMATEUR RADIO & COMPUTER RALLY – Exhibition Centre, Charleroi, Belgium. OT 09.00. International TS, FM. Details Michel, ON7FI, on 0032 64 849 596 or by e-mail to michel.dewyngaert@skynet.be [www.on6ll.be].

1 & 2 OCTOBER – NATIONAL HAMFEST – brought to you by the RSGB in association with the Lincoln Short Wave Club. George Stephenson Pavilion, Newark and Nottinghamshire Showground, Lincoln Road, Winthorpe, Newark NG24 2NY (close to junction of A1/A46/A17). TS, B&B, CB, C, SIG, Morse proficiency tests on demand, RSGB HQ Bookstall, RSGB Services & Committees, DF, FM [www.nationalhamfest.org.uk].

3 OCTOBER – AUTUMN MILITARIA & ELECTRONICS & RADIO AMATEUR HANGAR SALE – Hack Green secret Nuclear Bunker, Nantwich, Cheshire, CW5 8AL. OT 10.00, £2.50. Contact Rod Siebert, 01270 623 353 or e-mail coldwatr@hackgreen.co.uk [www.hackgreen.co.uk].

8 -10 OCTOBER – RSGB CONVENTION – Horwood House, Little Horwood, near Milton Keynes. Full convention programme with lectures for all interests and all levels of technicality [www.rsgb.org/rsgbconvention].

17 OCTOBER – BLACKWOOD AND DISTRICT ARS RALLY – Coleg Gwent, Risca Road, Cross Keys NP11 7ZA.TI S22, CP, OT 10.30/10.40, £2. TS, B&B, SIG, C, WIN. Details Dave, GW4HBK, 01495 228 516, e-mail gw4hbk@talktalk.net [www.gw6gw.co.uk].

17 OCTOBER – NEW DATE – HORNSEA AMATEUR RADIO CLUB RALLY – Floral Hall, 7 The Esplanade, Hornsea, East Yorks HU18 1NQ. OT 10.30, CP, TS, B&B, SIG RSGB, RAFARS, LB, C, DF, WIN. Details from Rick, MOCZR by e-mail to R106221@aol.com or Duncan, G3TLI, e-mail g3tli@hotmail.co.uk [www.hornseaarc.co.uk].

17 OCTOBER – GALASHIELS AND DISTRICT ARS RADIO RALLY – The Volunteer Hall, St Johns Street, Galashiels, Scottish Borders TD1 3JX. OT 11.00/10.45, £2.50. B&B, TS, C, WIN. Details from Jim, GM7LUN on 01896 850 245 or e-mail mail@gm7lun.co.uk.

30 & 31 OCTOBER – NORTH WALES RALLY – John Bright School, Llandudno. TS, RSGB Bookstall, CP. Details from Liz Cabban, GW0ETU on 01690 710 257 or e-mail lizcabban@vodafoneemail.co.uk.

7 NOVEMBER – WEST LONDON RADIO & ELECTRONICS SHOW (Kempton Rally) – Kempton Park racecourse, Staines Road East, Sunbury on Thames, Middlesex TW16 5AQ. OT 10.00. TS, FM, DF, CP free, RSGB, LEC, TI S22 (V44). Paul, M0CJX, 0845 165 0351, info@radiofairs.co.uk [www.radiofairs.co.uk].

13 NOVEMBER – ROCHDALE & DISTRICT RS TRADITIONAL RADIO RALLY – St Vincent's Church Hall, Caldershaw Road, Rochdale OL12 7QL. NB This is a Saturday rally. OT 10.15/10.30am, £2.50, concessions for U12 and seniors. B&B, C. Details Dave, G0PUD, QTHR, 07710 243 107, e-mail dave.shaw1@sky.com. [www.radars.me.uk].

21 NOVEMBER – 33rd CATS RADIO & ELECTRONICS BAZAAR – 1st Coulsdon Scout HQ, r/o Council car park, Lion Green Road, Coulsdon, Surrey. 10.00-13.00, £1, B&B, C, DIS, DF, CP free. Details Andy, G8JAC, e-mail secretary@catsradio.org.

SILENT KEYS

We regret to record the passing of the following members:

Mr R P Hope, RS6181	
Mr D Brooking, G1KHX	7/7/2010
Mr W W Wright, G0VMO	22/6/2010
Mr E A Homewood, G4KBY	30/6/2010
Mr A E Henry, GI4CRL	9/2/2010
Mr E E Cackett, M1DAI	24/5/2010
Mr D L Pole-Evans, VP8NX	
Mr J R Platt, G3FEV	11/12/2009
Mr W M Cliffe, G4YYV	9/6/2010
Dr P H Masterman, G3RHH	
Mr F B Shaw, GI4WXA	3rd/6/2010
Mr B J Joyner, G8ZYZ	19/6/2010
Mr T Bell, G8XXQ	27/4/2010
Mr G D Eddoes, G3NOH	
Mr H Thorpe, G0UFM	24/6/2010
Mr A C Holden, G1EVD	3rd/11/2009
Mr J S McAllister, GM1RHL	26/6/2010
Mr R Cotton, G6YLT	8/7/2010

SPECIAL EVENT STATIONS FOR SEPTEMBER 2010

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. Details published here are kindly provided by Ofcom.

The QSL Bureau sub-manager for all special event station callsigns (GBxAAA-GBxZZZ) is Mrs Davina Williams, M0LXT, 20 Neale Close, Wollaston, Northamptonshire, NN29 7UT, e-mail qsltrek@@hotmail.co.uk, website www.gb-special-event-qsl-status.webs.com. Will organisers of special event stations please ensure that they lodge plenty of envelopes with M0LXT?

Date	Callsign	Phonetics	Location	Bands	Keeper
01/09/2010	GB2BCL	Barmoor Castle	Lowick, Northumberland	LH2	G0AXJ
	GB0PC	Peterlee Carnival	Peterlee, Hants	TLHV27	G0NSK
	GB0SMA	Stowe Maries Aerodrome	Maldon	TLHV27	G0ULU
03/09/2010	GB4BLR	Battlefield Line Railway	Shackerstone, Leics	LHV27	M0JAV
	GB2LGR	Langar Airfield	Langar, Notts	LH2	G4NRZ
05/09/2010	GB2EFF	Epping Forest Festival	Chingford, London E4	V2	G0TOC
10/09/2010	GB70BRS	Bawdsey Research Station	Suffolk	TLHV27	G4FSG
	GB4NGR	Narrow Gauge Railway	Olney, Bucks	TLHV27	M0RPM
	GB2WSM	Withernsea St Matthews	Withernsea	TLHV27	G4HYY
	GB0SMW	St. Michaels' Workington	Workington, Cumbria	LH2	G0ORO
	GB0HTP	Holy Trinity Platt	Manchester	LH2	M0UFC
11/09/2010	GB4KL	Kingston Lacy	Wimborne, Dorset	LH2	G4PIJ
	GB0SMC	Stones Methodist Church	Ripponden	LH	G0PFH
	GB2CCC	Christ Church Cathedral	Oxford	LH27	G3NGX
	GB0LOW	LOWthorpe Church	Driffield, East Yorkshire	LH	G3XYF
	GB2WMF	Winscombe Michaelmas Fair	Winscombe, Somerset	LH2	G3YOL
	GB2CCA	Christ Church Abingdon	Abingdon, Oxon	27	M0CIW
17/09/2010	GB0LME	Lincoln Model Engineering	North Scarle	LH2	G4DBS
	GB0BSR	Bedfordshire Steam Rally	Shuttlework House, Bedfordshire	TLHV27	M0AZZ
24/09/2010	GB0GWR	Great Western Railway	Cheltenham	TLH27	G4IGN
25/09/2010	GB0HBL	Helston Branch Line	Helston, Cornwall	TLHV2	G7THT
	GB10HF	2010 National HamFest	Newark & Lincoln	LH2	M0RPD
	GB2ESR	East Somerset Railway	Shepton Mallet, Somerset	LH2	G3YOL
	GB2CR	Corris Railway	Corris	LH	GW7VBY
26/09/2010	GB4WLR	West Lancs Railway	Hesketh Bank, nr Preston	L	G1PIE

21 NOVEMBER – PLYMOUTH RADIO CLUB RALLY – Elm Community Centre, Leypark Walk, Estover, Plymouth PL6 8UE. CP, TI, OT 10.00, £2, TS, B&B, C, WIN.

28 NOVEMBER – BISHOP AUCKLAND RADIO AMATEURS CLUB RALLY – Spennymoor Leisure Centre, Co Durham DL16 6DB. CP, TI S22 (V44), OT 10.15/10.30, £1.50 (U14 free). TS, B&B, C, LB, DF, FAM. Details Mark, G0GFG, 01388 745 353.

16 JANUARY 2011 – NEW VENUE – RED ROSE WINTER RALLY – George H Carnall Leisure centre, Kingsway Park, M41 7FJ. DF, free CP, B&B, C, LB, OT 11am, TS, SIG, DF, RSGB bookstall. Details from Steve, 07502 295 141 [www.wmrc.org.uk].

6 FEBRUARY 2011 – 26th CANVEY RADIO & ELECTRONICS RALLY – 'The Paddocks', Long Road, Canvey Island, Essex SS8 0JA [southern end of A130]. Free CP, OT 10.30, £2, C, DF, TS. Dave, G4UVJ, 01268 697 978 (evenings) [www.southessex-ars.co.uk].

19 MARCH 2011 – LAGAN VALLEY ARS RALLY – The Village Centre, 7 Ballynahinch Road, Hillsborough. OT 11.30, TS, CP, C. Contact Jim, GI0DVU, 02892 662 270, e-mail jim.henry@ntlworld.com.

20 MARCH 2011 – 27th YEOVIL QRP CONVENTION – Digby Hall, Hound Street, Sherbourne, Dorset DT9 3AA (adjoining the central shopping car park). OT 9.30am, TI S22, CP, TS, LEC, B&B, C, DIS. Contact Derek, M0WOB, 01935 414 452.

10 APRIL 2011 – NORTHERN AMATEUR RADIO SOCIETIES ASSOCIATION EXHIBITION (Blackpool rally) – Norbreck Castle Exhibition Centre, Blackpool. TI, CP, TS, B&B, SIG, MT, LB, C, DF, RSGB Book Stand. OT 10:45/11:00. Dave, M0OBW, 01270 761 608 or e-mail dwilson@btinternet.com [www.g1gyc.demon.co.uk/narsa].

26 JUNE 2011 – WEST OF ENGLAND RADIO RALLY – Cheese & Grain, Bridge Street, Frome, Somerset BA11 1BE. TS, RSGB Books, C, CP, DIS. Contact Shaun, G8VPG, 01225 873 098, e-mail rallymanager@westrally.org.uk [www.westrally.org.uk].

This list shows all rallies and events we are aware of as at 3 August 2010. If your rally or event is not listed, TELL US ABOUT IT! Send an e-mail to GB2RS@RSGB.org.uk and your event will appear here and on GB2RS. It's free! Guidelines for submissions: Please let us know your event details as early as possible. If you submit by e–mail (to GB2RS@RSGB.org.uk) then we suggest you set your e–mail program to request a 'read' receipt so you can be sure we've seen the details.

TI Talk-In; CP Car Park; £ Admission; OT Opening time - time for disabled visitors appears first, (eg 10.30/11am); TS Trade Stands; FM Flea Market; CBS Car Boot Sale; B&B Bring and Buy; A Auction; SIG Special Interest Groups; MT Morse tests; MA Foundation Morse Assessments; LB Licensed Bar; C Catering; DF Disabled Facilities; WIN prize draw, raffle; LEC Lectures/Seminars; FAM Family attractions; CS Camp Site.

RSGB MEMBERS' ADVERTISEMENTS

RSGB members wishing to place an advertisement may do so free of charge by e-mail, or by post provided the advertisement is accompanied by a payment of £5.00 to cover administration costs.

The following terms and conditions apply to all Members' Advertisements.

1) In order to qualify for free insertion, Members Ads must be submitted by e-mail to memads@rsgb.org.uk. Please ensure you include .uk on the end of the email address.
2) **Your advert must clearly show whether it is For Sale or Wanted and must include your name, callsign or membership number, telephone number and postal town, in that order.**
3) The Ad may not contain more than 40 words, excluding the information in (2), and may be edited for readability at our sole discretion. Longer ads may be accepted if there is a good reason, eg a shack clearance on behalf of a SK member; e-mail us and ask.
4) Not more than one ad per month will be accepted from any member. 'Recurring' ads will not be accepted, but members may re-submit the same advert each month if they wish.
5) E-mailed adverts may optionally include one photograph of the item(s) being offered. Images must be attached as a jpg file, at least 800 pixels wide and of good quality. By submitting any image you warrant that you own the copyright and that you permit the RSGB to use it in any way. We will endeavour to publish photographs with ads as space permits but cannot guarantee to publish any particular photograph.
6) Adverts will be published at the first available opportunity but no guarantee can be given as to when a particular ad will appear.
7) The RSGB believes that it is inappropriate for members trading in radio equipment in any way to place members' ads. We therefore regret we are unable to accept such ads, although we do welcome these in the 'Classified' advertising section of *RadCom*.
8) The RSGB accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange.
9) Members' Ads are accepted and published in good faith.
10) Members' Ads are accepted at the sole discretion of the Editor, whose decision is final.

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 money paid.

Members' Ads also appear on the Members-Only website at www.rsgb.org/membersonly/membersads.

RADCOM MEMBERS' AD REQUEST FORM

Only use this form if you are unable to send your advert by e-mail. E-mailed adverts are free. A charge of £5 is made to cover administration costs for Members Ads submitted by post. Photocopies of this form are acceptable. Posted ads must not exceed 40 words. Please fill in all details, especially your name, callsign, phone number, town and your signature or your advert may not be accepted.

☐ I enclose a cheque for £5 payable to RSGB

☐ Please charge £5 to my credit card

Number

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Expiry date MM-YYYY Issue number (Switch only) ☐☐

Name

Callsign

Phone

Town

Signed

Date

Section: ☐ FOR SALE ☐ WANTED

CLASSIFIED ADS

Classified advertisements 58p per word (VAT inc.) minimum 14 words £8.12. All classified advertisements must be prepaid. Please write clearly. No responsibility accepted for errors. Latest date for acceptance is 1st of the month prior to publication.

Copy to: Chris Danby G0DWV, Danby Advertising, Fir Trees, Hall Road, Hainford, Norwich, Norfolk, NR10 3LX Tel: 0870 904 7377 Fax: 0870 904 7378 E-mail: adsales@rsgb.org.uk

Payment to: RSGB, 3 Abbey Court, Priory Business Park, Bedford, MK44 3WH

FOR SALE

ISOLATED DATA INTERFACES for PSK31-SSTV-RTTY-CW-FSK-WSJT etc. ALL PREVIOUS MODELS STILL AVAILABLE, See RSGB Reviews SEPT 09 RADCOM. AVAILABLE. PAYPAL REGISTERED. www.g3liv.co.uk johnny@melvin.com 0191 2843028

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OLD-TIMERS MEMORIES REVISITED

John, G3UCQ ex 5B4JF

The letter from Ron, G1DER certainly sparked some memories for me as I was stationed in Cyprus from 1962-65, becoming 5B4JF in 1964. I lived in Limassol and it was not long before I met Chalky Whiting, ZC4CW and George Barrett, ZC4IP (G8IP). I remember that Chalky was actively studying transequatorial propagation (TEP) using a Heathkit DX-40 TX to run a beacon on 28MHz.

Cyprus was well placed for a North-South path over the Equator to Rhodesia, as it was then, and he recorded many signals over that path when the band was dead to other parts of the world. His means of keying the transmitter was by rotating a large metal disc, it may have been an old 78rpm record with an aluminium base, around which he had cut out notches so that as it rotated it keyed the transmitter.

Just try working out the speed of rotation, length of the parts on the rim of the record to give perfect Morse. Chalky did! There was a similar beacon in Rhodesia and the signals from it were recorded on a chart with an ink pen. I believe his studies were published in QST and were quite revolutionary at the time.

Both Chalky and George worked at a nearby BBC relay station, with George the manager. George was instrumental in fostering my interest in CW and he was an excellent operator, often winning his section of the BERU contest.

I later became the secretary of the Cyprus Amateur Radio Club, with amateur radio activities being closed down in late 1964 due to the political situation with Turkey and the Greek Cypriots. All amateur radio equipment was confiscated and my station comprising a Heathkit DX40 and AR88 was taken to Limassol police station until I left Cyprus in 1965. It is not a pleasant experience to see three large policemen on your doorstep wanting to cart away your beloved rig.

Happy days!

REAL DX

Michael Fadil, G4CCA

Ken Smith's Technical Feature about real DX puts into perspective how the discoveries of the pioneers of electricity are leading to unlimited possibilities.

In all my readings of the *T & R* and *RSGB Bulletins* and *RadCom* (going back to Volume 1) I have never come away with such a feeling that I completely understand mathematics, astronomy and big numbers.

Educators wishing to inspire their pupils need go no further than *RadCom* July 2010 pp 60 - 62. I, in the meantime, am looking for a radio telescope aerial, minimum diameter 250ft and fully steerable.

Try eBay – Ed.

YOUR FIRST QSO AND WORKING HF

Ian Hepworth, 2M0BVN

It was a pleasure to read an article for new hams in *RadCom*. I have been licensed for three years and hold an Intermediate licence and I still tune up and wait about 30 minutes before I put out a call due to nerves. How many new hams on HF spend hours calling CQ not to get a response due to a M3, M6 or a 2 callsign? How many times, suddenly, at 1130GMT you do this and you suddenly get a brief QSO only to discover that at 1200GMT a contest takes off in full swing?

My log book – and I must admit I only operate on about one weekend a month – has about 10 QSOs in it and about 70 contest QSOs. So to me, as a new ham, contesting is a way of getting those countries into your logbook. Also, operating as a low power station means some of the contesters actively try and find you for bonus points!

As an M3, my fourth contact was the USA and I nearly fell off the seat when I heard 'MM3 this is XIZ coming back'. I worked a German station last year who, in turn, put out a call to see if any one else could hear me. It turned into a bit of an informal net. I worked an Irish special event station not that long ago, it took about four hours over four days to be heard in that pile up – I usually try for 15 minutes at a time then come back later – so you sometimes have to work at it.

Now I make a point of going up and down a band (I currently use a FT-897 and a MFJ Magloop) and if I hear someone call CQ then I jump in and call them back. I have made a couple of great contacts this way as they have been special event stations that have just come on the air. To me, stations calling DX means outside of your continent and not your country as the article inferred. I usually give people calling DX a wide berth as they are listening for faint signals, but I have also heard Ukrainian stations working Russian stations after giving a DX call! So it must mean different things to different operators.

The adage if you can hear them work them is the best one to go by.

In my old QTH, where it was quite built up, 50W was ample. Now I'm in the country and am currently waiting to get my full size G5RV, Magloop and VHF antennas set up as well as a permanent shack where I can just turn the radio on and call CQ. In the old QTH it was like operating portable, take the antenna outside, connect the coax, set the radio up, wife wants to use the garden take it all down! I'm also trying to sort out the best time to start working towards my Full licence.

INFORMATION NEEDED

Ray Barnes, G8AZN / G0VFZ

I have been a member of the Society now for many years. Up until about three years ago I was reasonably active on 80, 40 and 2m. About this time I started going deaf. I am now profoundly deaf and with the increase of band noise and local noise I find it almost impossible to understand others on the bands.

I do have digital hearing aids and these are very good for normal conversations but are of little use with my Kenwood TS870. I have the (T) function on my hearing aids and I have tried using this with a loop function but with little success. I am still able to use 2m but as this band is virtually dead in this area I have lost interest in it.

There must be many other amateurs out there with the same problems as I have, so it would be helpful for us OAPs and perhaps others not so old, if you could write an article on what is available to help us get back on the air.

As my hearing loss is worse in the top register I have wondered if some of the Heil products might be a help to me, but as they priced between £100 and £200 there is no way that I could contemplate purchasing them on spec. Even if they would help that would still be expensive, but I would purchase them if it would put me back on the air.

Are there any readers who have information or experience of products such as the Heil headphones that would help Ray? If so, please drop us a line and we'll publish the information in RadCom. Ed.

WIFI REPLACES PLT ARTICLE

Peter Ebsworth

Having replaced a SMPSU for a TV antenna splitter amp that gave S8-9 noise from 2.5 to over 12MHz and a new SMPSU + DAB receiver that was a little bit kinder, my son introduced a PLT adaptor set to the house. So a suggested replacement is needed and the units mentioned in *RadCom* could do the job. Thanks for uncovering a unit that could be the solution to my difficulties as well.

A TALE OF WOE AND HAPPINESS

Pat, M0AAC

Very recently I decided to treat myself to a rather powerful linear which was sent direct via Yaesu UK. Unfortunately it did not have the connecting cables in the box, however a call to the dealer and the problem was solved.

When I did eventually play nothing happened, not a peep from anything. Again a contact with the dealer and they arranged to collect the linear (as I am disabled) and test it for me – it was faulty and I didn't feel so much of an idiot! Two days later they came back with my linear and connected it all up for me too. I have yet to learn how to use the linear to my best advantage but that's not the purpose of this letter. I would like to thank Richard at MLS for all his help

but also Sam at Yaesu UK, both of whom dealt with me in such a wonderful manner I cannot praise them enough. My thanks should also go to G0CKV, G3CCZ, G3JUL and G3XTZ for all their advice and help, you could not wish for better friends.

ARTICLES IN *RADCOM*

Tom Brady G8HEB

Following on from the recent letter in *RadCom* about articles, I thought I would pass on my views. I find the range of articles in *RadCom* a good balance between easy to understand and follow, to technically challenging.

I enjoy home construction and have found many of the projects in the QRP manual are easy to construct – an HF CW transmitter by the late Dave Ingram is a great design, easy to construct and works well. However, I would always recommend caution when attempting more complex designs that are a 'one off' by a constructor who has few designs published. This is because some circuits do not duplicate well; the first one works due to individual component tolerances but others that are built do not always work. I remember an AM two meter transceiver project many years ago that suffered from this problem.

If you want to try more ambitious projects, consider kits. They are of a proven design, using known tolerance components and the kit supplier often has a technical back up. Also follow Eamon Skelton's 'Homebrew' features, you will not need all of the test equipment that he has and the circuits work.

PLANNING – MISERABLE NEIGHBOURS

Bill Watson, G4EHT

I have just received my August *RadCom* and I read with great interest the letter from 'Janet & Colin', husband and wife radio hams. I have a similar story on planning permission that is worth passing on.

I have a 'small' Butternut vertical – HF9V – which has been in situ on the lawn of our small garden for over 8 years. This was erected without planning permission and has never caused concern or comment from any of our neighbours. However, in February this year a surprise knock came on our door completely out of the blue. It was one of our neighbours and, like Janet and Colin, it was a lady! The lady neighbour in question was asking about my HF9Vand the bottom line was… had I got planning permission for it? Not wanting to tell any lies I responded, 'No'. She immediately said that she though I ought to have and said that she would be going to our local council to complain.

True to her word, within a few days I received a rather frightening letter from the council saying that I was in contravention of the planning laws and I had 28 days to take down my HF9V down or replace it with another aerial no higher than 3 metres, which would not need planning permission.

I wrote back to the council explaining that my HF9V had been in situ for over 8 years. They said that in that case it would cost me £150 for a certificate of lawful existence. However, the letter also said that if the council decided that I still needed planning permission, then I would need to submit a planning application. I know this may sound a contradiction but that's just what they quoted and, of course, the planning application would be an additional £150!

After serious though and not wanting to have further problems I decided to take my HP9V down and submit a proper planning application. I did this, drew up my own plans and paid the £150.

A week later, my application was returned saying that my plans were not to the specification of the council. I then contacted a professional who drew my plans again (at a price!) but he went on to say that, in his opinion, my original plans were superb and any other council would have accepted them.

My application was re-submitted, along with a list of my neighbours who were all in favour of my aerial. None of the neighbours could believe that this one lady had complained. In fact, they even went on to say that they had not even noticed that I had got any aerial up in the back garden and what a low profile the aerial had.

Anyway, I am please to confirm that within 8 weeks of my application I received a letter from the council saying that I had been granted permission. I am now considering a further application for a small Tennamast.

I would suggest than any members reading this will now consider planning permission for any aerial or mast that is over 3m in height because it does need it.

There is no legal requirement to obtain a Certificate of Lawful Use/Certificate of Lawfulness and it's a 'nice little earner' for the Council. These certificates are generally only required by mortgage providers etc for things like conservatories or garages which have no planning permission to ensure that there are no legal issues in future.

I generally recommend against obtaining a Certificate of Lawful Use/Certificate of Lawfulness due to the cost unless you plan to sell your house complete with aerials and masts to another radio amateur. The down side is that unless the Council's records are good (they usually are) you may have to go through the whole process of proving your installation has been there for more than 4 years in the future so keep a copy of your correspondence with the Council.

Len Paget

Chairman, Planning Advisory Committee

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MAKING SMALL METAL BOXES

Bob Fisk, G3CPV

I was interested to read Bob Crowe's article last month on doing a good old bit of 'chassis bashing', which is becoming a lost art these days.

One method of construction he didn't mention is the use of clinch nuts.

For those that have never seen these they are a metal nut encased in a serrated gripping edge that is pressed into a pre-drilled hole. For quick fabrication of aluminium boxes these are ideal and very easy to use. No worries of having to cut a thread in thin ally sheet (which are bound to get stripped sooner or later). All you need to press them in is a vice - or even a pair of mole grips will do.

I purchase mine from Rapid Electronics and they aren't expensive. Once you've used them you'll never go back to self tappers and the like.

ISS TV WITH A TWIST

Nick Hickson, M0NRH

I am an active member of the Colchester Amateur Radio club, and have been interested in ISS and SSTV for quite sometime, but to my horror had to drop my mast to do some maintenance on my 2m Yagi just as the latest ISSTV activation on 15 July was about to take place. Undeterred, I decided to try and listen for the ISSTV with the Yagi on the ground and pointing straight up in the air. You can imagine my great surprise when I managed to obtain some wonderful pictures from the ISS, it just goes to show what can be done if timing is right with some advice and help from fellow amateurs. Thanks to David, G8OQW for all the help and advice.

So please don't give up it goes to show anything is possible.

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- 3 Parallel Demodulator Channels.

The WR-G31DDC "Excalibur" receiver heralds a new standard of performance at a very affordable price. The robust front end handles today's busy bands with ease. You will love the live spectrum display (up to 50MHz wide) and absence of significant spurious signals.

More Stock Due Soon - Order Now!

TEN-TEC

There are radios and then there are RADIOS! TenTec have crafted their radios to provide that indefineable feel and performance that comes from low production runs and attention to handling, convenience & operator pleasure. Robust front ends, selectable roofing filters, & audio transmission (and receotion) quality that is a mark of design expertise and conception. Experience the difference!

SPECIAL OFFER! Buy Any TenTec Built Transceiver & Get FREE Base Mic!

Jupiter-538B

£1449 D
With internal ATU £1799

160m - 10m with 100 Watts output. The classic TenTec radio with a difference! It can read CW on the screen and you can plug a PC keyboard in to send text.

Orion-II-566

£3899 D
With internal ATU £4199

TenTec's flagship radio with dual receive and a lovely colour screen. It's the epitome of TenTec engineering.

Omni-VII-588

OMNI-VII is the first truly Net-Ready ham transceiver. No PC required at the rig to operate remote! Locate your OMNI-VII anywhere you have wideband Internet access. Simply connect built-in Ethernet port to your router with our e One Plug connection. Get live receive AND transmit operation from anywhere else in the world. £2499 D

Omni-VII 588AT With Internal ATU £2799 D

Centurion Amplifier 1.3kW

£PHONE

Uses pair of 3-500Z tubes. Self contained in a single, attractive black desk top cabinet. For 100W in (max), the power output is 1300W on SSB & CW and 650W solid "key-down" modes. All bands 160m-10m.

Did You Know? - the TenTec internal ATU for HF transceivers can match up to 10:1 VSWR! That means no problem for G5RV - no other HF rig comes close.

238C Antenna Tuner

£789.95 D

This is a 2kW "L" network tuner covering 160m to 10m. It is an ideal match for the Centurion linear amplifier.

FlexRadio Systems

FLEX-1500 Transceiver!

- *160m - 6m All Modes Transceiver*
- *5 Watts of clean RF-Power*
- *USB connection*
- *Selectivity to 25Hz!*
- *Use with laptop for easy portable*

£549.95 D

Even as a receiver it is worth the price!

All FlexRadio transceivers use the same software. Check out www.flex-radio.com and dow nload the **FREE** software together with sample IF files. Then test out the receiver section. You will be amazed!

Flex-3000 100W 160m-6m

Save £100! ***SPECIAL OFFER***

100Watts (down to approx1 Watt) of SSB, CW, FM and AM. About the size of a laptop! It is the go anywhere transceiver of today. This software defined radio offers cutting edge performance that takes advantage of the very latest technology. Built-in auto ATU. £1299.95 D

Brief Specifications:
160 - 6m / 1-100 Watts / 1Hz frequency steps / Firewire connection / Yaesu modular mic input / Tx unwanted SSB suppression 65dB / Tx 3rd order IMD -31dB / Rx typical sensitivity -0.3uV / Rx MDS (pre-amp off -121dB / IP3 better than +26dBm / IMD 95dB @ 2kHz / SSB selectivity 2.39/2.54 kHz (6dB/60dB) / Selctivity variable down to 50Hz / Power 13.8V 25 Amp peak (1.5 Amp receiver).

Flex-5000 100W 160m-6m

Is this the Ultimate SDR Radio?
We think it is!

The SDR-5000 is the most advanced transceiver ever built by Flex-Radio Systems. Not only does it have an amazing front end, it can also accomodate an additional fully independent receiver and a VHF-UHF transverter. £2495.95 D

RX-2	Extra receiver that offers SO2R performance with own filter banks and signal path.	£625
VU-5000-Up	2m & 70cms transverter module - 60 Watts output - available October.	£669
5000 ATU	Auto ATU	£319
VFO-Knob	Griffin VFO control	£39.95
VFO-Shuttle	VFO plus buttons	£79.95
HRFIO-34	I/O upgrade board	£169.95

Carriage Charges: A=£3, B=£4, C=£6.95, D=£10, E=£12

www.FTdx5000.com

Probably the very best endorsement of all;

"As a final postscript, I have been searching for some time for a new main station HF radio as my FT-1000MP is now 12 years old. I think I may have found it - roll on deliveries!! **Peter Hart, RadCom FTdx5000 Review, May 2010.**

Peter Hart's wait is over – ML&S have UK stock here right now!

Peter Hart reviewed the Perseus SDR Receiver and proclaimed to have found a new No.1 in receiver performance. The crown given to Perseus was short lived. The new FTdx5000 grabs the position, ahead of the Perseus SDR, Elecraft K3, Flex-5000, in that order.

The *FTdx5000* has landed at the World's Favourite Hamstore. To get a valuation on the very best HF transceiver available today, call **01932 567 333** and get a trade-in value on your current kit or the very best outright buy. Either way, you just know you will be buying this important landmark in Japanese engineering from a company that understands and supports HF DX Amateur Radio.

For more information see: www.FTdx5000.com or see our YouTube channel, search MLandSshop.

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