RadCom

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

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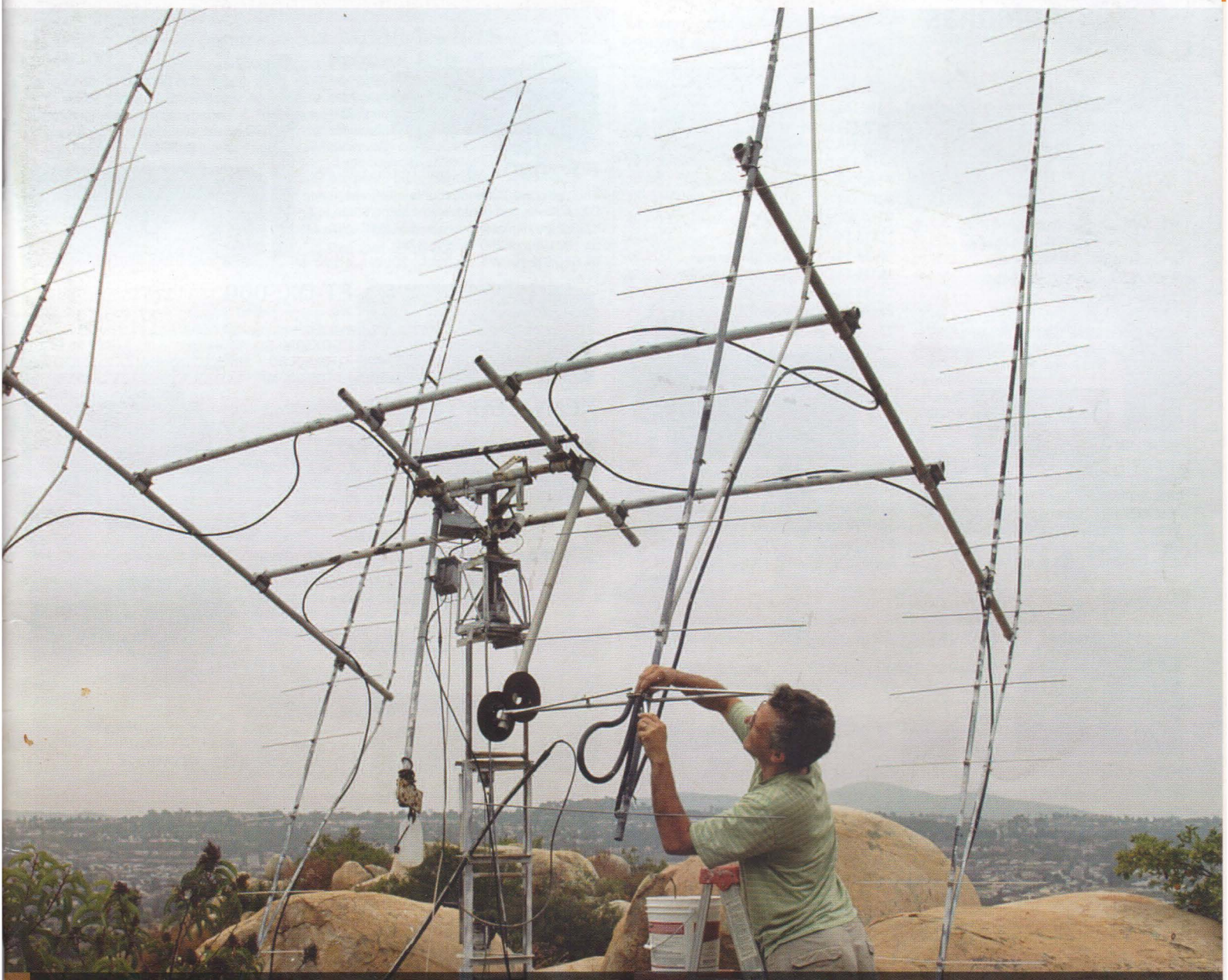


1112

Aiming High

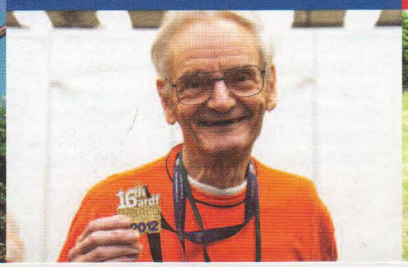
Moon bounce enthusiasts gathered for EME2012

The Claw
Construction details for this novel antenna

ARDF Gold Medal
Bob Titterington, G3ORY is the RSGB's first medal winner

NFD 2012
The operating position at G3LET/P, not exactly spacious!

Our Patron
His Royal Highness celebrates 60 years with the RSGB



WATERS & STANTON

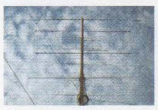
Main Sponsors of the RSGB National Club of the Year

Orderline 01702 206835

Online Catalogue www.wsplc.com

InnoAntennas
Performance through Innovation

The 50MHz "Magic" Band

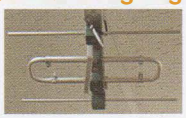


W7EW ordered 6 x 7 element 50MHz Yagis!

W3LPL ordered a 9 element 50MHz Yagi and has now ordered 2 more!

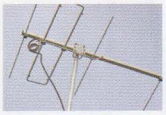
2-50-LFA2 6.7dB/Gn, 14.43dB F/B 0.7m boom	£89.95
3-50-OWL 7.67dB Gn, 18.4dB F/B, 1.6m boom	£99.95
3-50-LFA 8.9dB Gn, 20dB F/B, 2.3m boom	£119.95
4-50-LFA-S 9.2dB Gn, 23dB F/B, 2.6m boom	£154.95
5-DES-50 9.6dB Gn, 35dB F/B, 2.6 boom	£154.95
5-50-LFA-S 10.5dB Gn, 27dB F/B, 4.1m boom	£194.95
6-50-LFA-S 11.4dB Gn, 34dB F/B, 4.1m boom	£289.95
8-50-LFA-S 14.1dB Gn, 26dB F/B, 12.5m boom	£699.95

432MHz Long Yagis



10EL-432-LFA-SQ 14.4dB Gn, 27.8 F/B 2m bm	£92.95
14EL-432-LFA-SQ 15.7dB Gn, 39dB F/B, 2.9 bm	£119.95
16EL-432-LFA-SQ 15.9dB Gn, 40dB F/B, 3.5 bm	£139.95
18EL-432-LFA-LN 18.1dB Gn, 38dB F/B, 4.3m bm	£174.95
20EL-432-LFA-LN 18.6dB Gn, 39dB F/B, 4.9 bm	£195.95
26EL-432-LFA-LN 19.8dB Gn, 36dB F/B, 6.8 bm	£255.95

The 144MHz DXers Choice



All antennas rated to at least **3kW** RF Power.

Specials to Order.

3-LFA-144 8.7dB Gn, 0.7m boom	£59.95
4-LFA-144 9.5dB Gn, 29dB F/B, 1.17m boom	£74.95
5-LFA-144 11.1dB Gn, 20.3dB F/B 1.8m boom	£89.95
6-LFA-144 11.9dB Gn, 29.3dB F/B, 2.4m boom	£104.95
7-LFA-144 12.9dB Gn, 22dB F/B, 2.9m boom	£134.95
8-LFA-144 13.3dB Gn, 27dB F/B, 3.8m boom	£164.95
9-LFA-144 14dB Gn, 26dB F/B, 4.4m boom	£194.95
12-LFA-144 15.8dB Gn, 30dB F/B, 7.2m boom	£269.95
14-LFA-144 16.6dB Gn, 34dB F/B, 9m boom	£325.95
16-LFA-144 17.3dB Gn, 38dB F/B, 10.9m boom	£375.95
18-LFA-144 17.9dB Gn, 38dB F/B, 12.7m boom	£425.95
20-LFA-144 18.3dB Gn, 38dB F/B, 14.8m boom	£479.95

At Last - 4m Quality Yagis!

3-OWL-70 7.7dB Gn, 17dB F/B, 0.9m boom	£82.95
3-LFA-70 8.76dB Gn, 21.5dB F/B, 1.4m boom	£99.95
4-LFA-70 9.8dB Gn, 16.3.5dB F/B, 2.14m boom	£129.95
5-LFA-70 10.7dB Gn, 25dB F/B, 3.1m boom	£149.95
6-LFA-70 11.3dB Gn, 34dB F/B, 4.3m boom	£189.95
8-LFA-70 13.5dB Gn, 35dB F/B, 8.4m boom	£349.95

Microset Linear Amplifiers

RV-45 45W 2m Linear Amplifier

* 144MHz - 148MHz FM, SSB, CW * Input 3 -15W
* Output 45W * GaAsFET switched pre-amp
* Pre-amp Gain 18dB * SO-239 sockets
* Ext. 13.8V DC at 5A * Size 105 x 46 x 160mm * Weight 590g

IN STOCK £144.95 D

R-25 2m amp 1-4W in 30W maximum out SSB/CW/FM + GaAsFET pre-amp	£139.95 C
SR-100 2m amp 4-25W in 100W maxi out SSB/CW/FM + GaAsFET pre-amp	£254.95 C
RU-20 70cm amp 0.8-3in15-20W max out SSB/CW/FM + GaAsFET pre-amp	£172.95 C
RU-45 70cm amp 3-15W in 45 max out SSB/CW/FM + GaAsFET pre-amp	£239.95 C

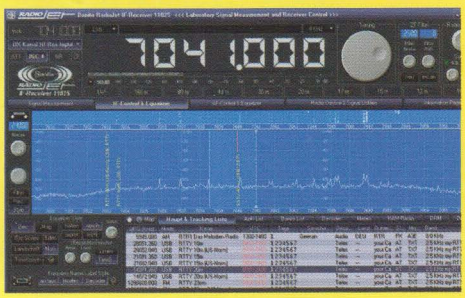
As Seen On The W&S Stand At National Hamfest 2012!

Bonito

NEW RADIOJET-1102S Computer Controlled Receiver

You won't believe your ears!

The Bonito shortwave receiver RadioJet 1102S combines innovative design with the advantages of modern computer technology. The frequency range is from 40 kHz to 30 MHz with a minimum detectable signal at 3 dB above noise at -134 dBm (DNS). It is linear over the 16 kHz signal width, which then is displayed on a 24 kHz enlarged spectrum for assessing the quality of the filter. The noise floor is extremely low because there are no active parts between the antenna and the ADC.



Exclusively controlled by computer, the Bonito RadioJet is a short wave receiver with a built-in USB audio device and a 24kHz multi-channel IF-Input or to put it simply: "The most obvious application of modern radio technology."

£529.95 C

HF High Performance Transceivers

YAESU FT-950 HF & 6m Transceiver

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. **IN STOCK £1264.95 D**

FT-2000 160 - 6m Transceiver

This radio is a DXers favourite and widely used for DXpeditions and contests. Covering 160m to 6m. It has all the digital features and auto ATU. Available as 100 Watt or 200 Watt version.

IN STOCK 100W £2259 D 200W £2899 D

FT-DX5000 160 - 6m Transceiver

The current Yaesu "flagship" radio, covering 160m to 6m delivering 200 Watts. **ALL IN STOCK**

FT-DX5000 Standard radio	£4635.95 D
FT-DX5000D + SM-5000 monitor	£4939.95 D
FT-DX5000MP + monitor & filters	£5369.95 D

KENWOOD TS-590S 160m - 6m with superb receiver inc. dual roofing filters, Auto ATU, 32 bit f/p DSP & USB PC connection.

This radio has won the admiration of the radio press and hams all over the world. The best dynamic range in its class, digital IF, narrow roofing filters and auto ATU. Also FREE PC control program that can be downloaded. Exceptional value. **IN STOCK £1329.95 D**

ICOM IC-7410 HF-6m Transceiver

This lovely new HF-6m all-mode 100W transceiver offers superb front end dynamic range, and has a 15kHz roofing filter. It also features a 36kHz DSP razor sharp filter, internal auto ATU, PC control via a USB port and speech synthesizer. **IN STOCK £1695.95 D**

IC-7600 HF Transceiver

The IC-7600 HF/50MHz transceiver is enhanced with some of the main features tried tested on the flagship IC-7700/7800 models. It is highly regarded by Amateur operators world-wide. Features inc a double conversion superheterodyne system, dual DSP units & 3kHz IF (roofing) filter. **IN STOCK £3519.95 D**

IC-7700 HF Transceiver

The IC-7700 HF/50MHz 200W transceiver shares many features with its "big brother", the world famous IC-7800. With two independent DSP units, a +40dBm 3rd order intercept point and ultra wide dynamic range to name but a few of the features.

IN STOCK £6364.95 D

IC-9100 HF Transceiver

The Icom IC-9100 is ideal for the operator who is looking for a complete high performance radio that covers HF - UHF in one box. It offers 100 Watts output on all bands up to 2m, whilst on 70cms you get a healthy 75 Watts. An internal auto ATU is included which covers HF plus 50MHz.

IN STOCK £2899.95 D

Tigertronics SignaLink USB Soundcard Interfaces

The SignaLink USB combines the excellent performance of the SL-1+ with a built-in low-noise USB sound card. It delivers optimum performance whilst eliminating the need to use your computer's sound card. The SignaLink USB will work with all radios (just select appropriate SignaLink model) and it can then be attached to the Mic. jack, Data port or Accessory port. **£99.95 C Each**

SL-USB-4R 4 pin round mic	**SL-USB-5PD** 5 pin din	for Kenwood
SL-USB-8R 8 pin round mic	**SL-USB-8PD** 8 pin din	**SL-USB-6PMD** 6 pin mini din
SL-USB-RJ-11 RJ-11 mic	**SL-USB-13PDI** 13 pin din Icom	**SL-USB-NC** unterminated
SL-USB-RJ-45 RJ-45 mic	**SL-USB-13PDK** 13 pin din	

PLUG & PLAY JUMPER MODULES FOR SL-USB

SLMOD6PM for SL-USB and 6 pin mini din data port	£7.95 A
SLMOD8PD for SL-USB and Icom radios with 8 pin din accessory socket	£7.95 A
SLMOD5PD for SL-USB and Yaesu/Ten-Tec 5 pin din accessory socket	£7.95 A
SLMOD13I for SL-USB and Icom radios with 13 pin din accessory socket	£7.95 A
SLMOD13K for SL-USB & Kenwood radios with 13 pin din accessory socket	£7.95 A

Carriage Charges: A=£4, B=£5, C=£8.50, D=£11

WATERS & STANTON
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Heil Audio Accessories

HM-12

The HM-12 features the new HC6 insert that works with all modern rigs. It will give your signal that "magic" lift that will add dBs to your signal's voice power. As Bob says in his live workshop, a linear costs a whole lot more! Check out our great price of **just £69.95 C**

Adaptor lead for your radio is required, phone for price.

Pro-Set-Elite-6

Modelled on the ProSet-6 but adds phase reversal switch which offers a spatial awareness that moves signals around in your head to give perceived placement of signals between the two acoustic headphone chambers.

Pro-Set-Elite-6	£179.95 C
Pro-Set-Elite-IC	£189.95 C
AD-1 Rig adaptor leads	£22.95 C

New Icom IC-7100

As Seen At National Hamfest 2012!

The most exciting news from Icom is the new IC-7100 transceiver that offers 100W from 1.8 -50MHz, 50W on 4m and 2m and 35W on 70cms. A big leap forward is the introduction of a colour touch screen and a convenient built-in speaker in the remote head unit.

- *HF, 6m, 2m, 70cm Multi-band, All-mode*
- *DSTAR DV Mode • Intuitive Touch Screen Display*
- *Easy-to-see, Easy-to-use Slant Top Controller*
- *Built-In SD Card Slot & USB • Built-In Speaker*

Register your interest today!

New Icom Remote Control System

Operate Your Icom Rig Via The Internet

As Seen At National Hamfest 2012!

The new **RC-28** remote control is Icom's new controller that works in conjunction with the **RS-BA1** software to enable you to remotely control your Icom radios from anywhere in the world. The controller is a nicely weighted item that features VFO, PTT and two programmable buttons.

IN STOCK £279.95 D including software

New TS-990S - The New Kenwood Flagship Radio

As Seen At National Hamfest 2012!

- *Freq. Range: 1.8 - 50MHz TX / RX*
- *Modes: SSB / CW / FSK / PSK / AM / FM*
- *TX Power: 5 - 200W (AM 50W)*
- *Built-In ATU • Built-In Switching PSU*
- *Display: 7 Inch Colour TFT*

There are no firm delivery dates yet, but it is due Winter 2012.

Register your interest today!

VHF UHF Mobiles

NEW

TM-281E 2m FM 65/25W Mobile **£169.95 D**

On or off the road, Kenwood's TM-281E is a mobile you can count on. This MIL-STD compliant transceiver delivers powerful performance, excellent audio clarity, and a host of advanced features.

FT-2900E 75 Watt 2m 3W Audio, CTCSS, DTMF mic & "WIRES" internet. **£142.95 D**

FT-7900E 2m/70cms mobile 50/40W CTCSS, DTMF, "WIRES" internet, wide Rx **£239.95 D**

FT-8800E Dualband Mobile 50W / 30W Great Value **£343.95 D**

FT-8900R Quad band 10/6/2m/70cm FM 50W (70cm 35W) **£389.95 D**

FTM-10E 2m/70cms Blue Tooth & built-in mic. **£324.95 D**

FTM-350E 2m/70cm Mobile Bluetooth GPS APRS **£479.95 D**

ID-E880 50 Watt Dual band 2m/70cm with D-Star and airband receive. **£439.95 D**

TM-D710E 50 Watts 2m/70cms with APRS **£445.95 D**

TM-V71E 2m/70cm Mobile with Echo Link **£299.95 D**

It Costs Less At W&S!

Turn This >>>> Into This!

Radio has never been cheaper in real terms but that does not helpi if you are short of cash. So why not turn out all that old gear and part exchange it for what you really want. EVEN DEAD equipment may have value! Just call us on 01702 203353 or e-mail us your list of gear together with what you want to buy, at: sales@wsplc.com. We will give you an immediate quotation. That new radio is waiting.

Handheld Transceivers

ID-31E NEW
70cms D-Star handheld with built-in GPS, IPX7 submersible & D-Star DV mode, SD card slot, 1252 memories & 5W output. **£349.95 D**

TH-K20E & TH-K40E NEW
Two new handies from Kenwood. "K20E" offers 5.5W output and rx from 136-174MHz. "K40" offers 5W out and rx from 400 - 470MHz. **£119.95 D each**

VX-3E 2m / 70cm Handheld Wideband receive **£169.95 D**

VX-6E 2m/70cms handy, 5W Wideband Receive **£214.95 C**

FT-60E 2m/70cms, 5W handy Wideband Receive **£129.95 C**

VX-8GE Dualband 2m/70cm 5W + GPS Antenna **£349.95 D**

VX-7R Waterproof triple band handy (silver/black) **£299.95 C**

VX-8DE Triple Band 6/2m/70cm Upgraded APRS **£369.95 D**

IC-E80D Dual band 2m/70cm D-Star CTCSS & DTCS GPS Compat. **£329.95 D**

IC-E92D Dual band 2m/70cm waterproof fitted D-Star. Rugged radio. **£387.95 D**

TH-F7E Dual band 2m/70cm + wideband receive inc. SSB **£236.95 D**

TH-D72E Dual band 2m/70cm with GPS & TNC + SiRF **£426.95 D**

TG-UV2 Dual band 2m/70cm with CTCSS DCS & LED torch! **£84.95 D**

KG-UV6D Dual band 2m/ 70cm 5W/4W SMA **£94.95 D**

HF - UHF in One Box!

YAESU

FT-897D base or portable, this 1.8 - 440MHz transceiver is great value. 1.8 - 50MHz 100W 2m 50W 70cm 20W. **IN STOCK £819.95 D**

FT-857D The great value mobile or base 1.8 - 440MHz. HF-6m 100W, 2m 50W 70cm 20W. **IN STOCK £714.95 D**

KENWOOD

The **TS-2000E** is a firm favourite for those wanting ultimate all-mode performamnce on all bands. 1.8-144MHz 100W 70cm 50W. It has the highest power on 2m & 70cms and the TS-2000X version adds 23 cms! Includes auto ATU, DX cluster facility & digital IF for superb weak signal performance. **IN STOCK £1549.95 D**

ICOM **IC-7000**

The most compact, high spec. HF-UHF transceiver available. With its lovely display and digital IF filters, it can handle all your needs - SSB CW and data. HF-6m 100W, 2m 50W and 70cms 35W. All in one lovely box. **IN STOCK £1189.95 D**

HF on a BUDGET!

YAESU

FT-450D transceiver comes with the extra IF filter & an Auto ATU built in. 100W 160m - 6m with 3 IF filters 300Hz, 500Hz & 2.4kHz. **IN STOCK £839.95 D**

ICOM

IC-718 SSB CW up to 100W from 160m-10m. You won't find a more cost effective HF radio! **IN STOCK £594.95 D**

IC-7200 this 100 Watt radio covers 160m-6m and includes digital IF filters. IN STOCK **£839.95 D**

KENWOOD

TS-480SAT A very HF transceiver giving 100 Watts from 160 - 6m and includes auto ATU. **IN STOCK £779.95 D**

TEN-TEC

Jupiter-538CE 160m - 10m 100 Watts SSB CW AM FM with on-screen CW reader and socket for PC keyboard. **IN STOCK £1649.95 D**

Carriage Charges: A=£4, B=£5, C=£8.50, D=£11

WATERS & STANTON

Orderline
01702 206835
Online Catalogue
www.wsplc.com

AOR

AR-8200-MKIII

The famous scanner with the quality performance. 530kHz - 3GHz AM FM FMW & SSB. Inc batts, charger + cigar lead.

£499.95 D

AR-MINI

This amazing little radio covers 100kHz - 1.3GHz AM FM & WFM. 1000 memories, over 30 programmable features including CTCSS and DCS. Alphanumeric memories give meaningful channels and there is a builtin bar antenna covering 100kHz - 5MHz. Inc. NiMH pack and charger. FREE software database for PC loading via www.aorja.com.

£169.95 D

W&S are now approved suppliers to UK Government Departments

AR-ONE

This is a commercial grade comms receiver for monitoring. It has a detachable front panel for remote operation.

- *10kHz - 3.3GHz.*
- *10 VFOs*
- *High Intercept point*
- *Dual IF Outs.*
- *Two RS-232 ports*
- *Control head port*

£4899.95 D

AR-5001D

Widely regarded as one of the best for spectrum monitoring & follows in the foot steps of the AR-5000

** 40kHz - 3.15GHz*
** All Mode Reception*
** Digital Signal Processing*
** Monitor 3 Channels At Once!*
** SD Media Recorder*
** AF 12kHz IQ Output*
** Optional I/Q Board & Software*

£3749.95 D

AR-8600MKII Base/Portable

This base or portable station receiver covers 530kHz - 3GHz. All modes AM FM FMW & SSB with standard rotary tuning.

£699.95 D

AR-STV

This dual-band receiver scans & displays 1.2GHz & 2.4GHz wireless SSTV pictures. Fitted with 2.5" screen, it can store & time stamp pictures to download later via USB. Handles all common modes PAL NTSC etc. and can free scan between 900 - 2800MHz. NiMH cells and charger inc.

£869.95 D

WATSON

Watson antennas are made to exacting standards at their far east factory in Taiwan. They use stainless steel for elements & fittings, base VHF/UHF antennas are encapsulated in high quality fibre glass resin. All are totally weather proof.

Mobile Whips

High quality whips all with PL-259 base connectors.

W-285
2m 5/8th wave with foldover base **£19.95 A**

W-627
6m/2m/70cms whip with fold base **£39.95 C**

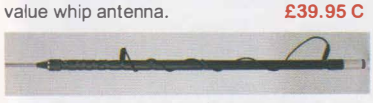
W-77LS
2m/70cms short whip just 39cms **£14.95 C**

W-7900
2m/70cms 5/7.6dB gain **£34.95 C**

W-8900
10/6/2 & 70cms mobile 1.32m **£69.95 C**

MULTI-RANGER-200 HF mobile whip
9-band HF mobile whip covering 80m - 6m and rated up to 200 Watts. **£59.95 C**

MULTI-RANGER-9 HF mobile whip
covers 80/40/20/15/10/6 and 2m. A great value whip antenna. **£39.95 C**



The Multiranger series offers a low cost way to mobile work. Fitted PL-259 bases.

Base Antennas

W-30 2m/70cm, Gain 3/6dB, Power 150W, Length 1.15m, Weight 0.885kg, SO-239. Features fibre glass case with stainless steel radials. **£49.95 D**

W-50 2m/70cm, Gain 5/7.2dB, Power 200W, Length 1.8m, Weight 1.2 kg, SO-239. Features fibre glass case with stainless steel radials. **£59.95 D**

W-2000 6m/2m/70cm, Gain 2/6.2/8.4dB, Power 100W, Length 2.5m, Weight 1.2 kg, SO-239. Features fibre glass case with stainless steel radials. **£99.95 D**

W-3HM Universal hatch mount **£14.95 A**

W-3CK Cable kit 5m long **£19.95 A**

W-300S **W-3HM** **W-3CK**

Mounting an HF mobile whip has never been easier! This 3-way magnetic mount will hold any HF mobile whip rock steady. **W-300S** has SO-239 socket and **W-300T** has 3/8th thread. **£39.95 C**

FlexRadio Systems®
Software Defined Radios

We Are Now Taking Orders For New Flex-6000 Signature Series

Flex-3000 160-6m 100 Watts Auto ATU

94dB dynamic range. 96kHz wide receiver display. Firewire connection. Built-in auto ATU, 100 Watts and weighs just 3.2kg. The FLEX-3000 is the high performancemid-range 100 watt all-band, all-mode amateur radio transceiver that achieves receiver performance that rivals all other traditional analogor hybrid DSP transceivers in its price class. The FLEX-3000 is the perfect transceiver for hams just getting started with high performancefully software defined radios or a companion SDR for existing FLEX-5000 owners who want a more convenient solution for portable operation .

£1399.95 D

Flex-1500 160-6m 5 Watts All Mode

86dB dynamic range, 48kHz receiver display, USB cable, 5 Watts output. Low Cost Transceiver with Software Defined Radio Features and Performance This is a common theme for FlexRadio Systems' software defined radios - a focus on performance and exceptional value. And the FLEX-1500 continues that tradition for a transceiver in the sub £600 price class. A QRP radio that works perfectly with your laptop and a great driver for VHF/UHF transverting.

£579.95 D

Flex-5000A 160-6m 100 Watts

In addition to exceptional performance, the FLEX-5000A offers the flexibility of multiple antenna ports, keying circuitry, balanced and unbalanced audio, plus a full-featured transverter interface. Options include an automatic antenna tuner and 2nd fully synchronous receiver. The FLEX-5000A is the perfect transceiver to Tune in Excitement!™ FlexRadio Systems, founded in 2003, is a leader in Software Defined Radio (SDR) technology. Our high-performance, GPL open source PowerSDRTM software is the gold standard in Software Defined Radio software. **SPECIAL PRICE** Whilst Stocks Last

5000A £2495 D + ATU £2745 D

SSB Electronics - Low Noise Preamplifiers

SSB-SP-6

** Freq: 50-52MHz*
** Gain: 20dB*
** Noise: 0.9dB*
** 500W by-pass*
** Insertion Loss: 0.1dB*
** HF-VOX 100W*
** N-Type Connectors*
** Supply: 13.8V DC*

£269.95 C

SSB-SP-23

** Freq: 1250-1296MHz*
** Gain: 20dB*
** Noise: 0.8dB*
** 100W by-pass*
** Insertion Loss: 0.2dB*
** RF-VOX 10W*
** N-Type Connectors*
** Supply: 13.8V DC*

£379.95 C

SSB-SP-2000

** Freq: 144-146MHz*
** Gain: 20dB*
** Noise: 0.8dB*
** 750W by-pass*
** Insertion Loss: 0.2dB*
** HF-VOX 100W*
** N-Type Connectors*
** Supply: 13.8V DC*

£259.95 C

SSB-SP-13B

** Freq: 2300-2400MHz*
** Gain: 24dB*
** Noise: 0.9dB*
** Insertion Loss: 0.4dB*
** RF-VOX 10W*
** N-Type Connectors*
** Supply: 13.8V DC*
** Waterproof Housing*

£339.95 C

SSB-SP-7000

** Freq: 430-440MHz*
** Gain: 20dB*
** Noise: 0.9dB*
** 500W by-pass*
** Insertion Loss: 0.4dB*
** HF-VOX 100W*
** N-Type Connectors*
** Supply: 13.8V DC*

£259.95 C

DCW-2004B

Sequence controller for SSB-SP-6/2000/7000 allows you to pass 13.8V DC up the coax feed line to the preamp, no need for a seperate DC feed!

£119.95 C

DCW-2004B-SHF As above but 13cm & 23cm for SSB-SP-23/13 **£129.95 C**

Watson Weather Stations

W-8681-SOLAR

This is weather station requires no connecting cable between the LCD monitor and the remote weather sensors. There is a large LCD control panel, solar transmitter, wind speed & direction sensors, temperature sensor, rain gauge and stub mast. All you need are 3x AA batts for the *new* LCD panel, the outside transmitters are solar powered! There is even a USB lead & software to connect to your PC!

£99.95 C

W-8681-MKII

Wireless weather station with LCD monitor and remote weather sensors. It offers amazing value and comes with everything you need to set it up in the garden. All hardware is included and the only items you need to supply are 3x AA cells for the LCD panel and 2x AA cells for the outside transmitter.

£79.95 C

W-8683 Wireless Weather Station - Ext Sensor/Temp/Humidity/Clock/Alarm **£26.95 A**

W-8684 LCD Display Clock + Remote Wireless Temp Sensor **£12.95 A**

W-8685 Bedside LCD Alarm Clock + Wireless Temp Sensor **£8.95 A**

Carriage Charges: A=£4, B=£5, C=£8.50, D=£11

RadCom

THE RADIO SOCIETY OF GREAT BRITAIN'S MEMBERS' MAGAZINE

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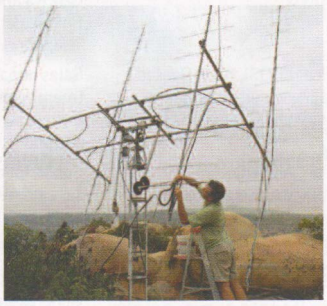
Notices to readers concerning errors and omissions and advertisments can be found at www.rsgb.org/radcom/notices.

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 December edition of *RadCom* is expected to arrive with most members by 19 November, although this can take up to a week longer in some cases; international deliveries can take longer still.**

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

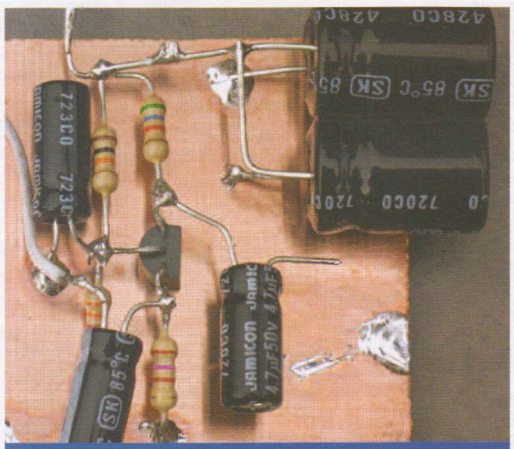
The online RadCom is at www.rsgb.org/radcom.



Paul, WA6PY in California working on his 2m Earth-Moon-Earth array. All his antennas are completely home made.

Photo: Henryk, SMOJHF.

News and Reports



A well-decoupled audio stage – P23

Review

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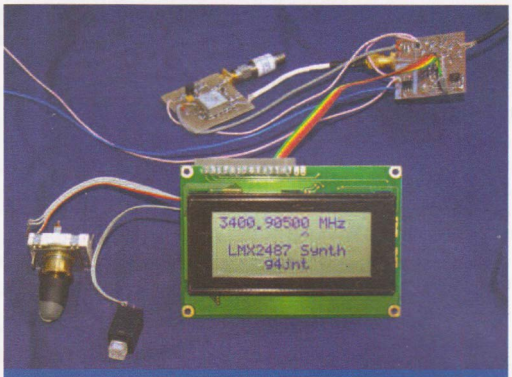

Fractional-N synthesisers – P42

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RSGB National Field Day – P33

RADIO SOCIETY OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH REPRESENTS UK RADIO AMATEURS

Founded in 1913 incorporated 1926. RSGB is a trading name of Radio Society of Great Britain, a limited company registered in England and Wales with company number 00216431. Member society of the International Amateur Radio Union.

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

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

RSGB MEMBERSHIP

Annual rates from 1 January 2011

Full membership (by Direct Debit) £47.00
(individual & club)
Family membership (by Direct Debit) £56.00

Paying other than by Direct Debit attracts a £4 premium.

Student (21-25) ..... Free
Ham Club (under 21) ..... Free

Subscriptions include VAT where applicable.
Special arrangements exist for visually impaired persons. Details and membership application forms are available from RSGB HQ or see www.rsgb.org/join.

YOUR RSGB

This page provides names and contact details for Board Members, Regional Managers, Committee Chairmen and Honorary Officers. Members seeking advice and guidance on any aspect of Amateur Radio of the Society's work are free to contact the relevant person below. But before doing so, please do check the comprehensive FAQs on the RSGB website, www.rsgb.org/faq/ to see if your question can be answered there.

For HQ staff below, both e-mail addresses and telephone details are provided, including the option to select when dialling through the RSGB switchboard (01234 832 700).

Chairmen and Honorary Officers:
These are all volunteers and give their time freely to support the Society. Members should respect the fact that many also have full time day jobs, and so e-mail is the appropriate method of communication.

General Manager:
Graham Coomber, G0NBI,
e-mail: graham.coomber@rsgb.org.uk

Honorary Treasurer (Acting):
Richard Horton, G4AOJ, e-mail: g4aoj@rsgb.org.uk

Company Secretary:
Rupert R Thorogood, G3KKT, e-mail: g3kkt@rsgb.org.uk

THE RSGB INTERIM BOARD

The Interim Board was appointed by members at the EGM held November 2011 to serve as the Board of the Society until the 2013 AGM.

Dave Wilson, M0OBW (President),
e-mail: m0obw@rsgb.org.uk

Dr Bob Whelan, G3PJT (Board Chairman),
e-mail: g3pjt@rsgb.org.uk

Don Beattie, G3BJ, e-mail: g3bj@rsgb.org.uk

Phillip Brooks, G4NZQ, e-mail: g4nzq @rsgb.org.uk

Dr Chris Duckling, G3SVL, e-mail: g3svl@rsgb.org.uk

Dr John Gould, G3WKL, e-mail: g3wkl@rsgb.org.uk

Alan Messenger, G0TLK, e-mail: g0tlk@rsgb.org.uk

Note: The General Manager, Company Secretary and Acting Honorary Treasurer are not Directors, but are in attendance at Board Meetings.

REGIONAL MANAGERS

Region 1 – L Paget, GM0ONX, e-mail: rm1@rsgb.org.uk
Region 2 – D Morrison, GM1BAN, e-mail: rm2@rsgb.org.uk
Region 3 – K A Wilson, M1CNY, e-mail: rm3@rsgb.org.uk
Region 4 – H Scrivens, G0UGE, e-mail: rm4@rsgb.org.uk
Region 5 – V Ravenscroft, M0VRR, e-mail: rm5@rsgb.org.uk
Region 6 – M Harper, MW1MDH, e-mail: rm6@rsgb.org.uk
Region 7 – J Sneddon, MW0EQL, e-mail: rm7@rsgb.org.uk
Region 8 – P Lowrie, MI5JYK, e-mail: rm8@rsgb.org.uk
Region 9 – A Johnston, G8ROG, e-mail: rm9@rsgb.org.uk
Region 10 – G Keegan, G6DGK, e-mail: rm10@rsgb.org.uk
Region 11 – P Helliwell, G7SME, e-mail: rm11@rsgb.org.uk
Region 12 – M Sanderson, M0IEO, e-mail: rm12@rsgb.org.uk
Region 13 – J Stevenson, G0EJQ, e-mail: rm13@rsgb.org.uk

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Abuse and poor operating
Amateur Radio Observation Service (AROS), Keith Bassett, G7NBU, AROS coordinator, e-mail: aros@rsgb.org.uk, www.rsgb.org/committees/honoraryofficers/aros.php

Amateur Radio Direction Finding
Bob Titterington, G3ORY, Chairman, ARDF Committee, e-mail: ardf.chairman@rsgb.org.uk, www.rsgb.org/ardf/

Contests
Ed Taylor, GW3SQX, Chairman, Contests Committee, e-mail: cc.chair@rsgb.org.uk, www.rsgb.org/radiosport/

EMC
John Rogers, M0JAV, Chairman, EMC Committee, e-mail: emc.chairman@rsgb.org.uk, www.rsgb.org/emc/

General Technical Matters
Andy Talbot, G4JNT, Chairman, Technical Forum, e-mail: tech.chair@rsgb.org.uk, www.rsgb.org/rsgbtech/about.php

General Spectrum & Regulatory Matters
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(GB2RS news items should be sent to gb2rs@rsgb.org.uk)

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Ian Greenshields, G4FSU, HF Manager, e-mail: hf.manager@rsgb.org.uk

Intruders to the Amateur Bands
Chris Cummings, G4BOH, e-mail: iw@rsgb.org.uk www.rsgb.org/committees/honoraryofficers/intruderwatchcoordinator.php

IOTA Activity Programme
Roger Balister, G3KMA, IOTA Manager, e-mail: iota.manager@rsgb.org.uk, www.rsgbiota.org/

Microwave matters
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Training & Education
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Training & Education Committee,
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www.rsgb.org/clubsandtraining/

VHF matters
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Details of the Society's volunteer officers can be found in the RSGB Yearbook and on the RSGB website, www.rsgb.org.

HEADQUARTERS STAFF

General Amateur Radio Issues
Carlos Eavis, G0AKI
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Telephone: 01234 832 700, Option 5

Amateur Radio Examinations
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Telephone: 01234 832 700, Option 4

RadCom **(news items, feature submissions, etc)**
Elaine Richards, G4LFM or Giles Read, G1MFG
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Telephone: 01234 832 700, Option 3

GB2RS and Club News
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(membership, books and other products)
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Subscription renewals
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Telephone: 01234 832 702

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PO Box 5, Halifax HX1 9JR, England
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E-mail: qsl@rsgb.org.uk, www.rsgb.org/qsl

PLAY YOUR PART IN YOUR RSGB

Have Your Say
Let us know how we're doing! Through "Have Your Say" you can let us know your views and you will receive a reply from the General Manager or a Board Member.

Write to haveyoursay@rsgb.org.uk or go to www.rsgb.org/haveyoursay

Consultations
From time to time you will find we are consulting the membership on aspects of Society policy. You can find current consultations at www.rsgb.org/consultations/

National Radio Centre
Don't forget to tell your friends about the National Radio Centre at Bletchley Park. Full details can be found at www.nationalradiocentre.com

Licensing & Special Event Stations
Licensing and Notices of Variation (NoVs) for special event stations are handled by Ofcom, 0207 981 3131, www.ofcom.org.uk

FAQs
The RSGB has compiled the questions most frequently asked by Members at www.rsgb.org/faq/

Band plan
The latest version of the band plan is always available on the website at www.rsgb.org/committees/spectrumforum/band-plans.php

Good Operating Practice
The RSGB fully supports the code of conduct and encourages all amateurs to ready the advice. www.rsgb.org/tutors/pdf/good_operating_practices.pdf & www.rsgb.org/operating/ethics/docs/ethics_and_operating.pdf

RSGB Tech
The purpose of this service is to be the first port of call for technical queries on amateur radio matters. It is open to all radio amateurs. http://groups.yahoo.com/group/rsgbtech/

RSGB Shop
All RSGB goods - books, filters, clothing - can be purchased online at www.rsgbshop.org/

Club finder
Use the website to find your nearest radio club and check out the facilities they have to offer. www.rsgb.org/clubsandtraining/

WEBSITE

Main website: www.rsgb.org
Members Area: www.rsgb.org/membersonly

Log in using your callsign in lower case as the user name and your membership number, without the leading zeros (see your *RadCom* address label) as the password.

If you need to update your membership details, please visit www.rsgb.org/amend.

November is an important month for the Society

INTERIM BOARD CREATION. Members will remember the events of 2011, which led to the creation of an Interim Board, with a remit to address the financial, strategy and governance weaknesses of the Society and make recommendations to Members on any changes to governance that it considered appropriate.

Since its appointment nearly a year ago, the Interim Board has stabilised the basic finances of the Society and has prepared and consulted on a longer term strategy for the Society. The Interim Board has also completed and opened the NRC, started work on a new and improved website, created a more open and responsive HQ (including appointing a new General Manager) and improved our relations with regulatory bodies. It is now preparing plans for the Society's Centenary in 2013 and for the launch early next year of new e-publications focussed at newcomers to amateur radio. It has also consulted on new governance arrangements to help avoid the issues of the past.

You will find the final proposals of the Interim Board on governance elsewhere in this issue of RadCom. There is a Board statement explaining the changes, and the proposed new Articles and Bylaws are printed in full. The Articles and Bylaws that we would revert to if the motion is not carried at the EGM can be found at: www.rsgb.org/membersonly/information/memarts/memartsbylaws2010.pdf.

Supporting documentation is also available on the RSGB website at www.rsgb.org/egm.

NOW IT IS YOUR TURN TO EXPRESS YOUR VIEWS. Unless an overwhelming proportion of those voting support the new proposals, then the work of the Interim Board on governance and integrity will have been in vain, and we will revert to the governance arrangements that applied prior to November 2011.

We hope that you will support the Board in what it is proposing, which will result in a stronger and more transparent Society. A Society with the necessary checks and balances in place to make sure that proper governance remains at the heart of everything we do.

Please give the board your support by voting in favour of the new arrangements which, if accepted, will come into force from April 2013.

Elsewhere in this edition of RadCom you will find details of how to vote – electronically on the RSGB website, or by post using the voting form included in this edition of RadCom. Or you can show your support by coming to the EGM being held on 17 November in Stratford on Avon. Whichever you choose, we hope you will play your part in safeguarding the future of YOUR Society.

Dave Wilson, M0OBW
RSGB President

Bob Whelan, G3PJT
Chairman of the Board

Radio Society of Great Britain

(A Company limited by guarantee, Registered in England & Wales No 00216431)

NOTICE OF MEETING. Notice is hereby given of an Extraordinary General Meeting of the Radio Society of Great Britain to be held at the Stratford Manor Hotel, Warwick Road, Stratford-upon-Avon, Warwickshire, CV37 0PY on 17 November 2012 at 12 noon for the business set out below. This notice contains the Special Resolution to be voted on, which concerns the introduction of revised Memorandum and Articles affecting governance arrangements to come into effect at the 2013 AGM.

SPECIAL RESOLUTION. *To approve and adopt revised Memorandum and Articles of Association as set out in pages 45 to 56 of the November 2012 issue of* RadCom, *and to authorise the Board to take the necessary steps to bring the new governance structure therein defined into effect.*

Rupert Thorogood, G3KKT,
Company Secretary
1st October 2012

TIMETABLE. Coffee and Registration is from 11am, the EGM starts at 12 noon promptly and lunch will be available from 12.30pm (details and registration form on the RSGB website).

Note: After lunch, starting at 1.30pm, there will be an informal session at which those present will be able to hear about the plans for the RSGB Centenary and discuss other aspects of the RSGB's work.

TRAVEL. The venue is conveniently located near to the M40 and car parking is free. There are 3 train stations nearby.

- The nearest train station is Stratford-upon-Avon, which is approximately 3.6 miles away.
- If you are travelling from Warwick Railway Station, you can catch the 16 bus service direct to the Stratford Manor Hotel.
- From Warwick Parkway Station you will need to catch the X17 into Warwick and then the 16 to Stratford Manor.

When planning your journey, a useful website can be found at www.transportdirect.info.

After London 2012

I wanted to express my warm thanks and appreciation for the contribution radio amateurs and the RSGB made to the outstanding success of wireless communications during the London 2012 Games.

I would like to confirm that the restrictions we placed on spectrum access that we requested during the Games have now been removed.

Meeting the Government's guarantee about spectrum availability was always going to be challenging. The key to success was a collaborative approach between the organisations making spectrum available and those who needed more spectrum. We had to meet the exceptional requirements of the Games, while accommodating the continuing operational needs of spectrum users and remaining flexible to respond to unexpected priorities. The real success of our endeavours depended on a collaborative approach to our plans. We very much appreciated the willingness of radio amateurs to accommodate the needs of the Games on frequency bands usually available to them.

Thank you again for the contribution of radio amateurs and the RSGB to this unique project. We look forward to working with you again if similar arrangements are needed in the future.

Peter Bury, Ofcom Spectrum Policy Director
London 2012

Request for proposals to fund a radio propagation-related project

The Radio Society of Great Britain's Propagation Studies Committee (PSC) is inviting proposals to fund a radio propagation-related project, up to a maximum of £1,000. The PSC was recently bequeathed £1,000 by the late Charlie Newton, G2FKZ, who died earlier this year.

Charlie was an active member of PSC and also helped educate other amateurs about propagation matters through talks and lectures. He was also the author of the book *Radio Auroras*, which is viewed as a definitive guide to this type of propagation. His bequest was made to help fund propagation-related research and PSC is looking to hear from any person or group who might have a detailed proposal for how the money could be used.

Full written proposals, including details, costings and likely timescales, should be submitted to PSC chairman Steve Nichols, G0KYA by the end of December 2012. These will then be reviewed and discussed by the Propagation Studies Committee.

Entrants will be told the result as soon as possible. If interested, please send your written proposals and project details to Steve at steve@infotechcomms.co.uk by 31 December 2012.

Ofcom thanks

Now that the London 2012 Games have come to an end, Ofcom have expressed their warm thanks and appreciation for the contribution that amateurs from the RSGB made to the outstanding success of wireless communications during the Games.

"One of the critical challenges for Britain was to find enough people with the right skills in radio engineering and interference management to support the needs of the Games. Ofcom could not have found enough people from their own resources and therefore sought help from amateurs and other agencies to help find expert staff.

"The amateurs who helped at the London Games were:

- *Roger Dixon, G4BVY, Spectrum Engineer in the South River team. Roger worked at Greenwich Park and the Royal Artillery Barracks.*
- *Dave Pick, G3YXM and Jon Lee, G4TSN, Spectrum Engineers in the River Zone team. Dave and Jon worked at the ExCel Centre and the North Greenwich Arena.*
- *John Pink, G8MM, Spectrum Engineer in the Testing and Tagging team. John worked in the Olympic Park.*
- *Darren Storer, G7LWT and Chris Morcom, G3VEH, Spectrum Engineers in LOCOG's Technology Operations Centre.*
- *Richard Meadows, M0SBU, Spectrum Engineer covering activities outside the venues."*

Ofcom went on to say, *"Your support for this initiative introduced us to people who were very well motivated and with a high level of technical skill and expertise. We could not have provided such a good service to our customers without their help. We had the benefit of learning from the experience and knowledge that they brought."*

The RSGB would like to thank all the amateurs who helped at the London 2012 Games. It was a very successful showcase for amateur radio expertise.

Validate Your Licence

If you received your licence for life between November 2006 and August 2007 and have not validated your amateur licence with Ofcom since, then it's time to do so. Ofcom decided to automatically extend the validation period of licences issued during that time for a further year to avoid having a large number of validations to process around the time of the London Olympic and Paralympic Games in 2012. Amateurs are encouraged to use the online licensing system at www.ofcom.org.uk/licensing/olc. If you experience difficulties or need assistance in processing your licence online, please call 0300 123 1000 or 020 7981 3131.

VHF Manager

We are looking to fill this vacancy with someone who has an interest in the bands from 6m to 70cm. This is to continue the work of developing amateur radio interests as well as spectrum management in these important bands. The position is a voluntary post that is annually reviewed and appointed by the Board. It will require occasional attendance at meetings and events both within the UK and overseas; some of these take place during the normal working week, others at weekends. The role will require a candidate with good knowledge of, and familiarity with, a wide range of usages of these bands as well as good interpersonal and communications skills for working both within but also externally to the Society. The VHF Manager reports formally to the Board and Membership through a written annual report. Necessary on-the-job training and/or background to the spectrum management and IARU responsibilities can be provided.

If you are interested in applying or seek further information, please write to Graham Coomber, G0NBI, General Manager, by e-mail to graham.coomber@rsgb.org.uk.

QSL Matters

Among the 80+ enquiries at the QSL stand at the recent National Hamfest, a number stand out, including, "Have you got any cards for me?"

Of course, that is something the central bureau cannot answer directly due to the high volumes passing through. However, it has become much easier for us to offer advice since the changes earlier this year. Your QSL Manager can usually be contacted via their e-mail address – shown on the RSGB website – and a growing number have web listings. No quarterly delivery from your manager should now mean 'no-cards waiting' as part of our send-all-send-any policy. One visitor did wonder if we sent out empty envelopes to prove there were no cards – definitely not the case!

This year the IARU recognised the Republic of Kosovo with the prefix K60 but, at the time of writing, we have no information concerning a possible QSL bureau and are unable to forward any cards. Most activations come from visitors and Members should listen for QSL information during the QSO and/or refer to QRZ.com for details.

G4GSB is stepping down as the G6 series sub-manager. The Society is extremely grateful to Miles for his excellent work on behalf of all G6s, particularly during the recent changes and wishes him well. Perhaps he will have more time to transmit himself! All collection envelopes have been transferred to Tony, G6GLP in time for our next UK despatch cycle, which starts in November. Full details are available at the RSGB website by following the links from 'Operating' to the QSL pages.

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.

Mr J Yunnie, 2E0BXR
Mr A Ferriroli, 2E0FJA
Mr C J Petric, 2E0SCR
Mr S Shortland, 2E0SSJ
Mr C P Holloway, G0GGF
Mrs L Wilkin, G0TPX
Mr A Terry, G4PZV
Mr S P Foster, G4XKH
Mrs M Sables, G4ZJN
Mr A P Joyce, G6REG
Mr J A Hollerbach, G6ZEM
Mr P Rothwell, G7AGB
Mr S Harvey, G7IHN
Mr J R Haywood, G7KPM
Mr R Cridland, G7LAS
Mr C Milburn, G7NLA
Mr J Hancock, G8YNI
Mr L Jones, GW7DKL
Mr H Siegmann, M0HFD
Hamtests, M0HTJ
Mr D Lowe, M0IBC
Mr M A Howell, M0JMA
Mr J Chatterton, M0OAA
Mr B MacMillan, M0SOE
The Vulture Sqn CG, M0VSQ
Mr A Hawkins, M3IGF
Mr D A Holland, M6BOP
Mr P Jones, M6BVO
Mr N Mirza, M6BYD
Mr D Rogers, M6BYF
Mr H J Smith, M6BZJ
Mr M Cook, M6ERU
Mr A J Huelin, M6HAP
Mr A T R Unwin, M6IER
Mr K Bantock, M6KBE
Mr M Slater, M6MZS
Mr K P Palin, M6NKP
Mr R J Hellicar, M6RIX
Mr S Gibbs, M6SDG
Mr G J Hayers, M6WJL
Mr M Wilkes, M6WOM
Mr T Evans, M1OTME
Mr S Taylor, MM0SJT
Mr M Smialek, MM6BYB
Mr C Murray, MM6CMX
Mr W D McFarland, MM6EJM
Mr C B Dumitrescu, MW0HCC
Mr C Tanner, MW0LLK
Mr M A Smith, RS203012
Mr D J Plummer, RS208748
Mr J Charlton, RS210659
Mr M Styles, RS211390
Mr J Creaser, RS211469
Mr R H Chander, RS211473
Mr D P Woodhams, RS211492
Mr I Troughton, RS211495
Mr R F Topley, RS211500
Mr M Childs, RS211501
Mr M Smith, RS211502
Mr P Mansfield, RS211509
Mr I Hutchinson, RS211523
Mrs A C Kelly, RS211524
Mr P Tolcher, RS211527
Mr D Hendricks, RS211538
Mr A England, RS211544
Mr L Blasco, VK3ALB
Mr I H Slack, W4PNS

Our apologies to Ms A Richards, M6DUO whose name was omitted due to an administrative error.

The RSGB would like to welcome back the following Members who have rejoined the Society.

Mr T Darrah, 2I0HRV
Mr W Jochem, DK7VW
Mr C C Mason, G0HRJ
Mr C G Soames, G0TZZ
Mr A N Sharp, G0WNZ
Mr PJ Clark, G4FUG
Mr P W Sables, G4MRU
Mr S N Black, G4PSS
Mr P R Johnson, G4RMT
Mr A W Baxter, G4SIU
Mr D J Hebden, G8BLC
Mr B Bourne, G8EIK
Mr P J Barrett, G8PYE
Mr J G Walker, GM0DJG
Mr J S Shaw, GM0EDQ
Mr S J Roberts, GM4HWS
Mr N S Jones, M0FFF
Mr C E King, M0GHH
Mr A Glenn, M0VOX
Mr T Quiney, M0VXX
Mr Burton, M1EQD
Mr S J Symonds, M5PDL
Mr S Smith, MM0SAJ
Mr B M Osterberg, N9BX
Mr Kurt-Ove Emanuelsson, SM5BOK
Mr J Thiessen, VA3KV

Our apologies to Mr D Harrop, G0FUO, whose name was omitted due to an administrative error

Royal Patronage

The Society was formed as the London Wireless Club in 1913, changing its name to the Wireless Society of London in 1914, then to the Radio Society of Great Britain in 1922. From 1922 until his accession to the throne, the Society was under the patronage of his Royal Highness the Prince of Wales, KG.

Early in 1952, advice was sought from past president Lt Col Sir Ian Fraser, CBE MP on seeking Royal Patronage once more. In May, the RSGB approached His Royal Highness, The Duke of Edinburgh, KG and he generously extended his Patronage in November 1952.

On 1 November 1952, an announcement came from Buckingham Palace with the news that *'despite having undertaken a great number of additional responsibilities, he will do his utmost to take a personal interest in the Society.'* The announcement appeared in the November 1952 RSGB Bulletin.

His Royal Highness has visited a number of events with the RSGB including special event stations, anniversary events and exhibitions. On this 60th anniversary of his Patronage, the RSGB Board, staff and Members would like to express their thanks and appreciation to His Royal Highness for his interest over the years.

RSGB Centenary Year Events

Thank you to all those who came forward with ideas and construction projects for some very interesting lectures and projects during RSGB Centenary Year. We are still open to receive other ideas whilst Centenary plans are being developed, so please do send them in.

Progress is well underway and we can now outline some of the first Centenary events that we hope will encourage activity on the bands in as many diverse ways as possible.

Although the anniversary is on 5 July 2013, we plan to hold events throughout the whole year. First, we plan a special event station with a 'flagship' callsign that travels around each RSGB region in turn for a 28 day period. The first region will be in the North West of England, with the President, Dave Wilson, M0OBW making the inaugural Centenary first day call on 1 January 2013.

Clubs and national special interest groups will be able to apply to operate under the flagship callsign within their region's allocated period, by contacting their RSGB regional manager. A schedule is outlined below, so please apply early because weekend activity is likely to be popular.

We are encouraging innovative operation and diversity in terms of using heritage and state of the art activations, all bands, all modes and more specialised operational working conditions. This is intended to widen the range of interest in amateur radio and perhaps encourage individuals to consider taking up a new facet of their hobby. An award programme will be offered for working the stations around the regions.

We will publish more on this and the many other Centenary events that are planned in future editions of *RadCom*.

In the meantime, if you or your club are interested in operating a station please e-mail your proposals to your Regional Manager with the date, location, post code, lead operator (must be a full licensee), their callsign and address. If you are in North West England or Scotland North & Northern Isles, please apply immediately, so that we can put your event on the SES licence application for January and February 2013.

Region 3: North West England.
1/1/2013 – 28/1/2013.
Kath Wilson, rm3@rsgb.org.uk

Region 2: Scotland North & Northern Isles.
29/1/2013 – 25/2/2013.
Denny Morrison, rm2@rsgb.org.uk

Region 4: England North East.
26/2/2013 – 25/3/2013.
Harold Scrivens, rm4@rsgb.org.uk

Region 11: England South West & Channel Islands. 26/3/2013 – 22/4/2013.
Pam Helliwell, rm11@rsgb.org.uk

Region 10: England South & South East.
23/4/2013 – 20/5/2013.
Gavin Keegan, rm10@rsgb.org.uk

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 S H Feldman	G3GBN

60 years

Mr A A Chisholm	G3INL
Mr K V Franklin	G3JKF
Mr E Griffiths	G3LZG
Mr J Guttridge	G3JQS
Mr R I Pryde	GM3LGU
Mr D A D Smith	G8IDL

50 years

Mr R S Boardall	G8AJZ
Mr H A Buckenham	G3PGN
Mr H Neale	G3REH
Mr L M Rose	G4KAB
Mr W S Steer	G8CYG
Mr O S Tillett	G3TPJ
Mr C W Westwood	G3VFD

Regional Manager Elections

In this year's Regional Elections there are Regional Manager vacancies for three Regions. Two Regions have only one candidate, who are therefore elected unopposed. Biographies and personal statements of the candidates are shown here. Two nominations have been received for Region 13 and the election will be held next month.

Philip Hosey, MI0MSO

Elected unopposed as Region 8 Regional Manager

Date of Birth: 29 August 1967

CURRICULUM VITAE. I am currently employed as a Technical Support Officer with the Western Education and Library Board. I have been a Radio Amateur since 2002 having progressed through the existing three stages of Foundation, Intermediate and finally progressing to Full Licence after sitting the ComReg Examination in Letterkenny. I have been actively involved with the Foyle & District ARC as a Committee Member and more recently with the West Tyrone ARC where I am one of the founding members and have held the positions of PRO & secretary. I am also an active member of RAYNET NI.

PERSONAL STATEMENT. I wish to begin by thanking those who have nominated me for the position of RSGB Manager for Region 8. If elected I will make myself available to all clubs' and Amateurs' in the region to represent them at local and national level. I will continue to promote and champion the service that Amateur Radio provides to the whole community. I will represent Radio Amateurs' honestly and strive to develop the Society and its membership in the widest context while respecting the opinion of all. If elected I will not hold any committee post in any clubs.

Nominee	Location	Known for (yrs)
Mr A Duffey, GI6ZIR	Enniskillen, NI	10
Mr J McCullagh, GI4BWM	Ballyclare, NI	5
Mr M Irvine, MI0MSR	Dervock, NI	5
Mr T Campbell, MI5TCC	Londonderry, NI	10
Mr I Morrow, MI1CCU	Six Mile Cross, NI	6
Mr F Kearney, 2I0FPK	Omagh, NI	10
Mr G McClusker, MI6WGM	Co Armagh, NI	3
Mr C Morton, 2I0NIE	Fermanagh, NI	5
Mr E Macintyre, GI4DYE	Co Tyrone, NI	10
Mr R Blythe, MI0VFO	Co Tyrone, NI	10
Mr E McCrystal, GI7FHZ	Omagh, NI	40
Mr H Sinclair, GI4GOS	Belfast, NI	3
Mr B Burns, MI0TGO	Co Armagh, NI	3
Mr M Grainger, GI7UCS	Co Tyrone, NI	10

Larry Smith, G4OXY

Elected unopposed as Region 9 Regional Manager

Date of Birth: 17 October 1949

CURRICULUM VITAE. I was licensed in 1981 as G6BTL and progressed to my current call a year later. I have an interest in most aspects of Amateur Radio. My favourite bands are 4 & 6 metres especially during the sporadic E season.

I am a Member of the Shefford and District Amateur Radio Society, Camb-Hams and the Cambridge Repeater Group. I am currently the Deputy Regional Manager covering North Herts, Bedfordshire and Cambridgeshire. I am also a news reader for GB2RS broadcasting on both 2 and 4 metres on Sundays at 10:00 local.

PERSONAL STATEMENT. Having served as a DRM in Region 9, I have become aware of the challenges of taking on the responsibility of liaising and interfacing with the membership in such a large area. If I am elected to Manager Region 9, I will undertake to strengthen the presence and raise the profile of the Society and ensure that through a strong and motivated team of DRMs we achieve these aims.

My primary objective will be to promote and support radio amateurs, clubs and all facets of Amateur radio. I believe the Society should play a leading role in this and be seen and recognised as being at the forefront of Amateur Radio at a local level.

Nominee	Location	Known for (yrs)
Mr B Farey, G8GHR	Sandy, Beds	10
Mr S Richardson, M0SLP	Biggleswade, Beds	20
Mr G Luhman, G0ETA	Langford, Beds	15
Mr I Taylor, G3ORG	Henlow, Beds	4
Mr D Lloyd, G8UOD	Wilstead, Beds	4
Mr P Bradfield, G1GSN	Langford, Beds	5
Mr C Eavis, G0AKI	Biggleswade, Beds	5
Mr B Bourne, M0BIK	Beeston, Beds	5
Mr R Compton, M0ZPU	Potton, Beds	5
Mr T Baldwin, G4UEM	Watford, Herts	5
Mr W Pugh, G8IAG	Elstow, Beds	10
Mr J Burnett, 2E0OAK	Silsoe, Beds	2

Region 7: South Wales.
21/5/2013 – 17/6/2013.
Jimmy Sneddon, rm7@rsgb.org.uk

Region 9: London & Thames Valley.
18/6/2013 – 15/7/2013.
Alison Johnston, rm9@rsgb.org.uk

Region 12: England East & East Anglia.
16/7/2013 – 12/8/2013.
Mark Sanderson, rm12@rsgb.org.uk

Region 6: North Wales.
13/8/2013 – 9/9/2013.
Mark Harper, rm6@rsgb.org.uk

Region 13: England East Midlands.
10/9/2013 – 7/10/2013.
Jim Stevenson, rm13@rsgb.org.uk

Region 5: England West Midlands.
8/10/2013 – 4/11/2013.
Vaughan Ravenscroft, rm5@rsgb.org.uk

Region 1: Scotland West & Western Isles.
5/11/2013 – 2/12/2013.
Len Paget, rm1@rsgb.org.uk

Region 8: Northern Ireland.
3/12/2013 – 31/12/2013.
Peter Lowrie, rm8@rsgb.org.uk

Suggestions and requests for further information on any aspect of Centenary events should be sent to Rob Harwood, G0HRT by e-mail to centenary@rsgb.org.uk.

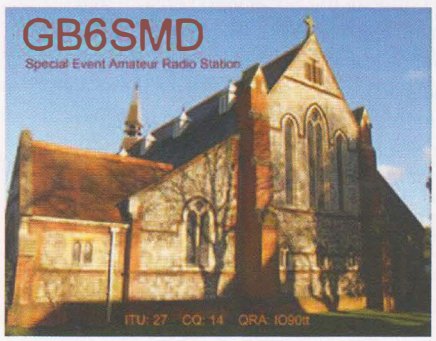
CHOTA 2012

Over 20 churches were active this year, the most participants since Churches & Chapels On The Air started in 2007. Churches and chapels with GB calls were active right from Cumbria to Oxfordshire and Cornwall to Norfolk. Most activity was on 40m SSB and the number of contacts made ranged from 60 to 140, including many QSOs with the continent and many churches working each other.

Several churches had good signals that they said were due the antenna being high up on the church tower – a ready made antenna support! One first time operator, GB4PAT on Anglesey, was running on battery power and said they could hear the echo on the audio from GB2CCC – Christ Church Cathederal in Oxford, who incidentally had over 80 visitors.

Many churches reported pile ups and were in demand for WAB squares. PD0WDV/P (Dutch novice near Amsterdam) ran a special station just work CHOTA stations and enjoyed it so much they intend to put their own church on next year.

With CHOTA being on Saturday, some churches have weddings taking place, but still managed to put a station on in an adjoining room or church hall. Next year CHOTA will be on Saturday 14 September. The event always coincides with churches and chapels being open for the annual Ride and Stride fundraising event that takes place in most counties.



Aluminium tubing

Antenna Engineering is now offering a new range of telescopic aluminium tubing for custom building your own antennas. The 6063 – T6 seamless telescopic aluminium is available with diameters ranging from 0.875 – 2.125" and are supplied in 6' lengths. The tubing has a wall thickness of 0.058" that gives a close tolerance sliding fit into the next section allowing easy assembly and the antenna element can be simply secured with stainless clamps. Adjusting the height of the antenna or element lengths can be done with ease.

The tubing can be purchased individually or as part of an 11 section 60ft telescopic kit for £164. www.antennaengineering.co.uk.

Aitutaki DXpedition

From 12 to 30 November, Frank, HB9BXU will lead a team to activate the island of Aitutaki, which is part of the Cook Islands (E51) and is situated in the Polynesian Triangle of the Southern Pacific area. The activation will operate on the 10m to 80m bands, including WARC bands, using SSB, CW and PSK31. The DXpedition is 'holiday-style'.

IARU Region 3

The RSGB is deeply saddened to learn of the sudden death of Michael Owen, VK3KI, President of the Wireless Institute of Australia, and Chairman of IARU Region 3.

Michael was one of the world influencers on the development of amateur radio. He had been Chairman of Directors of IARU Region 3 for some years, and had also been President of WIA since the restructure of the Institute in 2004. He was IARU Vice President for 10 years from 1989, and before that was a director of IARU Region 3. He had been a member of the IARU Team at a number of World Radiocommunications Conferences, in particular WRC03, where he was responsible for the formative work done to reshape Article 25 of the Radio Regulations.

A lawyer, a partner in a legal practice, then a director and General Counsel of an international company, Michael put his skills to effective use in the interests of the amateur services. He leaves a void in the world of amateur radio that will be hard to fill.

The RSGB extends its deepest sympathies to Michael's wife and family on their very sad loss.

The IARU has announced that Peter Lake, ZL2AZ is to take over as the new Chairman of IARU Region 3.

GB7DE

The Fife digital repeater, GB7DE, is now reconnected to the D-Star network. GB7DE, which operates on the 2m and 70cm bands, was without an internet connection after December 2010. This meant that the D-Star repeater could not connect to any D-Star reflectors or any other D-Star systems. A new admin team was formed (Martin, MM0DUN, Andrew, MM0DXE, John, GM7HHB and Danny, GM6CMQ) so that GB7DE no longer had to rely on one individual to keep it up and running. The new team have all donated equipment, materials and their own time in getting this D-Star repeater back onto an internet gateway connection to allow linking to the outside world. The repeater group is hoping users will financially support the work to ensure that GB7DE remains on an internet connection. See www.gb7de.co.uk for details.

SOTAbeams

SOTAbeams was originally set up as a hobby business by Richard Newstead, G3CWI, to help radio amateurs participating in the SOTA award programme. Since then its range of products has grown significantly but it remains true to Richard's vision of having everything portable in one place. Recently SOTAbeams has moved to an online webstore at www.sotabeams.co.uk and the company has expanded its range of products to include HF antennas.

NEWS IN BRIEF

• M0CVO Antennas has recently introduced the Magitenna to their range of antennas. This is, effectively, a short wire antenna (7.6m) with a matching unit at the feed point. This antenna is ideal for portable or fixed station use, with a 400W power rating it is equally good for either QRP or QRO. Full details are on www.m0cvoantennas.com.

• After an extensive rebuild, MB7ICB is now back on the air. The radio has been renewed with a Yaesu FT-2800 and a new interface to connect to the newly refurbished Echolink computer. The frequency and CTCSS remain the same at 145.2875 and 110.9, but the links ident is now in CW to conform with the regulations. The RF power is 5W and the quarter wave antenna ensures good coverage while staying well within the limits.

Please use the link but observe all the usual radio protocol and give your callsign whenever connecting or disconnecting, remember that when linked through Echolink, you are possibly speaking worldwide.

• The new Midland 40th Anniversary catalogue is now available. The eighty page catalogue shows the ever growing range of Midland products from amateur, CB radio and PMR446 to communications equipment for sports and action. A free copy is a available upon request from Nevada, the UK distributors, www.nevadaradio.co.uk.

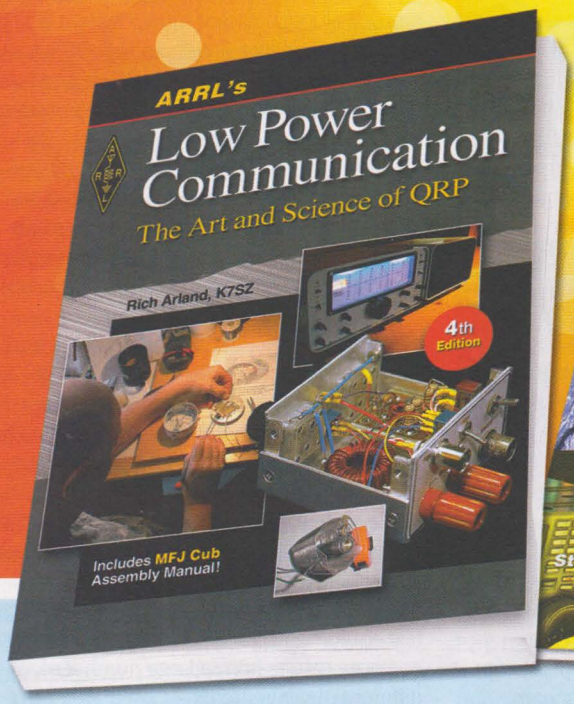
• The 2013 Bath Buildathon will take place on Saturday 12 January 2013 at the Bath & District Scout Headquarters in the city centre. A Buildathon is essentially a workshop where like-minded folk gather together to build a radio project. The one in Bath is aimed primarily at students preparing for the Intermediate assessment but it is open to anyone with an interest in melting solder under the guidance of some seasoned homebrew mentors. Enquiries, booking form requests and nominations for the free places should go to Steve Hartley, G0FUW, e-mail G0FUW@tiscali.co.uk.

RSGB shop

P&P FROM FREE

see page 80 for full details

NEW



E&OE All prices shown plus p&p

ARRL Low Power Communication

Richard Arland, K7SZ

The fourth edition of *ARRL Low Power Communication* is your guidebook to the fascinating world of low power QRP operating. This book promises that "Just a Little RF Power Goes a Long Way" and it shows that with only 5W or less you can enjoy conversations over hundreds and even thousands of miles. Ask any QRPer, and they'll tell you that less really is more and with a handful of parts, you can build a radio and put it on the air. *ARRL Low Power Communication* provides the resources you need for getting started and the latest information on advanced QRP techniques. There are guides to kit building, chasing DX, building antennas, propagation theory and much more. For the beginner there are "Tips to Get You Started the Right Way", "An introduction to QRP operating" and "FAQs for Beginners". There are many tips that even experienced amateurs will appreciate and *ARRL Low Power Communication* provides a great guide to getting the most out of QRP radio.

Included: Equipment and Station Accessories - commercial gear, kit-building and home-brew including an all-new home-brew photo gallery. • Antennas for QRP – Updated and Expanded! Wire beams, loops, dipoles, portable antennas and a look at the author's new stealth antenna design. • Operating Strategies - operating techniques, awards, and contesting • Emergency Communication - training, planning and other factors. NEW! HF Propagation for the QPRerAn authoritative look at likely propagation conditions for Solar Cycle 24.

ISBN: 9780-8725-9582-8
Size 183x227mm, 320 pages

Non Members' Price £22.99
RSGB Members' Price £19.54

The Rig Guide

Edited by Steve White, G3ZVW

The Rig Guide is one of the most popular books published by the RSGB as there is nothing else quite like it. This fully updated and revised edition simply defines the prices of amateur radio equipment in the UK.

Planning to buy or sell any amateur radio equipment? You should not be without *The Rig Guide*. If you want to know what the trade in price is for your existing kit or how much it will fetch as a second hand item, this book provides it along with current retail prices too. The guide isn't just limited to popular commercial amateur radio transceivers but also covers receivers, scanners and linear amplifiers too. You'll find extensive lists of past models from Alinco, Yaesu, Icom, TenTec and Kenwood and many others and so we're not just talking about current models either. There are full reviews that include handhelds from Icom & Wouxun and the Flex-1500. Overall *The Rig Guide* contains details of over 300 pieces of equipment covering HF, VHF & UHF. Each is described in an easy to understand listing that covers its main features, band coverage etc with a photograph and details of its RadCom review (a full list of *RadCom* reviews since 1990 is also included). There are also tips for buyers and a guide to selling and trading.

You can easily recoup the cost of *The Rig Guide* with your very first purchase or sale by simply knowing how much you ought to pay for an item (or sell) – the other person probably has a copy, so why be at a disadvantage? Buy a copy today!

Size: 210x297mm, 96 pages
ISBN: 9781-9050-8680-1

Price £5.99 & Free P&P

Radio Society of Great Britain **www.rsgbshop.org**
3 Abbey Court, Priory Business Park, Bedford, MK44 3WH. Tel: 01234 832 700 Fax: 01234 831 496

The 15th International EME Conference

PHOTO 1: The organising team.

EME2012. Between 15 and 19 August 2012, the UK Microwave Group hosted the 15th International EME Conference at Churchill College, Cambridge. International EME conferences are held every two years to provide a forum for those engaged in this very challenging branch of our hobby to exchange ideas and stay abreast of the latest developments. Having won the bid to host the conference at the 14th event in Texas in 2010, the UK Microwave Group set up a committee under the very capable chairmanship of Graham Murchie, G4FSG. With generous sponsorship from Waters and Stanton and others, a comprehensive programme was developed. This included two days of lectures and multi media presentations, a pre-conference guided tour to the Bletchley Park WWII code breaking centre, two formal dinners and a programme for delegates' partners.

Nearly two hundred delegates and 75 partners from 26 countries attended making this the largest and arguably the most successful EME conference to date.

SOCIAL SCENE. The two formal dinners were held in the large and impressive Churchill College dining hall. There is always something special about dining at one of the Cambridge colleges. The quality of the food and service were fully up to expectation and the wine flowed freely. Following Friday dinner, Howard Long, G6LVB, creator of the FunCube Dongle entertained delegates and their partners with the story of its genesis and gave us an early preview of the latest version.

The Saturday Gala Dinner speaker was the eminent radio astronomer Professor Antony Hewish who described his long involvement in radio astronomy, which led to his being awarded the 1974 Nobel Prize for Physics. It was especially appropriate that Joe Taylor, K1JT, an EME enthusiast and delegate to the conference, was re-united with fellow Nobel Laureate and friend Professor Hewish. With two such eminent radio astronomers present and by the inclusion in the lecture programme of a talk on using a 'back yard' interferometer to detect radio emissions from the Virgo cluster at a distance of about 50 million light years, the connection between Earth-Moon-Earth communications and radio astronomy was clearly demonstrated.

SPACED BASED TOPICS. As EME is very much a space-based branch of amateur radio, it was decided early in the planning of the conference that we should try to balance the programme by including not only strictly EME topics but also try to cover some aspects of radio astronomy and space research.

Following the initial call for papers, a large number of proposals for presentations were received. So many, in fact, that we were unable to fit all of them into the two day programme without some careful planning and the introduction of a second 'stream'.

The decision was made to limit each presentation in the main lecture theatre to around 30-35 minutes and to also run separate multimedia sessions during break and lunch times. The attraction of these additional presentations was that the presenters could take as long as needed (within reason!).

LECTURE TOPICS. Among the subjects covered in the Conference were:

- A review of the history and background to amateur radio EME
- An appraisement of the frontiers of EME and where-to next
- The technologies that are driving this branch of the hobby, including power amplifier devices, low noise receivers, antennas & feeds and software applications to improve system performance and usability
- Station control
- Measurement limitations and what can be done to improve accuracy and reproducibility
- Practical equipment aspects including designs, modifications and updates
- Receiving weak signal sources from space
- Operational results from an EME expedition
- Some alternative applications within EME.

We were fortunate that some of the most experienced and able EME enthusiasts in the world had offered to present their papers, making EME2012 a most informative, entertaining and memorable event. The talks were recorded and can be viewed online by visiting the BATC website [1].

MEASUREMENT FACILITIES. As has become traditional at EME conferences, a facility was provided for delegates to bring along preamplifiers in order to have their gain and noise figures measured and compared. The test test facility was provided by Dominique, HB9BBD and John, G3XDY. Dominique brought along a current model Agilent 8975A noise figure analyser, with an N4000A noise head that covers 10MHz to 18GHz and has a 5dB Excess Noise Ratio (ENR). John operated a second system comprising a Hewlett Packard 8970A NF meter with a choice of HP346A and C series noise sources. Dominique and John were kept very busy for the two main conference days, with over 130 measurements completed. The full results table can be found at [2].

John spent a good proportion of the time working with Leif, SM5BSZ, who brought a suitcase full of 144MHz preamplifiers. Each was measured with different lengths of cable between the noise source and preamplifier in order to gain data on the effects of imperfections in the noise source matching in its 'on' and 'off' states. This is a technique that Leif had been developing for some months prior to the Conference. The availability of several different test equipments gave Leif the opportunity to compare results from a large number of different measurements.

One of Leif's preamplifiers gave noise figures ranging from 0.02 to 0.27dB, using different cable lengths and, although Leif had built a preamplifier with a negative input impedance in the hope of confusing the measuring gear, it did not display a negative noise figure! Leif's analysis of the results is available at [3].

Meanwhile Dominique's more sophisticated analyser was in use for measurements on all bands from 144MHz to 10GHz. The Agilent 8975A is able to give a swept frequency plot of gain and noise figure which is very useful in determining if the preamplifier is correctly tuned.

In addition to preamplifier measurements, several noise heads were characterised for those with their own NF test equipment, by comparing them with the N4000A, which had a current calibration certificate. This was done over the frequency range 100-18000MHz.

It is important to remember that although measurements were made to a resolution of 0.01dB, the uncertainties in the systems mean that the absolute accuracy could be as much as 0.5 to 0.7dB, worst case, so the results have to be taken as a guide only. Ultimately, the proof of the pudding is how each preamplifier performs on a real EME antenna system. These limitations of NF measurements formed the topic for an interesting conference paper by Dave, GM4ZNX and Ian, GM3SEK.

GB2EME. Throughout the conference, a remote-controlled 2m station belonging to G4SWX, located some 90km east of Cambridge, was operating using JT65B digital mode. The special event callsign GB2EME was issued by

Ofcom for a demonstration station in support of the EME2012 Conference. What made GB2EME different from other special event or demonstration stations is that it only operated using Earth-Moon-Earth (EME) communications on 144MHz by complete remote operation of the station. The key to this was remote control of a Kenwood TS-2000 transceiver using technology from remoterig.com and remote azimuth and elevation rotator interfaces put together by John, G4SWX. The station used four 16-element I0JXX Yagi antennas with full elevation control and a power amplifier using an Eimac 8877 triode.

One of the major problems during the two days of operation of GB2EME was the proximity of the sun to the moon. At times this was only 7°, which required skilful offsetting of the antenna array so that weak EME signals were not 'drowned out' with solar noise. Despite the difficulties, 122 QSOs were completed. The logs can be found at [4] and show 117 different callsigns, 27 DXCC Countries, 15 US States and 96 grid squares.

Despite nearly 200 of the world's leading EME operators attending the conference there were a large number of enthusiastic callers, making the GB2EME operation a great success. At times, particularly on the Friday morning, there were over 15 stations calling at once!

Throughout the conference delegates crowded around the large screen showing the received spectrum and callsigns decoded. One of the 'guest operators' on GB2EME was K1JT, the designer of the JT65 protocol and software now used by many EME operators.

The station operated during the conference hours for both days without a single data communications glitch, a tribute to the network provided by the Churchill College IT support team. With most EME operators wanting QSL cards to be sent direct there could be quite a postage bill. At the time of preparing this report, in late September, the special QSL cards have arrived and John is busy filling out cards for the stations worked by GB2EME.

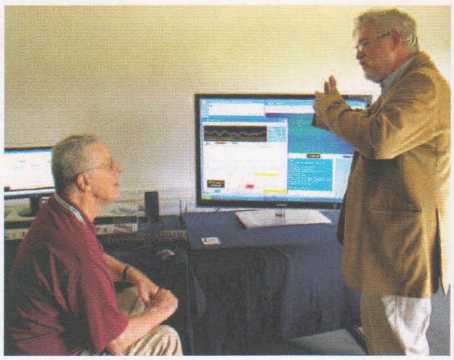


PHOTO 2: Joe Taylor, K1JT and Leif, SM5BSZ at the remote controlled GB2EME.

PHOTO 3: Professor Hewish and Joe Taylor at the Gala dinner.

PHOTO 4: Delegates and organisers of EME2012.

PRE CONFERENCE TOUR. On Thursday 16th, the day before the main conference started, 115 conference delegates and partners visited Bletchley Park. Three coaches transported them the 47 miles to the historic site located equidistant between Oxford and Cambridge and from where many brilliant minds were recruited in 1939 to break the German codes. The museum has a working replica of Colossus, the world's first electronic computer, built by Tommy Flowers at the Post Office Research Station at Dollis Hill, which was used to break the code of the Lorenz cipher machines. The guided tour included the rooms where the brilliant mathematicians Alan Turing and Bill Tutte lived and worked. The party was split into three groups and the guides, one of whom was Martin Atherton, G3ZAY, did an excellent job of balancing the technical aspects (for the delegates) and the human aspects (for the partners) of those who worked at BP throughout WWII.

At the end of the visit many of the delegates visited the RSGB National Radio Centre (described in the October RadCom).

PARTNERS' PROGRAMME. On the Friday of the conference partners were free to visit and explore the historic city of Cambridge, whilst on the Saturday there was a tour of the market town of Saffron Walden and the striking Audley End house and gardens. Ancient Saffron Walden dates back to before the birth of Christ and is the home of the largest parish church in the county of Essex. At Audley End manor house, visitors were able to take a step back in time and see how the English aristocracy and their servants lived in this Jacobean mansion. The gardens at the house have been restored to their original glory by English Heritage as has the Pastoral Parkland that was designed by Lancelot 'Capability' Brown in the 1700s.

Previous EME conference venues included Prague, Wurzburg, Florence and Dallas. With such a heritage, the organisers were anxious that Cambridge would be successful. From the many very positive comments received from attendees, both during and after the event, we believe we achieved our goal to make this one of the best International EME Conferences ever.

SUCCESSFUL EVENT. The success of any conference depends not only on attention to detail by the organisers but also in having the support of the target audience by way of presentation material. The quality and quantity of presentation material contained in the Conference proceedings and accompanying DVD testifies to the success of this. Copies of the Proceedings and associated DVD are available from the RSGB [5].

The support of sponsors is also important and the organisers were pleased that Waters and Stanton PLC felt able to support the Conference as the principal sponsor. A number of other companies and individuals also acted as additional sponsors by donating prizes to the grand raffle draw. So many prizes were donated that there was something for nearly everyone!

A very special thank you from the organisers of EME2012 to the team from Camb Hams [6] who manned the reception desk throughout the conference.

Following a vote by attendees at EME 2012 the decision was made to hold EME2014 in Lannion, France.

WEBSEARCH

[1] Video: go to www.batc.tv and click on 'film archive' at the top of the left hand column. Select 'EME 2012 conference' from the category drop down box and press 'select category'. Now select the stream or session you wish to watch from the drop down box and press 'select stream'. Then press the play arrow in the video window to start the stream.
[2] Noise measurement results: www.eme2012.com/resources/EME2012NFv2.pdf
[3] SM5BSZ results: www.sm5bsz.com/lir/nf/eme2012.htm
[4] GB2EME logs: www.eme2012.com/eme/gb2eme.html
[5] RSGB: www.rsgbshop.org/acatalog/Online_Catalogue_What_s_New_26.html
[6] Camb Hams: www.camb-hams.com/

ATV

What goes around, hoots around…

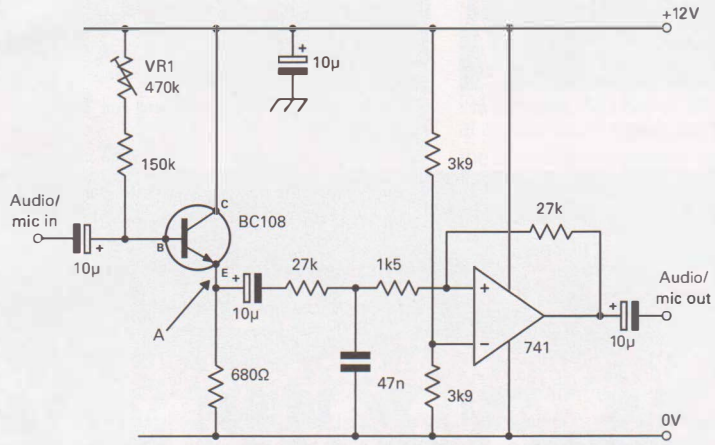


FIGURE 1: Anti-hoot-round microphone buffer. Set VR1 for ~3.5V at point A.

NOT JUST ATV. This month's main topic is not specific to ATV, but it was occurrences during ATV club nets that triggered various 'why don't you…?' suggestions.

The problem, usually referred to as hoot-round, howl-round, or feedback, is the intense oscillation that can occur when, for example, a microphone and speaker are too close. This can also happen when receiving the returned signal from audio and video repeaters as well as any form of simultaneous duplex/two band operation. Suggestions to 'turn the volume down' or 'use headphones' are all very well but can be inconvenient.

CAUSE. Hoot-round is produced when the input and output are in phase. An amplifier using this basic positive feedback principle is an oscillator. So, in the case of a hoot-round, shifting the input to be out of phase with the output can stop the oscillation. However, a point to watch is that due to the build up of a time delay around the system, an echo effect can still occur if the volume is set too high.

Figure 1 shows a simple audio phase shift buffer stage. My notebook dated the circuit as drawn in October 2005, but it was originally made up when amateur VHF and UHF audio repeaters first started. Being able to listen to your returned signal was useful during a period when certain 'disruptive interference' occurred.

A small phase shift created by an RC network (27k and 47nF) is combined with the components of a 741 opamp that helps to provide a near constant, unity gain over the audio bandwidth. An emitter follower at the input ensures necessary constant impedance at the input of the phase network.

THE DIGITAL APPROACH. There are digital ICs that can be used to produce echo and phase shifting for audio effects. The ability to produce an audio phase shift means that these ICs can be used to stop speaker to microphone feedback (hoot). One popular delay IC is the Princeton Technology PT2399. Instead of presenting a circuit diagram and working details here it is better to refer you to the article 'Digital Delay Unit for Surround Sound, Reverb & Echo' (Project 26A) by Rod Elliot **[1]**. His Figure 3 – Super-Simple PT2399 Delay Circuit (less the Repeat connection) is almost identical to what I would have shown. His article also covers various features of the PT2399 as well as a possible solution to difficulties that can occur when using a very small delay.

ANOTHER USE. Whilst looking into the properties of the PT2399 delay IC a thought occurred to me. It is very useful to have audio/video editing software for ATV to tidy up, cut out unwanted sections, add captions and convert to different video formats. Many freebie programs are available, as a web search will show. However, file format conversion needs quite a complex algorithm as it has to deal with different format video and audio components. A failing of many free programs is good lip sync after conversion. Having received one or two AV files with the audio in advance of the video, my thought was to use the PT2399 as a cheap homebrew variable audio delay to bring the audio back into sync when the file is played. Used sparingly, the repeat/reverb function could add a little 'sparkle' to dull audio.

BACK TO TEST CARDS AND IDENTS. In the last column I forgot to mention the *PicDream* by Alain Fort, F1CJN. The most basic version displays three lines of information: a scrolling message, an eight block greyscale and a digital clock. Adding an MC1377 IC brings colour. Subsequent developments brought enhanced capabilities, eg selectable callsign/scrolled information lines and a test tone output. A description, schematic and assembly program code for an improved version using a PIC16C84-10 and a 6MHz clock (P2d.asm) is available on the BATC website **[2]**. An advanced 8MHz clock version by Antonio, IK1HGI, uses three push buttons to make reprogramming easy for the user **[3]**. A representative output for this version is shown in **Figure 2** (my hardware was not finished in time for the press deadline).

LATEST DIGITAL NEWS. At the BATC 2012 BiGM & Conference in October, two new UK digital ATV transmission approaches were presented in addition to the now famous DigiLite system. Further details of these methods and the other 'happenings' at the conference will be subjects of the next CQ-TV journal.

DISCUSSION POINT. Analogue ATV repeaters relay the incoming video signal after detecting the video sync pulses. With various oddball and off frequency video sender transmissions occasionally appearing in the 23 and 13cm bands, repeaters can be opened up inappropriately. Why not consider a CCTSS tone on the audio subcarrier? Only if syncs *and* tone are received is it a *valid ATV* transmission. A short practical test has shown this arrangement should be viable. Any comments?

SILENT KEY. Sadly John, G0HAT became a silent key on 10 September. He was a long time member of the Home Counties ATV group and, more recently, SCART and Bournemouth Radio Club, as well as a very active member of BATC. He will be greatly missed.

WEBSEARCH

[1] www.sound.westhost.com/project26a.htm
[2] www.batc.org.uk/cq-tv/software/index.html
[3] www.qsl.net/ik1hgi/atv/mire07.htm

FIGURE 2: Representation of IK1HGI Advanced *PicDream* output.

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New Icom IC-7100

Who wants one of these little beauties in their shack? I do! Just check this one part of the specification: 70MHz as STANDARD! At last, a Japanese manufacturer that realises how important the 4m band is to the UK. Full TOUCH SCREEN remote controller, D-Star, All Mode, 160--70cm (including 4m!)

First seen in the UK at the recent RSGB HamFest and at the RSGB's Convention, the new IC-7100 really was "Star of the Show" We have started a list and it's getting longer by the day. See web for more details.

New product!

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The RC-28 utilises the same tuning knob and encoder used on Icom HF radios, (identical to the IC-7000) providing a tactile option for the bundled RS-BA1 IP control software. The table top controller includes a sturdy PTT and two user-programmable function keys. The RC-28 is not a standalone control for Icom radios and may only be used with the RS-BA1 software.

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Reviewed in RadioUser August 2012

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No release date yet - see web.

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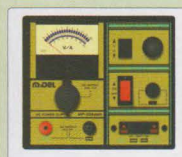

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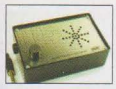


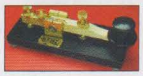

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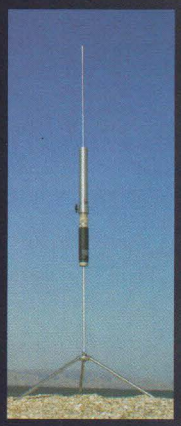

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Homebrew

RF amplifiers, mixers and direct conversion receivers

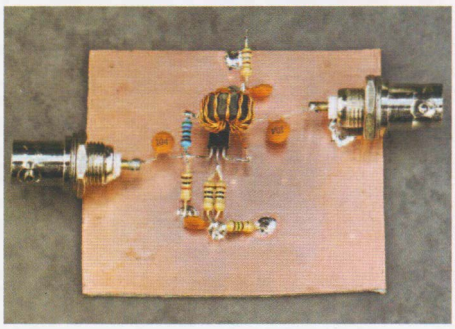

PHOTO 1: RF front end amplifier.

IMPROVING PERFORMANCE. The very simple receivers described over the last two months were fun to build, but rather lacking in performance. If we are to receive very weak signals from distant SSB and CW stations, we will need a more sensitive receiver. Sensitivity can be greatly increased by placing an RF amplifier between the aerial and the detector/demodulator stage of the receiver. In the case of a simple TRF (tuned radio frequency) receiver, the RF amplification always takes place at the signal frequency. In superhet (supersonic-heterodyne) receivers, the RF signal is first converted to an intermediate frequency (IF) where most, or in some cases, all of the radio frequency amplification takes place. The superhet offers some significant advantages over simpler TRF and regenerative receivers. We will take a closer look at superhet receiver design and construction in the months ahead.

A close relative of the superhet is the direct conversion (DC) receiver. This type of receiver is of great interest to the amateur constructor because it is probably the simplest practical receiver capable of reliably receiving and demodulating SSB and CW signals. The simple DC receivers described here are not suitable for FM or AM reception.

The direct conversion receiver uses a frequency mixer to convert the received RF signal directly down to the audio frequency range. The frequency conversion is achieved by mixing the received RF signal with a local oscillator signal. The local oscillator is tuned to a frequency that is very close to the frequency of the received signal. For example: if we want to receive a CW signal at 3560kHz, we might use a local oscillator frequency 3561kHz.

The received RF is fed to the RF port of a mixer and the local oscillator signal to the LO port. Assuming that we are using a perfect double-balanced mixer (DBM), the only signals that will appear at the mixer IF port are the sum and difference of RF and LO frequencies. The sum is 3561+3560=7121kHz; this is far removed from the audio frequency spectrum. The difference frequency is 3561−3560=1kHz. As this is well within the range of human hearing, it can be amplified and then fed to a loudspeaker. A frequency mixer used in this manner is known as a product detector (PD). Most direct conversion receivers have a low pass filter (LPF) immediately following the mixer. This removes the sum signal and any other RF signals appearing at the mixer output. As the audio amplifier stages of a typical direct conversion receiver have extremely high gain, it is important to keep any unwanted signals away from the AF amplifier input.

GAIN. Gain distribution is an important aspect of receiver design. The overall gain of the entire receiver is made up from the various gains and losses associated with each receiver stage. It is often useful to think of circuit losses as negative gain. The first stage in a receiver block diagram is usually some form of passive RF bandpass filter (BPF). This will have a small power loss. A typical BPF loss might be 2dB. This loss may be considered as a gain value of -2dB. Most receivers will have some RF amplification at the front end, particularly if the receiver covers the HF or VHF bands. A front end RF amplifier gain of 10-20dB is typical for HF. Even higher gain may be used at VHF and beyond. The first mixer in a superhet (or product detector in a DC receiver) may have gain or loss depending on mixer type. Passive mixers like the diode double balanced mixer used in this month's project always have a conversion loss.

A good, sensitive receiver will have enough gain to produce several volts of AF signal at the loudspeaker for microvolts of RF input from the aerial. This is a voltage gain of 1 million times, or 120dB.

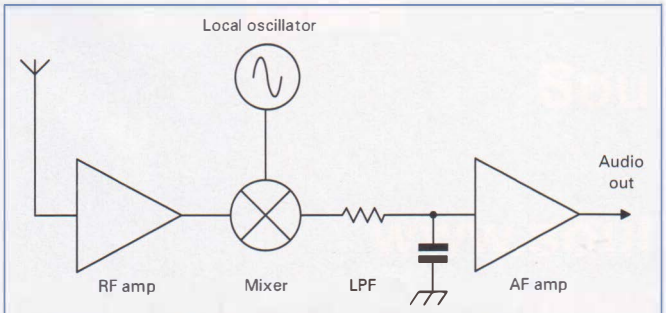

FIGURE 1: Block diagram of a direct conversion receiver.

Even a relatively simple homebrew receiver will need at least 80-100dB of gain. In a typical superhet receiver, the gain will be distributed across the RF, IF and AF amplifiers. The greatest gain is usually in the IF stages. A typical SSB/CW IF strip will have 50-100dB of gain. As the direct conversion receiver doesn't have any IF amplifiers, all of the gain must be achieved at either RF or AF. There are practical limits to the amount of RF gain that can be used in the receiver front end. Excessive RF gain will cause overloading of the mixer/PD that would seriously compromise receiver dynamic range. For HF use, 10-20dB is a useful amount of RF gain. For the lower bands (160m-40m) it is common practice to use no RF amplifier, so that the entire gain of the receiver is achieved in the audio stages. Building an audio amplifier with more than 100dB of gain poses a few challenges for the amateur constructor. The low level amplifier stages must be well screened and the power supply lines properly decoupled so that mains hum and other external noises are kept out of the amplifier chain.

Figure 1 shows a typical configuration for the front end of a DC receiver. In the case of a single band receiver, the RF amplifier will usually be a narrowband design with L/C bandpass filtering so that out-of-band signals are kept away from the sensitive product detector and AF amplifier circuits. Mixer linearity is critically important in a DC receiver. Non-linear behaviour of the mixer/PD will lead to demodulation of AM broadcast stations. DC receivers using low level active IC mixers as the product detector are very prone to this form of AM 'breakthrough'. I have found that high level passive diode mixers give the best results. The simple two-diode single balanced mixer serves well as a PD. A standard diode double balanced mixer (DBM) makes

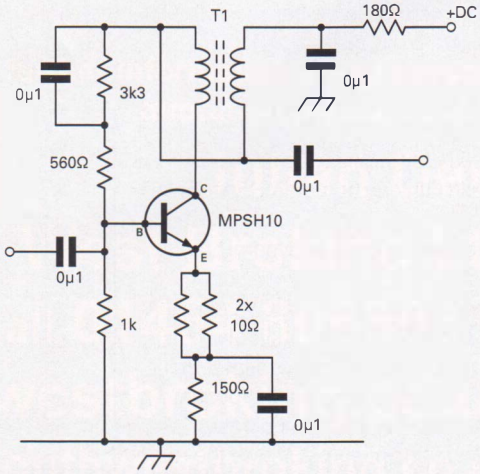

FIGURE 2: Front end RF amplifier.

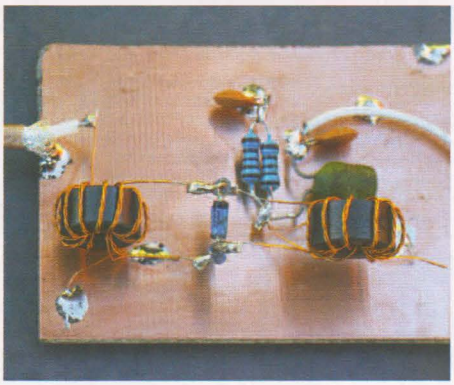

PHOTO 2: Double balanced mixer.

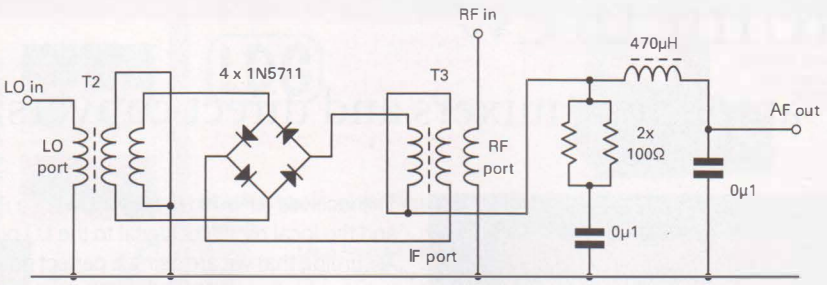

FIGURE 3: Double balanced mixer.

an almost ideal PD. Commercially made high level mixer modules will give excellent results, but home made diode mixers can achieve equally good performance at a small fraction of the cost. By convention, the DBM port used as the PD output is labelled as the 'IF port'. With most commonly available DBMs, the RF and LO ports are transformer coupled. This means they can not be used with DC signals. The IF is the only port with a direct DC connection, so that it can be used over a very wide bandwidth from VHF all the way down to DC. This allows the DBM to be used as an AF product detector, a phase detector, variable attenuator or RF switch. As the DBM is a bidirectional device, it can also be used in a transmitter as a balanced modulator. The PD in Figure 1 is followed by a simple LPF. If a relatively low cutoff frequency is used, this will keep mixer products generated by strong out-of-band signals out of the AF amplifier stages. Most of these unwanted signals will be at frequencies outside the audible range, but very strong signals may cause distortion or gain compression that could interfere with reception of wanted signals. Many DC receiver designs use a slightly more elaborate type of filter called a diplexer. As well as providing the required filtering, the diplexer ensures that the mixer IF port is properly terminated by a 50Ω load at all frequencies. The first AF amplifier should act as an impedance transformer between the 50Ω mixer/PD and the higher input impedance of later AF amplifier stages. The common-base transistor amplifier is well suited to this task.

RF AMPLIFIER. In some of our previous receiver projects, we have used very strong RF amplifiers based on one or more VHF/UHF power transistors. This approach is ideal when receiver dynamic range is a priority. Using such a strong amplifier in a simple DC receiver is probably overkill. A simple RF amplifier based on a small TO-92 packaged transistor will probably be adequate for most operating conditions. **Figure 2** shows the RF amplifier stage of the DC receiver. The transistor is an MPSH10.

This device is specified as a low-noise VHF/UHF amplifier. The transistor is biased for a standing current of 10mA from the 13.8V DC supply for a DC input power of 138mW or +21dBm. We can expect the amplifier 1dB compression point to approach this value and the output 3rd order intercept to be a bit higher, somewhere in the region of +25 to 30dBm. Amplifier gain is approximately 20dB, so the expected input IP3 should be around +5 to +10dBm. This is hardly state of the art, but it should be adequate for our purposes. The assembled amplifier is shown in **Photo 1**. Construction is quite straightforward. Transformer T1 is 12 turns bifilar wound on an FT37-43 or similar ferrite toroid. The 5Ω emitter feedback resistor is made from a parallel pair of 10Ω resistors. A transistor heatsink is not necessary. For best HF performance, component leads should be kept short and straight. Gain was measured at 19.5dB across the HF spectrum. Gain is flat to within 1dB from 1.5MHz to 40MHz and 3dB from 0.9MHz to 80MHz. Input and output return loss was measured at better than 20dB (SWR 1.2:1) from 1.8MHz to more than 30MHz.

MIXER/PD. The DBM schematic is shown in **Figure 3**. I used four 1N5711 Schottky diodes in the usual ring configuration. T2 and T3 are each 10 turns trifilar wound on an FT37-43 or similar core. **Photo 2** shows the assembled mixer. **Photo 3** shows the exact configuration of the windings. I used three twisted lengths of 35SWG (0.21mm) enamelled copper wire for each set of windings. The wire diameter isn't critical. You can safely use any thin enamelled wire as long as it will fit on the core. The mixer

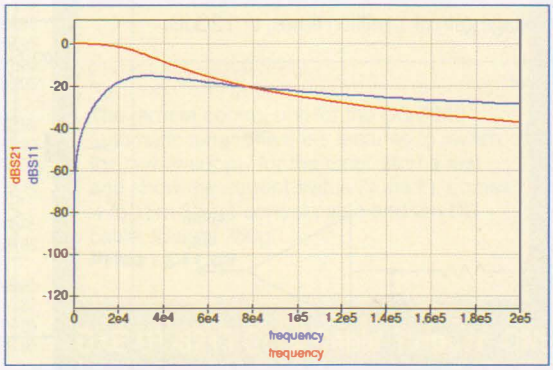

FIGURE 4: QUCS simulation of diplexer transmission and return loss (see text).

LO to RF port isolation was measured at greater than 50dB across the entire HF range. I have built quite a few of these mixers in the past and all of them show the same excellent isolation between LO and RF ports. This means that there will be no significant amount of local oscillator leakage out to the aerial, even if you don't use an RF amplifier.

The mixer/PD is followed by a very simple diplexer. This improves the IF port termination for RF signals. The diplexer provides a proper 50Ω termination for the local oscillator, image (sum) signal and any other RF signals that find their way into the mixer. The diplexer rolls off at approximately 30kHz. This doesn't provide much selectivity, but at least it keeps strong out of band signals away from the audio amplifier. **Figure 4** shows a QUCS simulation of transmission and return loss for the diplexer from 1Hz to 200kHz. The main selectivity will be placed between the common-base buffer and the audio amplifiers that were described last month.

AUDIO AMPLIFIER. The common-base amplifier schematic is shown in **Figure 5**. The circuit is very simple and quite similar to the design used in the phasing receiver project (March 2009). The only unusual feature is the degree of power supply decoupling. I used a pair of 470µF electrolytic capacitors in parallel. This part of the circuit is so sensitive to noise on the DC supply that adding the second capacitor gave a noticeable reduction in mains hum.

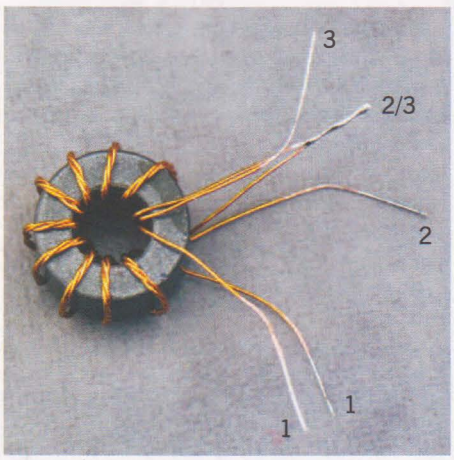

PHOTO 3: Winding configuration for DBM transformers.

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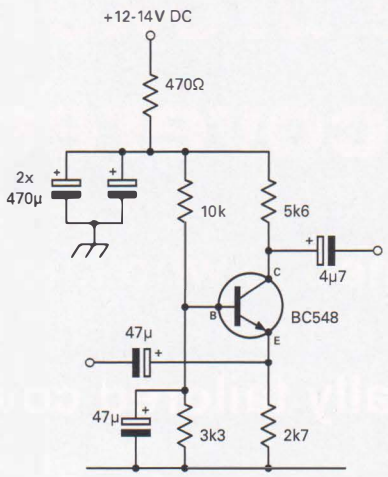

FIGURE 5: Common-base audio buffer amplifier.

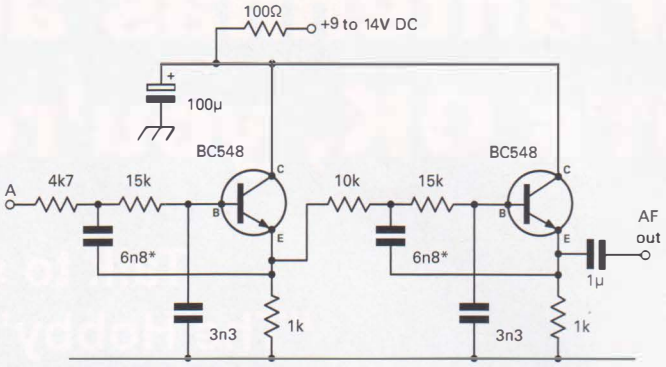

FIGURE 6: Low pass filter circuit.

TESTING. I used my HF doublet and T-match ATU to feed the input of the RF amplifier. The amplifier output was connected to the RF port of the receive mixer. This arrangement doesn't provide much in the way of front end selectivity, but I was pleasantly surprised to find that there was no trace of AM breakthrough or any other spurious signals during testing. I used my shack signal generator (March 2010) as the local oscillator source. LO injection level was +10dBm. The output from the common-base AF buffer was fed to the NE5534 low level amplifier and finally to the TDA2050 power amplifier. Both amplifiers were described in detail last month.

As soon as I connected the aerial, I could hear SSB and CW signals on the 20m band. Using the wire doublet, ATU and the DDS based signal generator allowed full frequency coverage from LF to above 30MHz. Many US, South American and European signals were heard on 20, 17, 15 and 10m. The 40m band was alive with SSB and CW signals from the UK and Western Europe. Conditions on 160m and 80m are poor during daylight hours, but I'm sure they will come to life after dark. First impressions are very positive. The simple DC receiver is working better than expected. I had forgotten how good a DC receiver sounds when compared to a superhet with a narrow filter. Selectivity may be poor, but the quality of the recovered audio is exceptionally good.

Many of the modules built so far will eventually end up as part of a superhet receiver that will be described over the next few months. I wasn't going to invest too much time and effort in the development and testing of the DC receiver because I only saw it as a step on the road to a more advanced superhet receiver project. However, as I have been so favourably impressed by the performance of this simple receiver, I will attempt to improve the selectivity by adding a filter with switchable bandwidth for SSB or CW reception. The circuit in **Figure 6** and the following text was originally published in the June 2006 Homebrew.

AUDIO LPF. To improve the receiver's signal to noise ratio, I added a very simple low pass filter to the low level audio amplifier stage. The filter is a Sallen-Key type active filter using a pair of transistors and a few resistors and capacitors. The component values in the schematic will give a -3dB cutoff frequency of about 2.1kHz, which is suitable for SSB reception. For narrow bandwidth modes like CW, PSK and RTTY, the value of the 6.8nF capacitors can be increased to 100nF. As well as reducing the bandwidth, this will increase the Q of the filter so that the response is more like that of a band pass filter. If you want to have selectable SSB/CW bandwidth, you can use a DPDT (double pole, double throw) switch to select the capacitors.

Adding this simple filter between the common-base buffer and the NE5534 amplifier makes a significant improvement to the performance of the DC receiver. Switching in a couple of 100nF capacitors in place of the 6.8nF feedback capacitors changes the response from a low-pass to a band-pass characteristic with a centre frequency of around 800Hz. This makes a reasonably good CW filter. Plots of filter response are shown in **Figure 7**. The filter input at point 'A' in the schematic connects directly to the collector of the common-base buffer (ie the 4k7 resistor replaces the 4µ7 capacitor). This allows the transistors in the LPF to 'steal' bias current from the first buffer amplifier.

The DC receiver is much easier to use than the previous regenerative TRF receiver project (September 2012). As this is not a single signal or single sideband receiver, it is possible to receive a CW signal by tuning slightly above or slightly below the zero-beat frequency. If there is QRM on one side, you can try tuning to the other side to see if it is quieter. To receive SSB, tune the local oscillator to the exact frequency of the suppressed carrier of the transmitting station. Unfortunately, if there is someone on the opposite sideband, you will hear them too. It is possible to make a single signal direct conversion rig (see March 2009). However, the advantage of single signal reception comes at considerable cost in terms of circuit complexity.

A recording of LZ1QI on 10m can be found at http://homepage.eircom.net/~ei9gq/LZ1QI.mp3.

Next month we look at oscillators and build a standalone VFO for the receiver project.

ERRATA. Homebrew October 2012, p21: "Based on the value of the feedback capacitors" should be corrected to "Based on the value of the feedback resistors".

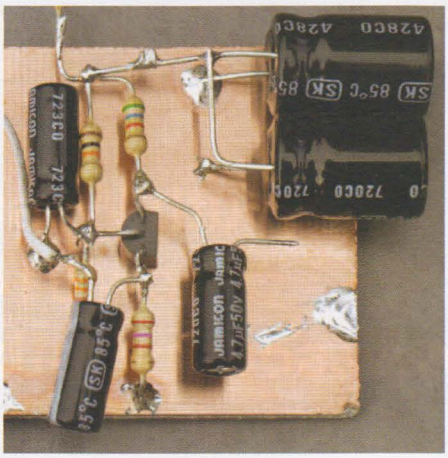

PHOTO 4: AF buffer amplifier.

FIGURE 7: Frequency response of the low pass filter with SSB and CW component variants (see text).

RadCom

HF F-Layer Propagation Predictions for November 2012

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	883....26778	877....78778	..7644788..3	...87888....	...99999....	...99997....	...7999.....	....998.....
*** Asia								
Yakutsk	3342	53.....56777	7.6555677748	...77.......	...74.......	.....	.....	.....
Tokyo	.......3333.	...54267777.	...3...3....	...3........	...5........	.....	.....	.....
Singapore	........112.	688775	......673...	......76....	.....686....	.....674....	.....66.....	.....55.....
Hyderabad	.....	24334	55333	......564...	......66....	......65....	.....46.....	.....55.....
Tel Aviv	885.....7888	979....79999	..7....67...	...6..57....	...88899....	...88887....	...8999.....	....888.....
*** Oceania								
Wellington	.....	....65662...	....77773...	....7876....	....6764....	....465.....	....576.....	.....6.....
Well (ZL) (LP)	.....	.....	.....	.....	.....	.....	.....	.....
Perth	.....	.......4422.	......78733.	......884...	......54....	.....	.....	.....
Sydney	.....	.....67864..	.....8886...	....7997....	....576.....	....565.....	.....5......	.....
Melbourne (LP)	.....	...82.......	..499.......	35.99.......	...896......	...796...4..	....8.......	....8.......
Honolulu	.....	...3...5....	...66648....	.....3.64...	........4...	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.....	.....	.....	.....	.....
W. Samoa	.....	...57667....	...68898....	....8997....	....7986....	....688.....	.....77.....	.....6.....
*** Africa								
Mauritius	2........222	7......27777	6......78766	.......87...	.......5....	.......4....	.....	.....
Johanesburg	.....	52.......244	75......7777	3......476..	.......76...	......474...	......56....	......55....
Ibadan	.1.....	666.....3456	777.....5766	5.74....77..	...73.3574..	...766677...	...777784...	...87777....
Nairobi	1.....	77......7677	54......4445	..3....464..	.......66...	...4..46....	...66677....	...76677....
Canary Isles	666......566	7776....6878	8888...28888	3..77667885.	...7999978..	....99999...	....55857...	......8.5...
*** S. America								
Buenos Aires	.....	3316........	66.9......44	...8........	...7........	...54.......	....4.......	.....
Rio de Janeiro	.....	4427.......3	6639.....565	...9.....5..	...7........	...65.......	....6..4....	....5.......
Lima	.....	23.5........	56.82.....33	...53.......	.....	.....	.....5......	.....5......
Caracas	.....	3333.......3	78.84.....77	....8....6..	....76556...	....57777...	.....8776...	.....877....
*** N. America								
Guatemala	.....	33.5........	66.86......5	...4.4......	.....63.....	.....554....	......65....	......65....
New Orleans	222.........	6666.......6	76.75.....36	...5.5......	.....	.....	......54....	......55....
Washington	3342.......2	7777......57	78.76....377	.....5..47..	.....5..4...	.....6456...	......66....	......66....
Quebec	5663......34	77.7.....666	...74...46..	....75.57...	....55454...	.....555....	......54....	.....
Anchorage	.33.........	6665.......3	74.666566637	........7...	........7...	.....	.....	.....
Vancouver	.....	3333........	3..3........	.....	.......66...	.....	.....	.....
San Francisco	.....	33.3........	...3........	.....	.......4....	.......4....	.......4....	.....
San Fran (LP)	.....	.....	.....	.....	.......6....	.......7....	.......7....	.......6....

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 December, January & February 2013 are respectively (SIDC classical method – Waldmeier's standard) 74, 76 & 78 and (combined method) 88, 90 & 91. The provisional mean sunspot number for September was 61.5. The daily maximum / minimum numbers were 112 on 3 September and 34 on 14 September.

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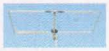

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Antennas

Can the *ACE-HF* propagation software be used to check antenna performance?

PHOTO 1: Trampoline antenna by Chris Jacobs, M0KTT.

STRANGE ANTENNA. Chris Jacobs, M0KTT sent me details of the 'non antenna' he has been using. He says, "I read your Antennas article in June with great interest, so I thought I'd try something different. I used a trampoline, see **Photo 1**. It is 3m in diameter and the eight vertical posts are 2.4m high. The shield from the coax feed is connected to the main station antenna ground system and the centre is connected to the base of one leg of the trampoline.

"While running 50W and using this 'antenna' I've contacted many G stations around England on 40m and Top Band on our local nets here in Havant. I also get the occasional EU contact. Signal reports appear to be 2dB or so less compared with my 128ft inverted L".

I consider the trampoline to be a real antenna and not a 'non-antenna'. It is more of a contender for the Strange Antenna Challenge hosted by Erik Weaver, NOEW [1]. The performance reports of M0KTT's antenna are restricted to the lower HF bands. It might have some interesting properties on the higher bands.

While I commend the experimental use of various metal objects around the garden being given temporary status as an antenna I should point out that these experiments should be carried out under strict supervision. As shown in last month's Antennas, even relatively low RF power can generate an RF voltage strong enough to strike a florescent tube. While unlikely to be fatal if accidentally touched when the transmitter is switched on, an unpleasant RF burn could be caused.

ANTENNA PERFORMANCE PREDICTION & *ACE-HF*. An article by NW7US in the Propagation column of *CQ* magazine [2] described the relative performances of SSB and CW. He used *ACE-HF* [3] propagation forecasting software to compare the relative effectiveness of these two modes. The images in this article prompted me to buy a copy of *ACE-HF* because I felt that this might be a useful tool for visualising the real world performance of various antennas.

The radio wave prediction model that this software is based is a mathematical formulation extracted from empirical data. In the case of HF radio it considers radio wave propagation over a given path as a function of transmitter power, antenna type and gain, frequency, distance, ionospheric conditions, mode and receiver noise environment. One example of this type of software is *VOACAP*, which was designed by the engineers and programmers of the Voice of America for predicting the coverage of their large broadcasting stations.

ACE-HF uses *VOACAP* to compute its predictions but has many interface options, which make the program more specific for amateur use and much more user friendly. The ACE aspect is 'Animated Communications Effectiveness', a coverage display technique originally developed for the US Navy submarine communications.

ACE-HF is normally set up to show various quality charts for point-to-point paths. I have set up a circuit between G3LDO and Ottawa in Canada and the program produces charts showing the predicted best times and frequencies, see **Figure 1**, given the restrictions of our stations and the prevailing ionospheric conditions.

VOACAP was originally designed to predict the reliability of a circuit path. In this regard just producing signal strength levels at the receiver site does not tell the whole story. A more useful figure is signal to noise ratio (SNR). A monthly median SNR expressed in dB is the primary measure of circuit quality. This figure is dependent on the receiver noise environment and the modulation mode/bandwidth. The default values of required SNR for a given mode and man-made noise that can be selected using an *ACE-HF* sub-menu as shown in **Figure 2**. However, having said that, the received signal level in the path analysis pop-up menu (at the bottom of Figure 1) can be switched to measure SNR, dBμV, S units/elevation angle, among others.

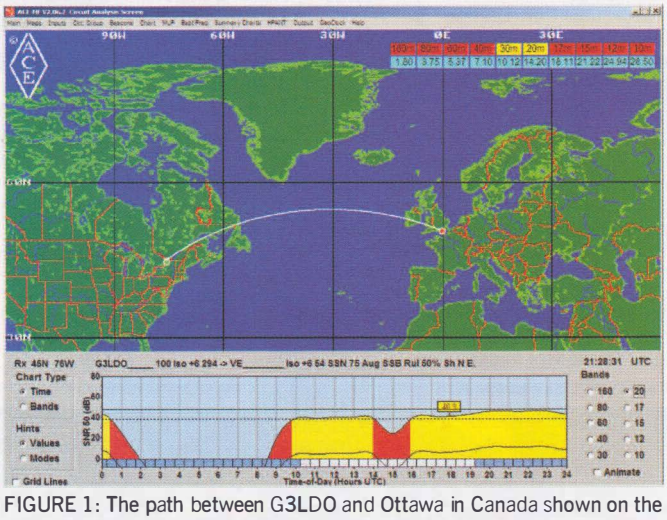

FIGURE 1: The path between G3LDO and Ottawa in Canada shown on the main *ACE-HF* screen. The submenu predicts the best times and frequencies given the restrictions of the stations and the prevailing ionospheric conditions.

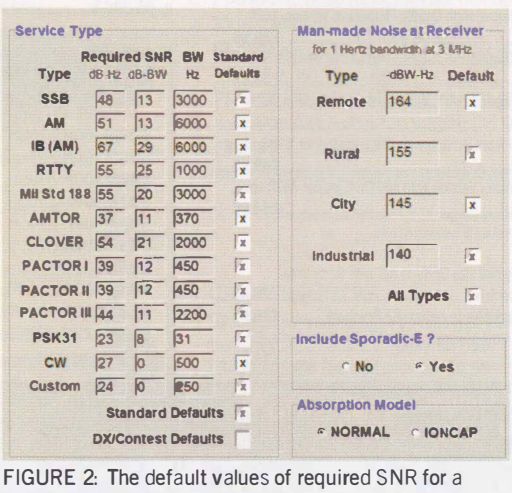

FIGURE 2: The default values of required SNR for a given mode and man-made noise that can be selected using *ACE-HF*.

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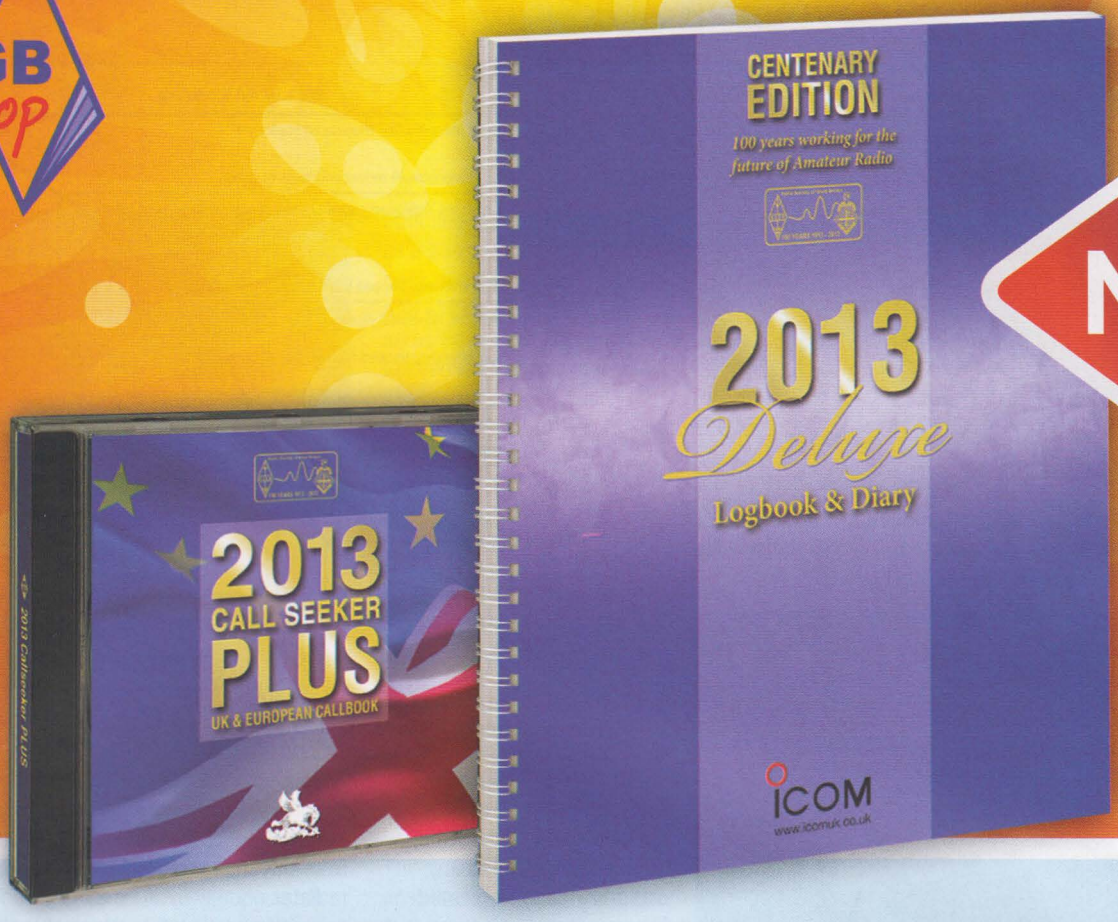
see page 80 for full details



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The Centenary edition of the *RSGB Yearbook* is duplicated in the *Callseeker Plus 2013*. Just like the Yearbook it contains the most up-to-date listings of United Kingdom and Republic of Ireland amateurs' callsigns but you will also find comprehensive coverage of callsigns from across Europe.

You will find all the pages of the information section from the *RSGB Yearbook* are included in an easily searchable PDF. The CD also boasts a host of "extras" from across Europe, including hundreds of mega bytes of useful amateur radio software.

Callseeker Plus 2013 is user friendly and takes up no computer hard disc space as it runs straight from the CD. You can search by callsign, name or location and navigating through the search results is quick and easy. You can print the results in a variety of formats including straight to an address label. *Callseeker Plus 2013* is the ideal way to search for European QSLs from 9A, DL, EA, ES, F, HA, HB9, I, LX, LY, OE, OH, ON, OZ, SM, SP, SV and Z3.

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RSGB Deluxe Log Book & Diary 2013 - Centenary Edition

Carrying the same design style as the Centenary edition of the RSGB Yearbook 2013, the new Deluxe Log Book & Diary 2013 is a suitable reminder of the anniversary. Not only are the very latest UK band plans included but you will find a useful DXCC prefix list, RSGB QSL Bureau information, RSGB Contest Calendar and information, a locator map, repeaters - pretty much everything you need to know. There is a diary section, notes pages, handy lists of operating abbreviations & codes of activity and, of course, a generous amateur radio station log section for you to record a whole year of your activity during the RSGB Centenary.

The RSGB Deluxe Log Book & Diary 2013 includes:

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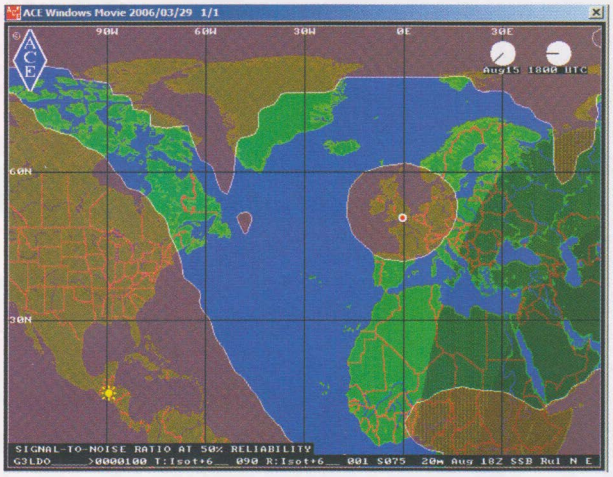

FIGURE 3: Predicted coverage of a 14MHz 100W SSB station with a reasonable antenna (see text).

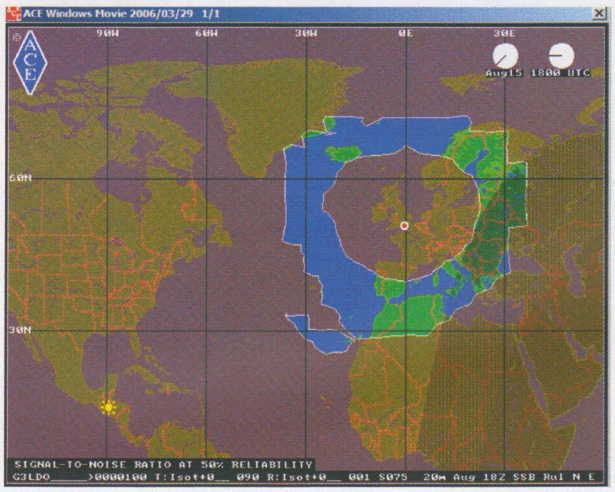

FIGURE 5: Predicted coverage of a 14MHz 100W SSB station with modest antenna (see text).

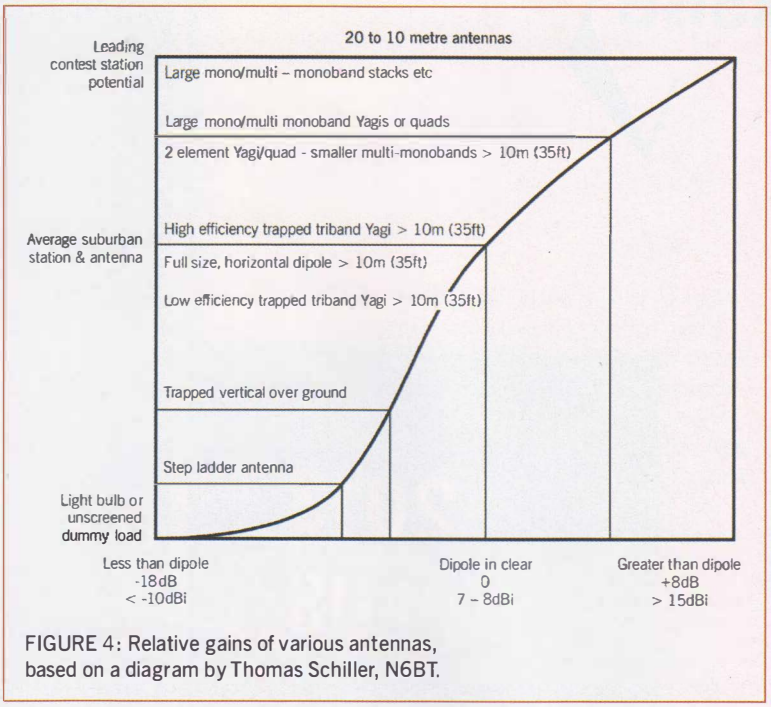

FIGURE 4: Relative gains of various antennas, based on a diagram by Thomas Schiller, N6BT.

PREDICTIONS. The *ACE-HF* program is designed to predict the reliability of a circuit path over a 30-day month, taking into account the many parameters described earlier. One of the parameters used by *ACE-HF* not mentioned so far is reliability (time available) and this is entered as a percentage, with a default value of 50%. This value indicates that SNR level will be as predicted or better during 15 days of a 30 day month.

Reliability is particularly important parameter for military and commercial organisations that need greater reliability than amateurs. They usually use 90% reliability, which gives a predicted usable SNR over 27 days of a 30 day month. This is achieved at a reduced coverage unless compensated by greater antenna gain or transmitter power.

AREA COVERAGE MAPS. It is the area coverage maps facility described by NW7US that is of the main interest to me. An example is shown in **Figure 3**, which shows the coverage of a 14MHz 100W SSB station with a reasonable quality antenna, say a 12m (40ft) high half-wave dipole. Other input data included is a SSN (Smoothed Sunspot Number) of 75, date/time August 1800hrs UTC. I also assumed any stations area to be located in a quiet rural noise environment.

The blue/green parts in Figure 3 indicate areas of the world where the band is open; the brown parts indicate areas out of range. You will notice that the band is open to parts of Europe, Scandinavia, Russia, the USA and Canada. It is also open to North and West Africa together with the Near East (although you might be forgiven for not believing it due to the low activity from these areas). The area around the UK and near Europe is also out of range; this is due to the well-known skip zone.

So how might a 'strange antenna' such as the one shown in Photo 1 perform under the same conditions? By comparing antennas in graph produced by N6BT (**Figure 4**) and assuming that the trampoline antenna and my step ladder antenna have a similar performance, I have guessed the M0KTT antenna to be 6dB down on a dipole in the clear on 14MHz.

I ran the program again with the same inputs as described above but with this reduced performance antenna. This resulted in the coverage shown in **Figure 5**. In comparing these two coverage areas you will see that for short skip contacts into Europe there isn't a great deal of difference. When it comes to DX it is a different matter...

ANTENNAS. As you are probably aware the gain and angle of maximum radiation are all important, especially on long DX paths. Creating the area coverage maps of Figure 3 and 5, showing openings in all directions, required an antenna that radiates equally in all directions in both azimuth and elevation. No such antenna exists in the real world. However, the *ACE-HF* antenna library has an isotropic theoretical point source antenna with adjustable gain settings for both the transmit and receive stations. The default setting is +6dB, which equates to the gain of many amateur stations. The 'dipole in the clear' in Figure 1 is the probably the nearest practical antenna, although this antenna has some directivity. An antenna gain setting of +6dB was used to produce the Figure 3 area coverage map and a setting of 0dB was used for Figure 5.

FINALLY. The question was asked in the heading; can *ACE-HF* be used to check antenna performance? Yes, I do believe it can, although I need to do more research. The *ACF-HF* help tutorials comprise 61 pages of close-typed text with no illustrations. When it comes to propagation prediction, the antenna is an important part of the equation. The *ACE-HF* antenna library has a 1650 real antenna models to choose from. Furthermore, you can import your own models from *NEC* or *EZNEC*. There is a wealth of information on HF propagation models and software comparisons by LX4SKY at **[4]**.

WEBSEARCH

[1] www.strangeantennachallenge.com, also Antennas column, *RadCom* April 2006 and June 2012
[2] Propagation, Thomas Hood, NW7US, *CQ Amateur Radio* July 2012
[3] www.mygeoclock.com/acehf
[4] www.astrosurf.com/luxorion/menu-qsl.htm – various articles under 'Propagation' by LX4SKY

RSGB National Field Day 2012

Team at GU4YOX/P (L to R: GU4EON, GU4CHY, GU4YOX).

ENTRIES. The number of entrants in NFD 2012 was down by 19% – from 47 in 2011 to 38. There were two main reasons for this. First, the Queen's Diamond Jubilee bank holiday fell on the same weekend as NFD. It was not sensible to change the date for NFD as the huge pool of contacts with portables in Region 1 countries holding their Field Days the same weekend would have been lost. This definitely falls in the category of 'circumstances beyond our control' and will not be repeated next year. Secondly, the significant changes in the 2012 rules (intended to give entrants more flexibility and to take advantage of advances in technology) – and more particularly the way in which those rules were promulgated – led to a number of regulars not entering or submitting only checklogs. For 2013, the Contest Committee are operating to a plan intended to ensure that entrants' views are taken into account, and that the rules are published in time to ensure that entrants have enough time to take any changes on board. Hopefully numbers will be back up next year.

Entries were received from all but two of the UK prefixes (GD & GJ). It was good to have GI activated again (by the well travelled Three As CG) after a gap of five years. GD was most recently represented in 2009, but for an entry from GJ it is necessary to go back to 1998 (the itinerant Three As again)... do we have any volunteers to enter NFD from Jersey in 2013? Overall results are shown on the Contest Committee website at www.rsgbcc.org/cgi-bin/hfresults.pl?Contest=NFD&year=2012.

In summary, the leading station in the Open section was Stockport RS, G3LX/P, up from 4th last year. The Restricted section leader (and overall leading station) was Orkney ARC, GM3POI/P, up from 2nd. In the Low Power section the leader for the third year running was Reading & DARC, G3ULT/P. It is at least a decade since the leading score was made in the Restricted section rather than the Open section and Orkney ARC is to be congratulated on this result. Another notable entry is that of Tilgate Forest CG, G3LET/P, who came 2nd in the Restricted section. This was a single operator entry by Peter, G3LET who has not operated in NFD before, except for a few hours as a guest operator. Operation was from the back of a 4x4 and all logging, check logging and keying were performed manually. Quite an achievement Peter and we look forward to even greater things in 2013!

TROPHIES. Trophies are awarded as follows:

National Field Day Trophy:
Orkney ARC, GM3POI/P
Bristol Trophy:
Stockport RS, G3LX/P
Reading QRP Trophy:
Reading & District ARC, G3ULT/P
Scottish NFD Trophy:
Orkney ARC, GM3POI/P
Gravesend Trophy:
Tilgate Forest CG, G3LET/P
G6ZR Memorial Trophy:
Bristol CG, G6YB/P
Frank Hoosen G3YF Trophy:
Three As CG, GI0AAA/P

The factors that have the greatest influence on entrant's memories of a particular NFD are usually the weather and radio conditions. 2012 was not a vintage year on either count. Three quarters of those who commented at all mentioned the weather, and the North/South divide was apparent. Two GM stations found it either dry (but very cold) or had only a little rain. All other comments mentioned rain, usually heavy (the words 'atrocious' and 'terrible' appear several times) and often accompanied by gales. This was presumably why no entrants mentioned club social events such as barbecues held on the Field Day site. As for conditions, apart from 10m that was widely agreed to be disappointing, opinions were surprisingly evenly divided – without any evident geographical bias – between those who felt that overall they were poor and those who thought they were good but deteriorated on the Sunday.

Comparison with last year's results offers little guidance: despite the fact that the number of UK entrants was down by 19%, total QSO numbers by UK entrants were up by 6% but points were down by 1.5%. Closer examination of the results by section suggests that the rule changes in the Restricted and Low Power sections (more flexibility over antennas and use of multiple transceivers subject to only one signal being transmitted) allowed more QSOs to be made, but with conditions worse than those in 2011 it meant that points per QSO were lower. But this explanation is not provable!

ON THE BANDS. Looking at how individual bands performed, 160m followed its usual pattern of a fairly short period of hectic activity: traffic built up rapidly from around 2015 (all times are in UTC), peaking around 2300 then died away more slowly with almost no contacts taking place after 0315. The resultant QRM, together with the QRN, which is always a problem on the LF bands (particularly 160m) during the summer, led to a number of entrants commenting that frequent repeats were required. Almost three quarters of contacts by UK portables were with the UK or Germany, but a total of 32 countries appear in the logs – all European apart from a handful of contacts with EA8 and VE1.

80m followed a similar pattern, but with a slightly earlier start and later finish – from around 2000 until 0500, with a peak around 0230. Only 4 of the 39 countries worked, (W, VE, EK & RA0) were outside Europe, contributing less than 2% of the contacts and, as with 160m, the majority of contacts were with the UK or Germany.

It was possible to make contacts on 40m at a good rate throughout the entire contest, although there were major dips around midnight and 0830. Since these corresponded to peaks of activity on 160/80m and 15/10m respectively, it appears that many entrants were using 40m as a kind of 'reservoir band' to fill in while the more time dependent bands were not productive. There was more DX to be worked than on 160 and 80m, with 14 (mostly Asian) countries outside Europe (out of a total of 53) appearing in UK logs. However, with the exception of North America, which contributed 143, the number of non-European contacts was fairly limited. Interesting prefixes on this band were A6, HS, YB, VK and ZL.

SOAPBOX

Missed hearing quite a few old callsigns this year: G3HEJ/P
We dedicated the station to our founder and president G3OVT who became SK in February: G3SAD/P
Wet wet wet – slow slow slow – Fresh cow pats: M0AAA/P
We greatly enjoyed new rules. Experimented with two interlocked rigs and also an on-site Skimmer. Much learnt by all, so a worthwhile exercise: G3TBK/P
Where were you all on 80m?: G4EKT/P
No fancy methods – just alternating S&P with running: G2AS/P
Conditions died Sunday lunchtime: G4ALE/P
QSO rate steady throughout: G4AYM/P
Excellent catering provided by Mike, M6PMH: G4WSM/P
We look forward to the promised consultation process for next year's rules: G5BK/P

20m again provided the highest number of contacts for UK entrants: the total number of contacts was down on 2011, but the average number of contacts per entrant was 1% up. The number of countries worked on the band – a good measure of conditions – was identical to last year at 65. Contacts were made during every hour of the contest, but the rate was sufficiently low (less than 50 per hour) between 2315 and 0315 that only the single band entries could justify staying on the band: however a few contacts were there to be made by those who checked it periodically. Most of the non-European contacts were with Asiatic Russia or North America (all US call areas appear in the logs) but some DX was worked including A6, A9, HP, HS, KH, KL, TN as well as a couple of dozen contacts with VK and ZL.

The performance of 15m was a bit quirky – as it often is in NFD. It was rather the inverse of 2011: the number of contacts per entrant was up by 39%, but the number of countries worked was down from 61 to 52 (one less than on 40m!). However, all US call areas appeared, along with some nice DX – some not seen on the other bands – including 9M, VP8, BY and VR2. There were two main periods of activity: from 1500 to 1915 (peaking in the first hour) and from 0630 to 1215, peaking around 0845, although as noted last year the activity fluctuated considerably over periods of time as short as 15 minutes.

Nearly everybody agreed that 10m was disappointing this year, both in comparison with last year's NFD and more recent conditions: the figures bear that out, but they don't tell the whole story. The average number of QSOs per entrant was only half of that in 2011, and there was no opening to North America (although a few South Americans appear): however 40 countries were worked including some quite rare ones not appearing elsewhere, including 5T, 7P, 9J, D3, SU and Z2. Interestingly, the band did not follow its usual pattern consisting of a peak of activity near the start, followed by a second and lower active period late on the Sunday morning. This year the initial traffic was quite low, with much stronger activity on the Sunday, peaking between 0815 and 0845.

EQUIPMENT. So that summarises the contacts made – what about the setups used to make them? A number of groups took advantage of the rule that allowed use of multiple transceivers provided only one signal at a time is emitted and one entrant commented that this helped to keep the QSO rate up. The single most common rig (for the third year running) was the Elecraft K2/3 series, of which 13 appeared. This was followed by eight models from the FT-1000 series, three FT-5000s, three Ten Tec Orions, three IC-756s and 12 individual other types from the Kenwood, Yaesu & Icom ranges.

Looking now at antennas, in the Open section, the well tried combination of beams

Catering department at G3WRR/P (no cases of food poisoning reported).

Station of G3TBK/P (G4EBK in foreground, G3TBK behind).

(of up to 7 elements) for the HF bands and doublet(s) for the LF bands continues to predominate. Interestingly, the three 20m single band entries all used verticals, either singly or in phased pairs. Over half the entrants in the Restricted and Low Power sections took advantage of the new antenna rules that allow more flexibility within prescribed limits of mastage and antenna element length. In most cases this involved use of a long – typically 265 feet – doublet (in either dipole or inverted V configuration) backed up by other antennas, usually dipoles or verticals. Several chose to put up special antennas for 10m in the hope of catching those elusive double point QSOs: the most common were dipoles or slopers but one group built a 2-element wire beam. Trap dipoles, G5RVs, Windoms and a mobile whip were also used.

ELECTRONIC LOGS. For the first time, all logs were received electronically this year. The use of the Robot for managing incoming logs has resulted in a reduced workload for the adjudicator, as many errors and potential errors in submitted logs can be picked up automatically and corrected at source. The use of the excellent AdjSQL adjudication tool has automated and integrated a number of tasks previously conducted manually and separately, freeing the adjudicator up for tasks requiring the human brain. Lest entrants may fear that adjudication has been reduced to a 'computer says' level, it should be noted that the program merely flags potential errors to the adjudicator who looks at each one to decide if it is valid or not. In the case of NFD this year, this meant about 90 minutes of computer run time and just short of 36 hours of adjudicator run time. The most common error types, in decreasing order, were wrong callsign, incorrect incoming serial and 'not in log'. A few instances of RST, band and out of time errors were also picked up but these were very infrequent. Another case where contacts were disallowed has re-emerged this year: this is where club members (and in one case one of the operators) came on to give their club station points – but didn't work any other entrants. While coming on to work the club station is all to the good, to work it and it alone is considered to be against the spirit of the contest. As usual logs were exchanged with other Region 1 countries holding their Field Days the same weekend as NFD, resulting in a pool of over 550 logs available for checking, meaning that a high percentage of contacts can be cross checked. A limited number of station inspections were carried out this year – mostly before the start of the contest – and no transgressions were identified. And finally, individual error reports (sometimes known as UBN reports) have been made available to all UK entrants.

CAUGHT! Every year, the writer gleefully enjoys including a section in this report on accidents and disasters: this year, it was a case of 'the biter bit'. Our site was very low down and near the water table in the hope that good ground conductivity would improve our LF performance (it didn't, but that's another story). Getting to and from the farmhouse necessitated following a very precise path to avoid getting wet feet. Making the trek at first light for biological reasons best not expanded upon, I strayed from the path and promptly found myself immersed in a bog up to parts of the body not normally mentioned in *RadCom*. Following a self-recovery technique recommended for exiting quicksand, I completed my mission. Dry trousers were located but not socks and shoes, so having lost 30 minutes operating time, the graveyard shift was completed operating for 2 hours in bare feet until relieved at 0700. This escapade was considered rather humorous by all members of the team but one. There is a serious message in there – Field Day sites can be hazardous places so think what you're doing – unlike me! Few other major problems were reported, but the usual difficulties cropped up, such as antennas that wouldn't tune on some bands, incurable S9+ noise on 15 and 10m, power problems (blown fuses and generator plugs) and cramped operating conditions with two K3s, keyboards, monitors etc on a 4' x 3' table!

LOOKING TO 2013. That's it for another year – the Contest Committee will be revisiting the NFD rules for 2013 and are keen to have input from current and former NFD entrants (and any other RSGB members). Next year NFD will be on the weekend of 1 and 2 June – so why not get the dates into your diaries and events calendars now? See you then!

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The Moxon Claw revisited (part 2)

INTRODUCTION. Last month we looked at the background and features for the Moxon Claw antenna. This second and final part describes the remote tuning unit and construction.

REMOTE TUNING. The principle for remotely tuning the Claw will be explained with reference to operation on one band – 14MHz – as the remote tuning on the other four HF bands follow a similar principle.

On the 14MHz band, the Claw elements provide a 2:1 SWR by means of the series inductance and 4:1 balun. In order for the Claw to behave like a beam, one of the elements needs to be turned into a reflector.

A simple way of doing this is to connect an inductor at the feedpoint of the loop that is to be the reflector. This inductor tunes the loop lower in frequency and is the electrical equivalent of increasing the latter's size.

Whilst a suitable inductor could be inserted, perhaps using relays, at the actual feedpoint of the loop designated as the reflector, it's much more convenient to be able to do this from the comfort of the shack. This allows the exact value of inductance to be easily determined experimentally with the antenna at its final height.

To optimise the front-to-back performance of the Claw across the entire 14MHz band (or as much of it as you are intending to use) it will be necessary to retune the inductor a number of times. Again, this is obviously much easier if the inductor is in front of you in the shack rather than on the top of the tower.

In order to optimise the amount of inductance required, the loop is connected in series with a variable inductance via a length of 50Ω coaxial cable that is cut exactly to be a multiple of an electrical half wave length at 14MHz.

If this cabling requirement is met, then, ignoring any losses, any impedance we connect to one end of the cable will appear at the other end.

To determine the electrical length of the coaxial cable, the velocity factor of the cable needs to be known. This is multiplied by the calculated length of the cable, which can be determined from

Length = velocity factor x 468/MHz (feet)

So for an electrical half wavelength of RG213 coax, this becomes

0.66 x 468/14 = 22 feet

Depending upon how high the Claw is above ground and/or how far it is located from the shack, it may be necessary for the length of coaxial cable to be an electrical multiple of a half wavelength (ie 22, 44, 66 feet, etc).

At first sight, the requirement for both the two Claw element's coaxial feeders to be equal (since either element may be used as the reflector) and a specific multiple of a certain length of coax may be considered a disadvantage. However, as will be shown shortly, there are ways around this.

Rather than use a variable inductance to tune the reflector, an alternative solution is to use a fixed inductor placed in series with a variable capacitor. Below the frequency of series resonance, this combination will simulate a variable inductor.

If the latter solution is used, the fixed inductor needs to be constructed so as to provide a high Q, since any loss here will result in the Claw having a reduced front-to-back ratio. The drive to the variable capacitor should be via a high-quality slow-motion drive, since the setting for maximum front-to-back attenuation of the Claw is quite critical on the higher bands. A calibrated scale on the slow-motion drive is also required to simplify re-adjustment of the reflector tuning when changing bands.

Identical lengths of feeder to the Claw's elements cut as above will allow operation on 14 and 28MHz. In order to operate on the other bands (18, 21 and 24MHz), one option is to insert (or remove) additional lengths of coaxial cable such that the overall feeder lengths meet the above requirements on these bands (ie an electrical multiple of a half wavelength).

However, there is a simpler and more elegant solution to this problem. Inductor/capacitor networks for these three bands can switched in circuit to the coaxial feeder connecting to the reflector that simulate the correct length of coaxial feeder required for each band. Even better, in practice we can use the same inductor/capacitor network on both the 18MHz and 21MHz bands since a variable capacitor can be used that has sufficient tuning range to reflect the required impedance up the coaxial cable on each band. A separate LC network is required for the 24MHz band.

The final remote control requirement is to provide a means of equalising the currents in both the Claw's loops in order to fulfil the requirements for critical coupling. It turns out that only a small adjustment in current is required to achieve this in the Claw.

One time-honoured method of adjusting current ratios to two separate antenna elements is to use a variometer, shown in **Figure 9**. For the uninitiated, a variometer comprises one coil mounted inside another, with the inner coil able to rotate over 180° and thus able to add or subtract current from the other coil. A cut-away diagram of the construction of the variometer is shown in **Figure 10**.

Conveniently, the outer coil can be the series inductor used for reflector tuning. Note that, depending on the exact spacing of the two loops, on some bands the Claw may be over-coupled (ie more current flows in the reflector than the driven element) so the job of the variometer in this case is to reduce the current in the reflector, hence the need for the inner coil to rotate 180°.

In practice, the 'tuning' of the variometer is relatively non-critical and is only used to wring out the last few dB of front-to-back ratio of the Claw. However, since the variometer setting (ie the reflector coupling) needs to be adjusted for each band (and set every time a band change is made) a calibrated scale is required for the variometer's rotary control. For convenience, I chose the same brand of calibrated slow-motion drive as the one used on the variable capacitor that tunes the reflector.

Effectively, what you have is two variable controls for the reflector – one to adjust its tuning and the other to adjust its coupling to the driven element.

G6XN was of the opinion that it may be possible to optimise the loop spacing of the Claw to the point that the variometer was not required.

PHOTO 2: Front panel view of my remote tuning unit.

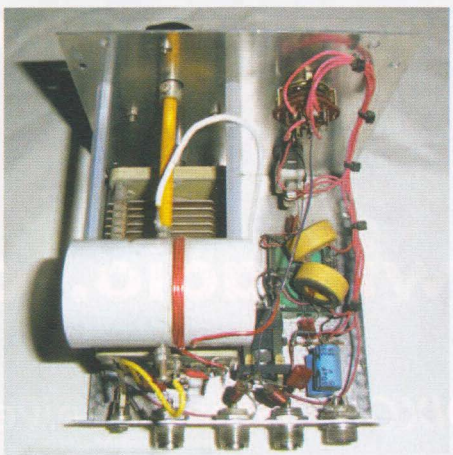


PHOTO 3: Internal view of my remote tuning unit.

PHOTO 4: Close-up of the 'half-spider' that joins the fibreglass poles together.

This remains an interesting exercise for those skilled in *EZNEC* or a keen experimenter, but it is very satisfying to actually be able to remotely control the coupling between the Claw elements from the shack.

The schematic of the Claw's remote tuning unit is shown in **Figure 11** and the actual VK6APH unit is in **Photo 2** and **Photo 3**.

BUILDING THE CLAW. The Claw may be built along the same lines as a 2-element Cubical Quad array. Spreaders for the prototype VK6APH Claw were, in the best tradition of Quad construction, made from bamboo poles.

Once the Claw was working satisfactorily, the spreaders were then changed to fibreglass fishing rod blanks. However, the ones used were not entirely satisfactory, since their ends were of a relatively small diameter and tended to flex somewhat in high winds.

If you decide to use fishing rod blanks as spreaders, when purchasing them ask the sales staff in the shop to mark the side of the blanks where the fishing line ferrules should be fitted. When the Claw is assembled, these sides must face each other across the loop.

The reason for this is that a fibreglass fishing rod is designed to bend mainly in one direction only – bending the rod 'backwards' to the same extent as it can be bent 'forwards' can snap it!

As a result of living very close to the coast in a windy environment, VK6APH then changed the spreaders to fibreglass boat outrigger blanks – with good success, since these are more rigid than fishing rods. The only downside was the blanks obtained were a little short and needed some solid fibreglass rod extensions inserting in the narrow ends and then fixing using epoxy resin.

These spreaders were used satisfactorily for a number of years until the edge of a cyclone moved close to Perth, destroying the 3-element Quad of an radio amateur who was a bit too close to it. I was subsequently able to recover four of the 'GEM Quad' spreaders [7] he had used, which are simply ideal for Claw construction.

The Claw wire loops have been made out of various materials over the years. Plastic-covered hook-up wire lasted until the first storm. Soft-drawn copper wire lasted a little longer, but the hands-down winner is hard-drawn copper wire of 1.65 mm diameter. This has survived the winter gales for the past six years and is highly recommended.

The central support for the spreaders is built along the lines of the central hub for a spider-type Quad. For the fishing rod and outrigger versions of the Claw, lengths of 90° one-inch by 1/8-inch aluminium angle were used. Stainless-steel hose clips were used to secure the spreaders and stainless-steel exhaust clamps used to mount the spider hub onto the rotator tube. **Photo 4** shows such a spider (which is perhaps more accurately, a 'half-spider'). **Figure 12** shows how it is constructed.

The bottom of each loop of the Claw is supported by a small stub-boom constructed from a 1.22 m (4') length of 12mm (half-inch) diameter fibreglass rod. Note that the stub-boom should be non-metallic. The plastic boxes holding the matching networks are mounted at the ends of the boom.

The 1.22 m (4') spacing is something of a compromise on the 18MHz band in that it is a little wide for optimum front-to-back ratio (attenuation). However, altering this spacing degrades the front-to-back ratio on the other four HF bands, so this appears to be a necessary compromise.

Computer modelling, or some further experimentation at a low height, may reveal a more optimum spacing for the Claw. If Les was alive today and had the use of computer modelling, with his genius I'm sure he would have come up with some innovative capacitive neutralisation technique to optimise the performance simultaneously on all bands!

After using the Claw for a number of years with outstanding results and then trying a remotely-tuned 3-element multi-band Yagi using linear resonators of my own design (which proved to be noisier and less mechanically and electrically reliable than the Claw), I decided the Claw would be my main HF antenna for the foreseeable future. Upon acquiring the GEM Quad spreaders, a custom-made spider was manufactured by a local engineering workshop and both are still currently in use.

The 90° triangular shape of the loops does pose some mechanical challenges. Unlike a Quad, it's not possible to tension the wires on the Claw (so that the spreaders provide rigid support) as some slack must be left in them. However, despite this draw-back, the use of the hard-drawn copper wire for the loops has meant there has been no storm damage to the antenna.

A possible alternative method of construction is to build the Claw along conventional delta loop beam lines and make the vertical parts of the loops out of aluminium tubing, with their tops made from a length of stainless steel wire. As long as the tubing is well insulated from the Claw's lower stub-boom, there should be no issues with matching the antenna on any band.

Those intending to construct the Claw are encouraged to read the relevant pages in G6XN's *HF Antennas for all Locations* that covers the theory and construction of the antenna.

OPERATING. The GEM quad spreader version of the Claw has been my main HF antenna for the past six years. Whilst I have built a number of different Claw variants over the last 15 years, the changes have been mainly mechanical, with the original matching and tuning networks simply being converted to more modern hardware.

Being able to reverse the direction of the Claw's beam/direction of maximum radiation and adjust the reflector tuning and coupling controls so as to null out the signal of a desired DX station off the back of the antenna in order to optimise its performance is a real boon. The beam direction is then reversed again, so the direction of fire of the Claw is once more again towards the desired station and a call to them is made. At this point, I *know* the Claw's front-to-back performance is absolutely optimum for this frequency/station – which is incredibly satisfying.

Demonstrating the large front-to-back ratios of the Claw on the air, via the instantaneous beam reversal switch, never fails to bring follow-on contacts from stations that are listening and can't believe what they are hearing.

The performance of the Claw has been compared with a full size 14MHz three element monoband Yagi, mounted as a replacement at just over 10m (35') on the same tower. As the Yagi had three elements, its gain over the Claw was expected to be some 1dB greater and the forward pattern narrower.

However, my very non-scientific impression was that the Claw worked better than the Yagi on long haul DX. This could be accounted for

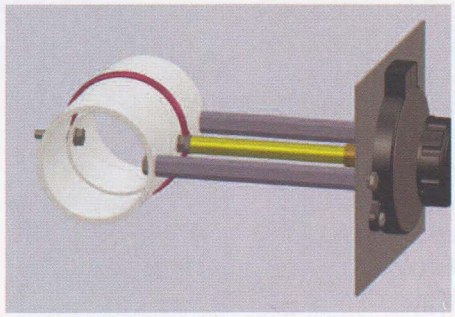


FIGURE 9: General view of a variometer, showing the two concentric coils. The inner coil can be rotated with respect to the outer coil by turning the front panel knob.

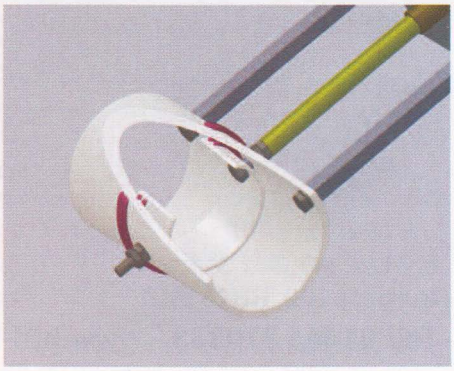


FIGURE 10: Cutaway view of the variometer showing the construction.

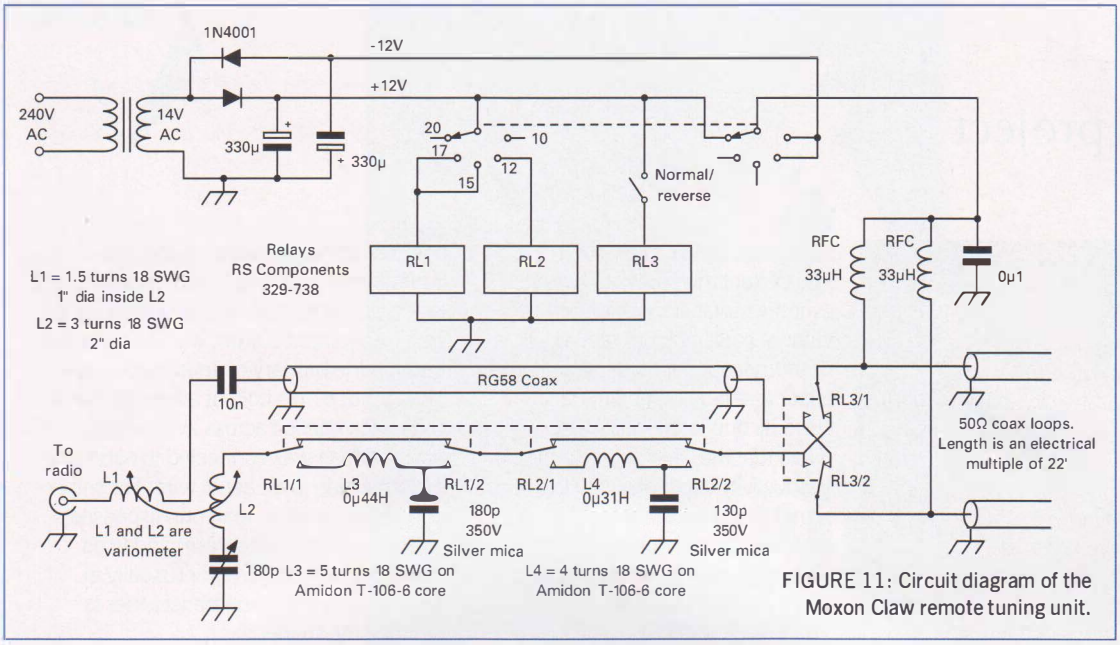


FIGURE 11: Circuit diagram of the Moxon Claw remote tuning unit.

by the almost 5m (15') height gain of the Claw on 14MHz over a conventional beam. G6XN frequently commented that a small beam high up will outperform a large beam at a lower height and it's nice to conclude that this is indeed what happened in the case of the Claw.

Another important difference between the two antennas was that the full-size 14MHz Yagi was substantially heaver than the Claw and had a higher wind loading. Additionally, the Claw appeared to be much quieter than the Yagi on receive.

Closed loop antennas have a reputation for being quieter than Yagis, but this has recently been questioned [8]. However, in my practical, empirical experience, the historical view is correct. I had no hesitation in removing the 14MHz Yagi and re-installing the Claw – all other reasons to one side, the fact that the beam direction of the Yagi could not be instantaneously reversed was more than sufficient motivation for its removal!

By increasing the size of the 14MHz matching inductance, operation of the Claw on the 10MHz band is possible, but it will have 0dBd of forward gain. However, it will still show a front-to-back ratio, which could be useful in for reducing interference.

The loops of the Claw make an effective capacity hat when using one of the coaxial feeder outers as a Marconi-type vertical antenna on the 3.5MHz band. Feeding this against a few above-ground radials via an aerial tuning unit enabled numerous SSB contacts with the USA to be made during the last period of minimum sunspot activity. Further information on using the Claw on other bands can be found in [1].

FURTHER WORK. There is still further work to be done to fully optimise both the echanical and electrical features of the Claw. For those with antenna computer modelling skills, it should be possible to design an optimised broadband matching network to improve the SWR on the 24MHz and 28MHz amateur bands [9].

Computer modelling indicates that maximum forward gain and maximum front-to-back ratio do not occur at exactly the same reflector tuning point. For those of a perfectionist nature, two reflector tuning networks could be developed for the Claw – one switched in-circuit on transmit and adjusted for maximum gain, while the other switched in-circuit on receive and adjusted at will for the nulling of interference or maximum front-to-back ratio.

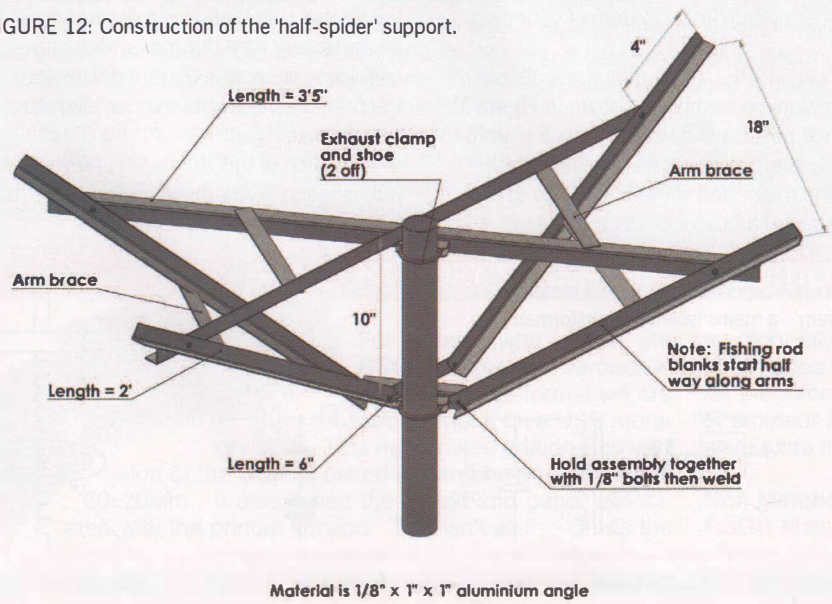
In practice, the tuning settings on the Claw for maximum forward gain and maximum front-to-back do not appear to be that different and the minute-by-minute variations in propagation do not appear to warrant such fine adjustment. However, this does represent yet another area for experimentation.

CONCLUSION. It is hoped that the new information provided here will spur others to experiment with the Claw and assist with incremental improvements. I'm sure Les would have wished his legacy to continue in this manner.

For those interested in building a Claw, Vortex Antenna Systems [10] are able to supply the hardware for an all-metal version of the Claw. The tuning and matching networks are presently not commercially available.

I would like to thank Steve Ireland, VK6VZ, for his assistance in preparing this article and Steve Merrells for his drawings of the variometer. This article is dedicated to the memory of Les Moxon, G6XN – a true antenna pioneer.

FIGURE 12: Construction of the 'half-spider' support.



WEBSEARCH

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Start Here

My Tesla coil project

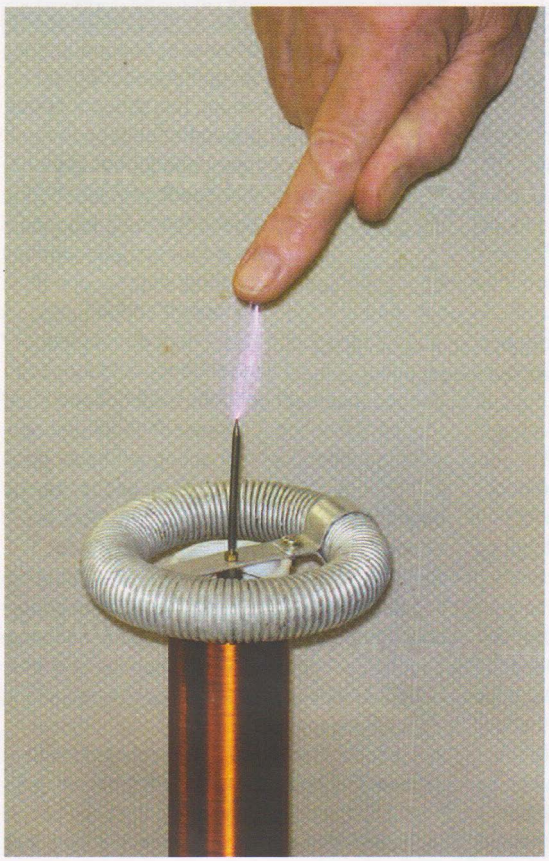

PHOTO 1: Dramatic sparks drawn from my homebrew Tesla coil system.

CONTEXT. I have always been interested in the very earliest forms of radio communication and have built working models of Marconi style spark transmitters, coherers, crystal sets and straight valve receivers to examine how well they worked. This month I start a brief excursion into the high voltage world of the Tesla coil.

THE TESLA COIL. My building and experimenting with a Tesla coil arose directly from my experiments with a spark transmitter, described in September. In fact, this transmitter formed one of the essential units of my original Tesla coil system. But what is a Tesla coil system? It is a collection of fairly simple but basic units that together produce a very high voltage – high enough to produce a corona discharge into the surrounding air. It also produces this high voltage at a very low current and at a high frequency, such that the resulting sparks can be drawn off to one's fingers, as shown in **Photo 1**. The current then flows to earth over the surface of one's body without causing pain, damage or RF burns, due to the limited depth of penetration of high frequency currents due to the 'skin effect'. (Note that the 'skin' refers to the conductivity depth of a high frequency signal in *any* material, not just your similarly-named epidermis. There was an article explaining the skin effect in conductors in the April 2012 *RadCom*).

The basic system actually comprises three stages or units; the 'switch' or 'pulse' unit, the 'RF' unit, and the Tesla coil itself, but the whole is colloquially just called a Tesla coil. For safety reasons, I added a mains isolating transformer to the basic design to try to limit the potential for (mains) electric shocks. A 230V to 230V isolating transformer of about 20-30W rating was used.

SAFETY. Although my description of the Tesla coil system will be sufficient for an experienced person to construct a similar device, it is not the intention of this short series to provide full constructional details, nor to draw your attention to all possible safety hazards. I'm simply describing what I did, at my own risk. There are a number of websites dedicated to Tesla coils – I would strongly recommend that you do a lot of research before even considering building a system of your own.

OVERVIEW OF UNITS. The basic circuit of the whole ensemble is shown in **Figure 1**. The first part is what I call the 'switch' unit. In early Marconi spark transmitters, this was the main (and sometimes only) unit. It contained a buzzer or electric bell mechanism for breaking up the direct current from a battery into short pulses of a few, or a few tens of milliseconds duration. This intermittent current was then passed through the primary of an induction coil. The output of this coil, at a few thousand volts, was applied across a spark gap, one side of which was connected to earth and the other side to an aerial wire. For ship borne applications, Marconi dispensed with the buzzer mechanism and used the ship's mains alternator (usually at 400Hz) plus a step-up transformer to produce the sparks.

In my experiments on spark transmitters and Tesla coils I have tried both methods of producing high voltage sparks (more on this latter). In both the Marconi style spark transmitters and the Tesla coil, the radio frequency power produced by the spark is prevented from being shunted by the self capacitance of the induction coil or transformer by a radio-frequency choke.

The Tesla coil itself is a loosely coupled tuned transformer, (both primary and secondary tuned to the same frequency, in my case about 2MHz), but with rather unusual inductance to capacity ratios. The primary (with the RF spark gap short circuited) has a high Q, low inductance (around 3μH) and a high capacitance (around 2.5nf), which is actually in the preceding section (that I call the RF unit). The secondary also has a high Q, but it has a very low capacitance (a few pF) and a high inductance (around 3.1mH).

NEXT MONTH. I will start by describing the Switch unit that uses a domestic incandescent light dimmer switch in a novel way to provide current pulses to the primary winding of the first step-up transformer.

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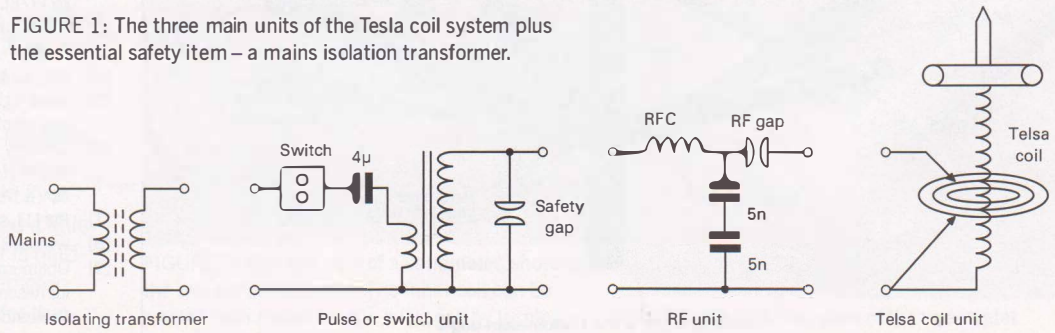
FIGURE 1: The three main units of the Tesla coil system plus the essential safety item – a mains isolation transformer.



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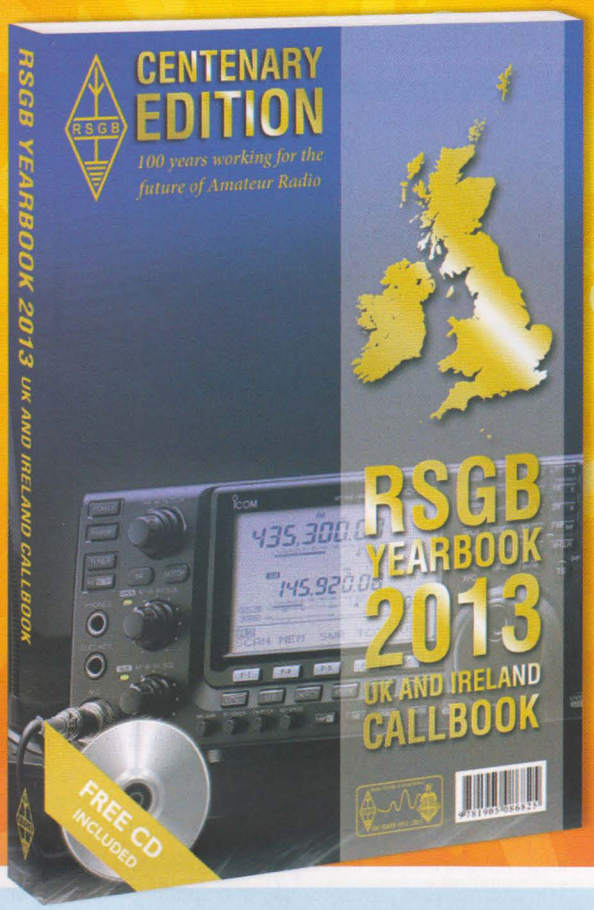

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Edited by Steve White, G3ZVW

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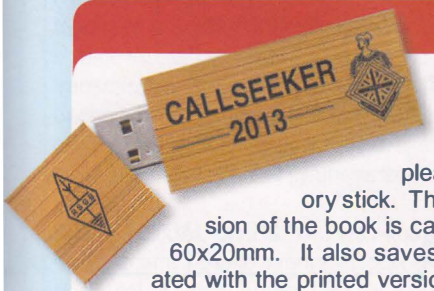

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Design Notes

More on fractional-N synthesisers

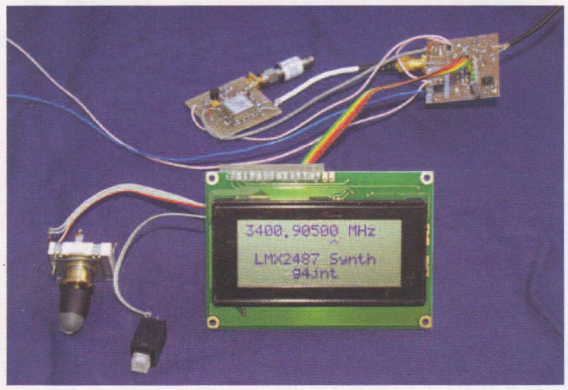

PHOTO 1: Breadboard microwave synthesiser tuning in 10Hz steps using an LMX2487 device.

RECAP. The March and April 2012 columns carried an introduction to the LMX2470, a fractional-N synthesiser chip that generates frequencies up to 2.6GHz with fine frequency resolution. At that time I had just started to look at fractional-N synthesis and results were somewhat preliminary – but now, having experience of several more such devices, it's time for an update and to see how these can be used as sources for just about any frequency range of interest from LF to SHF.

Figure 1 shows a block diagram of the fractional-N synthesis technique. A reference input F_{ref} can come from GPS or rubidium standards, a temperature compensated crystal oscillator (TCXO) at 10MHz or virtually any other frequency you like. 12.8MHz and 13MHz are popular frequencies, the latter in the mobile phone world. Or you could just use a normal crystal oscillator for less demanding applications. The reference input passes into a programmable divider, R, whose output forms a reference frequency at the phase detector for the phase locked loop (PLL). A voltage controlled oscillator (VCO) feeds a divider 'engine' that effectively divides by a fractional value. It doesn't *actually* divide by a fractional number; instead, it jitters between two or more fixed divide ratios so that the average is a fraction (this was explained in more detail in March and April). The output is then equal to the VCO input frequency divided by (N + F / D), where N, F and D are integers programmed into the chip for the desired frequency. The fractionally divided output also goes to the phase detector (PD). The PD output is filtered to remove sidebands and spurii, then fed back to control the VCO. With the PLL locked, the fractionally divided VCO output is forced to exactly equal the divided reference. As a final twist, the VCO output can then be divided in another programmable divider, M, to give the wanted output frequency, F_{out}. The M divider is sometimes (but not always) included within the synthesiser chip. We end up with the following relationship for the final output frequency:

$$F_{out} = F_{ref} / R * (N + F / D) / M$$

PRACTICAL APPLICATIONS. For traditional integer-N PLLs, the comparison frequency at the phase detector has to equal the channel spacing, eg 12.5kHz for channelised FM radios. More closely spaced frequency steps for the fine tuning needed for VFO replacement means that complicated double and triple loops have to be used to interpolate frequencies. The alternative is power-hungry and spurii-prone direct digital synthesis. The fractional-N synthesiser removes this need and allows much simplified continuously variable frequency output.

Ideally, in any phase locked loop, the phase detector needs to run at as high a frequency as possible to maximise loop bandwidth, reduce phase noise and allow more effective filtering of detector frequency sidebands. So, let's carry this to the extreme and make it the reference frequency itself. The R value is unity and the phase detector runs at (let's say) 10MHz. Some chips even include a reference doubler so F_{comp} can be twice the reference input. Let's also say we want to be able to tune in steps of 10Hz, an almost inaudible tuning step and virtually continuous tuning. It also means the software for frequency display and programming can be simplified. For now we'll also assume that no output divider is used (M=1) because the VCO generates the wanted output frequency.

With a comparison frequency of 10MHz, R and M both at unity, we can see that by choosing a value of 1,000,000 for the fractional denominator D and appropriate values of N and F we can generate any frequency we like in steps of 10Hz. For example, to generate 144.42850MHz, N is set to 14 and F to 442850. The effective division is therefore 14 + 442850 / 1000000 = 14.442850 that, when phase locked to the 10MHz reference, gives the wanted output. If a 13MHz reference were to be used in the same manner, the numbers would be D = 1300000, N = 11, F = 142850.

FREQUENCY RANGE LIMITATIONS. Unfortunately, as it stands the example just given is not practical with any existing off the shelf chip. The reason for this is that modern fractional-N synthesiser chips have a lower frequency limit for the VCO input, which is usually around 500MHz. The upper limit for modern chips is now several GHz, with a 6GHz input device costing less than £5. Somewhat perversely at first sight, the solution is to have the VCO running at a much higher frequency and use the M divider to bring this down to the wanted output. Back in days of yore, RF at frequencies of over 1GHz was considered a specialist area and far too complicated for the average amateur. But nowadays, the chips are designed to run best up here, with minimal extra decoupling and certainly none of the specialist RF hardware usually associated with microwaves. Ironically, it is the lower frequency components that can

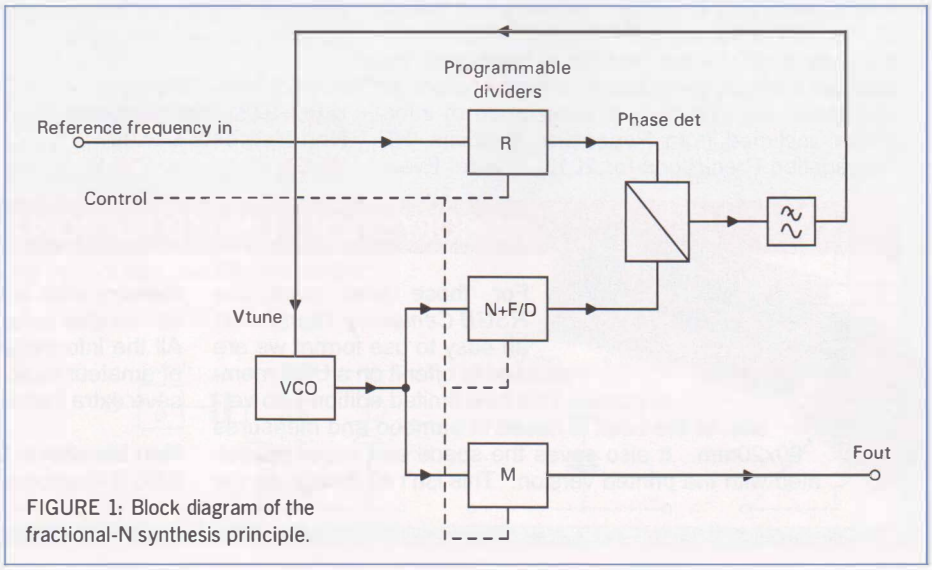

FIGURE 1: Block diagram of the fractional-N synthesis principle.

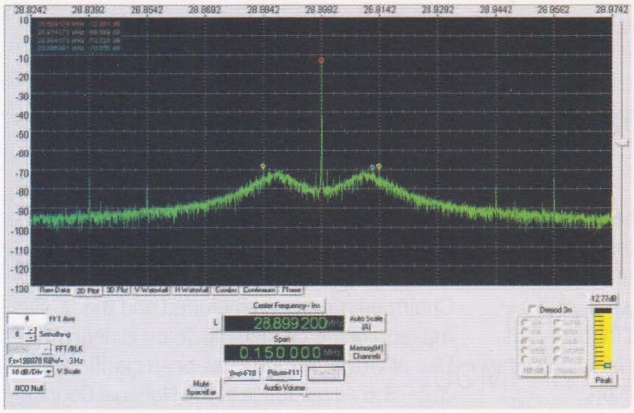

FIGURE 2: Phase noise plot at 3.4GHz of the synthesiser in Figure 2.

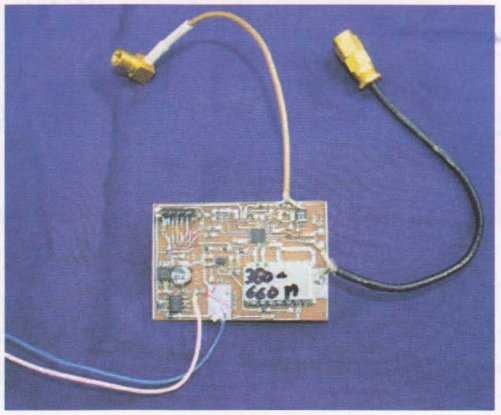

PHOTO 2: Breadboard ADF4150 design for VHF.

cause problems, needing higher value decoupling capacitors to be sprinkled throughout the circuit layout to prevent nasties from being passed around.

So now we recalculate the numbers for a practical system. First of all, choose a VCO frequency range and M divider. VCOs are readily available for the range 900MHz to 2GHz but M values can be restrictive. So let's choose M = 8, which means the VCO runs at 1152MHz. We'll stay with 10Hz steps, so this now means that due to the divide by 8 in the output, the PLL has to run with 80Hz steps. Keeping F_{comp} at 10MHz, D becomes 10MHz / 80Hz = 125000, so for a wanted output of 144.4285, the VCO runs at 1155.428MHz and we see that for this value of D, N = 115 and F = 67850.

$F_{out} = F_{ref} * (N + F / D)$
$= 10MHz * (115 + 67850 / 125000) / 8$
$= 144.4285MHz.$

For a 13MHz reference, the numbers are D = 162500, N = 88, F = 142850.

Being able to set the denominator to any arbitrary value means that obscure frequency steps can be formed. As an example, consider the weak signal mode JT65B, which requires a carrier to be stepped over 65 tone frequencies with a spacing of 11025/2048 = 5.38330Hz. Using the example above with output divider M = 8, this means the synthesiser runs with a step size of 43.0664Hz. The nearest integer for D is 232200, so the actual step on the 144MHz output comes out to be 5.38328Hz. The 0.00002Hz error is absolutely insignificant! A JT65B waveform can now be generated by reprogramming the synthesiser chip with a new F value for each symbol to be sent at the 2.7Hz transmission rate, without having to use any upconversion or mixing. The next generation of VHF and UHF beacons are quite likely to make use of fractional-N synthesis techniques.

SOME ACTUAL CHIPS. Two well-known manufacturers make a range of low cost fractional-N chips: Analog Devices with their ADF4xxx range, and National / TI with their LMX24xx and LMX25xx range. They are very different.

A design using the LMX2470 was detailed in April's issue. This works over the range 500MHz to 2.6GHz and allows F and D values up to a maximum of 2^{22} - 1 = 4194303, meaning that the 10Hz step size example using D = 1000000 described above can be implemented on a UHF output. However there is no internal M divider; this has to be added as a separate chip for lower frequencies.

The LMX2487 is similar functionally, but has a higher maximum frequency specification of 7.5GHz. **Photo 1** shows a breadboard 10Hz step tuneable synthesiser working over the 2.85 to 3.55GHz range (determined by the VCO module). A PIC with rotary encoder and LCD is used to set the registers. **Figure 2** shows the excellent phase noise spectrum generated by this virtually continuously-tuned microwave synthesiser.

The Analog Devices ADF4150 is a different sort of beast. It accepts RF from 500MHz to 4GHz but includes an output divider with programmable values of 1, 2, 4, 8 or 16, which means that frequencies as low as 31.25MHz can be directly generated using no external divider. However, the D register can only take a maximum of a 12 bit value, or 4095, so fine tuning steps are not possible with F_{comp} at the maximum. **Photo 2** shows a breadboard with a VCO running in the range 380 to 660MHz that can give 144MHz coverage with M = 4, or cover the 70MHz band with M = 8. Here R= 40 (for F_{comp} = 250kHz), allowing 20 or 10Hz steps respectively. Although the chip is specified for 500MHz minimum, it does actually work, in practice, with a 432MHz input. This is not guaranteed for all circumstances – you have been warned!

The LMX2541 is more exotic. It contains its own internal VCO, with six variants offering overlapping sub-bands in the 2 to 4GHz region. An output divider can be programmed to any value in the range 1 to 63, so continuously tuneable outputs down to 31MHz can be directly generated from this one-chip solution. D takes a 22 bit value.

All these chips have programming capability for more than just the dividers. Phase detector current, polarity, dither in the fractional-N engine and output amplitude can all be adjusted using the serial programming interface. See the datasheets for more information.

AN UNFORTUNATE INCIDENT. The LMX2541 was actually the first ever fractional-N chip I used, but I broke it. Not by rough handling, static discharge or bad soldering; I just over-volted it. The chip runs off a 3.3V rail, which I supplied from an LM317L regulator. As the PIC 12F629 controller would work with 3.3V supply I just did that, connecting its pins directly to the LMX2541. All would no doubt have worked fine but, before being able to do anything, I had to put new code into the PIC using the in-circuit programming facility. I then realised the PIC could only be in-circuit programmed when running from a 5V rail, so I dutifully separated the PIC V_{DD} from synth chip V_{DD}, applied 5V and blew in the new firmware. Then I reconnected the two supplies at the lower voltage. The synth chip vaguely, sort-of, worked, ish. But outputs from the test point were at the wrong frequencies – clearly something was seriously wrong! This was my first venture into fractional-N chips – everything was very new so of course I assumed it was merely a programming error on my part, with wrong codes being sent. But no, I finally realised I had damaged the chip. When the new PIC code was blown and the supply raised to 5V, I had disconnected the V_{DD} supply to the LMX2541 but not the three data lines. These rose to 5V during the programming phase and, with no V_{DD} supply on the synth chip to clamp them, putting 5V on the three serial lines rated for 3.3V maximum part-destroyed the logic circuitry inside. Ironically, had I shorted its supply to ground during reprogramming, the synth chip's own internal protection diodes might have saved it!

So now I always run the controller PIC from a 5V rail and use potential dividers on each of the programming lines – as everyone else seems to do. The experience made me wary of using the LMX2541 so subsequent experimentation was done using the simpler (and cheaper) devices with no internal VCO. I do have one more LMX2541; now might be the time to try it...

IT'S GONE VERY QUIET. Last time I had enough of your input to fill the column. This time – nothing. Can I have your ideas, experiences, pitfalls, catastrophes, successes etc please?

The Future of Your Society

A statement by the RSGB Interim Board

THE FUTURE. This issue of *RadCom* contains very important information for all Members, relating to the future of your Society. As you know, after the Society's difficulties at the beginning of 2011, the Interim Board was appointed to reshape the Society and make sure that it never again fell victim to some of the issues of poor governance that caused the last few years' problems.

The resolution at the November 2011 EGM authorised the creation of an Interim Board to serve until April 2013. Its role was to create a sound basis for the future management and direction of the Society. As a part of this work, the Board has consulted with Members on, and is now formally proposing, a new set of Governance processes that are designed to ensure that the issues of the past do not recur. They address the transparency of the Society, the capability of the Board and a more balanced workload between the Chairman and President (which previously had been a combined role).

The Board is now asking Members for formal approval to these proposals through an EGM to be held on 17 November in Stratford-upon-Avon. This edition of *RadCom* contains both the calling notice for the EGM and the formal resolution to be considered that proposes adoption of a new Constitution as embodied in the Memorandum and Articles of Association (M&A).

The Interim Board has also developed proposals for the future strategy of the Society that have been the subject of Member consultation, but which, although providing a framework for the future, do not form part of the issues to be discussed at the forthcoming EGM.

Pages 24 – 27 of the August *RadCom* outlined the Board's proposals for strategy and for the governance of the Society. Since then a consultation with Members has taken place, which has resulted in a number of helpful comments that the Board has taken into account. The Board is now presenting to Members for approval the revised governance proposals. Voting on these will take place between now and 15 November and, for those attending the EGM being held on 17 November, at the EGM itself.

The EGM in November 2011 suspended some articles and amended others to permit the Interim Board to be established. The M&A will return to the pre-November 2011 version in April 2013, unless otherwise agreed by Members. The following substantive changes are now proposed to that current version of the M&A (that can be found at www.rsgb.org/membersonly/information/memarts/memartsbylaws.pdf).

Additionally the opportunity has been taken to correct a few spelling and punctuation errors in the current version. The new proposed version, which is the subject of the EGM resolution, is included in full in this edition of *RadCom* and has been reviewed by our external Company Law advisors.

MEMORANDUM. No changes are proposed to this section of the Constitution.

ARTICLES. Interpretation. This has been updated to reflect new terminology: Leadership Team, Nominated Director, Elected Director and Chairman.

27 & 28. Article 28 changes the composition of the Board to include a minority of directly nominated Directors to ensure the Board always maintains the necessary skills mix to run the Society effectively. The Regional Council will no longer be required to nominate two of their members to the Board. Article 27 is adjusted accordingly.

29. A section on responsibilities of the Board has been added.

32. This states how the term of duty is to be determined and has been devised to assist the transition back from the Interim Board. It is intended to avoid a situation where the majority of the Directors retire at the same time and will be achieved by reducing the initial term for some Directors.

33. This defines the roles and periods of office of the President, the Chairman, the Leadership Team and the Nominations Committee (NomCom).

36. Now has an additional section detailing the new method of electing the President by the Membership rather than by the National Council.

49. Now includes e-mail.

BYLAWS. The Bylaws are not part of the legal requirement under the Companies Acts and have usually been determined with the National Council (in future with the Leadership Team). The following changes are proposed but do not form part of the Special Resolution to be considered at the EGM.

Any reference to the Management Committee, which was disbanded in 2011, has been removed.

1. Interpretation. Updated in a similar way to the same section in the Articles.

2. Objectives. There is a small addition and the website is now included.

3. Governance.

3.1 New Terms of Reference have been agreed for the Regional Managers and these are encapsulated in the second paragraph. The reference to Regional Managers being nominated to the Board has been removed.

Under Voluntary Support, Committee Chairmen have been included and the makeup of the Leadership Team is defined. Use of virtual working has been clarified.

3.2 – 3.6 All reference to the National Council has been removed. The President shall be elected by the Membership.

4.1 This deals with the proposed timing for elections and appointments and is intended to simplify the process and avoid disruptive changeovers. Crucially it ensures that the previous Board is still in office at an AGM to account for the year under review. This part also reiterates the process for the election of President.

4.2 Has changed dates to reflect the new starting date for periods of office and sets out candidate nomination arrangements.

4.3 This now includes a statement that a candidate for election as a Director will observe the Society's Code of Conduct and support the Society's strategies as determined by the Board and the Leadership Team.

5. Ballots. This is now more clearly defined and in particular regularises the use of an external agency such as Electoral Reform Services and removes any involvement of HQ in the election process.

11. Committees. This clause has been updated after discussions with the Committee Chairs.

Appendix 1. This now reflects the roles and appointment processes for Regional Managers and Deputies.

Appendix 2. This has minor updates in eg Board standing agenda for good governance reasons.

Appendix 3. This has been amended to clarify the relationship between RSGB and its affiliated societies.

CLARIFICATIONS. If any Member has not been able to follow the discussions on this matter, or would like further clarification, in the first instance please contact the General Manager or send an e-mail to the Hon Company Secretary at G3KKT@rsgb.org.uk. Alternatively any member of the Board will be happy to assist you.

RECOMMENDATION. The Board unanimously recommends the proposed changes to Members, and believes they will result in a stronger and better managed Society. We would like everyone to endorse this by voting in favour, either online or by post, as explained on the voting form in this issue of *RadCom*, or in person at the AGM.

THE COMPANIES ACT 1985
COMPANY LIMITED BY GUARANTEE

The Radio Society of Great Britain

Radio Society of Great Britain

THE COMPANIES ACT 1985 COMPANY LIMITED BY GUARANTEE

Memorandum of Association

1. The Name of the Company (hereinafter called "The Society") is "RADIO SOCIETY OF GREAT BRITAIN".
2. The registered office of the Society will be situated in England.
3. The objects for which the Society is established are:
   (a) To succeed to and take over such of the property, rights and obligations of the existing Radio Society of Great Britain as may lawfully be acquired and taken over by the Society.
   (b) To promote the general advancement of the science and practice of radio communication or other subjects allied thereto, and to facilitate the exchange of information and ideas on these subjects among its Members and to obtain the maximum liberty of action consistent with safeguarding the interests of all concerned, and for this purpose:
      (1) To hold Meetings of the Society for reading and discussing communications bearing upon radio science or the application thereof or upon subjects relating thereto;
      (2) To hold or promote exhibitions of instruments, apparatus or other appliances connected with radio science or its applications;
      (3) To print, publish, sell, lend or distribute the proceedings or reports of the Society or any papers, communications, works, or treatises on the Amateur Service, radio science, or its applications, or subjects connected therewith in the English or any foreign tongue or any abstracts or translations thereof or extracts therefrom;
      (4) To take charge of the books, pamphlets, publications, manuscripts or instruments at present in the possession of the Radio Society of Great Britain, and to observe and perform the Trusts of any deed affecting the same or any of them, or to form any additional library of books, works, manuscripts on radio communication or the application thereof or other subjects allied thereto;
      (5) To borrow or raise money as the Society may think fit;
      (6) To make grants of money, books, medals, apparatus or otherwise for the purpose of promoting invention and research in radio communication or its applications or in subjects connected therewith;
      (7) To form Sections of its Members united in pursuit of some common interest;
      (8) To affiliate with itself British, European and any other societies world-wide, interested in radio communication or other subjects allied thereto;
      (9) To purchase, for the purpose of resale, components, papers, books, apparatus and other items relating to radio communication and subjects allied thereto;
      (10) To act under agreement on behalf of government agencies for the purpose of issuing licences and variations thereto;
      (11) To develop and conduct examinations for the purpose of the furtherance of knowledge in the Amateur Service;
   (c) To purchase, take on lease, or otherwise acquire, and also let, lease, or to dispose of any premises or other property for the purposes of the Society
   (d) To consider, originate and support improvements in the law which may seem directly or indirectly conducive to any of the Society's objects, and to resist and oppose alterations therein which may seem to the Society directly or indirectly adverse to the interests of the Society or its Members or any section thereof;
   (e) The doing all such other lawful things the Society may think fit. Provided that the Society shall not support with its funds any object or endeavour to impose on or procure to be observed by its Members or others any regulation, restriction or condition which if an object of the Society would make it a Trade Union. Provided also that in case the Society shall take or hold any property subject to the jurisdiction of the Charity Commissioners for England and Wales, the Society shall not sell, mortgage, charge or lease the same without such authority, approval or consent as may be required by law, and as regards any such property the Managers or Trustees of the Society shall be chargeable for such property as may come into their hands, and shall be answerable and accountable for their own acts, receipts, neglects, and defaults, and for the due administration of such property in the same manner and to the same extent as they would as such Managers or Trustees have been if no incorporation had been effected, and the incorporation of the Society shall not diminish or impair any control or authority exercisable by the Chancery Division, the Charity Commissioners over such Managers or Trustees, but they shall, as regards any such property, be subject jointly and separately to such control or authority as if the Society were not incorporated. In case the Society shall take or hold any such property which may be subject to any trusts, the Society shall only deal with the same in such manner as allowed by law having regard to such trusts.
4. The income and property of the Society shall be applied exclusively in the promotion of the foregoing objects, and no dividend shall be paid to its Members or any of them; but these restrictions shall not prevent the payment to any Member (including any member of the Council of the Society) of interest on money lent, or rent for premises leased by him or her to the Society, nor the payment of appropriate fees or other remuneration for original literary or other material accepted by the Society for publication or inclusion in any of its publications.
5. The liability of the Members is limited.
6. Every Member of the Society undertakes to contribute to the assets of the Society, in the event of the same being wound up during the time that he is a Member or within one year afterwards, for payment of the debts and liabilities of the Society contracted before the time at which he ceases to be a Member, and of the costs, charges and expenses of winding up the same, and for the adjustment of the rights of the contributories amongst themselves such amount as may be required not exceeding £1.00 (one pound sterling).
7. If upon the winding up or dissolution of the Society there remains, after the satisfaction of all its debts and liabilities, any property whatsoever, the same shall not be paid to or distributed among the Members of the Society, but shall be given or transferred to some other institution or institutions, having objects similar to the objects of the Society, and which shall prohibit the distribution of its or their income and property amongst its or their Members to an extent at least as great as is imposed on the Society under or by virtue of Clause 4 hereof, such institution or institutions to be determined by the Members of the Society at or before the time of dissolution, or in default thereof by such Judge of the High Court of Justice as may have or acquire jurisdiction in the matter, and if and so far as effect cannot be given to the aforesaid provision then to some charitable object.
8. True accounts shall be kept of the sums of money received and expended by the Society, and the matters in respect of which receipts and expenditure take place, and of the property, credits, and liabilities of the Society; and, subject to any reasonable restrictions as to the time and manner of inspecting the same that may be imposed in accordance with the regulations of the Society for the time being, shall be open to the inspection of the Members. Once at least in every accounting period, the Society will call for the accounts of the Society to be examined, and the correctness of the balance-sheet ascertained by one or more properly qualified Auditor or Auditors. We, the several persons whose names and addresses are subscribed, are desirous of being formed into a Company in pursuance of this Memorandum of Association:

H.C.L. HOLDEN. Brig.-Gen., 2 St. John's Park, S.E.2 (Army Retired Pay); MAURICE CHILD, 60 Ashworth Mansions, Maida Vale, W.9 (Director of Company); O.F. BROWN, 13 Hampstead Way, N.W.11 (Civil Servant); J.H. REEVES, 2 Penywern Road, S.W.5 (Tutor); H.R. HALLIWELL, 2 Princes Road, Crumpsall, Manchester (Electrical Engineer); GERALD MARCUSE, Queens Park, Caterham (Merchant); H. BEVAN SWIFT, 49 Kingsmead Road, Tulse Hill, S.W.2 (Electrical Engineer).

Dated the 22nd day of July 1926.

Witness to the above signatures, FEARNLEY OWEN, St. Michael's Alley, Cornhill, E.C.3 (Solicitor).

Amended by special resolutions passed on:
- 18 December 1953;
- 8 December 1984;
- 4 December 1993;
- 2 December 2000;
- 6 May 2006.

THE COMPANIES ACT 1985 COMPANY LIMITED BY GUARANTEE

Articles of Association of Radio Society of Great Britain

**(As adopted by Special Resolution passed on 2nd December 2000 and amended by special resolution passed on the 6th May 2006.)
Further amended on 19th April 2008 and 19th November 2011. Proposed for adoption at an EGM to be held on 17th November 2012.**

INTERPRETATION

1. In these Articles:-

"the Act" means the Companies Act 1985 including any statutory modification or re-enactment thereof for the time being in force. References to "Section" refer to the relevant sections of the Act.
"the Society" means the Radio Society of Great Britain.
"the Articles" means the Articles of Association of the Society.
"the Bylaws" means the bylaws of the Society for the time being in force.
"Member" means any Member of the Society, as defined in Article 3 below.
"the Board" means the board of the Society.
"President" is the President of the Society for the time being.
"Board member" means any member of the Board of the Society.
"Regional Manager" means a candidate duly elected by the Membership to serve on the Regional Council and the Leadership Team.
"Nominated Director" means a Board member appointed following nomination by the Nominations Committee for approval by the Membership in election
"Elected Director" means a Board member appointed after being proposed by Members and approved by the Membership in election
"the Regional Council" is the Regional Council of the Society whose role is defined from time to time by the Board and recorded in the Bylaws.
"Council member" means any member of the Regional Council of the Society.
"Chairman of the Board" means the person elected by the Board from time to time to act as its Chairman.
"Leadership Team" means the Board, Regional Managers, Committee Chairs, Honorary Officers, General Manager and senior HQ staff as determined from time to time by the Board.
"executed" includes any mode of execution.
"Office" means the registered office of the Society.
"the Seal" means the common seal of the Society.
"Secretary" means the Company Secretary of the Society or any other person appointed to perform the duties of the Secretary of the Society, including a joint, assistant or Deputy Secretary.
"the United Kingdom" means Great Britain and Northern Ireland.
"clear days" in relation to the period of a notice means that period excluding the day when the notice is given or deemed to be given and the day for which it is given or on which it is to take effect.
"the RSGB Year" means 1 January to 31 December inclusive in each calendar year.

Words importing the singular number only shall include the plural number, and vice versa; words importing the masculine gender only shall include the feminine gender; and words importing persons shall include corporations.

Unless the context otherwise requires, words or expressions contained n these Articles bear the same meaning as in the Act but excluding any statutory modification thereof not in force when these regulations become binding on the Society.

OBJECTS

2. The Society is established for the objects expressed in the Memorandum of Association.

MEMBERS

3. The subscribers to the Memorandum of Association of the Society and such other persons as are admitted to membership in accordance with these Articles shall be Members of the Society. Every person who wishes to become a Member shall deliver to the Society an application for membership in such form as the Board requires, executed by him. The Society may reject any application for membership without giving a reason.

A Member may at any time withdraw from the Society by giving at least seven clear days notice to the Society. Membership shall not be transferable and shall cease on death.

GENERAL MEETINGS

4. All general meetings other than annual general meetings shall be called extraordinary general meetings.

(a) Any Member or Members wishing to call a general meeting of the Society shall deposit at the Office of the Society a requisition containing the signed declaration of not less than 300 paid up Members of the Society, on one or more similar documents and which also states the terms of the resolution which is to be proposed as a special resolution or extraordinary resolution of which constitutes a resolution requiring special notice and shall indicate the general nature of the business to be transacted at the meeting and the Board shall convene an extraordinary general meeting within 8 weeks of receipt of such requisition. If there are not within the UK sufficient Board members to call an extraordinary general meeting, any Board member shall call an extraordinary general meeting.

NOTICE OF GENERAL MEETINGS

5. An annual general meeting and an extraordinary general meeting called for the passing of a special resolution shall be called by at least twenty-one clear days' notice. All other extraordinary general meetings shall be called by at least fourteen clear days' notice but a general meeting may be called by shorter notice if it is so agreed:

(a) in the case of an annual general meeting, by all the Members entitled to attend and vote thereat; and

(b) in the case of any other meeting by a majority in number of the Members having a right to attend and vote being a majority together holding not less than ninety-five per cent of the total voting rights at the meeting of all the Members.

The notice shall specify the time and place of the meeting and the general nature of the business to be transacted and, in the case of an annual general meeting, shall specify the meeting as such. The notice shall be given to all the Members, to the Board members and to the Auditors in accordance with Articles 58 - 61 inclusive.

6. The accidental omission to give notice of a meeting to, or the non-receipt of notice of a meeting by, any person entitled to receive notice shall not invalidate the proceedings at that meeting.

PROCEEDINGS AT GENERAL MEETINGS

7. No business shall be transacted at any meeting unless a quorum is present. Fifty persons entitled to vote upon the business to be transacted, each being a Member or a proxy for a Member or a duly authorised representative of a corporation, shall be a quorum.

8. If such a quorum is not present within half an hour from the time appointed for the meeting, or if during a meeting such a quorum ceases to be present, the meeting shall stand adjourned to the same day in the next week at the same time and place or such time and place as the Board may determine.

9. The Chairman of the Board or in his absence some other Board member nominated by the Board shall preside as chairman of the meeting, but if neither the Chairman nor such other Board member (if any) be present within fifteen minutes after the time appointed for holding the meeting and willing to act, the Board members present shall elect one of their number to be chairman and, if there is only one Board member present and willing to act, he shall be chairman.

10. If no Board member is willing to act as chairman, or if no Board member is present within fifteen minutes after the time appointed for holding the meeting, the Members present and entitled to vote shall choose one of their number to be chairman.

11. The chairman may, with the consent of a meeting at which a quorum is present (and shall if so directed by the meeting), adjourn the meeting from time to time, and from place to place, but no business shall be transacted at an adjourned meeting other than business which might properly have been transacted at the meeting had the adjournment not taken place. When a meeting is adjourned for fourteen days or more, at least seven clear days notice shall be given specifying the time and place of the adjourned meeting and the general nature of the business to be transacted. Otherwise it shall not be necessary to give any such notice.

12. A resolution put to the vote of a meeting shall be decided on a show of hands unless before, or on the declaration of the result of the show of

hands, a poll is duly demanded. Subject to the provisions of the Act, a poll may be demanded;

(a) by the chairman; or

(b) by at least five Members having the right to vote at the meeting; Or

(c) by a Member or Members representing not less than one-tenth of the total voting rights of all the Members having the right to vote at the meeting; and a demand by a person as proxy for a Member shall be the same as a demand by the Member.

13. Unless a poll is duly demanded a declaration by the chairman that a resolution has been carried or carried unanimously, or by a particular majority, or lost, or not carried by a particular majority and an entry to that effect in the minutes of the meeting shall be conclusive evidence of the fact without proof of the number or proportion of the votes recorded in favour of or against the resolution.
14. The demand for a poll may, before the poll is taken, be withdrawn but only with the consent of the chairman and a demand so withdrawn shall not be taken to have invalidated the result of a show of hands declared before the demand was made.
15. A poll shall be taken as the chairman directs and he may appoint scrutineers (who need not be Members) and fix a time and place for declaring the result of the poll. The result of the poll shall be deemed to be the resolution of the meeting at which the poll was demanded.
16. In the case of an equality of votes, whether on a show of hands or on a poll, the chairman shall be entitled to a casting vote in addition to any other vote he may have.
17. A poll demanded on the election of a chairman or on a question of adjournment shall be taken forthwith. A poll demanded on any other question shall be taken either forthwith or at such time and place as the chairman directs not being more than thirty days after the poll is demanded. The demand for a poll shall not prevent the continuance of a meeting for the transaction of any business other than the question on which the poll was demanded. If a poll is demanded before the declaration of the result of a show of hands and the demand is duly withdrawn, the meeting shall continue as if the demand had not been made.
18. No notice need be given of a poll not taken forthwith if the time and place at which it is to be taken are announced at the meeting at which it is demanded. In any other case at least seven clear days notice shall be given specifying the time and place at which the poll is to be taken.
19. A resolution in writing executed by or on behalf of each Member who would have been entitled to vote upon it if it had been proposed at a general meeting at which he was present shall be as effectual as if it had been passed at a general meeting duly convened and held and may consist of several instruments in the like form each executed by or on behalf of one or more Members.

VOTE OF MEMBERS

20. On a poll every Member present or by proxy shall have one vote.
21. A Member in respect of whom an order has been made by any court having jurisdiction (whether in the United Kingdom or elsewhere) in matters concerning mental disorder may vote, whether on a show of hands or on a poll, by his receiver, curator bonis or other person authorised in that behalf appointed by that court, and any such receiver, curator bonis or other person may, on a poll, vote by proxy. Evidence to the satisfaction of the Board of the authority of the person claiming to exercise the right to vote shall be deposited at the Office, or at such other place as is specified in accordance with these Articles for the deposit of instruments of proxy, not less than 48 hours before the time appointed for holding the meeting or adjourned meeting at which the right to vote is to be exercised and in default the right to vote shall not be exercisable.
22. No objection shall be raised to the qualification of any voter except at the meeting or adjourned meeting at which the vote objected to is tendered, and every vote not disallowed at the meeting shall be valid. Any objection made in due time shall be referred to the chairman whose decision shall be final and conclusive.
23. The appointment of a proxy shall be executed by or on behalf of the appointor and shall be in the following form (or in a form as near thereto as circumstances allow or in any other form which is usual or which the Board may approve) -

"I/We,
of,
being a Member/Members of the above-named Company, hereby appoint
of,
or failing him,
of,
as my/our proxy to vote in my/our name and on my/our behalf at the annual/extraordinary general meeting of the Company to be held on.....20.. , and at any adjournment thereof.
Signed this day of .....20.. ."

24. Where it is desired to afford Members an opportunity of instructing the proxy how he shall act the appointment of a proxy shall be in the following form (or in a form as near thereto as circumstances allow or in any other form which is usual or which the Board may approve) -

"I/We,
of,
being a Member/Members of the above-named Company, hereby appoint
of,
or failing him,
of,
as my/our proxy to vote in my/our name and on my/our behalf at the annual/extraordinary general meeting of the Company, to be held on .....20.. , and at any adjournment thereof.
This form is to be used in respect of the resolutions mentioned below as follows:
Resolution No. 1 *for *against.
Resolution No. 2 *for *against.
*Strike out whichever is not desired.
Unless otherwise instructed, the proxy may vote as he thinks fit or abstain from voting.
Signed this day of .....20.. ."

25. The appointment of a proxy and any authority under which it is executed or a copy of such authority certified notarially or in some other way approved by the Board may;

(a) in the case of an instrument in writing be deposited at the Office or at such other place within the United Kingdom as is specified in the notice convening the meeting or in any instrument of proxy sent out by the Society in relation to the meeting not less than 48 hours before the time for holding the meeting or adjourned meeting at which the person named in the instrument proposes to vote; or

(b) in the case of an appointment contained in an electronic communication, be received at an electronic address specified in the notice convening the meeting or in any instrument of proxy sent out, or invitation contained in an electronic communication to appoint a proxy issued by the company in relation to the meeting not less than 48 hours before the time for holding the meeting or adjourned meeting at which the person named in the appointment proposes to vote;

(c) in the case of a poll taken more than 48 hours after it is demanded, be deposited as aforesaid after the poll has been demanded and not less than 24 hours before the time appointed for the taking of the poll; or

(d) where the poll is not taken forthwith but is taken not more than 48 hours after it was demanded, be delivered at the meeting at which the poll was demanded to the chairman or to the Secretary or to any Board Member; and an appointment of proxy which is not deposited, delivered or received in a manner so permitted shall be invalid.

26. A vote given or poll demanded by proxy or by the duly authorised representative of a corporation shall be valid notwithstanding the previous determination of the authority of the person voting or demanding a poll unless notice of the determination was received by the Society at the office or at such other place at which the instrument of proxy was duly deposited or where the invitation to appoint a proxy was contained in an electronic communication at the electronic address specified for that purpose before the commencement of the meeting or adjourned meeting at which the vote is given or the poll demanded or (in the case of a poll taken otherwise than on the same day as the meeting or adjourned meeting) the time appointed for taking the poll.

GOVERNANCE OF THE SOCIETY

27. The Society is a company limited by guarantee under the Companies Act 1985. Under the Act, the general governance of the Society is the responsibility of the Board of Directors. Subject to Article 28, the Directors of the Society will be the Elected Board members, Nominated Board members, co-opted members and the President. The Regional Council comprises the regionally elected members and the President who shall meet from time to time and be responsible for the representation of Members' interests and promotion and co-ordination of the Society's activities in the Regions.

NUMBER OF BOARD MEMBERS

28. Unless otherwise determined by ordinary resolution, the number of Board members shall not be less than eight and will be made up as follows:

(a) the elected President
(b) four nationally elected members
(c) three Nominated Directors
(d) Members co-opted by the Board under Article 33

All members of the Board will hold responsibilities as described by the Companies Acts and from time to time set out in the Bylaws.

POWERS AND RESPONSIBILITIES OF THE BOARD

29. Subject to the provisions of the Act, the Memorandum and these Articles and to any directions given by special resolution, the business of the Society shall be managed by the Board who may exercise all the powers of the Society. Members of the Board carry a responsibility to the Membership for strategy, scrutiny and operations review of all aspects of the Society's operations, including the creation and maintenance of a strategic plan and full overview of its delivery.

No alteration of the Memorandum or Articles and no such direction shall invalidate any prior act of the Board which would have been valid if that alteration had not been made or that direction had not been given. The powers given by this regulation shall not be limited by any special power given to the Board by these Articles and a meeting of the Board at which a quorum is present may exercise all powers exercisable by the Board.

30. The Board may, by power of attorney or otherwise, appoint any person to be the agent of the Society for such purposes and on such conditions as they determine, including authority for the agent to delegate all or any of his powers.

DELEGATION OF BOARD'S POWERS

31. The Board may delegate any of its powers to any committee consisting of one or more Board members. It may also delegate to any person holding executive office such of their powers as it considers desirable to be exercised by him. Any such delegation may be made subject to any conditions the Board may impose and either collaterally with or to the exclusion of its own powers and may be revoked or altered. Subject to any such conditions, the proceedings of committees with powers delegated from the Board shall be governed by these Articles regulating the proceedings of the Board so far as they are capable of applying.

APPOINTMENT AND RETIREMENT OF BOARD AND REGIONAL COUNCIL MEMBERS

32. **Board members**
Unless otherwise stated at the date of appointment, elected and nominated Board members shall initially hold office for three years (a "Term"). Such Board members may serve two consecutive Terms but shall retire at the end of their second consecutive Term. In the case of co-opted members, they shall retire at the end of their year of co-option, after which they may (subject to term limits) stand for election or nomination

33. **The President**
The President will be appointed to office by election by the Members. The President shall hold the office for two years, save where there are exceptional circumstances to meet a specific need as determined by the Board, where the appointment as President may be extended for a further year.

Completion of a two year term of office as President shall complete the relevant Term on the Board. Where this was the first Term, the retiring President may stand for election again as a Board member for a second three year Term.

33a. **The Chairman of the Board**
The Chairman of the Board shall be appointed by the Board from amongst its number. The Chairman shall not normally be the President. Appointment of the Chairman is not subject to term limits (save as imposed by those for Directors) but shall be reviewed by the Board each year.

33b. **Leadership Team**
The Board, Regional Managers, Committee Chairs, Honorary Officers, General Manager and senior HQ staff as determined from time to time by the Board, shall comprise the "Leadership Team" of the Society.

33c. **Nominations Committee**
The Nominations Committee shall comprise the Company Secretary, one Elected Director and one Nominated Director (one of whom shall be the Chairman of the Board) and two from the Leadership Team, one of whom shall be a Regional Manager and one of whom shall be from the rest of Leadership Team. The Nominations Committee shall consider and submit to the Board the names of candidates to be endorsed as nominated Directors by the Membership in secret ballot at or prior to the AGM.

34. **Regional Council members**
Regional Council members will, unless removed, remain in office for three years from the date of their appointment. Three years in office will be called a "Term".

35. **Maximum Service on the Board**
A Board member may, therefore, complete a maximum of two Terms of office of three years, plus a period on the Board as President, of either two years, or three years where the appointment is extended to meet a declared need pursuant to Article 33 above. The appointment to the Board as President may occur either during the two Terms or immediately following the two Terms, after which the person in question may not be re-elected or re-appointed for three years, when if appointed or elected, may serve for a similar period as a new Board member or President.

36. The Board shall send to each Member entitled to attend and vote at general meetings of the Society a list of all Regional Council and Board members subject to retirement at the next following annual general meeting and of all other Members eligible for nomination as Regional Council members or Board members or President. No person shall be appointed or re-appointed as a Regional Council or Board member unless he is nominated by not less than 10 Members entitled to vote. No person shall be appointed as President unless he is nominated by not less than 25 Members entitled to vote and drawn from at least three regions. In the case of nominations for President, at least five of those nominating shall be from the Leadership Team of the Society.

Notice shall be given to the Society in accordance with the terms of the Bylaws for the time being in force, of any person nominated for the Regional Council or the Board, stating the particulars which would, if he were so appointed, be required to be included in the Society's register of Board members, together with notice executed by that person of his willingness to be appointed or re-appointed. In the event that the number of valid nominations exceeds the number of vacancies, a ballot of the Members shall be held. The ballot shall be conducted in accordance with the relevant Bylaws for the time being in force governing the method and timing of such ballots.

37 **Casual vacancies**
The Board may appoint a Member who is willing to act as a Board member, either to fill a vacancy or as an additional Board member, provided that the appointment does not cause the number of Board members to exceed any number fixed by or in accordance with these Articles or Bylaws as the maximum number of Board members.

DISQUALIFICATION AND REMOVAL OF BOARD MEMBERS

38. The office of a Board member shall be vacated if:
(a) he ceases to be a Board member by virtue of any provision of the Act or he becomes prohibited by law from being a Board member; or
(b) he shall for more than six consecutive months have been absent without permission of the Board from meetings of the Board held during that period and the Board resolve that his office be vacated; or
(c) he becomes bankrupt; or
(d) he is, or may be, suffering from mental disorder and either-
(i) he is admitted to hospital in pursuance of an application for admission for treatment under the Mental Health Act 1983 or, in Scotland, an application for admission under the Mental Health (Scotland) Act 1960, or
(ii) an order is made by a court having jurisdiction (whether in the United Kingdom or elsewhere) in matters concerning mental disorder for his detention or for the appointment of a receiver, curator bonis or other person to exercise powers with respect to his property or affairs; or
(e) he resigns his office by notice to the Society; or
(f) he shall be requested in writing to resign by all other members of the Board; or
(g) he ceases to be a Member of the Society.

REMUNERATION OF REGIONAL COUNCIL AND BOARD MEMBERS

39. Regional Council and Board members shall not be entitled to any remuneration.

REGIONAL COUNCIL MEMBERS' AND BOARD MEMBERS' EXPENSES

40. Regional Council and Board members may be reimbursed reasonable expenses in accordance with the relevant Bylaws and expense policy of this Society for the time being in force.

BOARD MEMBERS' APPOINTMENTS AND INTERESTS

41. Subject to the provisions of the Act, and provided that he has disclosed to the Board the nature and extent of any material interest of his, a Board member notwithstanding his office
(a) may be a party to, or otherwise interested in, any transaction or arrangement with the Society or in which the Society is otherwise interested;
(b) may be a director or other officer of, or employed by, or a party to any transaction or arrangement with, or otherwise interested in, any body corporate promoted by the Society or in which the Society is otherwise interested; and

(c) shall not, by reason of his office, be accountable to the Society for any benefit which he derives from any such office or employment or from any such transaction or arrangement or from any interest in any such body corporate and no such transaction or arrangement shall be liable to be avoided on the ground of any such interest or benefit.

42. For the purposes of Article 41:
(a) a general notice given to the Board that a Board member is to be regarded as having an interest of the nature and extent specified in the notice in any transaction or arrangement in which a specified person or class of persons is interested shall be deemed to be a disclosure that the Board member has an interest in any such transaction of the nature and extent so specified; and
(b) an interest of which a Board member has no knowledge and of which it is unreasonable to expect him to have knowledge shall not be treated as an interest of his.

PROCEEDINGS OF THE BOARD

43. Subject to the provisions of these Articles, the Board may regulate its proceedings as it thinks fit. A Board member may, and the Secretary at the request of a Board member shall, call a meeting of the Board. It shall not be necessary to give notice of a meeting to a Board member who is absent from the United Kingdom. Questions arising at a meeting shall be decided by a majority of votes. In the case of an equality of votes, the Chairman of the Board shall have a second or casting vote. Meetings of the Board shall be held no less than four times each year.

44. The quorum for the transaction of the business of the Board may be fixed by the Board and unless so fixed at any number shall comprise two thirds (rounded down to the nearest integer, if necessary) of the total membership of the Board.

45. The continuing Board members or a sole continuing Board member may act notwithstanding any vacancies in their number, but, if the number of Board members is less than the number fixed as the quorum, the continuing Board members or Board member may act only for the purpose of filling vacancies or of calling a general meeting.

46. The Chairman shall chair every meeting of the Board at which he is present. But if there is no person holding that office, or if that person is unwilling to preside or is not present within five minutes after the time appointed for the meeting, the Board members present may appoint one of their number to be chairman of the meeting.

47. All acts done by a meeting of the Board, or of a committee of the Board, or by a person acting as a Board member shall, notwithstanding that it be afterwards discovered that there was a defect in the appointment of any Board member or that any of them were disqualified from holding office, or had vacated office, or were not entitled to vote, be as valid as if every such person had been duly appointed and was qualified and had continued to be a Board member and had been entitled to vote.

48. A resolution in writing signed by all the Board members entitled to receive notice of a meeting of the Board or of a committee of the Board shall be as valid and effectual as if it had been passed at a meeting of the Board or (as the case may be) a committee of the Board duly convened and held and may consist of several documents in the like form each signed by one or more Board members.

49. The Board, or a committee of the Board, may agree to hold meetings by electronic means including audio or video conferencing, a series of telephone conversations, e-mail, or by exchange of facsimile transmissions that are additionally addressed to the Company Secretary. The views of the Board, or a Committee of the Board, as ascertained by the above means shall be treated as votes in favour of or against a particular resolution. A resolution passed at any meeting held in this manner and signed by the Chairman shall be as valid and effectual as if it had been passed at a meeting of the Board (or, as the case may be, of that committee) duly convened and held. Any meetings conducted by any of the above means may be deemed to be held in the location either where the majority of the Board members are physically situated, or where the Chairman is physically situated, or as determined by the Board members at the meeting itself. The quorum for the transaction of the business of the Board shall be five although in respect of meetings conducted by any of the above means, the Board members need not be present in the same physical location for the meeting to be quorate.

50. Save as otherwise provided by these Articles, a Board member shall not vote at a meeting of the Board or of a committee of the Board on any resolution concerning a matter in which he has, directly or indirectly, an interest or duty which is material and which conflicts or may conflict with the interests of the Society unless his interest or duty arises only because the case falls within one or more of the following paragraphs:
(a) the resolution relates to the giving to him of a guarantee, security, or indemnity in respect of money lent to, or an obligation incurred by him for the benefit of, the Society or any of its subsidiaries;
(b) the resolution relates to the giving to a third party of a guarantee, security, or indemnity in respect of an obligation of the Society or any of its subsidiaries for which the Board member has assumed responsibility in whole or part and whether alone or jointly with others under a guarantee or indemnity or by the giving of security;
(c) his interest arises by virtue of his subscribing or agreeing to subscribe for any debentures of the Society or any of its subsidiaries, or by virtue of his being, or intending to become, a participant in the underwriting or sub-underwriting of an offer of any such debentures by the Society or any of its subsidiaries for subscription, purchase or exchange. For the purposes of this regulation, an interest of a person who is, for any purpose of the Act (excluding any statutory modification thereof not in force when this regulation becomes binding on the Society), connected with a Board member shall be treated as an interest of the Board member.

51. A Board member shall not be counted in the quorum present at a meeting in relation to a resolution on which he is not entitled to vote.

52. If a question arises at a meeting of the Board or of a Committee of the Board as to the right of a Board member to vote, the question may, before the conclusion of the meeting, be referred to the chairman of the meeting and his ruling in relation to any Board member other than himself shall be final and conclusive.

SECRETARY

53. Subject to the provisions of the Act, the Company Secretary shall be appointed by the Board for such term, at such remuneration and upon such conditions as it may think fit; and any Secretary so appointed may be removed by it.

MINUTES

54. The Board shall cause minutes to be kept for the purpose:
(a) of all appointments of officers made by the Board; and
(b) of all proceedings at meetings of the Society and of the Board, and of Committees of the Board, including the names of the Board members present at each such meeting.

THE SEAL

55. The Seal shall only be used by the authority of the Board or of a Committee of the Board authorised by the Board. The Board may determine who shall sign any instrument to which the Seal is affixed and unless otherwise so determined it shall be signed by a Board member and by the Secretary or by a second Board member.

TREASURER

56. The Treasurer shall be appointed by the Board for such term, at such remuneration and upon such conditions as it may think fit; and any Treasurer so appointed may be removed by it. No person who is a member of the Board shall be appointed to hold office as Treasurer.

ACCOUNTS

57. No Member shall (as such) have any right of inspecting any accounting records or other book or document of the Society except as conferred by statute or authorised by the Board or by ordinary resolution of the Society.

NOTICES

58. Any notice to be given to or by any person pursuant to these Articles (other than a notice calling a meeting of the Board) shall be in writing or, with the prior agreement of the Member, in electronic form or in accordance with section 369(4A).

59. The Society may give any notice to a Member either personally or by sending it by post in a prepaid envelope addressed to the Member at his registered address or by leaving it at that address, or in electronic form or in accordance with section 369(4A).

60. A Member present, either in person or by proxy, at any meeting of the Society shall be deemed to have received notice of the meeting and, where requisite, of the purposes for which it was called.

61. Proof that an envelope containing a notice was properly addressed, prepaid and posted, or a dated record of electronic mailing, shall be conclusive evidence that the notice was given. A notice shall, unless the contrary is proved, be deemed to be given at the expiration of 48 hours after the envelope containing it was posted or, in the case of a notice contained in an electronic communication, at the expiration of 48 hours after the time it was sent.

DISSOLUTION

62. Clause 7 of the Memorandum of Association relating to the winding up and dissolution of the Society shall have effect as if the provisions thereof were repeated in these Articles.

BYLAWS

63. The Board may from time to time make such Bylaws as it may deem necessary or expedient or convenient for the proper conduct and management of the Society and for the purposes of prescribing classes of and conditions of membership, and in particular but without prejudice to the generality of foregoing, it may by such Bylaws regulate:-
    (i) The admission and classification of Members of the Society, and the rights and privileges of such Members, and the conditions of membership and the terms on which Members may resign or have their membership terminated and the entrance fees, subscriptions and other fees or payments to be made by Members.
    (ii) The conduct of Members of the Society in relation to one another, and to the Society's servants.
    (iii) The setting aside of the whole or part of parts of the Society's premises at any particular time or times or for any particular purpose or purposes.
    (iv) The procedure at general meetings and meetings of the Regional Council, and committees of the Society in so far as such procedure is not regulated by these Articles.
    (v) And generally all such matters as are commonly the subject matter of Society rules. The Society in general meeting shall have power to alter or repeal the Bylaws and to make additions thereto and the Board shall adopt such means as they deem sufficient to bring to the notice of Members of the Society all such Bylaws, which so long as they shall be in force, shall be binding on all Members of the Society. Provided, nevertheless, that no Bylaw shall be inconsistent with, or shall affect or repeal anything contained in, the Memorandum or Articles of Association of the Society.

INDEMNITY

64. Subject to the provisions of the Act but without prejudice to any indemnity to which a Board member may otherwise be entitled, every Board member or other officer or auditor of the Society shall be indemnified out of the assets of the Society against any liability incurred by him in defending any proceedings, whether civil or criminal, in which judgment is given in his favour or in which he is acquitted or in connection with any application in which relief is granted to him by the cost from liability for negligence, default, breach of duty or breach of trust in relation to the affairs of the Society.

Bylaws of the Radio Society of Great Britain

1.0 INTERPRETATION

"the Act" means the Companies Act 1985 including any statutory modification or re-enactment thereof for the time being in force.
"the Society" means the Radio Society of Great Britain.
"the Articles" means the Articles of Association of the Society.
"the Bylaws" means the bylaws of the Society for the time being in force.
"Member" means any Member of the Society, as defined in Article 8 below.
"the Board" means the Board of the Society.
"President" is the President of the Society for the time being.
"Board member" means any member of the Board of the Society.
"the Regional Council" or otherwise "the Council" is the Regional Council of the Society whose role is defined from time to time by the Board and recorded in the Bylaws.
"Regional Manager" means a candidate duly elected by the Membership to serve on the Regional Council and the Leadership Team
"Nominated Director" means a Board member appointed following nomination by the Nominations Committee for approval by the Membership in election
"Elected Director" means a Board member appointed after being proposed by Members and approved by the Membership in election
"Council member" means any member of the Regional Council of the Society.
"Leadership Team" means the Board, Regional Managers, Committee Chairs, Honorary Officers, General Manager and senior HQ staff as determined from time to time by the Board.
"executed" includes any mode of execution.
"Office" means the registered office of the Society.
"the Seal" means the common seal of the Society.
"Secretary" means the Company Secretary of the Society or any other person appointed to perform the duties of the Secretary of the Society, including a joint, assistant or deputy secretary.
"the United Kingdom" means Great Britain and Northern Ireland.
"clear days" in relation to the period of a notice means that period excluding the day when the notice is given or deemed to be given and the day for which it is given or on which it is to take effect.
"the RSGB Year" means 1 January to 31 December inclusive in each calendar year.

Words importing the singular number only shall include the plural number, and vice versa; words importing the masculine gender only shall include the feminine gender; and words importing persons shall include corporations.

Unless the context otherwise requires, words or expressions contained in these Bylaws bear the same meaning as in the Act but excluding any statutory modification thereof not in force when these regulations become binding on the Society.

2.0 OBJECTIVES OF THE SOCIETY

The Radio Society of Great Britain is a Company Limited by Guarantee, registered under the Companies Acts. The objectives of the Society are given in its Memorandum and Articles of Association.
The objectives include:

- To promote the general advancement of the science and practice of radio communication.
- To facilitate the exchange of information and ideas on these subjects amongst its Members.
- To obtain the maximum liberty of action consistent with safeguarding the interests of all concerned.

Services provided by the Society's Headquarters staff and by volunteer effort from Members include:
Essential links with outside bodies such as Ofcom; IARU; ITU; City & Guilds; British Standards Institution; IET and the Radio Communications Foundation.
Organisation of exhibitions, conventions, rallies, round tables, special meetings. Provision of technical and other information through publication of periodicals, the RSGB website and books.
Organisation of general operating services such as Observation Service and Intruder Watch.
Provision of news and information through such mediums as may be deemed appropriate, which may include GB2RS news broadcasts; diary of events; information sheets; headline news service; film / tape / slide / video library and Internet based services.
Providing direct services to Members as may be determined from time to time.

3.0 STRUCTURE OF THE SOCIETY

3.1 Governance of the Society

The Society is a company limited by guarantee under the Companies Act 1985. Under the Act, the general governance of the Society is the responsibility of the Board acting within the Memorandum and Articles of Association.

The Regional Council (comprising the regionally elected Members as "Regional Managers") shall be responsible for the representation of Members' interests and promotion and coordination of the Society's activities in the regions.

Board

Board members will be appointed and serve as defined in the Society's Articles of Association.

Regional Managers

Members of the Society in each region shall elect their Regional Manager (the number and composition of the regions being as determined by the Board and recorded in the Bylaws of the Society). Regionally elected members shall meet as the Regional Council from time to time for the purposes set out in these Bylaws, under the chairmanship of a person appointed from within their number. Details of the Regional Management roles and responsibilities are given at Appendix 1.

Patron

The President may, from time to time and on the advice of the Board, invite an appropriate person to be a Patron of the Society.

Voluntary Support

A significant part of the workload of the Society is carried out by the Standing Committees. The Society has Regional Managers and deputies, Committee Chairs, Honorary Managers, Officers or organisers and a

number of representatives on outside bodies. Appropriate terms of reference are given in the later sections of these Bylaws. Volunteer officers of the Society (including Board and Regional Managers) are expected to have personal e-mail facilities and be prepared to conduct much of the business of the Society by electronic and virtual working. The Board, Regional Managers, Committee Chairs, Honorary Officers, General Manager and senior HQ staff as determined from time to time by the Board, shall comprise the "Leadership Team" of the Society.

3.2 President

The President shall be any Member of the Society who, in the view of the Membership, has rendered outstanding service to the Society or who has made acknowledged eminent contribution to radio research, experimentation, communication or a related subject and who can in the opinion of Members fittingly represent the Society in such office.

The Member appointed to fill the office of President will be determined through a ballot of Members.

A President may be removed from office by a unanimous decision of the rest of the Board. The President is an ex-officio member of all committees of the Society. The President will enjoy the privilege of Life Membership after his period of office.

3.3 Treasurer

The appointment of the Treasurer is defined in the Articles of Association.

3.4 General Manager

The General Manager shall be appointed by the Board, and administer the Society based on an employment contract for such term, at such remuneration and upon such conditions as the Board may think fit, and any General Manager so appointed may be removed by the Board.

3.5 Company Secretary

The appointment of the Company Secretary is defined in the Articles of Association.

3.6 Responsibilities of members of the Board and Regional Council

In addition to the responsibilities defined in the Articles of Association all members of the Board carry a responsibility to the Membership for strategy, scrutiny, operations review of all aspects of the Society's operations, including the creation and maintenance of a strategic plan and full overview of its delivery.

Members of the Regional Council have responsibility, acting as Regional Managers, for the representation of Members interests to the Board, promotion of the Society and its strategies to Members and co-ordination of Society activities in their regions. In partnership with their deputy regional managers, they arrange and / or attend local gatherings of Members and bring to the notice of the Leadership Team as appropriate any matters of general concern in the regions. (See Appendix 1).

3.6.1 All Directors, whether nationally elected, nominated or co-opted to the Board have an equal responsibility in law to the Members. All Directors will therefore be registered with Companies House upon appointment.

4.0 Nomination and Election of Board and Regional Council

The procedure for the nomination and election of Members to the Board and Regional Council is as defined in the Articles of Association and below.

4.1 The President, Board and Regional Council members' terms of office start immediately after the AGM. Not later than 1st January in each RSGB Year the Secretary shall send to each Member entitled to vote a list of those Board and Regional Council members who, to the knowledge of the Secretary on the preceding 1st December, will retire at the succeeding AGM, indicating those who are willing to accept nomination and eligible for re-election and whether the vacancies so arising are to be filled by election of a Member to the Board or by the election of a Regional Council member. Similarly, the Secretary shall indicate whether a vacancy exists for President for the forthcoming period.

4.2 Upon receipt of the Secretary's notification of vacancies and not later than 1st February following, any ten Corporate Members (as defined in section 8 of these Bylaws) may nominate any qualified Member as candidate for Elected Director or Regional Manager by delivering in one closed envelope to the Secretary their respective nominations in writing, together with written consent of such Member to accept office if elected. By nominating a Member for President, the nominator cannot additionally nominate a Member as an Elected Director and vice versa. He may also nominate one Member for election as a Regional Manager, providing that the nominator lives in the Region concerned.

Any 25 Corporate Members entitled to vote (of whom at least five shall be from the Leadership Team of the Society), drawn from at least three Regions may nominate any qualified Member as candidate for President by delivering in one closed envelope to the Secretary their nomination in writing, together with written consent of such Member to accept office if elected. Each such nominator shall be entitled to nominate only one Member for appointment as President or Director. For the avoidance of doubt, any candidate nominated to stand for election as President may, if he so wishes, also be eligible to stand in the ballot for Elected Director, if not elected President.

4.3 The nominated Member must enclose:

1. Written, signed consent to accept office if elected.
2. Written confirmation that the Member believes he meets the published "Requirements for Office", as determined by the Board from time to time.
3. A statement that he will observe the Society's Code of Conduct and Core Ethos, and support the Society's strategies.
4. A statement as to whether the nomination is for a Board member, President or Regional Council member, if the latter, both the Member nominated and those nominating him must reside in the same region.
5. A statement declaring any commercial interest in the field of amateur radio.
6. A recent head-and-shoulders photograph which is suitable for publication.
7. A CV or statement of 100 words maximum (250 for Board and President candidates), describing pertinent experience. This CV will be circulated with the ballot forms. Involvement with decision making in organisations of similar or larger size than the RSGB is relevant and should be mentioned. Experience of RSGB procedures, committee membership, writing for RSGB publications and any duties as an RSGB local representative should be mentioned. Candidates may state in not more than an additional 100 words what they hope to achieve if elected. Extravagant or nonsensical promises will be edited by the Company Secretary as Board and Regional Council members are expected to act as part of a team.

4.4 In the event of insufficient nominations being received to fill all vacancies arising, the Board shall have power to fill any remaining vacancies and all nominations properly made shall thereafter be declared elected unopposed.

4.5 Members nominated for election to the Regional Council must be resident within the Region for which they are nominated and the nominators must be Corporate Members resident in that Region provided that where a vacancy among the Members elected on a Regional basis occurs other than under Article 4.1 of the Bylaws, the Board shall have power to appoint any qualified Member to fill the vacancy within the terms of 4.4 hereof subject to the aforesaid restriction on the residence of the Member appointed.

5.0 BALLOT FOR ELECTION AS PRESIDENT AND TO THE REGIONAL COUNCIL AND THE BOARD

5.1 In the event that the number of valid nominations under 4.2 exceeds the number of vacancies arising under Article 4.1 of these Bylaws a ballot shall be held. Voting in the election for President or to the Board or to the Regional Council shall be conducted by way of a manual system involving a paper document and/or by way of an electronic system involving an electronically generated document. Both systems shall be described as a "ballot paper".

5.2 If a ballot is required then the Board shall send to each Corporate Member (as defined in Article 8.0 of these Bylaws) entitled to vote, not later than 21 days before the date of the election, a ballot paper containing names of all Members duly nominated and setting out the names of the Members by whom they are nominated.

5.3 The ballot papers shall provide a space in line with the name of each candidate thereon and each Corporate Member voting shall place a cross in the space against the name of each candidate for whom he desires to vote but so that the number of names so marked with a cross shall not in any case exceed the number of names to be elected to the respective offices. The ballot papers, marked as determined by the Board from time to time, shall be returned so as to reach the Secretary not later than twenty four hours before the date fixed for the Election. In the ballot for the Regional Council members, no Member shall vote for more than one Regional candidate and both voter and the candidate for whom he votes shall be resident in the same Region.

5.4 In the case of ballot for the President, candidates may also stand for election to the Board (to allow for them being unsuccessful in the ballot for President). In such case, the number of candidates voted for by each Member for Directors may be increased by one, to allow for one of the Director candidates being appointed President.

5.5 Each Corporate Member may vote for fewer candidates than there are vacancies to be filled. Any ballot paper which does not comply with all the requirements of this and the preceding Bylaw shall be null and void.

5.6 The Society shall use the service of an external independent organisation (eg Electoral Reform Services (ERS)) to oversee and administer the conduct of the election.

5.7 In the event of it not being possible to report the election of the prescribed number of persons to fill the vacancies on the Board or Regional Council owing to an equality of votes, the names of the candidates having the same number of votes shall be submitted to the President who shall determine by his casting vote or votes which candidate or candidates having equality of votes shall be elected.

5.8 The Society shall announce the results of the ballot within forty eight hours of completion of the Election. Notices will be posted in *RadCom*, GB2RS and on the 'Members only' section of the website.

6.0 GUIDANCE FOR THE CONDUCT OF BOARD MEETINGS

The Standing Orders are contained in Appendix 2.

7.0 RSGB AFFILIATED SOCIETIES AND CLUBS

7.1 The Society may admit clubs and societies interested in radio research, experimentation, communication or related subjects to such privileges of affiliation to the Society as shall be laid down by the Board from time to time.

7.2 The annual subscriptions to be paid by such societies shall be fixed by the Board.

7.3 After due notification an affiliated society which is two months in arrears with its annual subscription may be dis-affiliated by order of the Board but shall remain liable for the arrears of subscriptions. Further details are given in Appendix 3.

8.0 MEMBERSHIP

The Society shall consist of Members and Honorary Members (hereinafter together called "Corporate Members") and Associates. The rights and privileges of every Member of any class shall be personal to himself, and shall not be transferable or transmissible by his own act, or by operation of law.

The Society may admit such persons as may be hereinafter qualified as Members, Honorary Members and Associates respectively. The Society shall maintain a proper Register of Members, where details of Members shall be recorded.

8.1 CORPORATE MEMBERS

Corporate Members must be 18 years or over.

8.2 HONORARY MEMBERS

Honorary Members shall be persons who have rendered outstanding service to the Society or have made acknowledged eminent contributions to radio research, experimentation or communication or a related subject and shall be elected by the Board.

Honorary Members shall have all rights and duties of Members, except that they shall not pay an annual subscription under 9.0 hereof.

8.3 ASSOCIATES

Associate Members must be under the age of consent. Associates shall have no vote. On attaining the age of consent an Associate must transfer to Corporate Membership in order to remain a Member of the Society.

8.4 LIFE VICE-PRESIDENTS AND HONORARY VICE-PRESIDENTS

Corporate Members who have rendered outstanding services to the Society are eligible to be elected by the Board as Life Vice-Presidents.

Distinguished persons shall be eligible for election by the Board as Honorary Vice-Presidents.

8.5 ADMISSION OF MEMBERS

1. Honorary Members, Life Vice-Presidents and Honorary Vice-Presidents may be proposed, and a ballot held, at a meeting of the National Council. Every such election shall be announced at the next Annual General Meeting of the Society. Not more than two Honorary Members may be elected in any one year.
2. Any person wishing to become a Member of the Society shall apply to the Society on a form which shall be provided for that purpose.
3. An applicant whose application is rejected will not be considered again for membership within twelve calendar months of the rejection.
4. An applicant for membership of the Society shall not become a Member until such time as his subscription payment shall have been received by the Society.

8.6 CALLING A MEETING

Any Member or Members wishing to call a special meeting of the Society shall deposit at the Registered Office of the Society a requisition containing the signed declaration of not less than 300 paid up Members of the Society, on one or more similar documents and which also states the terms of the resolution which is to be proposed as a special resolution or extraordinary resolution of which constitutes a resolution requiring special notice and shall indicate the general nature of the business to be transacted at the meeting.

9.0 SUBSCRIPTIONS AND RESIGNATION OF MEMBERS

9.1 The annual subscription for Corporate Members and Associates shall be such as the Board may from time to time decide.

9.2 Where two or more Members live at the same address they shall be entitled to a Joint Family Membership. One "core membership" will attract the full fee for the grade of membership whilst the other members of the Joint Family Membership will not be charged an annual fee. If the "core member" lapses all others within the Joint Family Membership will also lapse. All members of the Joint Family Membership will enjoy full membership privileges with the exception of *RadCom* where one copy of each issue will be provided to the household. The fee for this membership will be equivalent to two full membership fees less 40%.

9.3 Upon the conditions of the preceding paragraph ceasing to apply such Members shall forthwith be required to pay the full subscription appropriate to their category of membership.

9.4 Subscriptions shall be payable in advance and may be paid in one or more instalments as shall be determined by the Board from time to time. The first subscription shall be due (subject to any instalment arrangements) on joining and subsequent annual subscriptions shall be due (subject to any instalment arrangements) either on the first day of the month in which the Member joined in each year or on such common renewal date as shall be determined by the Board from time to time.

9.5 Every Member desiring to resign from membership shall give notice thereof in writing to the Society addressed to the Secretary and shall be liable for all subscriptions due up to the receipt of such notice by the Society.

9.6 No Member whose subscription is in arrears shall be entitled to receive notice of or to attend or take part in the meetings or other activities of the Society, neither shall he be entitled to nominate any person to serve on the Board, Regional Council or in any other capacity, or to propose any candidate for membership, or to vote at any meeting of the Society or upon any ballot.

9.7 Any Member who is two months or more in arrears with his subscription shall be deemed to forfeit his claim to membership and to all the privileges thereof, and it may be recorded in the Register of Members that his membership has been terminated but he shall nevertheless remain liable to pay the arrears of subscription due at the time of such termination. The Board shall have power to reinstate any person whose membership has been terminated. Notwithstanding anything in these Bylaws, the Board shall have the power to specify from time to time any individual Members or classes of Members, or applicants for membership for whom payment of the full subscription would be in the opinion of the Board be unduly burdensome and to resolve that those so specified shall be liable, either indefinitely, or for such period as the Board may prescribe to pay only a reduced or no subscription, and from time to time to vary the amount of the reduction in the case of any Member or classes of Members as the Board may think fit.

10.0 EXPULSION

10.1 At a meeting specially convened for the purpose, the Board may expel any Corporate Member or Associate who shall have acted wilfully in contravention of these Bylaws, or who shall in the opinion of the Board have been guilty of such conduct as shall have rendered it undesirable in the interests of the Society that he should continue a Corporate Member or Associate thereof, and the Board may remove from the Register of Members the name of any person who is expelled and any person so expelled shall not be entitled to have returned to him any moneys paid by him as entrance fee, subscriptions or otherwise.

10.2 No motion of expulsion shall be put to a meeting of the Board unless two thirds of the Board members are present and unless two thirds of such Board members present vote in favour of expulsion the motion shall be lost. No person shall be expelled unless and until he has been given reasonable notice of the meeting at which his expulsion is to be proposed and is afforded a proper opportunity of being heard at such meeting in his own defence. No motion for expulsion shall be for more than one person but there is no limit to the number of motions for expulsion which can be proposed at any such meeting of the Board.

11.0 COMMITTEES

(a) The Chairman of each committee shall be appointed by the Board and may be removed from office at any time following an opportunity

to address the Board, by a vote exceeding two-thirds of the Board members present.

(b) Where a change of Committee Chairman is involved, the Board will normally advertise the post in the Society's journal *RadCom* and consult with the existing Committee Chairman and members of the committee concerned and will arrange for suitable candidates for appointment to be interviewed. The Board will consider the CV of the candidate(s) and a report of the interviewer(s) before making a decision to appoint a Committee Chairman.

(c) Each Committee Chairman will be responsible for the appointment of committee members other than ex-officio members, and for terminating their membership. The size of the committee must not exceed any number specified by its terms of reference without the permission of the Board.

(d) All Full members of the committee must be Members of the Society unless a specific waiver has been approved by the Board. The President or a Board member designated by the President to represent him may attend meetings of all committees and working groups. They may not be part of its quorum, nor vote.

(e) With the agreement of the Committee Chairman, members of the Society's staff may attend committee meetings. They may not vote, hold office or form part of the quorum.

(f) Wherever practicable, committees are encouraged to meet by "virtual" means.

(g) A Board member will be appointed as a Liaison member of each committee.

(h) A Committee Chairman may, at his discretion, appoint a category of Corresponding members who are committee members who do not attend meetings except at the specific invitation of the Committee Chairman. In addition, there may be Liaison members who provide links with outside bodies and may attend meetings with the permission of the Committee Chairman but at the expense of the bodies that they represent.

(j) Visitors may attend meetings at the specific invitation of a Committee Chairman at their own expense. Corresponding members, Liaison members and visitors have no vote nor form part of the quorum.

(k) In appointing new committee members, the Committee Chairman may adopt any reasonable procedure in cooperation with the President or the Board Liaison member, including advertising the vacancy in the Society's Journal, giving details of the qualifications required and the conditions under which the committee meets and holds. The Committee Chairman is responsible for notifying the General Manager of any change in committee composition.

(l) The committee shall serve on an open-ended basis subject to determination by the Board

(m) The committee shall elect a Vice-Chairman and appoint a Minutes Secretary. Minutes should be prepared and accepted by the committee, and published on the committee's web pages within three weeks of the committee meeting concerned, along with any relevant input papers. The exceptions to this rule concern matters that are of a personal or commercial nature, or sensitive operational matters, where a confidential annex to minutes along with input papers may remain confidential to the committee, General Manager and other Committee Chairmen and Honorary Officers. Where such confidential minutes exist the General Manager shall be sent a copy. In preparing committee minutes, the progress on the agreed programme for the year should be clearly distinguished from routine committee work.

(n) Meetings shall be called by the Committee Chairman, the Board, General Manager, or by a quorum of the committee.

(o) The quorum for a committee meeting shall be that specified by the terms of reference of the committee. If a quorum is not reached, the Committee Chairman at his discretion may conduct the meeting as though a quorum were present with the proviso that any decisions recorded have to be ratified by the next meeting at which a quorum is present.

(p) Committee procedures shall generally follow the principles laid down in the Articles of Association and Appendix 2 to these Bylaws.

(q) It is the responsibility of the Committee Chairman to deal with all matters within the competence of the committee and to decide which matters are sufficiently important to require and seek the prior authority of the Board. In conducting its work, the committee shall be mindful of the need to provide a responsive and customer-oriented service to Members. At the initiative of the Board or General Manager, a committee may be asked to agree service level targets for its work.

(r) Each Committee Chairman shall be responsible for ensuring adequate liaison with other committees and relevant outside bodies.

(s) A Committee Chairman shall attend a Board meeting on request in order to answer any questions concerning the work of his committee, or may ask to attend the Board personally when decisions affecting the work of his committee are likely to be made. Requests by the Board or Committee Chairmen must be made in writing to the Society Secretary at least 14 days prior to a Board meeting, accompanied by sufficient information to enable an adequate response to be made.

(t) Towards the end of each committee year, each Committee Chairman shall produce and present to the Board a written report concerning the work of the committee, with particular emphasis on the objectives agreed by the Board at the beginning of that year. The report will include the proposed programme and new objectives for the following year, for approval by the Board. The report will form the basis of the Annual Report to Members.

(u) In September each year each Committee Chairman will prepare an annual budget for submission to the General Manager. The budget will include travelling, subsistence and out-of-pocket expenses for Full Members, Liaison Members and Corresponding Members, and for any project work envisaged in the year.

(v) All claims for reasonable out-of-pocket expenses incurred by volunteers or invited visitors shall be submitted in accordance with the Society's expense reimbursement procedures.

(w) Committee Chairmen will be members of the Leadership Team of the Society and will meet in that forum from time to time.

APPENDIX 1 - REGIONAL MANAGEMENT

Regional and Deputy Regional Managers: Terms of Reference

Roles and Responsibilities

Job Title: RSGB Regional Manager (RM)
Reporting to: General Manager

Responsible for:

- representing the position of the Society to all radio amateurs in the Region.
- representing the views of members to the Board.
- contributing to the Society's strategy and policy development and implementation through membership of the Leadership Group.
- liaising with Committee Chairmen and Honorary Officers in connection with regional activity.
- undertaking recruitment and retention campaigns in the Region.
- undertaking inspections of examination centres.
- managing, supporting and advising the DRMs located within the Region.
- visiting clubs to maintain contact, present the RSGB position and to recruit new Members.
- providing a presence at nominated rallies in the Region, acting as the RSGB representative.
- attending RSGB meetings as required.
- submitting a quarterly activity and financial report to the General Manager.
- confirming and organising DRM appointments.
- controlling DRM and personal expenditure within the Region including timely authorisation and submission of expenses.

The post holder accepts and follows the RSGB's core Ethos values and Nolan's 7 principles of governance (see Annex A), and does this in part by application of the Code of Conduct detailed in Annex B. The post holder agrees to conform with the RSGB's polices and procedure as set out in the General Instructions (GIs).

Competencies

- the time, energy, interest and willingness to serve.
- experience of managing people.
- the ability to communicate effectively, both verbally and in writing.
- the ability to comment on and comprehend the main drivers of amateur radio
- IT literate and have access to computer facilities.
- able to travel throughout the Region and to meetings in other parts of the country.

Term of Office

Initially 3 years, or as defined in the Bylaws. RM's may be removed at any time by the Board through the process of the Performance Counselling procedure for volunteers.

Appointment to office as a RM
RM's are elected by the Members in the Region. Candidates must be
- A Corporate Member of at least 2 year's standing
- A resident within the region he/she wishes to represent

The candidate must submit the following:
- Written application to represent the area.
- A declaration of any commercial interest in amateur radio.
- That he/she agrees to his/her e-mail address, address and telephone number being published if he/she is elected.

Elections to vacancies are held annually. RM's may stand for re-election. Details of the election process are given in the Society's GI's.

Job Title: Deputy RSGB Regional Manager (DRM)
Reporting to: RSGB Regional Manager

Responsible for:
- representing the position of the Society to all radio amateurs in the sub-Region.
- representing the views of Members to the RM.
- taking part in recruitment and retention campaigns in the Region.
- undertaking inspections of examination centres.
- visiting clubs to maintain contact, present the RSGB position, recruit new Members and identify issues for consideration by the RM.
- providing a presence at nominated rallies in the Region, acting as the RSGB representative.
- deputising for the RM as required.

The post holder accepts and follows the RSGB's core Ethos values and Nolan's 7 principles of governance (see Annex A), and does this in part by application of the Code of Conduct detailed in Annex B. The post holder agrees to conform with the RSGB's polices and procedure as set out in the General Instructions (GIs)

Competencies
- the time, energy, interest and willingness to serve.
- the ability to communicate effectively, both verbally and in writing.
- the ability to comment on and comprehend the main drivers of amateur radio
- IT literate and have access to computer facilities.
- able to travel throughout the Region and to meetings in other parts of the country.

Term of Office
Initially 3 years, or as defined in the Bylaws. A DRM may be appointment for subsequent terms as required by the RM. They may be removed from office at any time by the relevant Regional Manager.

Appointment to office as a DRM
Suitable candidates who are Corporate Members can be nominated by Members within their area or invited to apply to represent Members resident in their area.

Candidate's Qualifications
The candidate must be:
- A Corporate Member of at least 2 year's standing
- A resident within the area he/she wishes to represent.

The candidate must submit the following:
- Written application to represent the area where he/she resides
- A declaration of any commercial interest in amateur radio
- Consent to accept office, if appointed.
- A declaration that he/she is a Member.
- That he/she agrees to his/her e-mail address, address and telephone number being published if he/she is elected.
- These declarations, together with nominations, may conveniently be made using the Candidate's Form for the Nomination of a Deputy RSGB Regional Manager available on request from the candidate's RSGB Regional Manager or: The General Manager, RSGB Headquarters, 3 Abbey Court, Priory Business Park, Fraser Road, Bedford, MK44 3WH

Confirmation of DRM Appointments
- Where vacancies occur due to resignations or other circumstances new DRMs will be appointed by the RM. On appointment the RM will inform the General Manager at RSGB HQ who will issue a letter of appointment and amend the RSGB HQ database accordingly.
- Regional Managers have the authority to initiate procedures to remove DRMs from office where they no longer serve the best interests of the areas they represent.

ANNEX A TO APPENDIX 1
The RSGB core ethos revolves around the following values and characteristics:
- Ethical, professional and high integrity.
- Financially sound
- Innovative, creative
- Respected
- Good value
- A "can do" organisation
- Credible (delivers on its promises) and authoritative
- Transparent
- Responsive

The following is an extract from the Second Report of the Nolan Committee on Standards in Public Life, May 1996.

SELFLESSNESS
Holders of public office should take decisions solely in terms of the public interest. They should not do so in order to gain financial or other material benefits for themselves, their family, or their friends.

INTEGRITY
Holders of public office should not place themselves under any financial or other obligation to outside individuals or organisations that might influence them in the performance of their official duties.

OBJECTIVITY
In carrying out public business, including making public appointments, awarding contracts, or recommending individuals for rewards and benefits, holders of public office should make choices on merit.

ACCOUNTABILITY
Holders of public office are accountable for their decisions and actions to the public and must submit themselves to whatever scrutiny is appropriate to their office.

OPENNESS
Holders of public office should be as open as possible about all the decisions and actions that they take. They should give reasons for their decisions and restrict information only when the wider public interest clearly demands.

HONESTY
Holders of public office have a duty to declare any private interests relating to their public duties and to take steps to resolve any conflicts arising in a way that protects the public interest.

LEADERSHIP
Holders of public office should promote and support these principles by leadership and example.

ANNEX B TO APPENDIX 1
RSGB Code of Conduct
The Society comes first – Do not make decisions with any improper purpose or personal motive; Loyalty to the Society comes above personal ambition or ego.

Equality – Everyone involved in amateur radio should be treated equally, except for those RSGB Membership benefits that are only available to Members.

Respect – Respect others by never acting in a way that lessens the pleasure of others; live the values of openness, honesty and integrity at all times in order to earn the respect of others.

Respect race, religion, gender, sexual orientation, culture and custom.

Accountability – Hold yourself accountable to our Members.

Majority Decision-making prevails – Make your points as robustly as you like, but work shoulder-to-shoulder once the decision has been taken.

No Conflicts of Interest – Declare all and any, however tenuous they may seem. Work though personal networks, but in a transparent fashion.

Confidentiality – Transparency and confidentiality are not mutually exclusive, see note 1 below. Use the Chatham House Rule (note 2). Do not be tempted to promote ones ego by communicating through use of social media, e-mail, etc. during or after meetings.

Notes
1. Meeting input papers, discussion, actions and outcomes shall remain confidential until released to Members by publication of the meeting minutes or proceedings on the RSGB website or otherwise as determined by the meeting. The use of social media and e-mail to provide real-time account is prohibited unless authorised by the meeting chair. Eventual publication of the details of the meeting, including the treatment of input papers, is a matter for the chair of the meeting to determine. Papers and discussions deemed to be confidential shall be so noted by the chair of the meeting and their distribution shall remain confidential until such time as their status is changed to releasable to the full Membership.

2. Chatham House Rule: "When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed". May be applied at the discretion of the meeting.

APPENDIX 2 - STANDING ORDERS FOR BOARD MEETINGS

Note: these standing orders are also intended to apply wherever practicable to meetings of committees of the Board.

1. The place and time of routine Board meetings shall be fixed by the Board in session. Non-routine meetings may be called by the Company Secretary under the direction of the President or not less than three Board members. At least 21 days notice must be given.
2. The chair shall be taken by the Chairman or, in his / her absence, by the President or another Board member nominated by the members present at the meeting.
3. The quorum for the Board shall be five.
4. The routine business of the Board may consist of:
   (a) Apologies for absence
   (b) Declaration of any conflicts of interest
   (c) Approval of the minutes of the previous meeting.
   (d) Matters arising not covered by agenda items: information only
   (e) General Manager's Report including Health and Safety report
   (f) Financial Report
   (g) Commercial Report
   (h) Agenda items for decision
   (j) Other business as defined in (5)

   Items 4c, 4e, 4f, 4g, and 4h require documentation to be circulated 7 days in advance of the scheduled date of the meeting. The remaining items may be omitted from the agenda when appropriate. Suggested amendments to the previous meeting's minutes must be notified in writing to the Minutes Secretary, at least 7 days prior to the following meeting.
5. The item "Other Business" should be taken as item 4j. It covers urgent matters of which it has not been possible to give formal notice, as defined in 6, but which has received the Chairman's permission to be raised at some point during the meeting.
6. Proposed agenda items apart from "Other Business" as defined in 4 and 5 above, shall be submitted to the Secretary as formal proposals which he must receive at least 7 days before the Board meeting, for circulation to the Board. The documentation should be self-contained, provide a complete briefing and include details of any financial implications. The Chairman will decide whether such items will be placed on the agenda of the following or subsequent meetings - or referred directly to appropriate bodies for comment.
7. Any Board member who is personally concerned in any matter under consideration shall declare his interest and retire during the discussion, not voting thereon.
8. At the request of any Board member, voting shall be by ballot.
9. Questions normally shall be determined by a simple majority of the votes of those present. In the case of an equality of votes, the Chairman shall have a second or casting vote.
10. If at any meeting business be introduced of which notice has not been given as a formal resolution at either the previous meeting or in the notice calling the meeting, any Board member present shall be entitled to require that no vote or decision shall be taken on such business until the next Board meeting. When necessary for reasons of timing a postal or electronic vote may be substituted for a show of hands at a Board meeting.
11. The ruling of the Chairman on any question under the Standing Orders, or on points of order or explanation, shall be final unless challenged by not less than five Members, or a majority of the Members present vote to the contrary.
12. Notwithstanding the above, the Board may meet together for the dispatch of business, adjourn and otherwise regulate its meetings as it thinks fit.
13. With the agreement of a majority of the Members present, observers may be invited to attend all or any part of a Board meeting.
14. Proper minutes shall be taken of all business transacted at each meeting. Minutes are prepared by the Company Secretary, and circulated on the understanding that they are strictly confidential to recipients, and may not be disclosed to any other party. The approved Minutes of the Board will be made public though the RSGB Members Only website, as well as to Committee Chairmen and Honorary Officers via suitable electronic means.
15. The Board operates on the principle of collective responsibility. Board members and former Board members are expected to support the views and decisions of the Board on which they serve or have served, whether or not they personally agree with them.
16. Board members likely to incur abnormal expenditure on Society business (ie anything other than normal out-of-pocket and travel) are required to obtain prior authorisation from the Chairman of the Board.
17. Board procedures shall be based on the Bylaws, Memorandum and Articles of Association and the relevant parts of the Companies Acts.
18. Whilst acknowledging that Board members are Directors of the Company with every legal right to visit RSGB HQ, it is not only courteous, but also assists in practical arrangements, that this should only take place after prior liaison / notification with the General Manager or his nominated deputy to whom the purpose of the visit should be indicated. Board members visiting HQ for any purpose are required to sign the visitors' book, observe any security measures in force, observe all Health and Safety regulations and comply with all current rules relating to conduct whilst in the building.
19. A Board member can be disqualified from service under Article 38.

Note 1: A resolution in writing signed by all members of the Board shall be as valid and effectual as if it had been passed at a meeting of the Board.

APPENDIX 3 - RSGB AFFILIATED SOCIETIES, GROUPS AND CLUBS

Note: In this Appendix, the term "Society" refers to the Affiliated Society or Club, and not to the Radio Society of Great Britain, which is referred to as the RSGB.

RSGB Groups

RSGB Groups consist of ten or more RSGB Members organised to hold regular meetings and other events to promote the interests of the RSGB in a community. Appropriate officers should be properly elected. RSGB Groups are afforded the same facilities as Affiliated Societies, provided that:

(a) Appropriate officers are properly elected.
(b) All members are fully paid-up Members of the RSGB, a full list of members to be provided on application. Registration forms are available from RSGB Headquarters and on completion should be sent to the appropriate Regional Council member for approval, as listed in the RSGB's Journal.

Affiliated Societies and Clubs

Many local societies or clubs interested in amateur radio and related subjects become affiliated to the RSGB. This does not imply any accountability on the part of RSGB for management of the society or club, but simply affords certain benefits to societies so affiliated, as follows:

1. Publicity for club activities through "Club News" each month in the RSGB's Journal.
2. Full facilities of the RSGB QSL Bureau for cards bearing the club station callsign.
3. Book purchases at a discount via RSGB.
4. Freedom to borrow RSGB films, tapes and display materials. (This facility is also available to certain non-affiliated groups such as schools.)
5. Freedom to participate in the RSGB Affiliated Societies Contests.
6. Receipt of the RSGB Yearbook.

Application Procedure

Clubs and Societies which wish to become affiliated to the Radio Society of Great Britain (RSGB) should make a formal application to the Society's General Manager, using the standard membership application form, signed by the club Chairman or Honorary Secretary. The application form should be accompanied by:

(a) A copy of the constitution of the club or society.
(b) A list of officers
(c) A statement of the number of members and the proportion who are members of the RSGB.

All societies, clubs or groups seeking affiliation with the RSGB are required to have a constitution that either adopts the RSGB model constitution, or observes the principles enshrined in the model constitution in relation to the exclusion of members, resolution of disputes and the principles on natural justice in such matters. Affiliated societies are expected to act in the interests of amateur radio in the UK and not to take any actions that might damage the reputation of the Amateur Radio Service.

The RSGB will not normally become involved in club affairs. Exceptionally the RSGB may seek involvement where it appears a member has been excluded, or otherwise disadvantaged in violation of the club constitution.

Model Constitution for RSGB Affiliated Societies

A model constitution for an Affiliated Society is available on the RSGB website www.rsgb.org or on application to the Society's headquarters.

Radio Society of Great Britain

(A Company limited by Guarantee, Registered in England and Wales No 00216431)

Proxy for use at RSGB Extraordinary General Meeting, 17 November 2012

For guidance on completion see overleaf.

I,* ..... Call/RS .....

Of * ..... Membership No .....

* Full name and address to be inserted in BLOCK CAPITALS

.....

a Member of the above named Society hereby appoint (mark X in one box)

☐ the Chairman of the Meeting or failing him the Company Secretary

☐ the following proxy holder:

Name ..... Call/RS .....

Of ..... Membership No .....

Or failing him/her ..... Call/RS .....

Of ..... Membership No .....

as my proxy to vote for me on my behalf at the Extraordinary General Meeting of the Society to be held on 17 November 2012 at 12 noon and at any adjournment and to vote as indicated below. In the event of no proxy being named or of your nominated proxy failing to attend the Extraordinary General Meeting the proxy will automatically revert to the Chair of the Meeting. Please indicate with an "X" how you wish your vote to be cast otherwise the proxy will abstain or vote at his or her discretion.

Extraordinary General Meeting

	For	Against	Abstain
Resolution 1: To approve and adopt revised Memorandum and Articles of Association as set out in pages 45 to 56 of the November 2012 issue of *RadCom* and to authorise the Board to take the necessary steps to bring the new governance structure therein defined into effect.	☐	☐	☐

Signature..... dated .....

NOTES

Members may appoint any Member or non Member as their proxy holder. However the following are willing to act as a proxy holders:

The President: Dave Wilson, M0OBW, 12 New Street, Elworth, Sandbach, Cheshire CW11 3JF

The Company Secretary: Rupert Thorogood, G3KKT, Station House, Station Road, Castle Cary, Somerset BA7 7PB

The proxy form must be signed by either the fully paid up corporate Member or by his or her attorney duly authorised in writing.

Articles 23-26 inclusive refer to proxy votes and the calling of a poll.

In order to be valid this form **MUST** reach the Electoral Reform Services, 33 Clarendon Street, London N8 0NW in the envelope provided not later than 12 noon on Thursday 15 November 2012.

Guidance for Voting

RSGB Extraordinary General Meeting

17 November 2012

You have one of three options for registering your vote on each Resolution:

1: **Attend the EGM in Person.** You will not need your ballot paper but you should bring with you a copy of the Resolution.

or

2: **By Post.** The voting is being conducted by the Electoral Reform Service (ERS) on behalf of the Society. The proxy form and return envelope can be found in this edition of *RadCom*. The details required on the proxy form are your name, address, callsign or RS number **AND** your membership number. This can be found on your *RadCom* mailing wrapper or by enquiry from HQ. This is a security measure required by the ERS. Once you have voted ***(see below)***, place the completed ballot paper in the pre-paid envelope and post it to the ERS to arrive on or before 15 November.

or

3: **By internet.** Go to www.votebyinternet.com/RSGB12. You will be asked for your membership number without the leading zeros as part 1 of your security code and the first four characters of your callsign as part 2 of your security code (eg G7XYZ enters G7XY). ERS internet services are available 24 hours a day commencing 12 noon on 3 October. The internet voting service will close at 12 noon on 15 November. See below for details of how to cast your vote.

How to cast your vote by post or internet:

If you do not enter the name of a proxy holder, your vote will be cast by the Chairman of the meeting in accordance with your wishes indicated on the voting form. Alternatively you can assign your vote as a proxy to another nominated individual. If you take up this alternative, you will need to indicate your choice of proxy holder – it has to be someone who will be at the EGM.

On the proxy form/voting screen you will find three boxes alongside the Resolution, you should mark an X indicating your choice.

If you leave the instruction on how to vote blank, your choice of proxy holder may vote as he/she wishes. Although a withheld vote ("Abstain") does not specifically appear in the Society's Articles, the provisions of the Articles are broad enough to permit its use and indeed its use is now common practice. So if you are assigning your proxy and do not vote for or against, you can elect to abstain, which is also binding on your proxy holder.

Note: The meeting will be attended by ERS who will establish the attendance register and confirm whether a proxy vote has already been received from you by either post or internet.

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HF

Catch up on the latest HF news

QSL card from the recent 9M4SLL (Spratly) DXpedition.

QUITE A MONTH! Some major expeditions took place with NH8S (Swains Island) and 3D2C (Conway Reef) the most notable. These two nicely illustrated the way that propagation changed during the course of September. NH8S was easy enough from the UK on 20, 17 and 15m, for example, but only a handful made it on 12m and I am not aware of any 10m QSOs. A couple of weeks later, though, and 3D2C was workable daily on both 12 and 10m, provided you could crack the huge pile-ups. At the other end of the spectrum, GM3POI appears to be one of the few to have worked both on 80m, no doubt benefiting to some extent from his higher latitude in the Orkneys. Z60K was a surprise effort from Kosovo, billed as a training exercise for local amateurs, most of whom had been off the air since the early days of the troubles in Yugoslavia. At the time of writing, though, it doesn't look as though this one will count for DXCC and there is some ambiguity about the use of the Z6 prefix. That said, it appears that Z8 has been issued to South Sudan, with the first Z8 stations having appeared on the bands during the month, which would suggest that Z6 and Z7 have at least been earmarked for use elsewhere. Jim, K7QI, who is living in South Sudan, was one of the first to receive a Z8 licence. On the subject of prefixes, Niue Island, previously ZK2, is now E6, so remember to update your logging program database.

Rob, M0VFC showed up as ZD9UW from Tristan da Cunha and is a good signal on 10 SSB as I write this. Unfortunately Martin, G3ZAY, who was due to accompany him, had to call off his participation.

I also wanted to mention the Azores special event activity on the last weekend of September, when each of the Azores' nine islands was activated by a combined local and international group of operators. This generated lots of interest, with certificates for those working all nine, as well as being eligible for a draw for free flights to the islands.

DX NEWS. Two big ones this month. The first is PT0S, St Peter and Paul Rocks, which I alluded to in a previous column. The DXpedition will take place around 10 to 22 November. The actual dates will depend on weather conditions and will be announced on the PT0S website. PT0S will have a strong low band focus. There will be a dedicated 160m station from sunset to sunrise. A second station will be on 80 and 40 at night.

The second major expedition is ZL9HR, Campbell Island, the 15th most wanted DXCC entity. This is on track for 28 November to 9 December. The team has a number of restrictions placed on it by the New Zealand authorities (the island is a designated nature reserve) but will make a big effort on all bands.

Donovan, ZS2DL, is taking a large team to Lesotho from 23 November to 3 December, where they will operate as 7P8D on all bands, CW, SSB and RTTY, with three to five stations.

A group of Polish amateurs will join 5T0JL (ON8RA), for a DXpedition as 5T0SP from 24 November to 12 December. Activity will be on CW, SSB and the digital modes on all bands.

V84SMD in Brunei will be active 13 to 22 November, by the Mediterraneo DX Club. 90% of the multinational team will be from the 9N7MD expedition group. The activity will be on 10 through to 160m including, CW, SSB and RTTY. As many as 18 operators and five stations are expected.

PJ4D will be on the air from 18 November to 1 December. The station was last active on the '10-10-10' date when the several PJ DXCC entities gained independence. QSL via W3HNK. 7L4DXT and K1GI will be on the air from, Sint Maarten, 18 to 24 November with the callsigns PJ7XK and PJ7I. QSL PJ7XK via 7L4XDT and PJ7I via JG2BRI.

Paul, N6PSE, of The Intrepid DX Group has posted some 2-3 minute slide shows of the team's DXpeditions. Plans are also in the works for videos of ST0R, YI9PSE and 3D2C. They are on the Intrepid groups' website.

KH8/N6MW on American Samoa is planned for 8 to 19 November, all bands, mostly CW, with some SSB and RTTY when things slow down. The only 'QSL' option at the time of writing is Logbook of the World (personally, I don't consider this a QSL option at all, simply a way of getting DXCC credits, which is a rather different matter). Bill hopes his group will have two stations operational, one of them on the air 24 hours a day. The focus will be on QSO volume, 160m and Europe, with 15m being the favoured band. I am listing the website, although at the time of writing it is returning an error message.

Seppo, OH1VR, and Henri, OH3JR, will be on from Lord Howe Island from 17 to 27 November, operating as VK9/OH1VR and VK9/OH3JR respectively, all bands, CW, SSB and RTTY. QSL direct only with SAE and IRC or two US dollars.

Several of the foregoing expeditions will also be active in the CQWW CW contest (24/25 November) and, of course, there will be the usual clutch of expeditions especially for the contest, with lists of these appearing in the usual places.

MISCELLANY. GM3WOJ/ZL1CT has a new 'DXpedition advice webpage'. Chris says, "It's taken me longer than expected, the pages are not quite finished and the font is not always what I intended, but I've posted some advice for first-time DXpeditioners".

Andy Fyodorov, KL1A, reports on his 'Sparky's Blog' that Romeo Stepanenko, 3W3RR, remains in jail. For newer DXers who may not be familiar with Romeo, he was at one time a prominent DXer who made a big splash with operations supposedly from rare ones, YA0RR in (or near) Afghanistan, strange North Korea military callsign P5RS7, and others, before running afoul of the law.

PILE-UP BEHAVIOUR. Gordon, GM3UCI wrote to me recently expressing his disgust at the 'rabble' calling NH8S indiscriminately, saying it made him feel disgusted to be a radio amateur. I have some sympathy but there are a number of aspects to this situation and no simple answers. On the whole the NH8S and 3D2C operators did a creditable job, though in both cases there were exceptions,

where the operator was, for example, listening on a wide split, not following his own instructions (eg taking US callers when he had said he was listening for Europe) or whatever. Veteran DXpeditioner Martti, OH2BH has always maintained that it is up to the expedition operator to control the pile-up. But I have even heard Martti lose the plot on one occasion, on Scarborough Reef. He later admitted, as I recall, that he was suffering from exhaustion through heat, humidity and lack of sleep, and starting to hallucinate at the rig. But, from the other end, there is also a cultural and behavioural issue. Without naming names, there are some countries, for example, where queuing is simply not recognised. The good news is that more and more expeditions are indicating their support for the DX Code of Conduct (also endorsed by the RSGB and the main UK DX groups), though some do seem to forget that it has guidance for both ends of the pile-up.

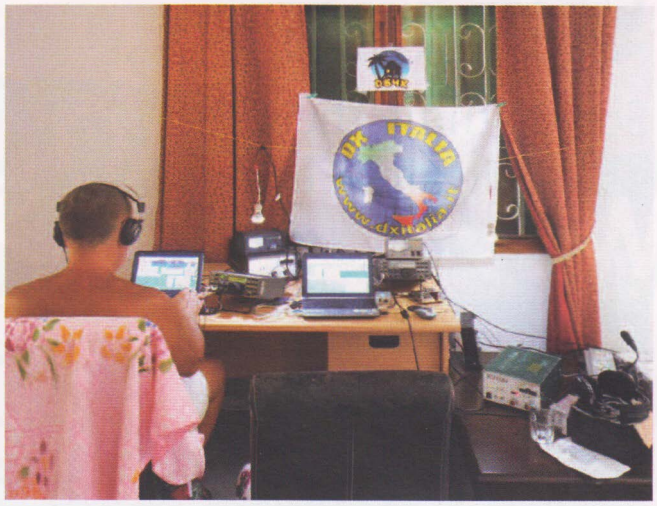
OTHER CORRESPONDENCE. Jim, GOJXN/MB7UXN dropped me a line to say that he has recently introduced live 20m APRS maps into the Net 14 APRS website. I'll put my hand up here and admit that I didn't know the site existed, so I'm including it in this month's listings.

Dave, MOBVE says it's been a slow month for him and reports just OX3JI, TR8CA and ZL2IFB on 20 plus HT9H (Nicaragua) on 30, all CW as usual. Colin, MUOFAL says he has been mostly on 17, running US stations and having the odd exotic caller (such as AH7C, Hawaii). The benefit of being semi-rare DX yourself, Colin! As MOOFAL he managed 2135 contacts with 112 countries. Trevor, G1JZY sends in a first report. As GO1JZY he made 235 contacts using PSK31, PSK63, Olivia, RTTY and Feld Hell, best contacts being VK7JB (Tasmania) using Feld Hell and LU3DAT using PSK31. Trevor uses an IC-706MkIIg at 40 watts and a wire dipole.

I owe Peter, G3HQT an apology for having omitted his report last month, so the following is the two-month version. He mentions D64K and RI1ANF as being notable for their outstanding signals on all bands (partly the benefit of a north-south path, of course). Peter does mention a rather unique problem he has faced recently, a dove that has taken a fancy to his MA5V vertical and detunes the vertical whenever it decides to sit there! Recent DX (dove notwithstanding) includes HB0/ON6NB on 40, CY9M on 30, BW/DF8DX, EY8/UA4WHX, HL3EHK, TR8CA and HK1MW on 20, V5/DF2UU, OJ0R and UK8IF on 17, D3AA and YB67RI on 15, D64K on 12 plus 5H3ME, T6MO and RI1ANF (South Shetland) on 10, all CW.

I also have two months of reports here from Peter, G4XEX. During August he managed some 1200 QSOs, almost all on datamodes, largely using his GO prefix. DX worked includes 3V8BB, 7T50I (Algeria), 9K24P, JA3EGZ, JX9JKA, UA0ZS, YB1MBV, YB1JYL and YB2TJV on 20 SSB, 4S7BRG, JE2PMC, ZS4TX, V51B and YV5TX on 20 RTTY, CE6MBK, CX4ACH, VK2NN, YC6EO and ZR6DX on 20 PSK, CN8YZ, CO2MS, CX3VO, E21YDP, EX8AI, HK3TY, HZ1DG, J39CR, JA8BNP, JH2XMK, JH3SIF, JH8JYV, VK3OHM, XR3P, YB1SAM and YC2WAN on 20 data (datamode unspecified), JA1OJJ, JA4FNE, VK4ZD and YB0NFL on 17 SSB, ZS6AKU on 17 data, C5YK, D4C, JG1OUT, OD5NH, OD5ZZ, VK4MSA, ZW5B and ZY5Y on 15 SSB, XR3P on 15 data, YB3OX on 12 SSB and 4X1ZQ on 12 data. Incidentally, Peter has been running an interesting experiment to compare antennas. He says, "My resonant dipoles are now tested and all fully functional. I am more than pleased with the results and at the moment I am running propagation experiments with them. I leave HRD running for a full 24 hrs, first on my resonant dipole, after which I record the results from PSK reporter, then repeating the experiment with my G5RV. I then compare the results. So far the dipoles seem to have the edge." A couple of comments from me on that. First, although it is impossible to do scientific comparisons on antennas unless you have access to a proper test range (because there are so many variables in a 'real' operational system) this seems like a fair way to get at least a feel for how two antennas compare. And, secondly, insofar as Peter's results are meaningful, they support what I have been saying in club talks for years, that a resonant dipole will outperform a G5RV any time. The latter is very much a compromise and, in most stations, is being pressed into service in ways which the late G5RV never envisaged (for example, on bands that didn't even exist when he devised his antenna).

A couple of welcome, though lengthy e-mails, from Terry, G3RKF, so I have to summarise. Terry says, "Since my missive last year, thought you might like to hear how the loft stealth multi band dipoles have been performing. The neighbours have little or no idea what I am doing. There is a little TVI here, but solved with ferrite on critical mains and coax leads. The only problem remaining is with the digital kitchen scales. My signal strength is 99.99kg. However the cakes continue to rise and taste delicious!" Terry has reached 241 countries worked with this setup including NH8S on 17 and 20 plus several of the other DXpeditions over the summer. He adds, "An iPad plus DX Cluster lets me know of any DX from the armchair while watching TV". Terry runs 120W to work the harder stuff but is able to work the US on a regular basis running just 10 watts to those indoor antennas. He credits G8APB, G3UJE and others from the Tall Trees Contest Group for offering help and encouragement. Terry also operates regularly as W2/G3RKF from his son's home using an IC-735 to multiband dipoles in the trees. He finds propagation from there to sub-Saharan Africa is very good and also notes that Eastern Europe tends to be easier to work than the UK. He does mention the hazards of that QTH, though. On one occasion, while using a slingshot to get wires into the trees he trod on, and was bitten by, a copperhead snake. The following day, trying again, he was bitten by a black widow spider. Another day and an unpleasant encounter with a hornet (a wasp with attitude!). Makes the UK seem positively benign!



One of the operating positions from the D64K Comoros expedition.

SILENT KEYS. Sid, ET3SID (G4CTQ, AB3OZ) passed away recently. For many years he had been the driving force behind amateur radio in Ethiopia, getting many locals on the air and supporting the ET3AA club station. He will be sorely missed. Another recent Silent Key of note is Dasho Tuji Yonten, A51TY (ex AC5TY), from Thimphu, Bhutan. Yonten worked at the Ministry Telecommunications Bhutan and was originally licensed in the early 70s.

WEBSEARCH

DX Code of Conduct: http://dx-code.org/
GM3WOJ Expedition Guidance: www.qsl.net/gm3woj/dxpeditionadvice.htm
KH8/N6MW: http://n6mw.jimdo.com
Intrepid DX Group: www.intrepid-dx.com
Net 14 APRS: www.net14.org.uk
PT0S: www.pt0s.com
ZL9HR: www.zl9hr.com
3W3RR news: http://www.cqdx.ru/ham/ham_radio/3w3rrs-10-years-jail-pedition/
7P8D: http://www.zs2dl.co.za/7P8D.html

VHF/UHF

So you think there's no one to work this morning? - think again. The digital revolution on VHF is here!

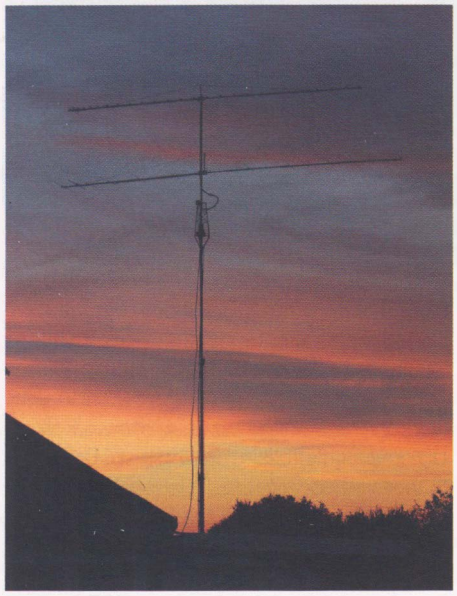


PHOTO 1: The 144 and 432MHz antennas used to work EA8 from G0UWK.

VHF WHO'S WHO. I'd like to start by saying how pleased I am to have been asked to write the VHF column this month, a column I first read in about 1969 and whose list of columnists over the years has read like a who's who of VHF activity in the UK.

LACK OF AMBITION? I think that many people fail to realise just how much the work of Joe Taylor, K1JT **[1]** has revolutionised VHF DX. Digital modes JT65 and FSK441 are now dominating EME and MS, such that G4SWX reports that he did not hear a single station on 144.100MHz on high speed CW during the Perseids meteor shower. However he did work over 25 stations on FSK441 and 105 stations on JT65 EME during August. That is on top of the 122 EME QSOs he worked as GB2EME from the Cambridge EME2012 Conference **[2]**.

There seems to be a distinct of lack of ambition to try DX amongst some (but not all) users of the 144MHz band and I am grateful to John, G4SWX for giving me the germ of the idea and much of the content for my introductory paragraphs.

The point I'd like to make this month is that you will be amazed what you can work on 144MHz with a relatively small station and a single Yagi if you are prepared venture in to the world of JT MS and EME. This was brought home to me on Mull with GS3PYE/P **[3]** in May when, running a single 17-ele Yagi with no elevation, one moonrise we decided to try JT65 EME 'for a laugh' and were called straight away by JE1TNL, with a signal that would have been copyable on CW! We then went on to work a number of EME stations until the moon got out of the main lobe of our antenna.

EME is a different world if you have a big station, but the good thing is that there are a lot of such stations that you, as a small station can work. To get some idea of the view from a big station, G4SWX writes, "On the evening of 29 August there was a huge pileup for BA7KW (OL63). This station is a newcomer to EME and has had major receiving problems. However he seems to have sorted them out and was working one or two Russian stations mid-afternoon. Before the moon rose over JO02 I could already see the tropo signals of many stations in the EME pileup. After choosing a clear offset to call I worked him about 30 minutes after my moonrise. Signal reports exchanged of -17 / -24, which represents very solid signals. I guess he had worked about 10 others before me that afternoon. As evening progressed the pileup got larger and larger with many well-known European stations calling. At its peak I could see at least 15 different stations calling at once. Remember that I am talking about a Wednesday evening not a weekend or a published expedition. BA7KW was QSO No 1999 and DXCC No 64 since I came back on 144MHz in July 2011. Others of note include VK3AXH, KH7Y, ZL4LV, VK4CDI, OX3LX, UN9L, ZL4PLM, JA5EEU, TI2SW, VK5APN, ZS2BK and PY2GN – Who says that 144MHz is not also a 'magic' band'?"

So, coming back to the point, 144MHz is not a 'locals' band and neither is it one for limited inter-G contacts on a Tuesday night. 144MHz is a serious DX band where, with relatively simple equipment (1 Yagi + 200W) you can probably work in excess of 500 other stations across the globe on EME. John's new 4 Yagi system has allowed him to hear stations that are running only 50W and a single Yagi – something that was only possible in the past for the big guns to do on CW. His highlights for September on EME included VK5FA (PF95) who was running 80W and 4 x 9-ele Yagis, VK7JG (QE38) using a single Yagi and the biggest surprise, BD4SY (PM01).

With 2 Yagis there are probably over 1000 stations that can be worked on 144MHz EME. Likewise with a single Yagi and 200W there are over 1000 stations within range that are workable via meteor scatter using FSK441. I would argue that 144MHz is a 'magic band' without the need for the solar maximum, so look beyond FM QSOs or sitting around for that twice a year good tropo opening and try something more ambitious! WSJT is so very easy to set up. Download the software, read through the setup instructions on Joe's site, connect up your radio to your sound card and away you go.

SEPTEMBER TROPO OPENINGS. The month started with average conditions in the IARU Region 1 144MHz contest in Eastern England although there was some ducting from the west of the UK down to CT3 and EA8. Contacts over 800km were quite tough, the best DX reported by G4SWX being SN7L (JO70) in Poland at 987km, which is pretty good for a fairly flat band.

On 6 and 7 September, an inversion layer over northern France, Belgium and the Netherlands provided long distance, mainly East-West, tropo between Germany and Western France, with distances up to 1500km being worked. For UK stations, the 15th and 16th produced the best conditions as the layer slipped further south. There were many good QSOs between the southern half of the British Isles and northern Spain and the Spanish-French border. On 144MHz, stations as far afield as the Canary Islands were worked, but the standout QSO on 432MHz was on the 15th at 1347UTC between Ian, G0UWK (IO83) and EA8TJ (IL18) in Tenerife, a distance of 2987km.

Ian writes, "At 1213 EA8TX (IL18) 2994km was heard on 144MHz and we exchanged reports on SSB. During the QSO I asked if he was QRV on 432MHz. He said not but EA8TJ was. EA8TJ announced on the DX cluster that he was calling CQ to the UK on 432.150 using JT65B, transmitting first period. I immediately heard JT65B tones on the frequency, but as my 432MHz system is not coupled to WSJT software I had no idea who was calling. I thought it was just another UK station, but on checking I was amazed that I was receiving tones on the 1st period. Unable to transmit data I called during the next 3 periods on SSB and EA8TJ came back with a 59 report at 13:47hrs. After our QSO he went back to JT65B and was copied for about an hour with no takers."

Ian's 432MHz system comprises of an Icom IC-756 Pro II, SSB Electronics LT70s, homebrew Nokia Tetra PA (200W), 26-ele LFA Yagi and SP7000 LNA. **Photo 1** shows the antennas.

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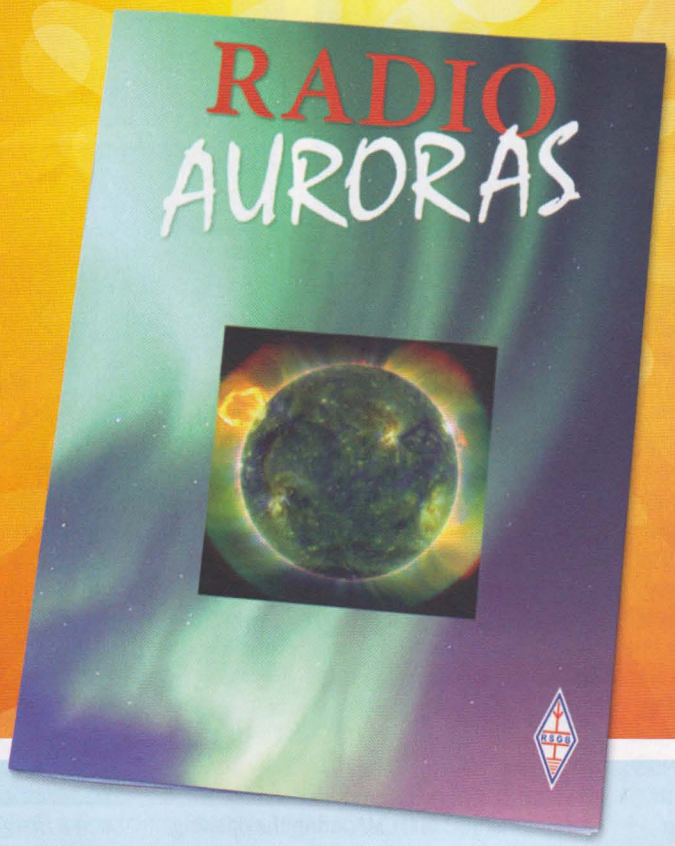

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Radio Auroras

Radio amateurs know that sunspots affect VHF as well as HF propagation and the solar cycle has a direct bearing on the prevalence of radio auroras. The extent and usefulness of this mode of propagation is perhaps still not widely known, though *Radio Auroras* sets out to explain this phenomenon in an easy to understand and useful way.

Radio Auroras tells the fascinating story of the radio amateurs who discovered this mode of propagation and how they made use of it. Through the following pages there are descriptions of how auroras are caused, how they can be forecast and perhaps most importantly how best to use them to work DX. This book also describes radio auroras at 28MHz as well as outlining the effects of auroras on the other HF bands. Occurrences of Sporadic-E can also accompany auroras to provide Auroral E propagation and this too is covered in *Radio Auroras*. If you are interested in radio propagation *Radio Auroras* is a unique guide to this topic, but for those studying and experimenting, or those keen to work DX on VHF, it is a real 'must have' book.

The late Charlie Newton, G2FKZ, who wrote the core material of this book, was acknowledged as one of the leading experts on radio auroras.

His work has been updated and supplemented with a new chapter compiled by well-known VHF DXer Neil Carr, G0JHC. Using contributions from a number of the UK's leading VHF DXers, Neil Carr looks at the major radio aurora events that took place during the last solar cycle and in the first part of the new cycle.

Size 174x240mm, 64 pages, ISBN: 9781-9050-8681-8

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Reg, G8VHI (IO92) reports that most of the DX was on 432MHz and gave him some new ones. On the 15th on 144MHz Reg worked EA1DDU,(IN73), EA2TO/1 (IN83), F6CIS (IN94), F1EIT (JN03), F1BOC/P (IN96), EA1MX (IN73) and on 432MHz EA1DDU, F5ICN (JN03), F4CWN (JN03), F6KEH/P (JN14), EA2TO/1, EA1MX (IN74). On the 16th Reg concentrated on 432MHz, working another string of French and Spanish stations including new squares F5GXX (IN95) #160 and F1BOC/P (IN96) #161. He comments that it was very nice to get two new ones as it is getting very hard on 432MHz now! On 144, Reg runs a TS-2000 with 100W, an MGF1302 masthead preamp with 2 x 9-ele DK7ZB Yagis, and on 432MHz an FT-847 with a 100W SSPA, 4 x 23-ele DK7ZB and an MGF1302.

PHOTO 2: F6BHI/P QRP 432MHz on the 'Pic de Nore'.

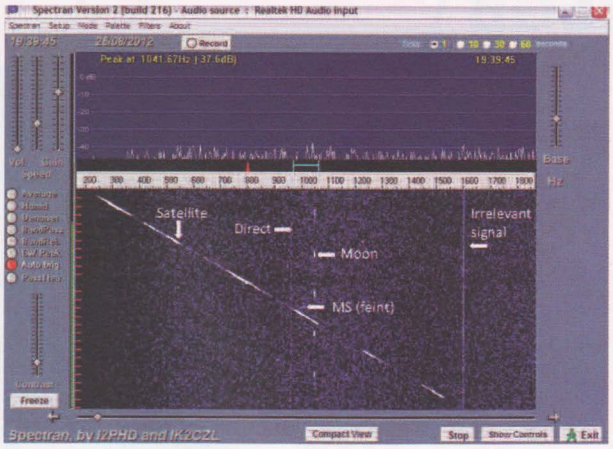


FIGURE 1: Moon and Satellite reflected signal from the Graves radar on 143.049MHz.

Even with a modest station, Steve, M0BPQ made quite a few QSOs on 432MHz over the weekend, working in to IN83, IN93 and JN03 ODX 979km from his home station in north London. Steve was running just 50W to an 18-ele DK7ZB.

This fine tropo opening coincided with the French F9NL Memorial Contest on 16 September, in memory of one of the pioneers of 432MHz operation in France. John, G3XDY (JO02) took part 'to give some points away' and worked lots of good DX stations in 15 different squares in the period from about 0600 – 1000GMT.

Some of the stations such as F9DX/P (JN14), F2JR/P and F5PFL/P (JN03) were 59+; others that were not directly in the duct were somewhat weaker.

John was particularly pleased to work F6BHI/P (JN13) who was running just 15W to a single 19-ele Tonna for a new square on 432MHz, see **Photo 2**.

John runs an Elecraft K3, homebrew transverter, 350W SSPA and a 28-ele M-squared Yagi.

50MHz REPORT. I'm back on six for the first time in many years with 100W to a YU7EF dual band Yagi [4]. The transequatorial propagation (TEP) season is upon us with plenty of Southern European stations working down in to Africa in September. Sadly in my 'just too far North and East' location in JO02 I've had the frustration of listening to a solid wall of Southern Europeans (via Es) working Africa via TEP, with just white noise coming up from the far South, but I live in hope, as I have worked both ZS3 (now V5) and ZS from here in the past.

Just a couple of reports of G stations hearing or working Africans; on the 14th, down in the favoured south west, G4IGO (IO80) and G8BCG (IO70) both spotted V5/HB9PHJ (JG88), but at 1626Z with some help from Es down in to the TE zone, LA3EQ (JO28) worked ZS6WN (KG46) at 9404km, while around the same time V5/HB9PHJ was working OZ, SM and LA stations by the same mode – more examples of 'right place, right time', as is often the case on 50MHz.

If you weren't amongst the exotics, there was no shortage of other stations to work on 50MHz though. I had ISCAT (a JT mode) QSOs on MS with EA2ARD (IN93) EA5/G3XGS (IM98) and EA7DUD (IM76) along with plenty of Polish Czech, Hungarian and Slovakian stations via SSB and CW during the opening on the 13th.

50MHz can be both exciting and frustrating at the same time, but that is its attraction.

70MHz REPORT. There has also been some TE propagation from southern Europe in to South Africa on 70MHz, with IW0FFK (JN61) and others working ZS6WAB (KG46) on the 24th, but nothing so exotic this far north. Usually, by September, Es propagation on 70MHz is becoming rather more infrequent and you have to rely on MS for making QSOs outside the contests and activity evenings. Using the YU7EF dual band Yagi and 160W, on the 4th and 5th I worked SP9HWY (JO90) and OZ2OE (JO45) on FSK441 MS at 1329 and 743km respectively. The contact with the OZ station was a short distance in MS terms, made early in the morning and easily completed after trying unsuccessfully the night before. This shows that you have to pick your time with MS. On the evening of the 13th I worked a mini pileup of SP stations via Es. On CW, I worked SP3RNZ (JO92) then, switching to SSB, SP2FH (JO92) (ODX 1274km), SP2DDV (JO83), SP2DDX (JO83) and SP8NCJ (KO12), all giving me 59 reports. The following week on the 22nd, I caught a weaker Es opening when I worked 9A2SB (JN95) and S52GJ (JN76), both on CW.

HOLIDAY MOONBOUNCE. After EME2012, Dave, G4RGK headed down to EA8 for a short break, taking his portable 70cm EME gear with him. Just a single home made 6m long Yagi made from bits of old antennas, an RIW amp, ATF54143 preamp and a mount that allows full polarisation rotation, based on an aluminium step ladder. The azimuth readout is an iPhone and the elevation is a Lidl spirit level! Using this system, he is able to work stations of 4 Yagis and above using JT and larger stations on CW. Conditions at the time were not good, with the Moon being in a very unfavourable position. However Dave was able to make some QSOs including a 'first' with LZ1DX who was strong enough to be workable on CW. The secret to being able to make QSOs with such a marginal system is the ability to fully rotate polarisation, not to just shift from vertical to horizontal. Signals often peak at 45 degrees, with nothing on either vertical or horizontal. The method of changing polarisation is extremely simple; you just look for a peak in the waterfall trace.

RADAR EME. Finally, I had an interesting e-mail from Martin, G8OFA that included **Figure 1**, showing moon and satellite reflected signals from the Graves radar [5] on 143.049MHz. It was received in Salisbury on just an FT-817 and a 9-ele Tonna. Note the meteor pings as well as EME and satellite reflected signals. Martin is being "tutored in the dark arts of EME" by microwave EME expert and radio astronomer Brian, G4NNS. He hopes to be QRV on 144MHz EME soon.

So, there is plenty to keep you entertained on the VHF bands apart from chatting on repeaters and working the odd station on a Tuesday evening. Get out there and talk to the DXers at rallies and conventions. Look on their websites. Find out how it's done – you can ALWAYS make your station better.

Thanks to all the contributors and keep the input coming to the Editor.

WEBSEARCH

[1] Info on JT modes
– http://physics.princeton.edu/pulsar/K1JT/
[2] EME2012 – www.eme2012.com
[3] Camb-Hams Mull DXpedition online logs
– http://dx.camb-hams.com/online-logbooks/mull-2012-logbook/
[4] YU7EF dual band Yagi
– www.yu7ef.com/efDUOBANDS.htm
[5] Graves Radar
– www.itr-datanet.com/~pel itr/graves/

GHz Bands

Activity reports – and an impressive new MMIC

PHOTO 1: G0EWN with his compact 'TNG' optical transceiver (plus 144MHz Yagi for the talkback link).

BAND ACTIVITY. Autumn is often marked by the arrival of anticyclonic weather patterns and, as these subside or move further east, conditions on the VHF, UHF and SHF bands often improve for a short period. This was especially true in early September when an Atlantic anticyclone crossed the UK between about the 3rd and 9th. Although it was a not a particularly high pressure anticyclone, reaching not much more than about 1028 – 1030mbar, it led to some interesting propagation from and within the UK.

Ralph, G4ALY (IO70), reported that on the 6th he worked F6DRO on 10GHz at 903km, F6ETZ at 398km, G3LRP at 399km and F9OE at 247km. Down on 1296MHz he worked F4CWN at 860km, F5EAN at 536km, DJ5AR at 888km and G3LRP at 399km. In addition he heard the HB9G beacon on 5.7GHz at 886km.

On the 7th it was even better and he reported EA1BLA/P on 10GHz at 883km as a new # (initial) and EA1GHE/P at 770km for another new #. This station was running just 200mW from a borrowed Kuhne transverter and Ralph was his first 'G' contact on 10GHz!

Ralph also worked F6DRO on 10GHz at 903km, F6CBC at 676km, F6AJW at 807km and heard the HB9G/B beacon for the first time at 883km. It peaked 539.

Moving to 5.7GHz he worked F6CBC at 676km, F9OE at 247km, G3LRP at 399km and again heard the HB9G/B beacon at 883km.

Simon, G3LQR (JO02), told me that he was hearing lots of beacons on 1296MHz on the morning of 8 September. When I checked from my own QTH near Felixstowe I found that conditions were not quite as good as with Simon, but up on 3.4GHz I was able to hear GB3ZME and GB3OHM, both around 15dB over noise in 2.5kHz. Later that same morning Andy, G4JNT, heard a weak beacon signal around 3400.855MHz. This turned out to be GB3LPC, well off its designated frequency of 3400.935MHz, but operating as a personal beacon whilst awaiting its full licence from Ofcom.

I decided to check GB3SCF on 3400.905MHz, located at Bell Hill on the south coast. It was quite strong and with its distinctive JT65C modulation, a good target for monitoring to see what signal strength the JT65C program running on my PC would report. The beacon peaked at -5dBJT. That is approximately 0dB in 1kHz bandwidth.

Nick, G4KUX (IO94) worked Maurice, F6DKW (JN18) on 1296MHz on the morning of the 8th, with reasonable reports each way of 55/57 but a test on 10GHz failed even though signals were heard weakly. Soon after Nick worked a few DLs at over 1000km on 144MHz. Around 1900Z he called CQ on 1296MHz and was called by Eckhard, DK7QX (JO42), who was 55. Moving to 10GHz, nil was heard. They have attempted to work on this band previously. Nick then saw Karel, OK1JKT (JO60), on ON4KST chat. He suggested that there might be some high level ducting around and they should have a short test to see if that was the case (not really expecting there to be any). Karel responded by saying that he could hear Nick's CW dots, weakly. After optimising the antenna direction and over the course of around 6 to 8 minutes, the signals improved and a 519/519 contact was made each way over the 1128km path.

After this Nick arranged another sked with Eckhard and for the first time heard his signals. After arranging to use 1 minute transmit and receive periods a contact resulted with 419/519 reports each way at 758km.

A NEW RED LIGHT DISTANCE RECORD. Just as I was completing this column came word that Barry, G8AGN and Gordon, G0EWN, had set a new UK red light record of 129.1km on the evening of 8 September. Barry was located SW of Sheffield at locator IO93FH13 whilst Gordon and his XYL, Jenni, were located on the North York Moors at IO94MJ96.

Signals were 53/54 using baseband modulated optical transmission systems. Both stations reported that conditions on the evening were hazy with slow scintillation on the signals. The event was recorded on video by G3PHO. **Photo 1** shows G0EWN with The Next Generation (TNG) optical transceiver and a 4 element Yagi for 144MHz talkback over the 129km path.

I'm sure we will hear more about the record in the coming days. In the meantime congratulations to both stations as they near the magic 100 mile mark!

PGA103+ MMIC. WA5VJB introduced me to a relatively new monolithic microwave

TABLE 1: PGA103+ on evaluation PCB with C1 = C4 = 100pF.

Frequency (MHz)	Noise figure (dB)	Insertion gain (dB)	Input return loss (dB)
30	0.68	22.9	1.4
50	0.54	25.2	4.2
70	0.49	25.5	5.5
144	0.48	25.2	7.1
432	0.49	21.7	10
1296	0.78	14.1	15.4
1420	0.85	13.2	15.7
1600	0.85	12.1	15.7

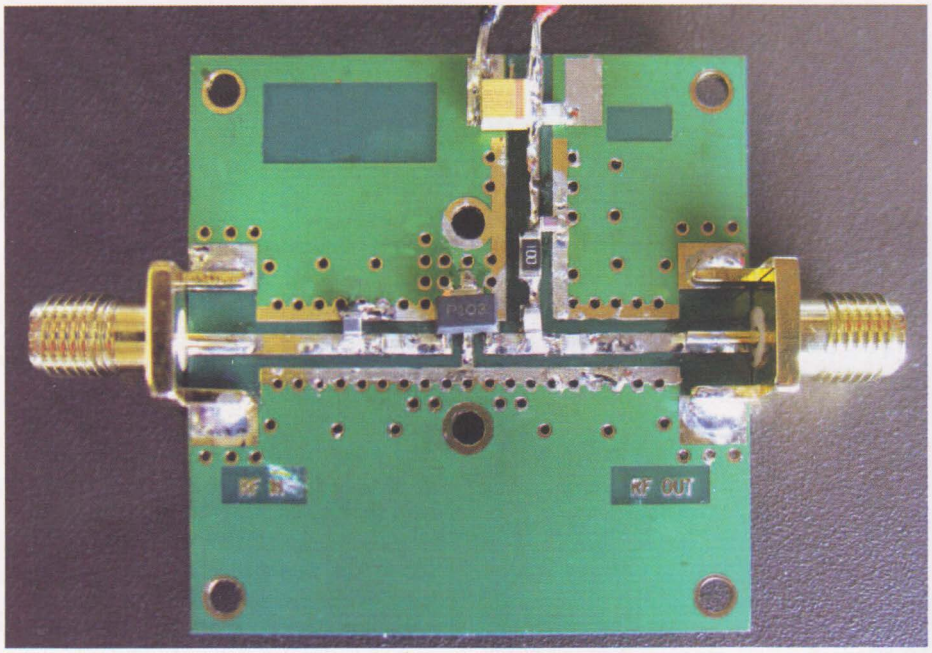


PHOTO 2: PGA103+ MMIC mounted on a suitable evaluation board for testing.

integrated circuit (MMIC) earlier this year. The Mini-Circuits PGA103+ [1] is a 50MHz to 4GHz wideband MMIC using P-HEMT technology. What is different about this device is that it claims a 0.5dB noise figure from 50MHz to around 1GHz with high gain, an excellent 50Ω input match and very high dynamic range. And all this for $1.99 in quantities of 20 or more. I just had to try them out!

I managed to obtain a few devices and then, quite fortuitously, I found online an evaluation board that was designed for SOT89 surface mount device (SMD) pads and SMA input and output connectors. This made it easy to breadboard a device for testing.

Figure 1 shows the simple circuit schematic of the PGA103+ low noise amplifier.

The test circuit was quickly assembled using a 270nH SMD inductor in the drain connection with two 10Ω 1206 size resistors in parallel to give 5Ω as a dropper resistor in series with the inductor. In the schematic this resistor value is given as 4.7Ω The DC resistance of the SMD inductor was ignored. **Photo 2** shows my breadboarded PGA103+ test amplifier.

With the supply set at 5.0V, 5Ω drain resistor and 84mA being drawn, the drain voltage was just under 4.2V.

Initially the input and output coupling capacitors were set at 100pF but later tests showed that 1nF might, in certain circumstances, be a better choice.

Using my HP8970A noise figure meter and HP346A noise head I measured the noise figure and insertion gain from 30MHz to 1600MHz (the limit of my 8970A). The results are shown in **Table 1**, together with the measured input return loss measurements obtained using my HP8753C network analyser.

It is clear that, as configured, the PGA103+ meets the claimed noise figure of 0.5dB at 144MHz, although it should be noted that the measured noise figure and gain is subject to some uncertainty due to instrumentation calibration (although the noise head was checked at the recent EME2012 Conference; its excess noise ratio (ENR) was tested against other noise heads and found to have only a small error).

Even at 1296MHz the noise figure measured under 0.8dB. This is a very acceptable noise figure for a terrestrial system on this band.

In an attempt to improve the noise figure at 70MHz for possible use in my 4m transverter I increased the value of both C1 and C4 from 100pF to 1nF. I found that this significantly improved the low frequency performance, but at the expense of performance at 1296MHz and above. I also measured the saturated output power and output return loss of the amplifier at 70, 144 and 1296MHz. These measurements are shown in **Table 2**.

It is clear that increasing the value of C1 (in particular) and C4 to 1nF can improve the low frequency response although the ESR (equivalent series resistance) of this type of multilayer 0603 size capacitor may start to impact the noise figure at higher frequencies. The use of a lower ESR capacitor for C1 and a more careful choice of value may give some further improvements at higher frequencies.

After measuring the input reflection coefficient I conducted some further tests using a small SMD inductor across the amplifier input. This was placed on the input side of C1 so that it didn't short out the gate bias of the MMIC. It was found possible to make a small improvement to the input return loss at 144MHz by using a value of 150nH. This inductor can be seen to the left of C1 in Photo 2. With this value the input return loss increased to 10dB, however, the noise figure rose to 0.55dB.

I recently designed 70MHz and 144MHz transverters using SPF5043 MMICs in key stages. Looking at the performance of the PGA103+ I have now revised that design as it is clear that a significant improvement in dynamic range is now possible with this MMIC in the critical front end. It also looks as if I might be able to revise my 1296MHz transverter design as well.

I wonder what other new devices are about to appear that will allow designers to make even more improvements to our VHF/UHF and SHF equipment designs?

WEBSEARCH

[1] PGA103+ – www.minicircuits.com

FIGURE 1: Circuit diagram of the PGA103+ simple, low noise figure, high dynamic range amplifier.

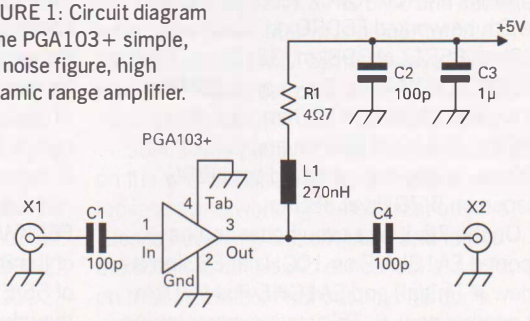
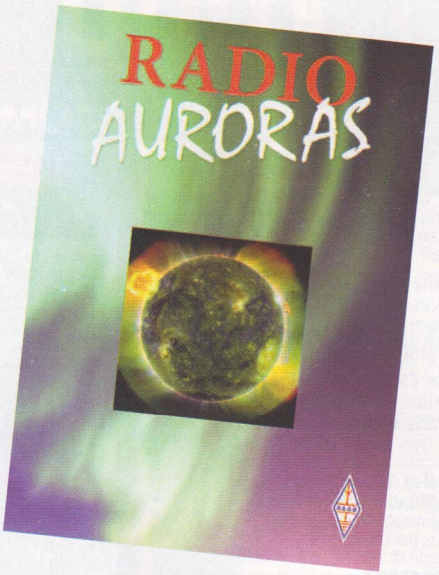


TABLE 2: PGA103+ on evaluation PCB with C1 = C4 = 1nF.

Frequency (MHz)	Noise figure (dB)	Insertion gain (dB)	Input return loss (dB)	Output return loss (dB)	Psat output (dBm)
30	0.5	26.2			
50	0.48	26.2	3.8		
70	0.47	25.9	5.2		22.2
144	0.46	25.2	8.7	22	22.5
432	0.52	21.6	10.6		
1296	0.80	14.1	14.7	15.4	24.5
1420	0.86	13.1	15.1		
1600	0.86	12.2	15.6		

Book review

Auroral propagation and the story of early transatlantic cables



Radio Auroras

The first edition of *Radio Auroras*, published in 1991 and out of print for many years, was widely regarded as one of the best books on the subject. In the intervening years a whole new generation of amateurs have come along and will be experiencing VHF auroral propagation for the first time, so the republication of this excellent work seems very timely. Regrettably, Charlie became a silent key during the production process of this book, which is dedicated to his memory.

Auroral radio experiments really only started after World War II, when VHF equipment started to become available to the amateur community. Scottish and Scandinavian amateurs noticed strange, hissing CW signals from the north and, through experimentation, auroral propagation was added to the DXer's armoury. Scientific investigation and discovery went hand-in-hand, leading to an understanding of the phenomena. This book explains the underlying physics of auroral propagation in a manner that I found quite accessible. There are plenty of line drawings that illustrate and support the points made in the text, supplemented by a sprinkling of graphs and tables. Charlie Newton had the ability to convey his expertise in a very clear fashion, which shines through in this book.

Beginning with a description of the Sun's part in how an aurora begins, Charlie then turns to the magnetic fields of the Sun and Earth. He describes how an aurora comes about, and the issues of field-aligned propagation. I was interested to learn that the minimum range of an auroral contact is about 155km and the maximum about 1095km, although practical considerations limit the latter to around 1000km in most circumstances and anomalous conditions may extend this somewhat. Although the majority of the book concentrates on 2m auroral propagation, there is an entire chapter devoted to auroral effects on other bands.

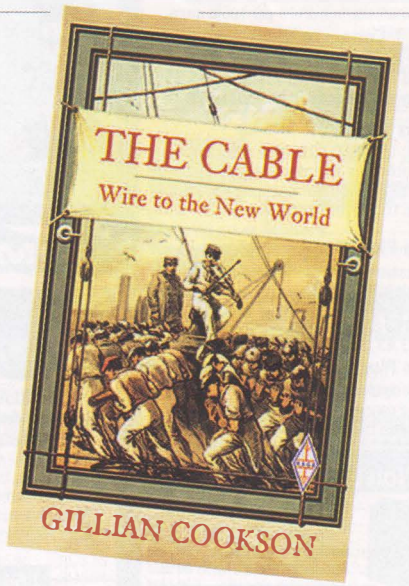
Aside from the updates and amendments to the main text, the main difference between this edition and the first version is that the last two chapters of the original, which dealt with particular auroral events as far back as 1957, have been replaced by a new chapter that examines auroral propagation between 2000 and 2012. This new material, by Neil Carr, GOJHC, draws on the records and experiences of a number of experienced aurora operators. There is even some advice on viewing visual auroras.

If you're thinking about operating via aurora and want to develop a full understanding of the underlying mechanisms of this fascinating mode, *Radio Auroras* is definitely the book for you.

ISBN 9781-9050-8681-8
170 x 240mm, 64 pages
Non-Members' price £6.99
Members' price £5.94

The Cable

By Gillian Cookson



Until reading this book, I hadn't realised that underwater cabling had been possible for so long. Laying cables on the seabed was first discussed in the 1840s. Morse was one of a handful of pioneers who succeeded when he laid a cable across New York harbour in 1842. It didn't last long as an anchor destroyed the line almost immediately but he had proved it was possible. The book continues with the story of these early pioneers who went from cabling between Prince Edward Island and New Brunswick to the first attempts to span the Atlantic. Apparently, the seabed between Newfoundland and Ireland was deemed as 'the best in terms of depth and composition'. Even so, this first attempt failed and cost a million dollars – back then!

The details of the cable laying voyage by the *Niagara* and *Agamemnon* tells a story of mechanical difficulties, setbacks and food and fuel shortages. It must have been a difficult and frustrating voyage for those involved and a concern for investors.

Finally, an attempt succeeded. Overcoming appalling weather and technical failures when the cable snapped and had to be picked up and re-joined, the *Great Eastern* successfully laid a cable across the Atlantic.

If you enjoy a good adventure story, this book makes a great read – even better, it's a true story. This revised and updated special RSGB edition has some excellent illustrations in the centre from newspaper illustrations to very early photographs from the Cable & Wireless Archives. The *Great Eastern* was a huge vessel and the cable laying machinery fascinating, especially as these photographs were taken in 1865.

ISBN 978-0-7524-3903-7
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Data

WSJT updated with JT65xB and new ISCAT modes, plus some reader feedback

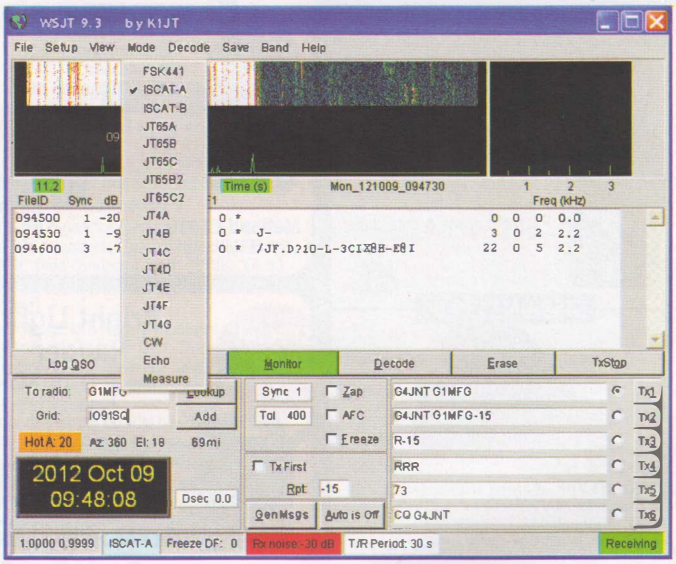

FIGURE 1: *WSJT* version 9.3 includes new modes.

WSJT UPDATE. Two new modes have been added to the *WSJT* weak signal software in version 9.3. JT65B2 and JT65C2 use the same tone spacing as JT65B and JT65C respectively, but are keyed at twice the rate, with the T/R sequences of 30 seconds rather than one minute. Sensitivity of the fast modes is 3dB worse than the standard modes. The B2 and C2 modes allow EME contest QSOs to be made at twice the rate, typically up to about 20 QSOs per hour. In addition to JT65B2 and JT65C2, users of *WSJT* 9.3 will find new entries ISCAT-A and ISCAT-B on the Mode menu. ISCAT-B is the original ISCAT mode with a total bandwidth of 1809Hz. ISCAT-A runs at half the rate, uses half the bandwidth and (for average decodes on steady signals) is about 1dB more sensitive. It has been found very effective for making aircraft scatter QSOs at 10GHz. ISCAT-B probably remains the best mode for 50MHz, but as always, experimentation is encouraged!

FEEDBACK. After my request in the previous column, so many of you have sent in your experiences I can't include everyone this time! I'll include more next time, but meanwhile here goes...

Clive Kidd, G3YTQ, writes, "I recently got a new computer and installed *Windows 7 Home 32 Bit*. I went on and installed the amateur radio programs I normally run - SDR drivers and display, *MultiPSK* and *WSPR*.

"*WSPR* did not run properly. To sync the *WSPR* / PC clock I use *GPS clock*, a free program downloaded some while ago that I drive from an old GPS handheld and an externally mounted GPS antenna that provides a really good signal. I could not get the software to run from a USB to RS232 interface so I installed a header onto the COM connector on the motherboard. The *GPS clock* software now showed time, number of satellites etc. on its display but refused to synchronise the PC clock. Of course, this meant that I could not decode the *WSPR* signals, although I could see them on the waterfall display – most frustrating.

"There was a 6 second difference between the PC clock and *GPS clock*. Whilst looking at the PC clock window I saw an Advanced Settings button. I clicked on this and found that the default is set to synchronise to a choice of web based clocks. I unticked this box, switched the GPS off and on and the PC now synchronises properly to GPS time, with *WSPR* displaying the list of stations as expected. Yes, I know I could have connected the PC to the internet, but I don't want to do that."

Alister, G3ZBU, sent this in: "The RSARS magazine, *Mercury*, had an article on JT65 by MOOIC so I thought I would try it. It seemed to take about 20 seconds for the 48 seconds worth of data to be decoded and displayed. This meant that it was very hard to reply to CQ calls because there was only 15 seconds to decode the current buffer and set up a reply. Messages are always sent within about one second of the start of each UTC minute. I have found that one can be several seconds out and the system still works. This 20 second decode period depends on how many signals are in the receiver audio passband. My PC was an AMD 2800+, which I thought was reasonably fast.

"Next step: I used a laptop (dual-core Pentium, Fujitsu Siemens Amilo) and found the data would be decoded and displayed in maybe five seconds! Now this is much more like it. So I tape recorded about 20 minutes worth of JT65 off air for subsequent playing into a variety of computers. The winner was an ancient HP laptop running Puppy Linux. That took about a second to decode and display. So I guess that the answer is that the JT65 decoder uses MMD instructions, and maybe the AMD processors do not have MMD but some kind of software emulation?

"I was given a Raspberry Pi as a birthday present, but it did not burst into life as expected. The problem was caused by a 3m long 99p HDMI cable. It would only give a display on my HP monitor in low resolution modes. The 640x480 display was of very poor quality with fuzzy blurred characters. I borrowed a fatter, shorter HDMI cable and was finally able to get a very nice, high quality display at 1600x1080p. The trouble is that if the display goes blank, one cannot use the R-Pi to edit the config file, so I had to take out the SD card and put it in the SD card slot of my Puppy Linux laptop for editing. A cheap USB sound adaptor gets audio in and out of the R-Pi and, ultimately, I will use it for RTTY/PSK/JT65. But so far I haven't had the chance to plug it in."

And, finally, from John, G4KZV: "Retirement activities don't always give as much time as I'd like for operating. I mainly take part in UKAC, on 2m and 70cm from home and on 23 and 13cm from the local club. HF tends to be low power digital. When I'm doing other things I often put *WSPR* on and leave it running on an old laptop that struggles a bit. On the radio side I use a G3LIV interface to an FT-817 running at 1W.

"As I write, the 20m propagation is all within northern Europe, Scandinavia and into Spain, but at the beginning and end of the day, as the paths open, it can be heartening and surprising to see that you've heard and been heard in the USA or Russia; as a bonus, sometimes even the Pacific basin. It's impressive how far a watt can get if you don't want a high data rate and are prepared to use some serious signal processing."

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- Aluminium for antenna building
- Insulators for antenna building
- Towers and masts
- High-end tube audio systems
- Precision component manufacture
- Antenna rotators for every antenna
- Antenna switches, manual and auto
- I.F. Filters for better selectivity
- Bandpass filters manual and auto
- Antenna stack-match switches.

Special Offers on many of our Antennas

Moxons and Super-Moxons

•Greatest gain per boom length available •Excellent front/back ratio •Models for 2,4,6 and 10M (10m shown) is only 12ft 6" across, lightweight and **only £ 149.95**

Expert 2K-FA

Nothing comes near the Expert 2K for power output, operating convenience and versatility.

* 2 Antenna inputs, 6 outputs
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* Easy remoted with PC software
* Choice of 3 antenna settings per band
* Automatic operation with all models of radio
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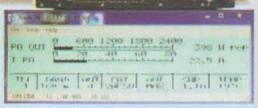

The most Powerfull Transister Amplifier in the world today - There is nothing better!!

The Expert 1K still available from Vine

Monitor all the parameters, Temps, Fans, Volts, Tuning and Power out on the PC

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Acom Amplifiers are without doubt the best-selling tube amplifiers in the world today. The top DXers choice worldwide. Mil-spec components and build quality. HF-6m to fit all budgets or the big daddy 2000A Available from Stock, You Know you want one!

IN STOCK !

ACOM 1500

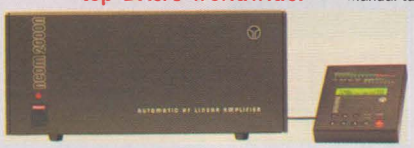
New Dot Matrix Display, Silent QSK, Tube Protection, 3 Antenna outputs, 160-6m manual Tune, 4CX1000A tube for 1500W SSB/CW and 1200W RTTY output.

£2750

Now in Stock !

ACOM2000A

" The Linear for the top DXers worldwide."



160-10m, 2000W o/p Fully Automatic, Instantaneous, band Changing **£4995**

ACOM1000

160-6m, 1000W o/p Manual tune, **£2049**

ACOM1010

160-10m 700W o/p Manual tune, **£1649**

PLEASE NOTE our new telephone number

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Take the strain out of raising and luffing aerial masts - Fit a winch system specially prepared by Goodwinch Limited

David Bowyer, M1AEI has for some time now been preparing 12 volt winch systems for 40, 60, 80 and 100 ft Strumech Versatowers, as well as similar other models like Westower, Altron and Tennamast.

The prepared narrow drum TDS-8.5 or 12.0 waterproof winch systems come ready made up on galvanised back plates and spacers as required to ensure that the back plate does not interfere with the front tube.

The solenoids are repositioned with remote wiring to keep the weather off them (although they are sealed). The rope fixing hole on the drum is prepared to get the original mast rope through twice (although we do include the original winch wire should you wish to use it) and we also disable the freespool (the yellow knob).

Finally, we fit an Anderson quick disconnect fitting on the end of the winch supply cables and another on a battery harness with battery posts on the other end, then bench test and run.

The special prices for fellow Radio Amateur enthusiasts is **£475** plus carriage and VAT for 40 & 60ft standard Strumech Versatowers with small to medium head loads using the TDS-8.5. Alternatively, **£525** plus carriage and VAT for 60, 80 & 100ft heavy duty towers especially with heavy head loads using the TDS-12.0.

Carriage is £30 plus VAT (UK mainland excluding offshore islands and the Scottish Highlands).

We also have the ATV 4000 winch system (see inset picture above) for the smaller tower at **£220** plus **£18** carriage and VAT.

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FT-950
HF + 6m IF DSP

OUR PRICE **£1259.99**

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NEW FT-450D

This is the latest IF DSP marvel from Yaesu. HF + 6m (500/300 CW filters as standard). New design + ATU.

THE DSP ON THIS RECEIVER IS AMAZING!

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FT-897D
Includes DSP

SALE **£799.99**

+ PSU **£859.99**

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HF + 6m + 2m + 70cm.

OUR PRICE **£695.00**

+ PSU **£759.99**

FT-450

Amazing Rx front end performance. (IF DSP). HF + 6m (100W)

LAST FEW **£639.99**

or FT-450AT (+ ATU) £679.99

One customer claimed, "this is the best kept secret of the communications industry".

FT-817 ND

HF + 6m + 2m + 70cms. Incl's battery/charger + antennas. OUR PRICE **£535**

Optional case £22.00
Extra spare battery £49.99

STAR BUY - FT-817ND + extra battery + case £589.00

FT-2000
(100W HF + 6m).

£2199.99

FT-2000 PLUS SP-2000 ..... £2339.00

FT-2000D

FT-2000D 200W **£2799.99**

MD-100A8 + FT-2000D £2860.00
FT-2000D + SP-2000 ..... £2899.00

ATAS-120A
Military spec mobile antenna – superbly made. Covers HF + 6m + 2m + 70cm. *Fully automatic. (*certain Yaesu radios).

SALE PRICE **£289.99**

ICOM IC-7600

HF + 6m in stock.

OUR PRICE **£2999.99**

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IC-7200 (HF + 6m)	£825.00
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TS-590S

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Superb DSP Rx **£1265**

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TS-480HX (200W HF+6m)	£869.99
TS 2000E	£1469.00
TS-2000X	£1695.00

TEN-TEC HF

538CE **£1625.00**

538 + ATU	£1849.00
Eagle 599	£1730.00
Eagle 599 + ATU	£1835.00
Omni-VII-588	£2650.00
Omni-VII-588 + ATU	£2950.00
707 Regal desk mic	£149.99
Optional 4-pinor 8-pin lead	32.99
707 desk stand	29.99

ELECRAFT

K3/100F (built)	£1999.00
K3/100K (built)	£1899.00

KENWOOD

TS-480SAT	£765.00
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PSUs

NISSEI PS-300

Features: ★ Over voltage protection ★ Short circuit current limited ★ Twin illuminated meters ★ Variable voltage (3-15V) latches 13.8V ★ Additional "push clip" DC power sockets at rear. Dim'ns: 256(W) x 135(H) x 280(D)mm. A truly professionally made unit built to outlast most PSUs.

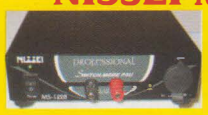
30 AMP/12 VOLT PSU

The goliath of PSUs

TRUE 'LINEAR' PSU

OUR PRICE **£199.99**

NISSEI MS-1228



28A at 13.8V yet under 2kgs. (H 57mm, W 174mm, D 200mm approx). Fully voltage protected. Cigar socket & extra sockets at front/rear. Ultra slim.

NISSEI HAVE BECOME RENOWNED FOR PUTTING QUALITY FIRST, YET MAINTAINING A GOOD PRICING STRUCTURE. A TRULY SUPERB POWER SUPPLY UNIT

'Smallest version to date' now with cigar socket.

QUALITY MADE PRODUCT **£89.99**

YAESU FP-1030

30 amp, 12 volt linear power unit. **£179.99**

DIAMOND GZV-4000

Includes built-in extention speaker

40AMP/13.8V P.S.U.

OUR PRICE **£189.99**

GZV-2500 25 amp version of above. Sale price £129.99

WATSON PSU

Power-Mite NF 22amp	£79.95
Power max (25A)	£89.95
Power max (45)	£129.99
Power max (65)	£229.99
W-5A 5A (7A max) linear	£36.99
W-10A 25A (10A linear)	£59.95
W-25AM (25A linear)	£119.99

ANTENNAS

DIAMOND CP-6

A superb (diamond quality) 6 band trap vertical antenna with trap radials – "rotary" trap system allows "flat wall" mounting. 80m/40m/20m/15m/10m/6m. 200W SSB, HT 4.6m (15ft tall).

SEND SAE FOR DATA SHEET

OUR BEST SELLING VERTICAL

SALE PRICE **£329.99**

CUSHCRAFT BARGAINS

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A4S 4 ele yagi (10 - 20m)	£649.99
R-8E 40 - 6m verticle	£499.99

Standard & Deluxe G5RV

Half size 40-10m	£32.99
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In-line choke balun for G5RV, etc.	£39.99
Replacement dipole centres	£9.99

INTRUDER II

11 band (80-10 6/2/70cm). PL-259 fitting. Collapses to 95cm (~ 3 ft).

£39.99
(2 for £70.00)

NEW INTRUDER III

12 band (80-10/6/2). PL-259 fitting. Includes WARC bands. Our best selling HF mobile.

£59.99
(2 for £89.99)

LDG PRODUCTS

YT-450 ATU for FT-450/FT-950	£225.00
AT-100 PRO II 1.8-54MHz/125W	£184.99
AT-200 PRO II 1.8-54MHz/250W/10W	£209.99
AT-1000 PRO (1.8-54MHz) 1Kw	£499.99
AT-897 plus bolt-on ATU-897	£179.95
YT-100 ATU for 857/897	£177.95
Z-817 ATU for FT-817	£119.95
Z-100 plus ATU FT-817	£134.95
Z-11 PRO II (1.8-54MHz) 125W	£159.95
FT-Meter for 897/857	£44.95
FTL-Meter Large meter/above	£79.95

VHF/UHF TX

KENWOOD TH-D72

2m/70cm + APRS. Incl's battery, charger, PC lead + wide Rx. FREE MIC

£429.99

YAESU VX-8DE

6m+ 2m + 70cm APRS.

SALE **£365.00**

Add extra batt'y £379.00

YAESU VX-8E

6m/2m/70cm. "APRS" with Rx:- 0.5-1GHz. Incl's battery & chgr.

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ALINCO G-7E

2m/70cm/23cm + wide Rx. FREE WATERPROOF CARRY BAG

£329.99

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Micro 2/70cm + wide Rx. Incl's battery/ charger

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YAESU FT-60

2m + 70cm + wideband Rx. Includes battery/ charger. ~~£179.99~~

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2m, 70cm + APRS/TNC True dual bander

£445.00

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Wideband Rx + free GPS antenna

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10/6/2/70. Incls DTMF remote mic.

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KENWOOD TMV-71E

50W, 2m, 70cm dual Rx. Built-in "Echolink" facility & more.

£295.00

YAESU FT-7900 R/E

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Incls: Wide Rx + DTMF mic

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THE GOLIATH OF MOBILES

2m FM (75W). (Incl's free remote control DTMF mic)

£142.99

ACCS

WONDER WAND

1.8-450MHz BNC. Whip supplied. Ideal for FT-817. Optional desk stand + 5m patch £24.99

£129.99

SGC

SGC MAC-200 ..... sale	£239.99
SGC-239	£199.99
SGC-237	£309.99
SGC-230 ..... sale	£429.99
SGC-Smart lock	£69.99

MFJ-993B INTELLITUNER

Fully automatic (1.8-30MHz). 300W SSB.

Easy to use ATU.

SALE **£249.99**

MFJ-949E

£179.99

● 1.8-30MHz 300W ATU ● Large cross needle meter ● 30/300W PEP power meter ● VSWR ● 3-way antenna selector ● Internal balun + dummy load.

MFJ-259B ANALYSER

1.8-170MHz **£249.99**

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1.8-170MHz + 70cm

SALE **£325.00**

Case 259B £29.99 Dip Coils 259/269 £29.99 Case 269B £29.99

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GIZMOS

NEW SANGEAN ATS-909X

The ultimate all-mode portable shortwave + FM (76-108). Fully loaded portable with improved Rx thanks to a "dsp" tuner. Includes PSU, antenna, case, etc.

£249.99 Del £10

AOR AR-5000A + 3

Probably the best all-rounder ever made.

10kHz-3GHz (all mode) wit "plus 3" add on's. We have 2 pieces – brand new and unused. Left over from a government contract. Grab one while you can!

Boxed, new and complete **£2199**

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2m + 70cm Handie. Includes nickle metal N.M.H.I and charger.

Includes free speaker mic

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2m/5W handie. Incl's battery pack, mains charger, etc.

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all include battery, charger and antenna

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(Incl's 2m/70cm handie + spare batt's, mic, case, s/ware & more)	
KG-UV 6D radio + batt	£94.99
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USB lead + S/W	£21.00
Speaker mic	£15.99
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New UV-6D 2m/70cm £94.99

WOUXUN KG-UV920R

NEW 2m/ 70cm.

NOW IN STOCK

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YAESU G-450C

Heavy duty rotator for HF beams, etc. Supplied with circular display control box

WOW **£335.99** or £389.99 with 25m cable/plugs

G-650C extra heavy duty rotator..... £379.99 or £429.99 with cable
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GC-038 lower mast clamps..... £35.99
Rotator cable & plugs:- 40m £94.99 20m £69.99

AR303

Quality rotator for VHF/UHF. Superb for most VHF-UHF Yagis, 3-core cable required. 3-core cable £1 per mtr. GS-050 stay bearing £39.99

OUR PRICE **£99.99**

DIAMOND YAGIS

No tuning required

2m/5 element — No tuning required SD-239 feed..... £47.99
2m/10 element — No tuning required SO-239 feed..... £82.99
70cms/10 element — No tuning required SO-239 feed..... £52.99
70cms/15 element — No tuning required SO-239 feed..... £69.99
6m/2 element — No tuning required SO-239 feed..... £94.99

DIAMOND V-2000

6m + 2m + 70cm. 2 section (2.5m long) PL-259 fitting. Superb quality.

Our price **£124.99**

Q-TEK COLLINEARS (VHF/UHF)

Del £10.00

X-30 GF 144/430MHz, 3/6dB (1.1m)..... £49.99
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X-300 GF 144/430MHz, 6.5/9dB (3m)..... £89.99
X-510H GF 144/430MHz, 8.5/11dB (5.4m)..... £149.99
X-627 GF 50/144/430MHz..... £99.99

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MX-2000 50/144/430MHz Triplexer..... £84.99
TSA-6011 144/430/1200MHz Triplexer..... £84.99
MX-72 144/430MHz..... £39.99
MX-72 "N" 144/430..... £42.99
MX-62M (1.8-56MHz + 76-470MHz)..... £79.99
MX-610 1.8-30MHz + 49-470MHz (S-239 conn's)..... £99.99

MOBILE ANTENNAS

Del £10.00

DB-7900 2m/70cm (5.5/7.2dB) 1.6m (PL-259)..... £44.99
DB-770M 2m/70cm (3.5/5.5dB) 1m (PL-259)..... £24.99
Diamond CR-8900 10/6/2m/70cm (1.26m)..... £99.99
Diamond AZ-506 2m/70cm – only 0.67m long..... £39.99
PL-62M 6m/2m (1.4m) PL-259..... £23.99
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RH-999 (new)
Tx: 50/144/430/1200MHz. BNC (plus SMA adapter). 51cm long. Rx: 40-1200MHz.
NEW **£89.99** post £5

RH-770H (BNC)
2m/70cm Tx + wide Rx. High gain up to 5.5dB.
£59.99
P&P £5.00

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HF-9V (as HF-6V + 17/12 & 6m)..... £425.00

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220811 11ele 2m..... £109.99
220817 17 ele 2m..... £139.95
220818 9ele 2m XD..... £129.95
220921 21ele 70cm..... £109.00
220089 9ele 2m (portable)..... £86.99

DOUBLE THICK FERRITE RINGS

A superb quaility ferrite ring with incredible properties. Ideal for "R.F.I". Width 12mm/ OD35mm. 6 for £16.99 P&P £5.00
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Hard drawn (50m roll)..... £29.99 P&P £7.50
Enamelled copper wire (50m x 16 guage)..... £24.99 P&P £7.50
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Flexweave (PVC coated 18m)..... £24.99 P&P £7.50
Flexweave (PVC coated 50m)..... £59.99 P&P £7.50
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2 inch to 1½" or 1¼" pole convertor (specify)..... £26.99
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6" stand off brackets (no U-bolts)..... £8.99
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12" T & K brackets (pair)..... £24.99
18" T & K brackets (pair)..... £28.99
24" T & K brackets (pair)..... £32.99
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U-bolts (1.5" or 2") each..... £2.00
8mm screw bolt wall fixings..... £1.70
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2" extra long U-bolt/clamp..... £7.49
2" crossover plate with U-bolts..... £18.99
15" long (2") sleeve joiner (1.5" also available)..... £19.99
3-way guy ring..... £9.99
4-way guy ring..... £12.99
Heavy duty guy kit (wire clamp, etc.)..... £49.99
Set of 3 heavy duty fixing spikes (~0.7m long)..... £29.99
30m pack (4.4m) 480kg B/F nylon guy..... £15.00
Roll of self-amalgamating tape 25mm x 10mtr..... £8.99

All our brackets are of high quality, British made and galvanised.

HEAVY DUTY 30ft SWAGED MAST SET

5 sections, 2 inch x 6 foot long. Very heavy duty.
★ STAR BUY ★ **£84.99 PER SET** (delivery £15)
TWO SETS FOR £120.00 while stocks last (delivery £18)

NEW SWAGED MAST SETS

24 foot mast. 1½" – 4 sections (6ft long). **£49.99** OR 2 SETS £84.99
SALE:- 3 SETS £99.99

24 foot mast. 1¼" – 4 sections (6ft long). **£46.99** OR 2 SETS £78.99
SALE:- 3 SETS £95.00

H/DUTY CAR BOOT MAST SET

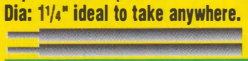
15 foot (5 x 3ft sections) slot together. 2 inch O/D 15ft
£44.99

18 foot (6 x 3ft sections) slot together. 1.5 inch O/D 18ft
£42.99

ANY TWO SETS £70.00

NEW CAR BOOT MAST SET

Superb 18 foot (6 x 3 foot sections) that slot together. Dia: 1¼" ideal to take anywhere. **£39.99**



2 for £74.99 3 sets £89.99

HEAVY DUTY 24ft SWAGED MAST SET

New extra heavy duty 2" mast set. 4 sections x 6 foot that slot together. **£79.99 PER SET**
TWO SETS FOR £140.00 SALE: THREE SETS FOR £159.99

10m PNEUMATIC MAST

10m MAST, ONLY
£1199.99 Del £40

NEW NOISE FILTER!

A superb TDK 'snap fix' ferrite clamp for use in Radio/TV/ Mains/PC/Phone etc. *Simply close shut over cables and notice the difference!* Will fit cables up to 13mm diameter. Ideal on power supply leads/mic leads/audio leads/phone leads.

2 for £16.99 / 5 for £36.99 (P&P £5.00)

6mm SNAP FERRITES NOW IN STOCK. 2 for £14.99, 5 for £30. P&P £5.00

MAST HEAD PULLEY

A simple to fit but very handy mast pulley with rope guides to avoid tangling. (Fits up to 2" mast) **£14.99** + P&P £5.00
30m pack (4.4mm) nylon guy rope £15.00
Special: 3 Pulley's £37.50 post £6.00

NEW EASY FIT WALL PULLEY

Pulley will hang freely and take most rope up to 6mm. (Wall bracket not supplied).
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Wall bracket, screws not supplied. Simply screw to outside wall and hang pulley on WALL BRACKET £2.99 P&P £1.00
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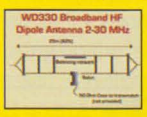

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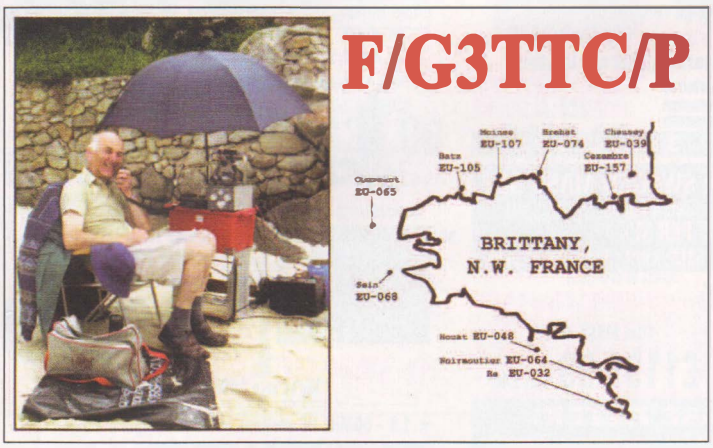
One man's activation of 10 French IOTAs



QSL card showing operation from Ile de Batz, EU-105.

SUMMER HOLIDAY. For many years I have had a desire to activate Chausey Island (EU-039), 25 miles SSE of Jersey in the Channel Isles. So, when I was deciding where this summer's motorhome holiday should take me, I opted for a month in Brittany followed by a few days on Chausey. My plan was to attempt to visit all the IOTA references around Brittany: EU-157, EU-074, EU-107, EU-105, EU-065, EU-068, EU-094, EU-048 and EU-039. Unfortunately, due to bad weather, EU-094 defeated me despite two attempts. Two other non-IOTA islands were also visited.

As I had a little time to spare at the end, I was able to continue southwards to EU-064 and EU-032. Heading back northwards towards Chausey island for my pre-booked period there, I revisited EU-107 as it is relatively rare and generated a huge pileup on my first brief visit.

Generally, most islands have a regular ferry service and by taking a morning ferry out and an afternoon ferry back I was able to get in about 3 hours of operating. All the trips took place between 26 May and 22 June.

MY STATION. Equipment used on day trips comprised an FT-857, under-run at 80W to conserve battery power, an SWR bridge, a KW E-Zee match, a 10m length of thin coax and a Pro-Whip 10m high vertical with counterpoise. In reserve, I took some coax cables and a small toolkit. The power source was an 85Ah car battery. I also took an umbrella to keep off sun or rain, large plastic sheets to cover the equipment in an emergency, licence documents, plus a phone etc.

I used a folding trolley (sack-barrow type) bought from a well known electronics chain to transport everything, as I was mostly travelling as a foot passenger. Parking a motorhome can be tricky in many of the towns and I often had a long walk from the parked vehicle to the embarkation point.

Thanks to the internet, I was able to get timetables for most of the ferries in advance. I also looked at the terrain adjacent to the island disembarkation point, looking for a beach where it would be easy to 'plant' the spike supporting the vertical antenna – and also reducing the distance travelled once disembarked. A beach would also be good from a propagation point of view. My homework told me that ferries to EU-157 were normally weekends only, so it made sense to go to the north coast of Brittany first, then visit the other islands anticlockwise.

CEZEMBRE, EU-157. A weekends-only ferry links Cezembre with Dinard and St Malo. The ferry terminal in Dinard is not easy to locate and close parking is not possible. However, I found on-street parking ten minutes' walk away and worked out the best route to take the trolley. I noted how quiet the area seemed at 1600 on a Friday. Next morning, what a contrast! I had planned to catch the ferry at 1230 but at 1000 the roads were jammed with cars and campervans, all looking for non-existent parking places. I had no option but to park further away, where I found satisfactory on-street parking. I started to wheel my trolley towards the ferry but I soon found that the 80kg-rated trolley could not cope with my 30kg load. My whole plan was in jeopardy before it had even started. Anyway, I struggled on and caught the ferry to Cezembre. What a gorgeous sandy beach on a glorious sunny day!

Most of the island is out of bounds due to WWII mines, but I was able to set up my station close to the ferry ramp and after 30 minutes I was on the air. I operated for much of the time under the shade of my umbrella. After 100-plus QSOs, virtually all on 14MHz, I had to derig and catch the return ferry.

Struggling back to my motorhome from the ferry I contemplated the equipment shortcomings. The trolley would probably not survive even one more trip in its present state. Something had to be done! The problem was the wheels turning inwards, so I figured that if I jammed a piece of timber between them, that should solve the problem. Picking up a scrap piece of timber nearby, I modified it to do the job and, hey presto, the trolley lasted the remainder of the holiday.

BREHAT, EU-074. Late the following day I arrived at Pointe de l'Arcouest to recce the following day's trip to Brehat. This coastline has one of Europe's highest tidal ranges and Brehat has three landing stages, depending on the state of the tide. I arrived at high tide and finding a place on a nearby beach for my antenna spike took a few minutes as the sand is deceptive and there are stones just under the surface. After setting up I was soon up and running. When the time came to pack up, with over a hundred QSOs in the log, I had a fifteen minute walk along a concrete causeway to the low tide landing stage. My trolley modification seemed to have done the trick.

LES SEPT ILES, EU-107. The following day I moved on and, after some sightseeing, arrived at Trestraou, near Perros Guirec to recce the following day's trip to Les Sept Iles. I knew that if I could pull off this visit it would make a lot of people happy as this is the rarest of all the Brittany IOTAs, possibly because it is a nature reserve and home to many species of bird. I already knew from the internet that two types of cruise were available. One of them allowed just forty minutes landing time on one of the islands in the group. Clearly forty minutes was much too short for an activation, as I needed a minimum of two hours to give time to set up, operate and dismantle. As there were two 'landing' trips a day, one in the morning and one in the afternoon, I asked if I could go in the morning and return in the afternoon. "Non" was the reply. "What is the problem?", I asked. "You have to leave the island on the same sailing as you arrive." The reason anyone is allowed landing at all on one island (Ile Aux Moines) is that there are hardly any birds on this particular island. Even so, there are strict rules about what you can and cannot do. Anyway, I decided that I would go on the following morning's ferry as a tourist without equipment, enjoy some birdwatching and have a good look round the one island. The ferry staff said that the bird protection organisation did not want people spending long periods there.

I thoroughly enjoyed the cruise, seeing seals and numerous breeds of bird including puffins. A morning well spent. I called at the ferry office again and, to cut a long story short, got agreement that I could go again with my equipment and stay there alone between ferries. Success!

That afternoon I called at Ile Grande, further west along the coast. It's a non-IOTA island linked by a causeway to the mainland.

I operated in my motorhome near a beach for a couple of hours.

The following day dawned and, after leaving my emergency contact details with the office, I caught the morning ferry back to Ile Aux Moines. Fortunately the weather was good and it didn't take long for a pileup to appear. I operated from the rocky beach adjacent to the top of the ferry ramp with the antenna spike wedged between some of the rocks nearby. Two hundred QSOs later I left with a smile on my face. I must say all the ferry staff were very helpful and interested in what I was doing.

Heading west, I approached Ile Callot, a non-IOTA island with a submersible road linking it to the mainland. Seeing that the tide was low, I opted to drive across and parked up on the beach adjacent to the road, facing back to the mainland so that I could watch the tide coming in and dash back at the appropriate time. I operated from the motorhome for an hour before it was time to leave.

BATZ EU-105. A few miles further west I reached Roscoff. I enjoyed a little sightseeing and did a recce of the Batz ferry. There are three departure points, depending on the tide. I was up at 0600 to be sure of getting a prime parking place but, as it was low tide, had a ten-minute walk to the embarkation point, departing at 0830 for the fifteen-minute crossing. There are two good beaches close to the ferry ramp, so it wasn't long before F/G3TTC/P was on the air again on a sunny day. I even managed QSOs with W6s, VEs and a PY, all on 14MHz.

I headed along the coast to the westernmost point of mainland France and on to Le Conquet, the departure point for ferries to Molene and, further out to sea, Ouessant. I opted for the latter.

OUESSANT, EU-065. One welcome feature of this ferry is that it uses mini containers for Ouessant baggage, so you can put your heavy items into the container on the quayside and forget about them until you have landed on the island, saving a lot of effort carrying items on and off the boat. The 0945 ferry that I caught called at Molene en route to Ouessant. As the weather was doubtful I set up my station under the canopy of the Tourist Information office, 100 yards from the pier, using a convenient wooden bollard nearby to support my antenna.

SEIN, EU-068. A couple of days later I arrived at Audierne. After an hour on a choppy sea, the 0900 ferry arrived on Ile de Sein. The sun was a welcome sight as I set up a few yards from the top of the pier in a small walled-in area just beyond a small lighthouse. Some convenient railings supported my antenna. 125 QSOs were made before conditions deteriorated. I packed up to go for a short walking tour of the island.

By now I was travelling eastward along the south coast of Brittany and the Glenan Isles, EU-094 were the next target. I had planned to visit St Nicolas by ferry from Benodet, but unfortunately gales were forecast for several days ahead and sailings were cancelled. Another problem was that ferries normally only ran in the afternoon, allowing a short stay on the island, with an additional morning sailing perhaps only once or twice a week. I decided to continue my journey in the hope that I might be able to call back in a few days.

Continuing east to Quiberon, I was forced to use the Park and Ride as there is time-limited parking around the ferry terminal. I could have opted to visit any number of islands in EU-048, but I settled for Houat, a 45 minute ride away. As the ferry approached the island I couldn't see any convenient beach, so I settled for the pier itself. Only a few yards from where the ferry tied up where I spotted some ladder rungs cast into the concrete wall alongside the pier, so I tied the antenna to these. The weather held until I had 140 QSOs in the log, when the drizzle started and I packed away, a few minutes earlier than planned.

Under the original plan, Houat was to be the last island before heading back northwards towards Chausey, EU-039. I did, however, want to look round the town of Vannes and the Gulf of Morbihan. This I did, then retraced my steps to make a second attempt at the Glenan Islands. Unfortunately, although the ferries had started running again following the gales, the weather was still very wet and not conducive to enjoyable outdoor operating. So I gave up on the Glenans altogether and headed further east, then south, still following the coast.

NOIRMOUTIER, EU-064. This was an addition to the original plan. I had participated in the IOTA contest from there ten or more years ago. Taking the motorhome over the toll-free bridge I had the luxury of operating in comfort on 7MHz in the evening and 14MHz the following morning. As the tide was low I returned to the mainland by way of the submersible causeway, which was quite an experience. A lot of the local people stop there to gather seafood. Still with time in hand I continued south, with 150 QSOs in the log.

ILE DE RE, EU-032. This is another island linked to the mainland by a bridge, but there is an 8 Euro toll, return. Trying to find parking near the sea with a decent view was tricky, until I found a large layby with views over some lakes. I managed 120 QSOs on 7 and 14MHz.

REPEAT VISIT. Ever since activating the rare Ile Aux Moines EU-107 a couple of weeks earlier, I had wondered about doing a repeat activation if time allowed. The first time round pileups had built up rapidly and numerous people had said how pleased they were to get a 'new one'. Indeed, I had never worked EU-107 from home. Fortunately time did allow me to return there en route to my final destination of Chausey Island. I drove for most of the day from Ile de Re north to near Perros-Guirrec, for an attempt the following day. The day dawned but it was overcast. I bit the bullet as it was today or not at all, as I had to get to the Chausey ferry port of Granville the following day. Arriving on the island again, with me already dressed in waterproofs, the sky looked dark so I set up in a more compact fashion with a large plastic sheet at the ready in case of rain. Instead of leaving the battery on the concrete ramp and putting the equipment a few feet away on a convenient rock, I left everything on the edge of the ramp while I stood on the rocky beach alongside. A few minutes after getting on the air the expected pileup arrived and so did the rain. I quickly pulled the sheet over the equipment, put up the golfing umbrella to shield my back, and operated beneath. In mediocre conditions, I had probably made another 180 people very happy. Fortunately I only suffered damp feet; the rain stopped just as it was time to derig and board the return ferry.

So I was off to Granville in Normandy, eastwards along the coast ready to catch the following day's ferry for the final activation.

CHAUSEY ISLAND, EU-039. First, some geography. The Chausey Island archipelago, about 25 miles SSE of Jersey, comprises 365 islands at low tide and 52 islands at high tide. The huge tidal range of about 14m is one of the largest in the world. Only Grande Ile is inhabited, with a permanent population of about 30, though 200,000 people visit annually. At high tide, Grande Ile measures 1 mile by 0.3 mile at its widest with an area of 45 hectares. I stayed at La Ferme, which has 20 gîtes available to rent for a week or weekend. Apart from a small number of tractors, there are no motorised vehicles.

I arrived mid-morning after an hour-long ferry ride from Granville and, by mid-day I was installed in my gîte. After consulting the landlord, I erected the Pro-Whip 10m vertical and was soon on the air. The weather was excellent, band conditions were fair and I was up and running. As a precaution I took a G5RV antenna, extra lengths of UR67 and a borrowed FT-897 as spares. Thankfully they weren't needed.

Weather conditions were very good for the first four days, which meant I could explore the island daily on foot when band conditions failed. Later in the week the weather deteriorated, but by using 7 and 14MHz I was able to operate for several hours a day. Conditions generally were below average, and there were times when no amount of CQing would produce calls. The total number of QSOs from Chausey was 569, bringing the total for the whole trip to 1920.

This brings my all-time count of islands activated to 63, in 39 IOTA references.

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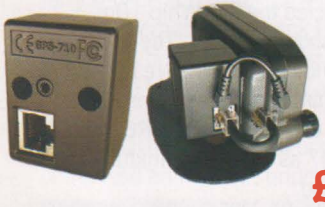

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Sport Radio

New trophies, a new forum, changes to the HF Championship and how Norfolk ARC won the 80m Club Championships

PHOTO 1: Some of the Norfolk ARC contesting team, who took top honours in the 80m Club Championships 2012.

NEW TROPHIES. To compliment the trophies already presented by the Contest Committee, a couple of new ones were introduced this year.

First, the Low Power Contest. Hitherto there were three trophies awarded in an event that has four sections. Curiously there was no trophy for the 3 watt Fixed section, but the HFCC Trophy plugs that gap.

The 70MHz CW Contest that was introduced in 2010 now has some silverware that is awarded to the highest-scoring station, regardless of section. It's the Bill Capstick, G3JYP, Memorial Trophy.

NEW ONLINE FORUM. I received a note from Paul Marchant, MOWAF to say, "I host a forum for contesters that prior to contests allows them to announce that they will to be on the air during said contest, eg a UKAC. I know we have KST and such other sites, but nothing to pre warn people that you will be there on the day.

"So far it is aimed at VHF as I am a VHF contester with the Five Bells Contest Group, but with popularity it could be opened up to include the HF bands later on.

"It is slowly gaining interest from people and can only get better with more publicity.

"The reason for setting it up is that I often heard people saying things like 'No one on from GI or GM' or, like I have just recently heard, 'Why are there no stations from GB beaming towards OZ?' Also, once a contest is complete, we can then offer comments, photos and publish our QSO maps which we get sent when logs are submitted to the robot.

"Stop by http://contestshoutout.dyndns.org, have a look and see what you think."

THE TEAM TO BEAT. Last December in this column I included an item about the 80m Club Championships. In it I wrote these words; "Norfolk is my 'team to watch' for 2012, because they have been moving steadily up the Club Champs results tables over the years". How prophetic they turned out to be, because Norfolk have now transformed themselves from the being the team to watch into the team to beat, by winning the 2012 80m Club Championship. What's more, they have done this from within the Local Club category, which restricts teams to members who operate within 35km of the club meeting place.

I was keen to find out how they did this, so asked Malcolm Prestwood, G3PDH to put me in the picture. He replied; "Whilst Norfolk Amateur Radio Club (NARC) had been taking part in the usual RSGB contests for many years it was the introduction of the 80m Club Championships that inspired a major push. Since the inception of these NARC had finished in a variety of positions, homing in on the top five by 2008. This had been achieved through dedicated training and encouraging more club members into contesting, but further recruitment and training was needed on even newer licensees to reach the number one spot.

"As a club already having an emphasis on training and personal development, there was a steady stream of newcomers and candidates moving up the licensing chain. All that was needed was to convince them to try contesting. To do this we formed a Contest Sub Group within the club and conducted specific contest-related talks, as well as holding dedicated workshops to explain the techniques and how to set up a station for contest operation. The newcomers soon found that this held other benefits, such as improvements to their on-air confidence, operating skills and a desire to experiment and improve their antenna systems. Additionally they also found that they actually enjoyed it!

"To support these efforts special attention was given to advice about selection of optimum antennae for small gardens, which seems to be the norm now, involving experimentation with various options and modelling software.

"Local Morse training was established (see **Photo 2**) three times per week under the RSGB GB2CW scheme to improve the skills of those new to CW, or those who have allowed it to lapse over time. For those with no CW capability, assistance was provided to use a CW reader program, along with advice about how best to use it in the heat of a contest.

"A Contest Net was also established on 2m, to assist with technical matters on interfacing and general setting-up of computers, and software and to carry out cross band on-air tests. Without this many would have given up on datamodes through sheer frustration. Even with it, it sometimes took a concerted effort for some to finally make data contacts.

"A club contest reflector was also established to disseminate information and advice, as well as timely reminders about contest dates.

"The net result of this concentrated effort was a following of some 30+ local members out of our 150 membership, enabling us to submit 20 or more logs in most of the Club Championship sessions.

"Whilst many of the newcomers only initially achieved low scores they are improving, and in a series where every log and every QSO counts, their scores cumulatively created a winning total and they are keen to achieve a personal best.

"One of the main elements throughout has been the strong team effort, and after seeing the club in a leading position from the beginning there was a strong desire to maintain the momentum.

"With a job well done in 2012 the debate is now about strategy for 2013... once we see what the rules will bring."

PROPOSED CHANGE. The UK Activity Contest series of contests has been a great success and the M5 multiplier system has played a significant part in that success, by encouraging entrants to hunt for stations in all corners of the UK. As part of the continuing evolution of the event the contest committee is *proposing* a small change to the multiplier system used in all UKACs for 2013. To encourage more participation from Ireland and the continent, but without returning to giving a multiplier for every Locator square, the proposal is to replace the M5 multiplier with a new multiplier (M6). This would be the sum of the UK squares (as now), *plus* the number of non-UK countries worked.

Comments on this proposal are welcomed and should be e-mailed to vhf.query@rsgbcc.org.

RSGB HF EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange
Nov 10	Club Calls §	2000-2300	SSB	1.8	RS + SN + Club code
Nov 14	80m Club Sprint	2000-2100	SSB	3.5	SN + name
Nov 17-18	2nd 1.8MHz *	2100-0100	CW	1.8	RST + SN + District code
Nov 29	80m Club Sprint	2000-2100	CW	3.5	SN + name

RSGB VHF EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange
Nov 3-4	Marconi CW	1400-1400	CW	144	RST + SN + Locator
Nov 6	144MHz UKAC	2000-2230	All	144	RS(T) + SN + Locator
Nov 13	432MHz UKAC	2000-2230	All	432	RS(T) + SN + Locator
Nov 20	1.3GHz UKAC	2000-2230	All	1.3G	RS(T) + SN + Locator
Nov 27	50MHz UKAC	2000-2230	All	50	RS(T) + SN + Locator
Nov 27	SHF UKAC	2000-2230	All	2.3-10G	RS(T) + SN + Locator

BEST OF THE REST EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange/info
Nov 10-11	WAE DX RTTY	0000-2359	RTTY	3.5-28	RST + SN
Nov 24-25	CQWW DX CW	0000-2359	CW	1.8-28	RST + CQ Zone (UK=14)
Non 25	UKuG Low Band	1000-1400	All	1.3-3.4G	RS(T) + SN + Locator

Italics indicate that only provisional information was available.
*HF Championship event. § Super League event.
For all the latest RSGB contest information and results, visit www.rsgbcc.org

HF CHAMPIONSHIP. Two years ago BARTG RTTY events and the EU Sprint contests started to be included in the HF Championship, to add a different dimension to it. However, this has not been without problems. In particular, the organisation that runs the EU Sprints has not been able to produce any recent results, so only those from the spring 2011 Sprints have been included in the 2011 HF Championship. It looks as though the results from the autumn 2011 Sprints are unlikely ever to be produced.

In the current Championship points are awarded for various sections in the qualifying contests, with the best six positions counting towards the result. Given that the maximum score is 600, both of those in the top two positions in the 2011 Table achieved over 500, which is extremely good. The winner is G4FNL, who receives the G2QT Trophy, with G4RCG being awarded a certificate of merit. All those in the top twenty should be congratulated for their efforts and persistence in RSGB contests.

The Contest Committee considers that the experiment with incorporating external contests has been worthwhile but hasn't contributed a significant element to the Championship, so next year it will return to a format in which a smaller number of RSGB contests only will be included. These will be the two 1.8MHz Contests, the Commonwealth Contest, the two RoPoCo contests and the 21/28MHz Contest. All scores will contribute to the final results, which will return to the system whereby entrants will be awarded points according to their score expressed as a percentage of that achieved by the UK winner. The IOTA Contest is not being included, because so many entrants take part as members of multi-operator teams, and the committee does not wish to discourage this aspect of our flagship international contest.

An innovation for 2013 is that a running total will be shown after each qualifying contest, so entrants can check where they stand in the Table at any time. This should add to the competitive element and might improve the situation where contenders for the Championship do not realise that they could be in a winning position until all the contests are over.

THIS MONTH'S EVENTS. The action begins on the evening of Saturday 10th, with Club Calls Contest. Participation in this popular 160m SSB event hit a new high last year, almost certainly because it is now part of the Super League series. If you are intending to take part and represent a club, please be aware that these days there is a four letter code to be sent, rather than a full club name. The change was introduced because incorrect variations of club names were being given by some entrants. A list of the codes can be found via the CC web page where the rules are. If you are a member of a newly affiliated society that has not yet been allocated a code, please request one in good time for the published list to be updated before the contest. Then it's on to the 80m Club Sprints, with SSB on Wednesday 14th. This is the final month of the series. On the evening of Saturday 17th the Second 1.8MHz Contest is a CW-only event. With sections for UK and non-UK entrants, please be aware that other European CW contests coincide and they don't all use the same exchange details. Last but by no means least, the CW leg of the 80m Club Sprints takes place on Thursday 29th.

The Marconi CW Contest is the first VHF event of the month. There are 6- and 24-hour sections for Open and Single-op Fixed entries.

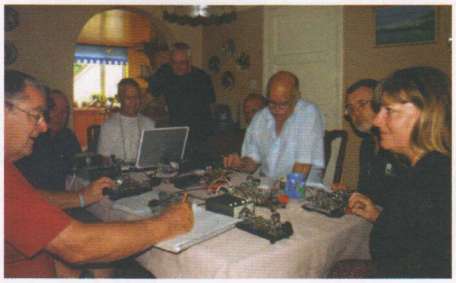

PHOTO 2: Members of Norfolk ARC taking part in a Morse training exercise.

After that it's a straight run of UKACs, with 2m on the 6th, 70cm on the 13th, 23cm on the 20th, and 6m and SHF on the 27th.

For the whole 48 hours of the weekend of 10-11th the WAE DX RTTY Contest should keep the RTTY parts of the HF bands buzzing. Unlike the CW and SSB legs of the contest (held in August and September respectively), everybody can work everybody on RTTY. In WAE events QTCs (reports of previously conducted contest QSOs) can add significantly to your total score, so it's well worth investigating in advance of the event how they work. The penultimate event of the month will be the busiest – CQWW DX CW. It takes place for the full 48 hours of the weekend of 24-25th and invariably keeps the CW portions of the HF bands really busy – especially any frequency where a DXpedition to a rarely activated country operates. Notwithstanding solar outbursts, I expect conditions on the upper HF bands to be very good this year, so QSO totals for the leading stations should be high. The final event is the UK Microwave Group's 'Low Band' Contest, which takes place on Sunday 25th. Because of the limited hours of daylight at the end of November, please note that this session is two hours shorter than the other three in the series.

ARDF

Gold in Serbia

YOUR RSGB
ARDF: DEDICATED TO DF HUNTING

Bob, G3ORY sings the national anthem from the podium after his win in M70.

GOLD MEDAL. *God Save the Queen* was heard for the first time at a World ARDF Championships following the victory of Bob Titterington, G3ORY in the 80m classic race. This was the very first podium finish for the RSGB since the sport of IARU format Amateur Radio Direction Finding started in the UK back in 2002. In just ten years, ARDF has developed to a level where Great Britain is now regularly represented internationally by a hard core of 9 self-financing RSGB members. This year, the team competed in the male categories (M40, M50, M60 and M70) and Jillian, M0JIN in the W50 category. To win a gold medal against countries with over 50 years of experience in the sport – many helped by some state funding in the Soviet era – was a considerable achievement.

ALPINE RUNNING. The World Championships were again held in the Balkans, this time in the mountain ski resort of Kopaonik on the Serb side of the border with Kosovo. The terrain was a typical alpine spruce forest, with boulders and numerous streams cutting into the mountainsides, forming marshy valleys, big re-entrants and huge spurs. Runners had to contend with the physical challenge of this terrain with the additional impediment of clusters of fallen trees that often blocked the few paths. All this was at an altitude of 6,500 feet, which made a significant difference to the older competitors. The challenge in this environment was the strong multi-path propagation at VHF, produced by transmitters placed on the tops of the spurs or at the top of a big re-entrant. This made it very difficult to get accurate bearings. Without a large slice of luck, it was possible to spend an extra 30 minutes running up and down the same hill seeking the same transmitter. Luck was in short supply for Great Britain, as very few team members managed to find all of the transmitters and return inside the 2½ hour time limit of the 2m classic race.

The three 80m competitions proved more successful – the classic competition especially so. This was where Bob, G3ORY managed to win his gold medal. His 'trick' was to get the sequence in which he located the transmitters to be the shortest distance possible. Most of the other top ten competitors got this wrong and paid the penalty. Once Bob was home, it took some nervous minutes until it became clear we had a new (if exhausted) world champion! 80 metres also proved more successful for the other RSGB competitors. Andrew, G4KWQ and Steve Chalk, both in the very competitive M40 (men aged 40+) category managed to complete the physically-challenging 6km course in around 60 minutes each, to put the British team in a worthy fifth place, just 3 seconds behind the traditionally-strong Czech team.

The four days of competition included the sprint competition that was trialled at last year's Region 1 (European) Championships and, for the first time, the orienteering-style FoxOring. The sprint is a real spectator sport, where viewers could see the athletes seeking the 'foxes' across the pistes above the ski resort. The shorter course proved good to British competitors such as Vlad, 2E0VLB's commendable 11th place, since it required slick radio work with each fox transmitting for just 12 seconds at a time.

Jillian, M0JIN in full flow during the W50 race on 2m.

The FoxOring, on the other hand, was a real orienteering race where the objective was to find the centre of the circle on the map and then pick up the extremely faint 80m signal to find the SI reader (an electronic registering device) without a marker flag. This proved to be the toughest race after the 2m competition for all but the best orienteers, with the time limit of only 100 minutes punishing any orienteering mistakes. Big congratulations are therefore due to team captain David Williams, who managed to draw on his vast experience of orienteering around the world to complete the 9km course well within the time limit, to clinch 6th place in the M50 category. Robert, G3ORI also put in an impressive run to finish in 4th place in M70 and David, G6HGE showed how much progress he has made by coming in as the best of the British M40 runners in this event.

So the RSGB team can reflect with some satisfaction on four days of hard competition and the great atmosphere of having so many radio and sport minded amateurs from around the world in the same place. The team now relishes the challenge of improving the necessary technical and physical skills in time for next year's ARDF Region 1 Championships in Poland.

ARDF EVENTS

November
Saturday 17th at Hawley close to M3 J4

December
Saturday 8th at Benyons Enclosure between Basingstoke and Reading

Check the website www.rsgb.org.uk/radiosport/ardf for further details.

M40 team members Steve Chalk (left) and Andy, G4KWQ compare routes and tactics after the Sprint race.

RSGB shop

ARRL

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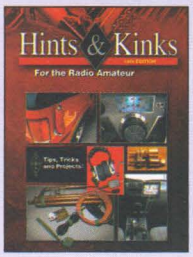

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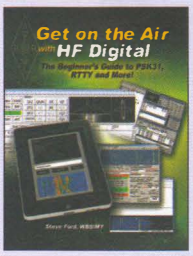

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By Steve Ford, WB8IMY

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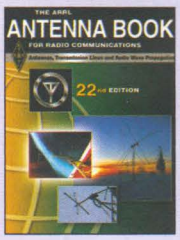
ARRL Antenna Book



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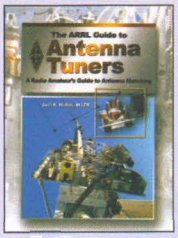

By Joel R. Hallas, W1ZR

The antenna tuner is an often misunderstood device in the amateur radio world. While not every station requires an antenna tuner to transmit radio signals, often the incompatibility between the transmitter and the antenna system results in poor performance. An antenna tuner between them is often the way to obtain efficient operation.

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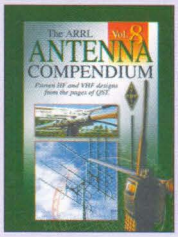

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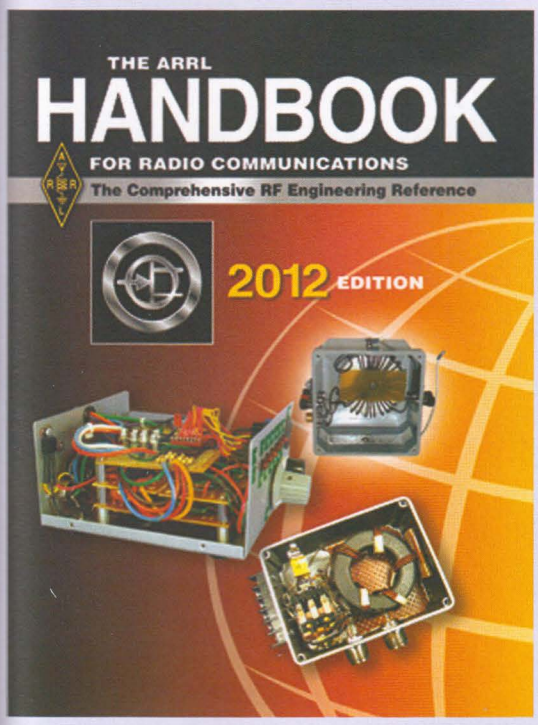

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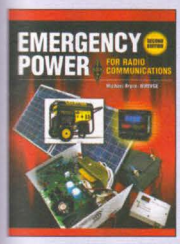

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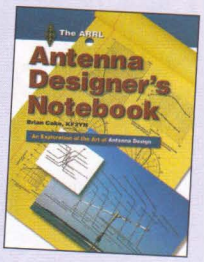

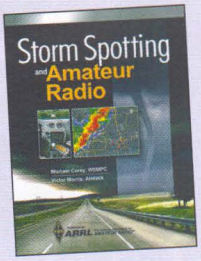

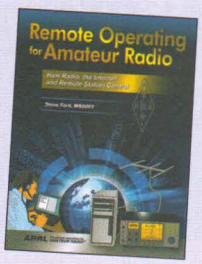

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Radio Society of Great Britain
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Please send news reports to radcom@rsgb.org.uk. To get future events listed here and put on GB2RS, e-mail details of your meetings as early as possible to GB2RS@RSGB.org.uk 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. Please note that we don't normally print 'closed', 'TBA' or 'every Tuesday' type submissions. The deadline for the December 2012 *RadCom* is 29 October and for the January edition its 26 November. For GB2RS, the deadline is 10am on the Thursday for the week of broadcast. If you need to amend your club details, please visit www.rsgb.org/clubupdates.

NATIONAL

The Civil Service Amateur Radio Society holds a weekly net, which has operated without interruption for over 30 years. They meet every Tuesday evening at 8pm local time on 3.763MHz, everybody is welcome to join in.

INTERNATIONAL

No listings received.

REGION 1: SCOTLAND SOUTH & WESTERN ISLES

REGIONAL REP: LEN PAGET, GMOONX, RM1@RSGB.ORG.UK

COCKENZIE & PORT SETON ARC
Bob, GM4UYZ, 01875 811 723, www.cpsarc.com
2 Normal club night
23 SOTA activation, Dr Colwyn Jones

LOTHIANS RS
Alan J Masson, GM3PSP,
0131 623 4580, alanjmasson@virginmedia.com
14 President's address, Andy, MM0FMF
28 Getting started on 6m, Brian, GM4DIJ

WEST OF SCOTLAND ARS
Sam, GM4BGS, 07771 554 035
2, 9, 16, 23, 30 Project work & learning
4, 11, 18, 25 Club night with talks, quiz & raffle

REGION 2: SCOTLAND NORTH & NORTHERN ISLES

REGIONAL REP: DENNY MORRISON, GM1BAN, RM2@RSGB.ORG.UK

In August, a group of **Dundee ARC** members visited the Isle of Man on a small-scale DXpedition. They used the callsign GT4AAF/P and made well over 3,000 contacts in their time on the island. The location was in a rented cottage in a valley about a mile above Laxey, on the east coast with permission to putt up antennas on the land. They used a 200-foot long wire, a ¼-wave 40m vertical to get on the air, a 3-element tri-bander beam, 3-element 6m beam, 6-element 2m beam and another ¼-wave vertical for 17m.

Unfortunately, Cycle 24 remained true to form and conditions were disappointing. In spite of this, and the fact that no amplifiers were used, there were frequent hectic phases on the bands and CW and phone pileups were not unusual. Inter-G contacts took place mainly on 40 and 80m, while 2m FM was kept busy with G and GW stations calling in. Digimodes made a fair number of contacts, but intermod problems meant the stations could not be on the air all the time. Best DX included UA0, DU and VK7, but the location had a poor take-off to the west and NW meaning only a few east coast American stations made it into the log.

One highlight of the visit was meeting up with members of the Isle of Man Amateur Radio Society, who gave the team an outstandingly warm welcome. Special thanks from the team go to the members of Dundee ARC for their support, Jaycee for sponsoring the team with equipment, the Isle of Man ARS for their hospitality and to the many hundreds of amateurs who called in.

The Dundee team members were Paul, GM0BKC, Ally, MM0DRA, Mark, 2M0LEW, Pete, GM1CMF, Colin, GM4JPZ and Malcolm, MM6PAU.

REGION 3: NORTH WEST

REGIONAL REP: KATH WILSON, M1CNY, RM3@RSGB.ORG.UK

BOLTON WIRELESS CLUB
boltonwireless@gmail.com
12 Idiot's guide to homebrew PSUs, Glenn, G6HFF
26 Amateur radio in Thailand, Chris, G4JAG

CHESTER & DRS
Bruce Sutherland, M0CVP,
01244 343 825
6 Talk on operating procedures
13 Committee meeting
20 DVD of K3 operation/ competence check
27 Operating evening - Waverton Institute

MID-CHESHIRE ARS
Peter Paul Fox, G8HAV,
01606 553 401
7 2m on the air
14 80m Club Sprint
21 Committee meeting
28 Calibration evening

MORECAMBE BAY ARS
Sheila, 07867 516 836,
sssmith456@btinternet.com
6 Film night
13 Talk on glass, Chris
20 HF and 70cm night
27 Committee meeting

SOUTH MANCHESTER R&CC
Ron, G3SVW, 01619 693 999
1 Winter BBQ
8 Antenna clinic, Ron, G3SVW
15 Home construction, Ged, G8RSI
22 Leap seconds, Ron, G3SVW
26 Monthly technical forum
29 Celestial navigation, Terry, G6CRF

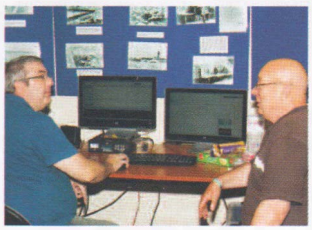
WORKINGTON & D AR&IT GROUP
Barry Easdon, G0RZI,
01946 812 092,
barrydrm31@hotmail.co.uk
5 Club meeting and OTA
19 Power supplies by Glyn, M0XUH

On 18 and 19 August, **Wirral and DARC** once again activated Leasowe Lighthouse, using GB4LL, as part of International Lighthouse & Lightship Weekend. The lighthouse is the oldest brick built lighthouse in the Great Britain at 249 years old and provided the activators an opportunity to mount antennas 34m ASL at the shoreline. It remains open to the public for guided tours and to local schools courtesy of the 'Friends of Leasowe Lighthouse'.

Station Manager (and lighthouse keeper) Geoff, G4WUA along with Neil, 2E0MTX, Simon, G6XHF and his son Daniel set up the two HF stations – one PSK (Yaesu FT-950 and Tigertronics signal link interface to a home brew flat top wire antenna fed with 450 ohm ribbon and 4:1 balun) and one phone (Kenwood TS-870S to a full size Carolina Windom antenna). A 2m rig into a Diamond X-50N vertical was also set up and Daniel worked this for the duration of the weekend. On PSK, Darren, 2E0OIG and Eddie, 2E0GLR managed to make 130 QSOs over 24 countries with the best DX being Papua New Guinea. On HF phone, 32 lighthouses were worked over 19 countries with the best DX being into the west coast of North America despite poor band conditions that only improved late on Sunday. The operators were Geoff, G4WUA, Phil, G8IIM and Rufus, M0WMD who made the best of the band conditions.

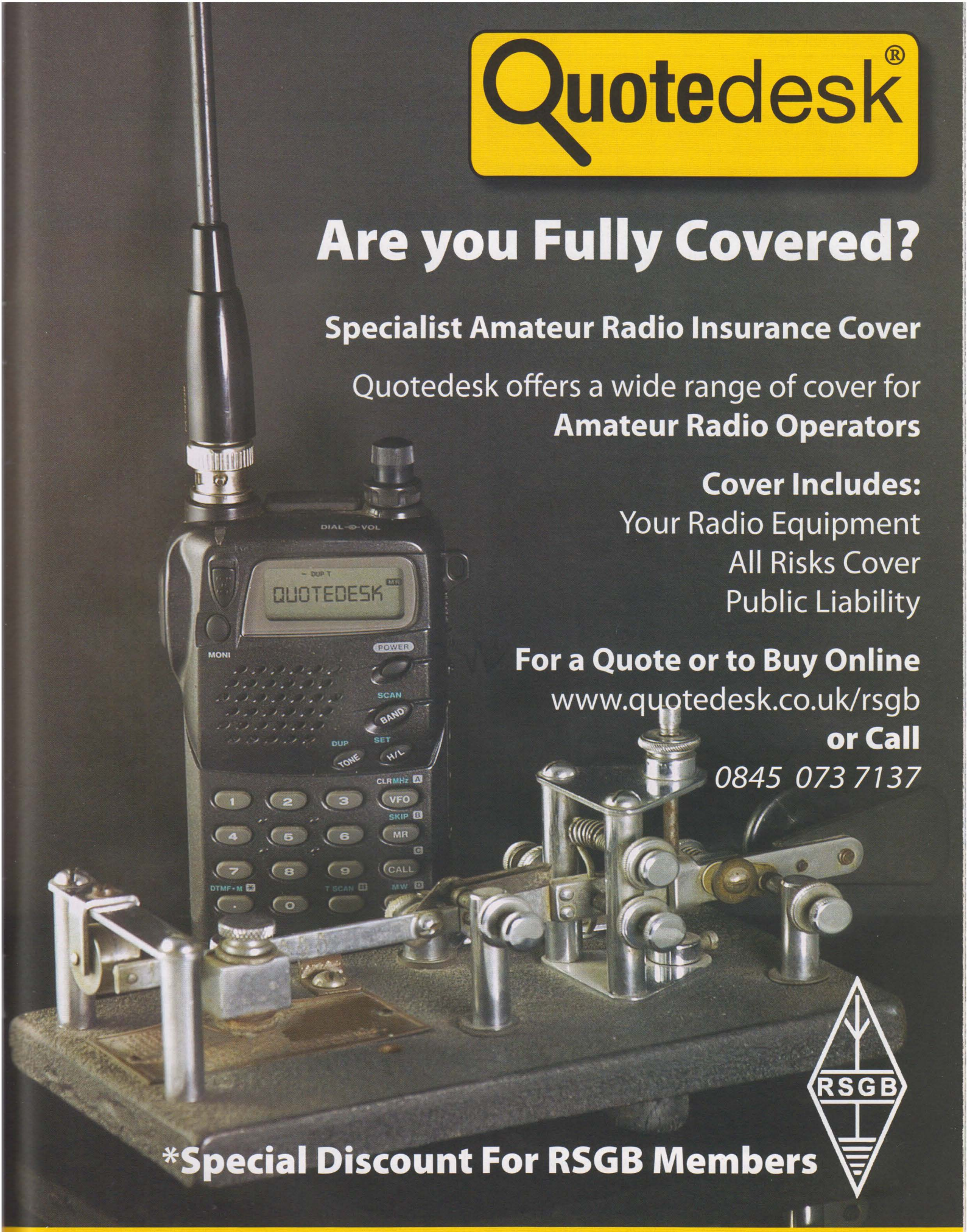
They were delighted to welcome Ko Jen Foo, 9W2KJF, who is currently studying in the UK, and show him the station, the lighthouse and for him to take part in the weekend. What better than DX in person!

The club look forward to next year's activation and hope that GB4LL will be on the air again very shortly.



Daz, 2E0OIG and Eddie, 2E0GLR, the data duo.

Earlier this year, **Workington ARC** did a special event station, GB1WSL, to commemorate the town of Maryport and the Ismay family's connection with the White Star Line, which of course owned the *RMS Titanic*. Unfortunately, due to unforseen circumstances, the QSL cards have not been forthcoming. They would like to apologise to all who contacted the station for this situation. Pleased be assured that everyone who worked the station will receive a card as soon as possible.



www.quotedesk.co.uk/rsgb - 0845 073 7137

* Proof of membership may be required.

rsgb/QD/05/12

REGION 4: NORTH EAST

REGIONAL REP: HAROLD SCRIVENS, GOUGE, RM4@RSGB.ORG.UK

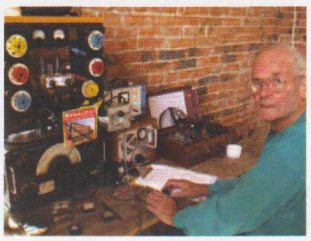
ANGEL OF THE NORTH ARC
Nancy Bone, G7UUR, 01914 770 036, nancybone2001@yahoo.co.uk
5, 26 On the air
12 Valves and how to use them effectively, David Stansfield
19 Linear amplifiers and how to use them effectively, David Stansfield

DENBY DALE RC
Richard, MORBG, 07976 220 126, m0rbg@talktalk.net
7 Open meeting to discuss 40th anniversary celebrations in 2013
14, 28 Night on the air, 145.575MHz, 1930
21 Demonstration of SDR receiver, Cross Country Wireless

HORNSEA ARC
Gordon MacNaught, G3WOV, 01377 240 573, gmacnaughtwov@yahoo.co.uk
7 Talk by G3XYF
10 Club Calls
14 80m Sprint SSB, M1MM update
17 2nd 1.8MHz competition
21 AGM
28 Committee meeting
29 80m Sprint CW

SHEFFIELD ARC
Peter Day, G3PHO, sarc@g3pho.org.uk
5 The art and heartache of DXing, Andrew, G0HSA
12 Simple fault finding, Peter, G3PHO
26 Winter junk sale

Regional Manager, Harold Scrivens, GOUGE spoke to new Member Steve Eastwood, G7POT recently. He has been away from the hobby for 10 years or more but a few months ago picked up a copy of *PW* and was instantly hooked again. Steve bought a FT-450D and an MD100A8X mic from ML&S and a cheap power supply. He signed up with the RSGB again and read *RadCom* cover to cover. Using some cheap RG58 he made a quick homebrew inverted V and coax choke on a broom stick, painted it white and stuck it on the chimney pot 7m off the ground. He couldn't hear much chatter on SSB except for a quiet voice calling 'CQ VP8LP' on 21.292MHz. He replied and was amazed to find out this station was in Port Stanley Falkland Islands over 8000 miles away. He said that it shows a cheap very basic budget set up can work great DX.



Terry Foxton, G0KOE operated an ex- Bomber Command T1154 transmitter with its associated R1155B receiver using the callsign G4KCF/P from Bennington Hall, York and worked Tony, G4XIV. The station is owned by Ken, G4KCF.

Louise Simpson, M3WSQ is 29 and has been blind since birth. She was selected to join Team GB at the London 2012 Paralympic Games. Louise, who studied and passed her Foundation exam some years ago with the **Wakefield & DRS** under the tutelage of Dr David Lockwood, G4CLI and John Carter, G7JTH. Louise was a remarkably resourceful candidate with few adaptations required to cope with Louise's disability, the exceptions being help with practicals and a reader at the exam.

London 2012 was Louise's second Paralympic Games. She regularly used to contact the club with messages to the effect that she had travelled somewhere to compete in a Goalball Tournament, or was at a pop concert "seeing" some band or other. From an amateur radio point of view, Louise was the first blind candidate that the **Wakefield & District Radio Society** had trained; on her success, she gained the callsign M3WSQ and adopted the phonetics 'Mike Three White Stick Queen' – a title to which both the author and the rest of the W&DRS believe is completely entitled! Whilst attending meetings of the Society, she also gained the honorary title of 'Tea Bucket' as she drank a remarkable number of cups of tea at each meeting. Her reputation for tea consumption became so firmly established, that when she left to pursue a job 'down south', David, G4CLI presented her with a two gallon plastic bucket printed in both text and Braille with the words 'Louise Simpson M3WSQ – Tea Bucket'!

The Officers, Committee and Members of the **Wakefield & District Radio Society** were very proud of Louise and her teammates at Team GB and hope she continues to be an inspiration to us all!

Not everyone can commit to regularly attending Foundation licence training in a classroom environment. Denise Carey, M6DMW is such a person, leading a busy life; like lots of such people she is constantly looking for new challenges. Tony, G1TKX, lead instructor at **Sheffield & Rotherham RAYNET** also likes a challenge and saw Denise as an ideal candidate for the specially designed, individual distance learning scheme that he devised. Denise's partner, a Full licence holder, was pleasantly surprised as he wasn't even aware of her studies until tuition was well under way ... the give-away was when she asked him about Ohm's Law whilst revising! Denise was delighted to pass the exam, "I couldn't hide the big smile when I showed my partner the Pass Certificate."

York Radio Club took part in the 2012 SSB Field Day using the club callsign G4YRC. They made around 350 contacts in the 24 hours.

M0KOO prepares the area for the tent.

M0EBR & M6YYK put up a 50ft pole.

REGION 5: WEST MIDLANDS

REGIONAL REP: VAUGHAN RAVENSCROFT, M0VRR, RM5@RSGB.ORG.UK

ALDRIDGE & BARR BEACON ARC
Albert, G0KFS, 01922 614 169
5 Data modes in radio
19 Planning for 2013

CENTRAL RADIO AMATEUR CIRCLE
Martin Hallard, G1TYV, radio-circle@live.co.uk
6, 13, 20, 24 Intermediate course via Skype, 1900-2100
8, 22 Night on the air, 145.375MHz, 2000
15 Circle meeting at the Turf Tavern pub
27 Plug and play, Barr Beacon, Walsall, 1000 onwards

GLOUCESTER AR&ES
Anne, 2E1GKY, 01452 548 478, daytime, www.g4aym.org.uk
5 Junk sale
10 Club Calls Contest
12 Operating VHF
19 Construction/operating HF
26 Informal meeting

MIDLAND ARS
Norman, G8BHE, 07808 078 003
7 Late bonfire night BBQ and training classes
11 Kempton Park rally
14 Committee meeting and training classes
21 Open meeting, shack on the air and training classes
28 Plans for the Christmas party and training classes

SOUTH BIRMINGHAM RS
Don, 01214 581 603, www.radioclubs.net/southbirmingham
1, 8, 15, 22, 29 Training classes with Dave, G8OWL
2, 9, 16, 23 Shack and aerial work

5 Getting ready for the AGM; shack on the air
7 AGM in main hall, 8pm start
12 Open meeting and rag chew
19 Committee meeting
26 Arrangement and date for Christmas social

STRATFORD UPON AVON DRS
G0CHO, 01608 664 488, cousbey@theiet.org
12 Surplus equipment sale hosted by John, G8HJS
26 Talking to an astronaut in space: how to engage the next generation, Ciaran, M0XTD (AMSAT-UK)

TELFORD & DARS
Mike, G3JKX, 01952 299 677, mjstreetg3jkx@blueyonder.co.uk
7 Committee meeting, GX3ZME OTA
14 Surplus sale
21 ARDF, G4KWQ
28 Winter projects

WYTHALL RADIO CLUB
Chris, G0EYO, 07710 412 819
2, 9, 16, 23, 30 Friday shack social
3 Wythall House Bonfire Night - special event
4, 11, 18, 25 Club Net on 145.225MHz FM
5, 12, 29 Advanced course
6 Wire antennas for dummies, Callum, M0MCX
10 160m Club Calls Contest from the shack
13 Committee meeting
14 RSGB 80m Club Sprint SSB Contest
20 Filtering in the shack, James, M0YOM
24 Weekend event: CQ Worldwide CW Contest
26 Curry Night at Monsoon, May Lane, Hollywood & Advanced course
27 What I did on my 2012 holidays, Dave, G3YXM

REGION 6: NORTH WALES

REGIONAL REP: MARK HARPER, MW1MDH, RM6@RSGB.ORG.UK

DRAGON ARC
Stewart Rolfe, GW0ETF, 07833 620 733
5 Surplus sale
19 AGM

WREXHAM ARS
Frank Bailey, M1EYH, fcbailey20@btinternet.com
6 Build night - a chance for soldering practice
20 CW night with Pat

REGION 7: SOUTH WALES

REGIONAL REP: JIMMY SNEDDON, MW0EQL, RM7@RSGB.ORG.UK

CARMARTHEN ARS
Lloyd, 2W0LLT, 01239 711 297, 2W0LLT@talktalk.net
6 Back to basics
20 Open night

REGION 8: NORTHERN IRELAND

REGIONAL REP: PETER LOWRIE, MI5JYK, RM8@RSGB.ORG.UK

BANGOR & DARC
Mike, GI4XSF, 02842 772 383
1 Annual surplus sale

REGION 9: LONDON & THAMES VALLEY

REGIONAL REP: ALISON JOHNSTON, G8ROG, RM9@RSGB.ORG.UK

BROMLEY & DARS
Andy, G4WGZ, 01689 878 089
3, 18 Intermediate course
20 Construction contest, Richard, G8ITB

BURNHAM BEECHES RC
Dave, G4XDU, 01628 625 720
5 Construction project 2
19 Broken equipment evening, Jeremy, G8MLK

COULSDON ATS
Steve Beal G3WZK, secretary@catsradio.org
12 Microcontrollers, Denis, MONDJ

CRAY VALLEY RS
Malcolm Bryan, G8MCA, 07906 433 965
1 Surplus equipment sale
15 ADS-B / AIS positioning systems, Richard, G8ITB

CRYSTAL PALACE R&EC
Bob, G3OOU, 01737 552 170, g3oou@aol.com
2 The Cassini Mission to Saturn by Dr Chris Arridge

DORKING & DRS
Garth, G3NPC, 01737 359 472, www.ddrs.org.uk
27 The Elecraft K2 transceiver, Roger Eeles, GOSWC/VP8DBR

EDGWARE & DRS
Mike, G4RNW, 02089 500 658, michael.stewart5@ntlworld.com
8 Diversity of amateur radio round table discussion
22 Amateur radio to suit your environment

NEWBURY & DARS
Rob, G4LMW, 01635 862 737, g4lmw@btconnect.com
10 Club Calls Contest
28 Practical radio astronomy for amateurs, Paul, G4CSD

RADIO SOCIETY OF HARROW
Linda, G7RJL, 02083 868 586, www.g3efx.org.uk
9 QRSS / digital modes, Carl
13 Informal at Rayners Lane
23 The vector network analyser, Brian, G3YKB

READING & DARC
Pete, G8FRC, 01189 695 697
8 Construction contest, Robin Caine, G4IWS
22 Amateur radio at the North Pole, Michael Meerman, MOMPM

SHEFFORD & DARS
John Burnett, M6JBU, 07860804 793
1 Military Radios 1940s to 1970s, Don, G4LOO
15 Closed
22 Quiz, David, G8UOD
29 Christmas Island T32C, John Wayman, G4DRS

SOUTHGATE ARC
David Sharp, M0XDS, david.sharp1@tesco.net
14 Autumn junk/surplus sale

SURREY RADIO CONTACT CLUB
John, G3MCX, 0208 688 3322, secretary@g3src.org.uk
5 Cryptanalysis, Peter, G3ZPB
19 Natter and fix it night

SUTTON & CHEAM RS
Darren, M0PRV, 07525 753 702, info@scrs.org.uk
15 Contesting, DXing, awards, station improvements, do I need an amplifier, UR59, Alun Cross, G4WGE

VERULAM ARC
Ralph, G1BSZ, 01923 265 572, g1bsz@aol.com
8 Social with GB3VH repeater group
20 Club meeting followed by talk

WEY VALLEY ARG
www.weyvalleyarg.org.uk
2 Mechanical music, Ken Tythacott
16 Club construction contest

WIMBLEDON & DARS
Andrew Maish, G4ADM, 02083 353 434
9 On the air
30 Surplus equipment sale

At **Verulam ARC**'s September meeting, members of Middlesex University Robotics Department gave a talk and demonstration of their very successful unmanned air vehicle (UAV) called HALO. This UAV, or drone, was the highest scoring entry and winner of the international UAVForge competition held in May by the US Defence Advanced Research Project Agency (equivalent to UK's MOD). This drone competition involved the team taking on some of the world's top engineers and universities. As part of their preparation for the competition, members of the HALO team attended a Foundation course run by VARC. All were successful and now have their amateur radio licences. The HALO machine used a frequency hopping spread spectrum (FHSS) system with a 900MHz data downlink and a 1280MHz video feed. One of their drones may be seen in action at the AMSAT UK website www.uk.amsat.org/8868.

On 17 September, as part of its 75th anniversary celebrations, **Burnham Beeches RC** held an open evening to showcase amateur radio. Highlight of the displays was a working 1937 station built by one of the club members. During the evening the 1937 station, using AM and a period carbon microphone, made contact with a station running an Icom IC-7800. Jeremy, G8MLK describes his 1937 station as, "My 1937 replica AM transmitter was originally inspired by the 1937 Utah kit transmitter design using a 6L6 PA.

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This general design was very popular before the war and appeared in various guises in ARRL publications of the period. My design has a single 6L6 AM modulator, a single 6L6 PA and a 6AG7 crystal oscillator. The original design was for 80m but high noise levels on that band forced a re-design for 40m. A number of revisions finally resulted in a very stable transmitter, needing no neutralisation and giving a reasonable 6W output. It uses a Colpitts oscillator that has proved quite stable, fed with 150V from a QS150/30 stabiliser valve. A pi-tank gives it a good match to 50 ohm antennas, but an external ATU helps match random lengths of wire. I used a wartime 19-set carbon microphone for authenticity (and simplicity of driving the modulator) and got good audio reports. Chassis space constraints meant the use of metal valve versions, not glass, but both were available in 1937. The transmitter was paired with 1941 HRO, recently restored. The HT is switched via the transmitter to mute the receiver on transmit. The pair was powered from a home-built all-valve power supply, choke input, with period valves. This gives 300V and 150V for the transmitter and 250V for the HRO. The crystals used allowed operation on one of three frequencies, including the VMARS AM net frequency of 7143kHz."

Photo: G4XDU.

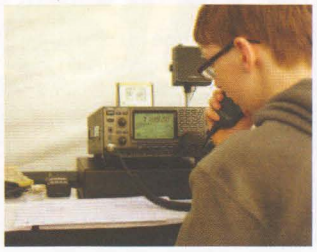
On 1 January 2013, the eighteen year association of the **Milton Keynes ARS** and Bletchley Park will finally come to an end, due to MKARS having to vacate their current clubhouse on the estate. Two of the main reasons for Bletchley Park serving notice on MKARS are due to the building currently occupied is required to make way for the creation of a new park entrance and access road to the coach park and no additional space being available on the estate that MKARS could occupy.

The Milton Keynes Amateur Radio Society and its members have been both privileged and proud to have been associated with the world renowned Bletchley Park, its history, its outside events and its place in the public consciousness. By representing the voice of both amateur radio and Bletchley Park to the world, the call sign GB2BP has made the Milton Keynes ARS friends in many countries, creating interest in the amazing work that was carried out within Bletchley Park during WWII.

Although GB2BP may no longer be in residence on Bletchley Park after 1 January, it will re-appear occasionally as a special event station supporting public events on Bletchley Park. Further details will become available on the MKARS website, just visit www.mkars.org.uk/.

During the National Heritage Weekend, **Dorking and DRS** and the National Trust collaborated to present a radio themed event at Polesden Lacey near Leatherhead in Surrey. There was a well attended exhibition of vintage radios that included the RGD Model 1129 used in the house in the 1930's during the time of Mrs Greville, who donated the estate to the National Trust in 1942. Thanks to Peter, G4JNU, visitors were able to see a working model of the radio that was used on the Titanic, pre-electronics and before the era of valves. It used the antenna current to bias a pattern of magnetisation on a moving iron wire loop, in effect rectifying the signal that was played back inductively.

A special event station, GB0NT, busily contacted other stations participating in the National Heritage event around the country as well as stations world wide. The photograph shows their youngest radio operator, David Berry, M6PIC, in communication with European stations. They were fortunate in having as a visitor Mary, G0BQV, who gave impressive demonstrations of high speed CW communication. The G5RV antenna was launched high into the trees using, believe it or not, a crossbow. A 4-square antenna was used on 21MHz but although conditions were good the WAE contest made it difficult to demonstrate world wide communication to the public. There was particular interest in the effect of the Sun on radio communication explained with material made available by the nearby UCL Mullard Space Science Laboratory. The weather was excellent until late on Sunday when strong gusts of wind made it advisable to hastily dismantle the marquees that had been kindly supplied and erected by Fetcham scouts.



Around sixty Bletchley Park veterans gathered again at the Home of the Codebreakers on 2 September for the annual Enigma Reunion. The event is timed each year to coincide with the anniversary of the arrival of the first codebreakers at BP, after they received the coded message 'Auntie Flo is not so well', indicating the imminent outbreak of war in September 1939.

A vintage radio display was provided by members of the **Vintage and Military ARS** on the lawn on both Saturday and Sunday, while in another part of the site the National Radio Centre operated throughout the day using state of the art equipment. VMARS specialise in using **AM** equipment from WW2 and a Wireless Set 19HP and 1154/1155 sets were specifically noted in operation bringing back the atmosphere of the period when all the actual operating would have been away from the Codebreakers in BP.

REGION 10: SOUTH & SOUTH EAST

REGIONAL REP: GAVIN KEEGAN, G6DGK, RM10@RSGB.ORG.UK

BANBURY AMATEUR RADIO SOCIETY
John, G8OZH, 07774 525 818, BARS@g8ozh.com
7 Working satellites - AMSAT & Funcube
21 Demonstration of slow scan television

BREDE STEAM ARS
Steve, 01424 720 815, M0NUC@aol.com
3, 6, 13, 20, 27 At the shack

FAREHAM & DARC
Derek Clarkson, G4JLP, 01329 823 405
14 Inter club quiz

FARNBOROUGH & DRS
Neville, G3SPD, 01252 404 816
2, 9, 16, 23, 30 2m net, 144.675MHz, 8pm
5, 12, 19, 26 CW net on 3.570MHz, 1pm; Top Band net on 1.995MHz, 8pm
14 Talk by Derek, G3HEJ
21 AGM

HARWELL ARS
Malcolm, G8NRP, 01235 524 844, info@g3pia.org.uk
13 Amateur radio astronomy, Brian Coleman, G4NNS
27 Shack activity night

HASTINGS E&RC
Gordon, 01424 431 909, www.herc.uk.net
28 Members' items of interest at the Taplin Centre

HORNDEAN & DARC
Stuart, G0FYX, 02392 472 846, www.hdarc.co.uk
1 Natter night/social evening
15 15 minute talks by club members

HORSHAM ARC
www.harc.org.uk
1 Talk by the high-altitude balloon team
15 Social at The White Lion Inn, Thakeham

ITCHEN VALLEY ARC
Liz, M0ACL, 02380 254 599, m0acl@ivarc.org.uk
9 RAYNET, David, M0XIX
23 Members' forum

MID-SUSSEX ARS
Rob, 2E0RJA, 01444 232 129, 2e0rja@msars.org.uk
16 Construction contest
23 Radio night and table top sale
30 Radio night

SWINDON & DARC
Den, M0ACM, 07810 317 750, www.sdarc.net
1 Talk
8, 22 Activity night
15 Members' equipment sale
29 Fun quiz

TROWBRIDGE & DARC
Ian, G0GRI, 01225 864 698, E/W
7 Judging G2BQY & G4UNU Constructor's Cup entries
21 Natter night

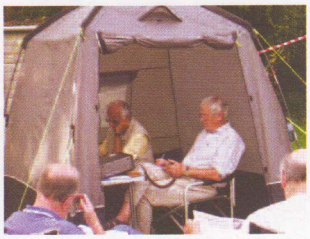
WORTHING & DARC
John, G8FMJ, 01273 593 232
4 Breakfast meeting at The Goring café, 9am
7 Science and technology of skateboarding and longboarding, Jonathan, G1EXG
10 Club Calls Contest
14 Discussion evening & 80m SSB Sprint Contest
21 Photo quiz, G4LRP
28 GX3WOR on the air
29 80m CW Sprint Contest

Brede Steam ARS took part in Churches and Chapels on the Air from St Georges at Brede in East Sussex, which dates back to 1070. The station was set up on Friday morning starting with Antony, G4CUS and Dan, M0HOW ascending the tower to erect the centre of a full size G5RV from the top of the flagpole, some 150 feet high. Antony, despite his fear of heights, enjoyed the view but was very relieved to descend the tower and get his feet back on *terra firma*. In the southern aisle facing the font they set up a Kenwood TS-2000, linear amp and computerised logging station. With Steve, M0SSR helping, the station was quickly assembled. A test call using GB4STG resulted in an instant pileup. Many stations were worked before they closed down at 3pm. On Saturday morning, after Eucharist, they started to operate. Several CHOTA stations were worked during the day by G4CUS, M0SSR and M0HOW who were joined by other club members Tony, G4KLF and Mike, M0EDU. Some of the young BSARS members turned up and had a go at operating, Marie-Claire, M6MCP and Isabelle, 2E0IJA. The church was also participating in a Kent and Sussex open day, which meant visitors came and went during the day, many paying an interest in what was going on. This enabled the team to explain what amateur radio was all about.

A total of 82 entries were put in the log before they closed the station down.

It was the first time the club had operated from the church and it was considered by all a pleasant and successful event. BSARS would like to thank Fr Martin for his warm welcome and for his co-operation in using the church and look forward to next year when they hope to participate in the event again.

In the photo, **Itchen Valley ARC** are waiting to start operating for this year's IARU Region 1 field day at the beginning of September. It shows Ted, G0BHK waiting to operate and Ray, G3HRH ready to log the contacts.



REGION 11: SOUTH WEST & CHANNEL ISLANDS

REGIONAL REP: PAM HELLIWELL, G7SME, RM11@RSGB.ORG.UK

APPLEDORE & DARC
Brian Jewell, M0BRB, 01237 473 251
19 Club Bring and Buy

BRISTOL RSGB GROUP
Robin, G3TKF, 01225 420 442
26 Forensic applications of electron microscopes, Nick, GW8YJM

CORNISH RADIO AMATEUR CLUB
Steve, G7VOH, 01209 844 939, G7VOH@btinternet.com
1 Main meeting
7 Committee meeting
22 Construction night (change of date due to local elections)

EXETER ARS
Nick, 2E0NRJ, 01363 775 756, info@exeterars.co.uk
1, 8, 15, 22, 29 4m net on 70.425MHz at 1900
5, 19 HF net on 3,675MHz at 1945
6, 13, 20, 27 2m net on 145.575MHz at 1945
12 HF DX Club operations in Moose Centre
26 PC clinic in Moose Centre

PLYMOUTH RC
Rob James, 2E0ONO, Robert-james@virginmedia.com
13 Rally preparation, natter night & on the air
25 Plymouth Radio Rally

POOLE RADIO SOCIETY
Bill Coombes, G4ERV, secretary@g4prs.org.uk
2, 16, 23, 30 Activity night & Intermediate course
9 Club speakers' night

RIVIERA ARC
Alan Wyatt, G2DXU, rivieraarc@gmail.com
12, 26 Club night

SALTASH & DARC
Brian, M0BHG, 01752 844 321, m0bhg@yahoo.co.uk
1 AGM at Burraton Community Centre, 7.45pm

SOUTH BRISTOL ARC
Andrew Jenner, G7KNA, 07838 695 471
1 Start of Christmas raffle
8 Committee meeting
15 QSL card evening
22 AGM
29 Open house and on the air

THORNBURY & SOUTH GLOUCESTERSHIRE ARC
Tony, G0WMB, 01454 417 048, tonytsgarc@btinternet.com
7 Magnetic loop aerials, Paul, M0SSJ
14, 28 On the air
21 Video night

TORBAY ARS
Dave, G6FSP, g6fsp@tars.org.uk
2, 9, 16, 23 Natter night with TARS 80m net
30 Stover Canal Trust presentation

WESTON SUPER MARE RS
Paul, G3SDH, 01761 221 206, g3sdh@btinternet.com
5 On the air
12 Morse class & natter night
19 Wireless restoration topics
26 Construction night

REGION 12: EAST & EAST ANGLIA

REGIONAL REP: MARK SANDERSON, M0IEO, RM12@RSGB.ORG.UK

BITTERN DX GROUP
Linda, G0AJJ, 01692 404 154, secretary@bittern-dxers.org.uk
29 Meeting at Pinewood Park Leisure Club

BRAINTREE & DARS
John, M5AJB, 01787 460 947
5 Junk sale
12 2m club net
19 Metal Detecting, Howard, G6LXK
26 70cm club net

BREDHURST RECEIVING AND TRANSMITTING SOCIETY
Charles G4VSZ, 07982 244 788, secretary@brats-qth.org
1 Closed
15 Talk
22 Homebrew demonstration
29 Club night, CW practice

CAMBRIDGE & DARC
Ron, G3KBR, 01223 501 712
9 Computer question time, Mark, M1MPW
23 The history of broadcasting, Ron, G3KBR

CHELMSFORD ARS
Martyn, G1EFL, 01245 469 008, www.g0mwt.org.uk
3 Coach visit to Bletchley Park
6 Valve evening with Louis Poli, N3OL
13 2m net on GB3DA, 8.30pm
14 Committee meeting
20 70cm net on GB3ER, 8:30pm
27 Top Band net on 1975kHz, 8.30pm

COLCHESTER RADIO AMATEURS
Kevan, 2E0WMG, 07766 543 784, kevan2e0wmg@live.co.uk
15 Club activities discussion evening

DARENTH VALLEY RADIO SOCIETY
Bob, M0RAW, 01322 663804, m0raw-bob@talktalk.net
14, 28 On the air/natter night

EAST KENT RS
Karl Davies, M1DFM, 01227 710 120, karl.davies@talk21.com
5 Screen reading computers, Brian, M0DCO
19 Visit by Chris Ridley and John Turner of Icom

HUNTINGDONSHIRE ARS
David Leech, G7DIU, 01480 431 333, david.leech1@ntlworld.com
8 VHF on the air
22 Baluns, Steve, G1KWF

KENT WEALD RADIO CLUB
Patrick, G0UXG, palybl@btinternet.com
24 Regular meeting

LEISTON ARC
Andy, G3ZYP, 01394 460 441, andy.g3zyp@gmail.com
6 AGM

NORFOLK ARC
Chris Danby, G0DWV, 01603 898 678, cmdanby@btinternet.com
7 An introduction to ClubLog, Michael Wells, G7VJR
14 Flexible whispering plus JT65, Peter Richmond, M0HBL
21 The Reverse Beacon Network, Steve Appleyard, G3PND
28 Informal meeting, Bright Sparks, shack open, workshop available

SOUTH ESSEX ARS
Dave, G4UVJ, 01268 697 978, g4uvj@btinternet.com
13 AGM

The radio... YAESU

HF/50 MHz 100 W Transceiver

FT DX 3000

New Crystal Roofing Filters provide ultimate weak signal receiver performance in crowded, strong signal environments

The amazing Crystal Roofing Filter performance

The Down conversion 9 MHz 1st IF frequency receiver construction, can realize narrow 300 Hz (optional), 600 Hz and 3 kHz bandwidth roofing filters.

Outstanding receiver performance, the heritage of the FT DX 5000!

The high dynamic range IP3 performance that was realized and proven in the FTDX5000.

IF DSP provides effective and optimized QRM rejection

Independent Frequency display

The newly developed LCD has a wider viewing angle and higher contrast.

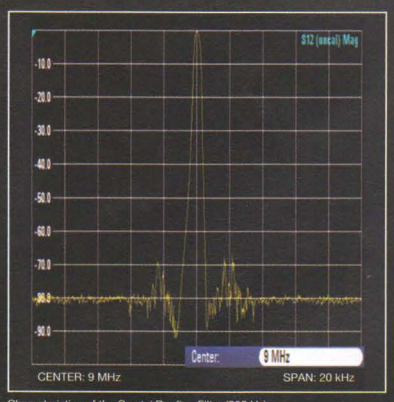
4.3-inch Large and wide color LCD display with high resolution

High Speed Spectrum Scope built-in

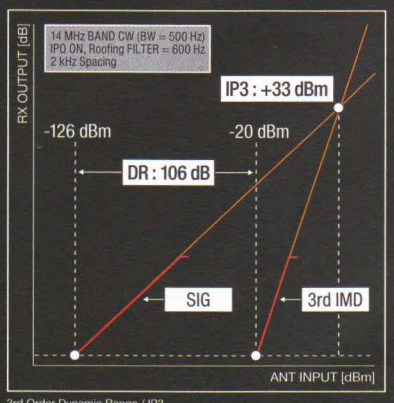
AF SCOPE display and RTTY/PSK encoder/decoder (optional)

Other features

The specialized Receiver amplifier for 50 MHz is built in / Three antenna connectors are provided / The "ANT-3" terminal may be assigned to "RX-only" / Signal output for an external receiver and the 9 MHz IF output are furnished / High speed Automatic antenna tuner built in / Optional μ-tune unit available / USB interface equipped



Characteristics of the Crystal Roofing Filter (300 Hz)



3rd Order Dynamic Range / IP3

YAESU
The radio

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

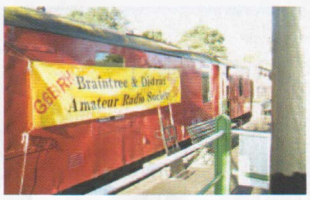
www.yaesu.co.uk

VANGE ARS
Steve, G0KVZ, 01268 552 606, vars@live.co.uk
1 Junk sale
8 DVD
15 Talk
22 Natter night

WEST KENT ARS
Keith, G4JED, westkentars@googlemail.com
12 Radio control models, Darren, M0PRV

Braintree & DARS were hosted by Colne Valley Railway for the Railways on the Air special event. They had a great time and made 169 radio contacts. Their hosts at the railway, which is located at Castle Hedingham, Essex, made them most welcome and put on a great display of working steam and diesel, giving passenger rides on both. Many club members turned up to operate and others to support – some had train rides. What a surprise! The station attracted a lot of public interest being located in an old Motorail carriage beside a platform with Windom antenna hanging over it. The club look forward to next year.

The club also set up a station, to take part in the British Wireless For The Blind event. The club station was under canvas at the QTH of John, M5AJB in his very large garden. Using a Windom antenna and an IC-746 they made over 100 contacts. They noticed that not many other clubs took part in the very worthwhile charitable event, which is unfortunate. They are a small club, but still managed to raise over £110 for the charity. Imagine what could have been raised if all clubs had made the effort.



September sunshine and temperatures in the high 20s bathed the Essex countryside for the annual Farleigh Hospice Cycle for Life. It is estimate that nearly £50,000 will be raised by the 680 young and old cyclists who completed the 20km and 50km routes. **Essex RAYNET** provided safety and first aid communications for the British Red Cross with the use of a 70cm voice net and APRS tracking. The topography of the course meant that a UHF inband repeater and APRS digipeater had to be deployed to ensure 100% coverage for the four checkpoints and two water stops. Following the event, the organiser said "as always your team were very helpful and we couldn't have done it without you". For further information visit www.essexraynet.co.uk.

REGION 13: EAST MIDLANDS

REGIONAL REP: JIM STEVENSON, G0EJQ, RM13@RSGB.ORG.UK

LINCOLN SHORT-WAVE CLUB
Pam Rose, G4STO, 01427 788 356, pamelagrose@tiscali.co.uk
1 Repeater net, 145.725MHz, 2000
3 Saturday surgery, 0900
6 144MHz UK AC, 2000
7 G5FZ OTA, the shack; natter night, BSA Club
8, 15, 22, 26 Simplex net, 145.375MHz, 2000
10 Saturday surgery, 0900; 1.8MHz Club Calls Contest, 2000 to 2300
13 432MHz UK AC, 2000
14 G6COL OTA, the Shack; video night, BSA Club
17 Saturday surgery, 0900; RSGB EGM, Stratford Upon Avon
19 Committee meeting
20 1.3GHz UK AC, 2000
21 Formal meeting & construction contest
24 Saturday surgery, 0900; 50MHz UK AC, 2000
25 Wartime Bletchley Park talk, Nick Miers

LOUGHBOROUGH & DARC
Chris, G1ETZ, 01509 504 319
6 Kegworth Steam Carnival, Peter Haywood
13 Junk Sale, Mick, M0GDW
20 Gerry Wells video night
27 Practical evening

MELTON MOWBRAY ARS
Geoff, G3STG, 01664 480 733, G3STG@btinternet.com
16 The work of the Leicestershire Repeater Group, Geoff, G4AFJ

SOUTH KESTEVEN AMATEUR RADIO SOCIETY
Nigel, M0CVO, 01476 402 550
7, 21 Club net, 145.525MHz, 2000
14, 28 Informal evening

SOUTH NOTTS ARC
Robin G4NDM, 0115 937 2942, g8ddsnarc@ntlworld.com
6 2m contest
7 The oscilloscope, G4EDX
14 JT65-HF, MORIA
17, 24 Advanced weekend
21 On air and natter
28 Members only forum

WELLAND VALLEY ARS
Peter D Rivers, G4XEX, 01858 432 105, g4xex@fsmail.net
5 2m net on 145.275MHz FM

The **Friskney & East Lincolnshire CC** would like to welcome two additional RSGB Registered Instructors to their radio amateur training program – Colin, M0EAO and Duncan, M0HIS. Colin has a wealth of knowledge in ex military equipment and building crystal radio sets and superhets. Licensed in 2005, Colin's main interests are antennas and propagation. Duncan's passion is aircraft monitoring and recognition listening on the HF/VHF bands. Licensed in 2008, Duncan's fascination is propagation and antenna construction. Bookings are now available for September, October and November courses. Contact the FELCC Information line on 0755 436 2020 or visit FELCC.com.

Members of the South Kesteven ARS would like to congratulate Konrad Ford, their newest member, on his 100% pass in the Foundation exam and in obtaining the call M6KVF. They all wish him many happy years on the radio.

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 93).

FOR SALE

ALTRON WALL MOUNTED TELESCOPIC MAST 5m-10m with beam rotator and stub mast. I am moving so giving it away, recipient with friends would have to assist in dismantling and arrange to transport it to its new home. John Serlin, G3TLU, 07896 979 873, john.serlin@gmail.com (Edgware, Middx).

ASSORTED VALVES. 807s etc. Send SAE for list. GW3NAS, 01545 581 108, Synod Inn, Llandysul, Wales SA44 6JS.

DICK SMITH COMMANDER 12W FM transceiver (kit, assembled), 144 – 146MHz, 5kHz spacing. Up/down channel select, 7 segment LED display. Repeater shift, 1750Hz toneburst, 12V DC operation. Includes mic, vehicle mounting and schematics. Good working condition £18 + £6.50 carriage. Peter Matthews, M0LBM, 07711 811 610 (Melton Mowbray, Leics).

ELECRAFT K2 TRANSCEIVER, 100W, c/w Elecraft KAT-100 automatic antenna tuner, £500. John, M0OJG, 07802 156 819 (Alcester).

FT-790 Mk 2 70cm multimode, mic, box, manual, good condition, £150. FT-690 Mk 1 6m multimode, mic, box, manual, soft case, good condition, £120. Both rigs only used in shack as base station linear drivers. All plus postage, or collect. Glenn Bates, G6HFF, 01204 595 615, glenn.bates@talk21.com (Bolton, Lancs).

HY-GAIN 18HTjr, 10-80m vertical antenna. Brand new, still in box. Reason for sale: too large for my new small garden. £350 OVNO. Sam, G3YZB, bassford@waitrose.com (Ely, Cambs).

ICOM IC-718 transceiver with UT-106 DSP fitted. Full working order and in excellent condition, manual and original box, £375 ono. Please inspect and collect. Ed Emery, G0WDT, 01782 717 837 (Newcastle Under Lyme, Staffs).

ICOM IC-7400 only £795. Boxed, complete and as new as supplied by ML&S. Terry, G3VSK, 01709 916 568 (Rotherham).

ICOM IC-7800 XCVR. Lightly used, original box, with Heil 780 mic, Icom SP-20 speaker, £5,850 ONO. Ill health forces sale, buyer to collect if poss. Paypal or cash. Clive, 2E0FZM, 07899 492 975, clvrams@aol.com (East Yorkshire).

ICOM IC-761 HF transceiver. £300 + shipping. A good work horse! Richard Broom, G4LFE, 07976 761 681, info@rids.co.uk (Stoke on Trent).

ICOM IC-775DSP. In mint condition. Was Icom's flagship. Purchased new by me, a non-smoker. 200W+ on HF. Built-in ATU and mains power supply, all filters fitted, electronic keyer. Manuals, original box. This is a big radio. £1,250 OVNO plus carriage. Tony, G0MDZ, 01636 830 005, (Nottingham).

LDG PRO 200 AUTO TUNER. As new, boxed, bought as a spare 1 of 2. Handles 250W. Manuals, no scratches, mint, £170. M0CVS, 01629 823 025 (Matlock, Derbyshire).

LINEAR AMPLIFIER. 2kW Kenwood TL-922A with Doc Sheller QSK unit. Excellent condition. Buyer collects. Both together £1,175. G3NDO, 02392 465 121 (Hayling Island).

LINEAR AMP UK 800W RANGER amplifier. 2 years old, pristine condition, fitted with 572b valves, £800. Collection only or agree mutual logistics for collection/ delivery. Mike, G4SMB, 07985 185 944, mikeg4smb@aol.com (Driffield, East Yorkshire).

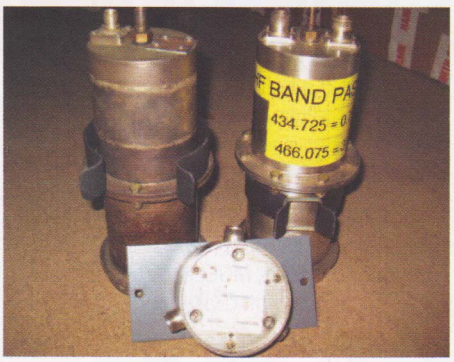
OUTSTANDING RURAL HILLTOP DX SITE in North Lincolnshire. 5 en-suite bedroom home with superb views. 1.4 acre garden, includes 65' mast with antennas, barn with planning permission for holiday lets. Home business opportunity with DX from the office! £695,000. Graham, M0AEP, 07790 618 658, m0aep@aol.com (Brigg).

PALSTAR AT-1500CV antenna tuner, £185. IC-7000 communications Rx, £250. Both items in mint condition. Geoff, G4AYH, 07989 606 376, minty@alomon.co.uk (Leeds).

PRE-CIRCULATED INTERNATIONAL REPLY COUPONS (IRCs). Slash your QSL return postal costs vs 'green stamps'! Available in any quantity at £1 each plus £1 postage per order. 25 or more post free. Expiry 31/12/2013. Email for further details. Gordon, G3USR, 01572 737 774, g3usr@btinternet.com (Oakham).

STEPPIR 3 ELEMENT BEAM. Continuously adjustable from 6m to 20m, no lossy traps. Only used for contest duty, first class condition. With high voltage PSU for extra long control cable plus connection for Yaesu CAT control, £1,200 ONO. Collection only. Simone, M0BOX, 07973 269 570 (Cambridge).

UHF 70cm filter components: tuneable cavity filters, one notch TNC 50Ω, one band-pass N type 50Ω, also three port ferric isolator with N type 50Ω connections mounted on fixing plate. £40 plus carriage. Gordon King, G3XTH, 01273 843 276, graking@talktalk.net (West Sussex).



VERTICAL ANTENNA. 4 traps, 10, 15, 20, 80(?)m. 5 Sections, 7 metres long. £100 ONO. Tony, G4RUZ, 01367 241 179 (Faringdon).

W2IHY 8 band EQ and EQPlus, hardly used, boxed with manuals, VGC with mic lead for 8 pin Kenwood. Both for £450 plus postage. Brian, G1IKV, 07976 360 657 (Hastings).

WATSON POWER-MAX-65-NF SMPSU. 65A peak, 60A continuous. A few months old, used just twice. As new with original packing. Prefer buyer inspects and collects from Cardiff but will post at cost if necessary. Cost new £239, offers around £165. Lyndon Leach, GW8JLY, 02920 576 225 (Cardiff).

WOUXUN KG-UV6D 2m/70cm handy, charger, speaker mic, SMA/PL259 adapter. Perfect condition and boxed. 6 months old and never used. £95 + postage. Ben, M0BZE, 01908 375 310, Ben.Allen@beds.ac.uk (Milton Keynes).

YAESU FL-50B Tx, Yaesu FR-50B Rx, Yaesu FV-50B Ext VFO & Datong FL1 Filter. All clean condx, £300. E-mail me for photos. Buyer to pay cash and collect. Nigel, G4KZZ, 01723 890 786, nipro@btinternet.com (Scarborough).

FOR SALE

YAESU FT-107 HF TRANSCEIVER. Solid state 160-10m SSB, CW, AM, FSK. Power input 240W SSB/CW. Digital display. SSB and CW filters. Requires 13.8VDC, 20A. Includes mic and photocopy instruction manual (FT-107M). Good working order. Offers over £215, plus P&P. Peter, GW4GCB, 01745 720 756, peter.kay1@virgin.net (North Wales).

WANTED

ART 13 parts especially audio module or transformers and plug for same. Also ART 13 vacuum switch and BC348 receiver wanted. C Young, M0BGA, 01637 875 848, rcry100@yahoo.com (Newquay).

DEREK STILLWELL MORSE KEY wanted please. Looking for a large straight Morse key made by Derek Stillwell, UK. Also any interesting early Morse keys. John, GORDO, 01626 206 090, john@morsemad.com (Newton Abbot).

GOOD CONDITION DRAKE MN-7 ATU with or without balun. V Waddington, G4JSS, G4JSS@tiscali.co.uk 01924 267 451 (Wakefield).

HELP TO REPAIR boat anchor HV PSU 3KV for my amplifier. Can deliver and collect within reasonable distance from my QTH. Call or e-mail for discussion. John, M0ELS, 07502 194 599, m0els@yahoo.co.uk (Basildon, Essex).

KENWOOD SW-200 double SWR and power meters. Also want SEM Ezitune (cased or board only), WiMo Ezitune and MFJ 212 MatchMaker. Mike, G3USX, 01483 765 959, jingle@btinternet.com (Woking).

TEKTRONIX OSCILLOSCOPE 453. Scrap unit wanted with a working EHT unit. My instrument has an open circuit EHT transformer. I can collect. Phil Stevens, G3SES, 01244 383 954, philg3ses@gmail.com (Chester).

TRAILER MOUNTED HD Strumech type tower (60 or 80ft). Head unit not essential. Must be roadworthy. Can collect. John, G0GDU, 07930 417 424 (Nottingham).

WORKSHOP SERVICE MANUAL for Yaesu FT290R Mk 1, to include table of voltages at transistors and IC's under receive and transmit condition. Reasonable price paid. I have user manual and schematic so do not need these. Bob, G8SPC, 01275 874 001, g8spc@blueyonder.co.uk (Clevedon).

RALLIES & EVENTS

Members of the RSGB Regional Team will be present with a bookstall at the rallies this month marked with an RSGB diamond.

4 NOVEMBER – HOLSWORTHY AMATEUR RADIO RALLY – Holsworthy Community College, Victoria Hill, Holsworthy EX22 6JD. Contact gsowter@talktalk.net.

4 NOVEMBER – FOYLE & DISTRICT ARC RALLY – White Horse Hotel, 68 Clooney Road, Londonderry BT47 3PA. OT 11.30, TS, SIG, RSGB book stall, IRTS, B&B, WIN. Philip Hosey, MI0MSO, mi0mso@yahoo.co.uk.

10 NOVEMBER – ROCHDALE & DISTRICT ARS TRADITIONAL RADIO RALLY – St Vincent's Church Hall, Cutgate, Rochdale OL12 7QL. OT 10.30, £2.50 (concessions U12 & Seniors), B&B, C. Pitches £7.50. Dave, G0PUD, 01706 346 517, dave.shaw1@sky.com. [www.radars.me.uk].

11 NOVEMBER – WEST LONDON RADIO & ELECTRONICS SHOW (Kempton Rally) – Kempton Park Racecourse, Staines Road East, Sunbury on Thames, TW16 5AQ. TI, free CP, OT 9.50/10.00. TS, FM, B&B, SIG, C, DF, WIN, LEC. Details Paul, M0CJX, 08451 650 351, info@radiofairs.co.uk. [www.radiofairs.co.uk].

17 NOVEMBER – HALTON & DISTRICT RADIO AMATEURS RALLY – The Heath Business & Technical Park, Runcorn, Cheshire WA7 4QX. OT 10.15/10.30am, £FREE, TS (free), B&B, C, DF, SIG, cash machine. George Low, G0RLF, 01928 897 591 (daytime only please), g0rlf@talktalk.net.

24 NOVEMBER – NORTH WAKEFIELD RADIO CLUB RALLY – Drighlington Community Hall, Moorland Road, Drighlington BD11 1JZ. Tables £6. OT 10.30am (8am traders), £2 (U14s free), C. Tony, G0JVI 0774 000 3159, tonymawson@btinternet.com.

25 NOVEMBER – 34th 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, free CP. Details Glenn, G4FVL, chairman@catsradio.org.

25 NOVEMBER – NEW VENUE – PLYMOUTH RADIO CLUB RALLY – Harewood House, The Ridgeway, Plympton, Plymouth PL7 2AS. CP, TI, OT 10.00, £2, TS, B&B, C. Contact g7nhb@hotmail.co.uk.

This list shows all rallies and events we are aware of as at 2 October 2012. 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.

SILENT KEYS

We regret to record the passing of the following members:

Lt Col J N Harding (USAF Retd), GOABW	29/8/2012
Mr P Collett, GOBQF	
Mr J K Wareham, GOCXS	13/9/2012
Mr L Allen, GOEIB	22/9/2012
Mr A G Swanborough, GOJUS	2/9/2012
Mr G R Warburton, GDOLQE	16/9/2012
Mr J Wimpenny, GOLVH	28/8/2012
Mr H Underwood, GOVMH	12/2011
Mr C J Beanland, G3BVU	21/9/2012
Mr S J Roddan, G3CSC	9/9/2012
Mr A C Whitehill, GW3IRK	28/8/2012
Mr W A Lindsay-Smith, G3WNI	29/8/2012
Mr R T Palmer, G3YJJ	6/9/2012
Mr T Case, G4ZVR	17/9/2012
Mr S C Wells, G8FMD	2012
Mr F M G Collins, MORPM	9/2012
Mr K G Wanstall, M5AFW	26/8/2012
Mr R Keiser, N7VAM	

OBITUARIES

As part of the improvements to the RSGB website, an obituaries section is being opened at www.rsgb.org/sk and we welcome obituaries from clubs or individuals when someone sadly passes away. Please send submissions by e-mail (only) to sk@rsgb.org.uk. All submissions will be moderated.

SILENT KEY ENTRIES

The Silent Keys column is separate from the obituaries section. To notify the RSGB that a Member has passed away (and their subscription should end and they should be listed in Silent Keys), please e-mail sales@rsgb.org.uk or telephone 01234 832 700 and then select option 1. We will need to know the deceased's name, callsign or RS number and, if possible, date of death.

2 DECEMBER – BISHOP AUCKLAND RADIO AMATEURS CLUB RALLY – Spennymoor Leisure Centre, Co Durham DL16 6DB. CP, TI S22 (V44), OT 10.15/10.30, £2 (U14 free). TS, B&B, C, LB, DF, FAM. Details Mark, G0GFG, 01388 747 497.

8 DECEMBER – SOUTH LANCS WINTER RALLY – Bickershaw Labour Club, Bickershaw Lane, Bickershaw, Wigan. OT 10am, traders 8am. Tables £8 pre-booked, entry £1.50, TI, B&B, C, DIS, CP, SIG, DF, TS, LB. Allan, 2E0RAG, 07533 970 841, rally@slarc.co.uk.

2013

13 JANUARY – RED ROSE WINTER RALLY – George H Carnall Leisure Centre, Kingsway Park, M41 7FJ (easily accessible from M60 J9, opposite the Trafford Centre). Free CP, B&B, C, OT 11am, TS, SIG, DF, RSGB book stall. Details from Steve, 07502 295 141. [www.wmrc.org.uk].

20 JANUARY – DOVER AMATEUR RADIO CLUB RALLY – Whitfield Village Hall, Dover CT16 3LY. 10am – 1pm, £2, auction 12.30pm. [www.doverradiorally.com].

3 FEBRUARY – 28th CANVEY RADIO & ELECTRONICS RALLY – 'The Paddocks', Long Road, Canvey Island, Essex SS8 0JA (southern end of A130). Free CP, OT 10.30, C, DF, TS. Vic Rogers, G6BHE, 01702 308 562, nvr@blueyonder.co.uk. [www.southessex-ars.co.uk].

3 FEBRUARY – RADIO-ACTIVE RALLY – Civic Hall, Nantwich, Cheshire CW5 5DG. Organised by the MidCheshire Amateur

SPECIAL EVENT STATIONS FOR NOVEMBER 2012

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.

Date	Callsign	Phonetics	Location	Bands	Keeper
11/11/2012	GB4WLR	West Lancashire Railway	Preston	L	G1PIE
24/11/2012	GB0LD	Lancashire Day	Preston	TLHV27	G4PF
26/11/2012	GB1LD	Lancashire Day	Wigan, Lancashire	TLHV27	G1EFU

Radio Society. CP, OT 10.30, TS, B&B, C, DF. Simon, G8ATB, 01270 841 506, Simon@G8ATB.co.uk. [www.midcars.org].

10 FEBRUARY – HARWELL RADIO AND ELECTRONICS RALLY – Didcot Leisure Centre, Mereland Road, Didcot. TI S22, free CP. OT 10.15/10.30, £2.50 (under 12's free), TS, FM, SIG, LB, C, DF. Ann, G8NVI, 01235 816 379, ann.stevens@btinternet.com. [www.g3pia.org.uk].

3 MARCH – BRATS RAINHAM RADIO RALLY – Rainham School for Girls, Derwent Way, Rainham, Gillingham, Kent ME8 0BX. 10.00, DIS 9.30am, TI, C. Trevor, G6YLW, 07717 678 795, trev@wig1.co.uk.

3 MARCH – SPRING MILITARIA & ELECTRONICS & RADIO AMATEUR HANGAR SALE – Hack Green Secret Nuclear Bunker, Nantwich, Cheshire, CW5 8AL. OT 10.00, civil, military & vintage radio equipment, vehicle spares & more. Contact Rod Siebert, 01270 623 353, coldwatr@hackgreen.co.uk. [www.hackgreen.co.uk].

7 APRIL – SOUTH GLOUCESTERSHIRE AMATEUR RADIO RALLY – Scout Activity Centre, Woodhouse Park, Almondsbury, Bristol BS32 4LX. OT 10.00, B&B, CP, C, CBS, TI S22 (V44). Rally Coordinator Mike, M1DPB, 07806 310 095, southglosradiorallycoordinator@gmail.com. [southglosradiorally.org.uk].

7 APRIL – NORTHERN AMATEUR RADIO SOCIETIES ASSOCIATION EXHIBITION (Blackpool rally) – Norbreck Castle Exhibition Centre, Blackpool FY2 9AA. TI, CP, TS, B&B, SIG, MT, LB, C, DF, RSGB book stand. OT 10.15 /10.30. Dave, MOOBW, 01270 761 608, dwilson@btinternet.com. [www.narsa.org.uk].

9 JUNE – 12th JUNCTION 28 QRP RALLY – South Normanton Alfreton and District Amateur Radio Club in association with the G-QRP Club. Alfreton Leisure Centre, Church Street, Alfreton, Derbyshire DE55 7BD. 10 minutes from M1 J28 and the A38. TI S21, OT 10am, TS, SIG, C, LB. Anya Lawrence, 2E0BQS, 0115 930 7322. [www.snadarc.com].

30 JUNE – WEST OF ENGLAND RADIO RALLY – Cheese & Grain, Bridge Street, Frome, Somerset BA11 1BE. OT 10am-2pm, £2.50, TS, RSGB book stall, C, CP, DIS. Contact Shaun, G8VPG, 01225 873 098, rallymanager@westrally.org.uk. [www.westrally.org.uk].

6 JULY – BANGOR AND DISTRICT ARS RALLY – Donaghadee Community Centre, County Down BT21 0HB. OT 11.30am, £3, TS, B&B, SIG. Bill, GI4AAM 02891 816 707, bill.langtry@btinternet.com. [www.bdars.com].

21 JULY – AMATEUR RADIO IN THE COUNTRY – Upton Bridge Farm, Long Sutton TA10 9NJ. Amateur radio, QRP & homebrew in a country setting. TS, FAM, SIG. Tim Walford, G3PCJ, walfor@globalnet.co.uk.

22 SEPTEMBER – 24th GREAT NORTHERN HAMFEST – Barnsley Premier Leisure Complex, Queens Road, Barnsley S71 1AN or follow the brown Metrodome signs. GNHF in association with SYRG. OT 10.30am, £3.50. DF, TS, SIG, RSGB book stall, LB, C, FAM. Ernie, G4LUE, 07984 191 873. [www.greatnorthernhamfest.co.uk].

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 e-mail 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.

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: 01603 898678 Fax: 01603 898678 E-mail: adsales@rsgb.org.uk
Payment to: RSGB, 3 Abbey Court, Priory Business Park, Bedford, MK44 3WH

FOR SALE

WANA DATA INTERFACE ? You need an Isoterm! Job Done.... Our Product help is always available. See www.g3liv.co.uk johnny@melvin.com 0191-2843028

GOTA VIBROPLEX BUG KEY, GHD (50mm available, 60mm soon) You need a CableTidy! Job Done.... See advert above

FIBREGLASS TUBE High strength tube, square box, rod, and other sections all from stock in 6m lengths. Engineered Compositions, Chester. Tel: 01244 676000 e. barbara@engineered-composites.co.uk www.engineered-composites.co.uk

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X-TALS 3.560/7.030/10.106/10.245/ 14.060MHz £5-95/set Pr Carrier 10.7MHz +/- 1.5kHz, 9.0MHz +/-1.5kHz £3-95/pair 7x9MHz Matched≤30Hz £6-95/set P&P £1-50 + VAT. Many freq ex-stock. vincentvoy@hotmail.co.uk 0208 391 0545

CTCSS ENCODER AND DECODER KITS, DTMF kits, low cost LCD displays, Chris G6WHI www.cstech.co.uk

PERSONALISED EMBROIDERED BASE BALL CAPS, Polo shirts and Sweat shirts. With your name and call sign, club logo contact Bill M0WBH at email: billm3wbh@btinternet.com or www.tintagel-crafts.com

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PROGRAMMING CABLES & SOFTWARE FOR YAESU RADIOS Http://www.g4hfq.co.uk bob.freeth@g4hfq.co.uk (01425) 618092

CONTEST LOGGERS - SD by EI5DI. Free and Unrestricted in all RSGB HF Contests. www.ei5di.com

AERIALS

WWW.PROANTENNAS.CO.UK The DUAL BEAM PRO & I-PRO HOME, compact HF aerials with outstanding reviews and top eHam ratings, Call Carl for a great deal: 01489 789960

M0CVO ANTENNAS for all your amateur radio antenna needs. Full details at: http://www.m0cvoantennas.eu

NEW: PORTABLE RADIO SPECIALISTS SOTAbeams have opened a new webstore at www.sotabeams.co.uk Radcom readers will get a 10% discount using this voucher code FKVJBXTOAN9T. Code valid until the end of the month. 73 Richard G3CWI.

"WESTERN HF 10" 67ft wire dipole 160-6m, full details lookup m0bzi at: www.qrz.com buy direct: m0bzi@hotmail.co.uk or 07748331458 reviews at: http://g0kya.blogspot.com/2010_08_01_archive.html or http://www.eham.net/reviews/detail/9424

VORTEX ANTENNA SYSTEMS UK Manufacturer and hardware supplier. Delta Loops, Yagis, Monoband and Multiband, OWA Arrays, Bespoke Designs. Antenna parts and mounting solutions. 6082-T6 Metric Tubing, Stainless U-Bolts and much more. www.vortexantennas.co.uk or 07943 871893

COMPACT VERTICAL HF ANTENNAS, low visability. Details from www.aerial-worx.com

NEED A LOW PROFILE, NEIGHBOUR FRIENDLY, AND VERY RUGGED AND EFFECTIVE AERIAL MAST INSTALLATION??? - Affordable Clark 12 Metre Reconditioned Telescopic Masts - like no other telescopic mast; headload up to 77 lbs. Details m0rbs@btinternet.com"

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G4TPH PORTABLE MAGLOOPS back in production. Full details of the new ML40 model at: www.g4tph.com

VHF ANTENNAS FROM I0JXX for 6m, 4m, 2m and 70cms. UK made power splitters for 4m, 2m and 70cms, clamps, brackets, insulators, HF vertical and radial plate, Alimast. Please see www.aerial-parts.co.uk.

MISCELLANEOUS

CALL IN ON THE UK 'GOOD NEWS' CHRISTIAN NETS! Every Sunday morning at 8am local on 3747kHz, 2pm on 3747 or 7147KHz (propagation) and 144.205 SSB at 3pm sharing Christian fellowship. Go to www.wacral.org for more information or contact G3XNX at 51 Alma Road, Brixham, South Devon, TQ5 8QR, Tel: 01803 854504 or derekg3xnx@talktalk.net

GITE, LOIRE ATLANTIQUE, sleeps 4/5, UKTV, from £100 per week. 01223911263, G6HKF

HOLIDAY COTTAGE AT JO28RJ (Eastern France) can cater for up to 13 persons, registered for the handicapped. Roman ampitheatre and Mosaic museum, both within ½ km. Elevation 375m (max. locally 440m to NE). Has 2m/70cm collinear and over 40m space. Visit http://apollon.gite.grand.perso.sfr.fr/ or Tel: 00 33 (0)670 968 765

PAFOS, CYPRUS. 2 bed villa. Simple HF station 300m ASL. www.domsvilla.co.uk/radcom

EQUIPMENT

REPAIRS to all amateur and vintage RX/TX cost effective service phone or call in for details. Kent Rigs, 52, Salisbury Road, CHATHAM, Kent, ME4 5NN, 07903 023437

RELIABLE REPAIRS for all amateur and vintage equipment. Professional service, reasonable rates. Call: 01807 580376 email: radiorepairs@btconnect.com

CARDS & DESIGN

QSLERS SPECIAL OFFER till end of November, 1000 full colour qsl cards £47inc postage. 07720 580968 QSLers@aol.com

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WANTED

UNWANTED VALVE AMPLIFIERS, working or not. Known makes only (Kenwood, Yaesu, Drake, Linear Amp, etc), not homebrew. Cash paid. Contact Peter G3ZRS on 01482 862323 or e-mail: g3zrs@hotmail.co.uk

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The World's Most Popular ATUs!

MFJ-1026 Active Antenna & Noise Canceller

It's more effective than a noise blanker because interference much stronger than your desired signal can be completely removed without affecting your signal. It works on all modes -- SSB, AM, CW, FM, frequences from BCB to lower VHF. **£204.95 C**

MFJ-1025 Noise Canceller Same as MFJ-1026 but without the active antenna. **£184.95 C**

MFJ-1260/1 Microphone Control Centre

The **MFJ-1260** allows 2 microphones, modular or 8-pin round to be connected to 1 radio.
The **MFJ-1261** allows 1 microphone, modular or 8-pin round to be connected to 2 radios.
Each £101.95 C

World's Most Popular AUTO ATUs!

MFJ-993B IntelliTuner Auto ATU 300 Watts 1.8-30MHz

This tuner lets you tune any antenna; long wire, coax cable or balanced feed. You get both analogue cross-needle metering & LCD data display! MFJ's exclusive Intelliturner Adaptive Search and instant recall algorithm gives you ultra fast tuning with 20,000 memories! Beat that! Select 300 Watts for 6-1600 Ohms matching or 150 Watts for ultra wide 6-3200 Ohms. Versatile antenna selection and pre-used setups are found in milleseconds! This tuner matches virtually anything you thow at it. **£254.95 D**

MFJ-925 Ideal For IC-7000/FT-857D

This compact auto ATU sits nicely under the IC-7000 or FT-857D.It's all you need for a complete automated station that will match any antenna! **£174.95 D**

MFJ-929 World's Fastest ATU

World's fastest compact auto ATU. The algorithm offers 132,072 solutions and instantly matches any antenna with near perfect VSWR. Get the best from your antenna! **£214.95 C**

MFJ-991B 300W Auto ATU

Handles 300W, fitted cross needle meter. Wide range: coax, balanced or wire. 300 Watts level matches 6-1600Ohms, or 150 Watts with wider range of6 - 3200 Ohms. **£214.95 C**

MFJ-998 1.5kW Auto ATU

Handle really high power, which makes it well above UK limits and also offers great efficiency. You get the same fast tuning, with cross needle metering & LCD display. Coax, balanced or wire. **£659.95 C**

MFJ-928 Econo 300W Auto ATU

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MFJ-927 Remote ATU

Here's a great way to tune wire or coax. This fully weatherproof ATU will sit outside right by your antenna and with the included "power thru" box, you feed the DC supply up the coax. No separate hh cable needed. **£259.95 C**

1.5kW Handling Power! **MFJ-998RT 1.5kW Remote Auto ATU**

MFJ's 1500 Watt remote automatic antenna tuner is built into a weather-tight ABS plastic cabinet top with a stainless steel bottom. Includes MFJ-4117 BiasTee Power Injector to send DC/RF down the coaxial line. When you key your transmitter, MFJ's InstantRecall checks to see if that requency has been used before. If so, tuning is instantaneous. Measures 13 3/4W x 6 3/4H x 17 1/2D inches. It's the true fit and forget Auto ATU for those using linear amplifiers. **£779.95 D**

MFJ-994BRT 600W Remote Auto ATU

As you're ragchewing, contesting or DXing, your MFJ IntelliTuner is learning! to operate in milliseconds! We've made this tuner to suit the UK market, so that those with linear amplifiers can enjoy the benefit of auto ATU. Includes coax DC feed. **£449.95 D**

MFJ-993BRT 300W Remote Auto ATU

Remote IntelliTuner is mounted in a durable hard plastic case that measures just 9 ¼" x 3" x 14 ¼". Covers 1.8 to 30 MHz, have heavy duty 16 Amp / 1000 Volt relays and are a highly efficient L-network. It also includes the MFJ-4117 BiasTee Power Injector to send DC/RF down your coax. **£329.95 D**

MFJ-926B 200W Remote Auto ATU

MFJ-926B Automatic Antenna Tuner covers the entire HF band and will match a random wire or coax-fed antenna 1.8-30 MHz at a full 200 Watts SSB/CW. Matches impedances 6-1600 Ohms (SWR up to 32:1). **£299.95 D**

MFJ-927 200W Remote Auto ATU

Weather protected remote auto tuner for coax/ wire ant., includes MFJ-4116 Power Injector. Most MFJ-929 features, no LCD/buttons. This is a low cost ATU that will get you on all HF bands using just a single wire. **£259.95 D**

MFJ-655B All in one Transmit Audio Console

It gives you all the capabilities you'll ever need ...8-Band Equalizer - Downward Expansion noise gate - Clean Compressor - Smooth Limiter - Low noise Preamp - Universal Microphone Interfacing - Impedance matching - Level Control & RF/audio isolation. **£223.95 C**

MFJ-267 1.5kW Dummy Load and VSWR Meter

1.5 kW Dry Dummy Load has built-in precision, true peak-reading SWR/Wattmeter switchable to external antenna! Range DC - 60M Hz. **£162.95 C**

MFJ-868 Giant VSWR Meter 1.8-30MHz

If you struggle to read your VSWR & output power, then help is at hand. This meter has a massive 6.5" instrument meter. Range 20/200/2kW. **£159.95 C**

MFJ-250X Oil Cooled 2kW Dummy Load

The MFJ-250X VersaLoad KW Wet Dummy Load lets you tune up fast! You can run 1KW CW or 2 KW PEP for 10 minutes. Or run ½ KW CW or 1 KW PEP for 20 minutes. Run continuous duty with 200 Watts CW or 400 Watts PEP. Requires transformer oil. **£56.95 C**

MFJ-974B 3.5-53MHz Manual ATU 300W

The MFJ-974B is a fully balanced true balanced line antenna tuner. It gives you superb current balance throughout its very wide matching and frequency range. Handles 300 Watts SSB PEP and 150 Watts CW. **£194.95 C**

MFJ-974HB Same as MFJ-974B but covers 1.8-54MHz. **£199.95 C**

MFJ-9982 1.8-30MHz 2.5kW Manual ATU

The MFJ-9982 Continuous Carrier antenna tuner handles 2500 Watts continuous carrier output on all modes and all HF bands into most unbalanced antennas -- even on 160 Meters where even the best antenna tuners fail! 6-position antenna switch, 4-core balun, dummy load, true peak/average lighted SWR/ Wattmeter, 6:1 reduction drives with detailed logging scales, 3-digit turns counter **£684.95 C**

Flat Dwellers Antenna

MFJ-1625

Complete antenna system mounts on window frames, balconies, and railings. Covers 80-6 Meters. Includes universal mount, built-in antenna tuner with RF isolator, long 12ft telescopic whip (22.5' collapsed), high efficiency loading coil for 40/80m, counterpoise wires, and safety rope. Handles 200 Watts. **£204.95 C**

MFJ-1623

Complete antenna system mounts on window frames, balconies, & railings. Covers 30-6 Meters. Inc universal mount, built-in ATU with RF isolator, long 12ft telescopic whip (22.5' collapsed), counterpoise wires, & safety rope. Handles 200W. **£174.95 C**

Antenna Analysers

MFJ-266 HF/VHF/UHF Digital Ant Analyser

Get all the basic RF-diagnostic functions you need and more!
The MFJ-266 covers HF, VHF, plus UHF amateur and commercial frequencies with digital precision. It also displays SWR, Complex Impedance, and Impedance magnitude simultaneously -- all on the same easy-to-read LCD screen. Use it to measure Capacitance, Inductance, Field Strength, Frequency, plus generate test signals. You can also fine tune stubs, analyse coax, test baluns and RF transformers, and perform many other important RF-related tasks around the shack or on the road! **£399.95 C**

MFJ-269PRO Professional Digital Analyser

Instantly check and tune any antenna from 1.8 to 170MHz and 430-520MHz with this rugged easy-to-use complete antenna test lab!

It measures every antenna parameter: SWR, return loss, reflection coefficient, match efficiency, RF resistance, reactance, impedance and phase angle of antennas and antenna resonant frequency, bandwidth and Q. You can determine coax cable loss in dB, its velocity factor and its length in feet and electrical degrees. **£389.95 C**

MFJ-976 1500W Balanced Manual ATU

The MFJ-976 is a 1500 Watt full legal limit fully balanced antenna tuner. You get superb balance, very wide matching ranges (12-2000 Ohms) and continuous 1.8-30 MHz coverage including all WARC bands! It handles a full 1500 Watts SSB and CW. **£479.95 C**

MFJ-989D 1.5kW ATU Matches Anything!

New and improved! World's most popular legal limit antenna tuner just got better -- with no increase in price! You get better efficiency, lower losses, and a new true peak-reading meter.

**500 pF air variable capacitors *AirCore™ Roller Inductor with new fast-tune Crank Knob *TrueActive™ Peak-Reading Cross-Needle SWR/Wattmeter *High-Voltage Current Balun *Rugged Cabinet maintains hi-Q*

£399.95 D

MFJ-949E 300W 1.8-30MHz ATU with Load

More Hams use the MFJ-949E ATU than any other model in the world! The reason? Because it is reliable and can match just about any antenna. Wires, coax, balanced, it handles them with ease. The large inducor is rugged and the 8-way antenna switch lets you select your antenna, quickly. You get a large 3 cross needle meter which makes tuning easy. You even get an internal dummy load. No wonder it's the hams choice! **£169.95 C**

MFJ-986 1.5kW 1.8-30MHz ATU

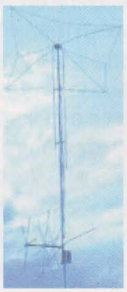
MFJs innovative Differential-T Tuner uses a differential capacitor that makes tuning easier than ever. It gives minimum SWR at only one setting. Broadband coverage ends constant re-tuning. The MFJ-986 is a rugged roller inductor antenna tuner that handles 3KW PEP SSB amplifier input power (1500 Watts PEP SSB output power). It tunes 1.8 - 30 MHz continuously, including MARS and WARC bands. **£359.95 D**

MFJ Vertical HF Antennas

MFJ-1796 40m-2m No Traps No radials

Only 12 feet high and has a tiny 24 inch footprint! Mount anywhere -- ground level to tower top -- apartments, small lots, trailers. Perfect for vacations, field day, DXpedition, camping. Efficient end-loading, no lossy traps. Entire length is always radiating. Full size halfwave on 2/6 Meters. High power air-wound choke balun eliminates feedline radiation. Adjusting 1 band has minimum effect on others. Automatic bandswitching, low radiation angle, omnidirectional, handles 1500 watts PEP. Goes together in an afternoon. **£244.95 D**

MFJ-1798 80m-2m No Traps No Radials



Operate 10 bands -- 75/80, 40, 30, 20, 17, 15, 12, 10, 6 and 2 Meters with this MFJ-1798 vertical antenna and get full size performance with no ground or radials! Full size performance gives high efficiency for more power radiated. Results? Stronger signals and more Q-5 QSOs. Full size performance is achieved using separate full size radiators for 2-20 Meters and highly efficient end loading for 30, 40, 75/80 Meters. **£309.95 D**

Carriage Charges: A=£4, B=£5, C=£8.50, D=£11

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ELECRAFT®

As Seen On The W&S Stand At National Hamfest 2012!

KX3 Transceiver 160 - 6m 10W All Modes + PSK31

"Best Receiver Dynamic Range" says Test Report!

We asked our own Peter Waters, G3OJV, what his first impressions were of the KX3.

"Well I have been a long-time fan of Elecraft because 8 years ago I built myself a K2 and it reminded me of my early years as a ham when, as a school boy, I had to build everything. There was no way I could afford ready-built gear. That K2 opened my eyes as to how something that looked so modest, could perform so well. When I switched on the KX3, it was a revelation. That radio really does perform. I can tell a good radio within minutes of switching it on. And the KX3 first impressions really grabbed me. 40m at night and not a sign of distress from the receiver. The selectivity was something else. I could progressively adjust it right down to 50Hz. The skirts were steep and the sensitivity was staggering. On the bench 1uV gave me S2 on the meter - very useful on 10m and 6m. The radio uses SDR technology and I was able to connect it to my iPad to provide a panoramic display. The 8-band EQ worked on both receive and transmit, enabling remarkable audio flexibility. With 6 channels each of 250 character CW, I could call CQ and store my station data which not only made CW QSOs easier, it made PSK31 and RTTY QSOs possible without a PC. I can dial in any power level right down to 100mW and the current drain on both rx and tx is lower than any other equivalent transceiver. A set of AA cells will last for a good few days QRP and the radio still operates well below 9V. DSP noise reduction is one of the best, and the combination of VOX and the noise gate make mobile hands free SSB a reality. I installed the internal auto ATU and boy, that little tuner matches anything including wires. No more struggles with the G5RV. For me, stereo CW is just great and for split working I can enjoy true dual band receive in each ear with phones. There is even a voice keyer coming along with the firmware update, a 2m built-in transceiver and 100W PA. The free USB lead makes firmware updates quick & easy. There is also free software for programming the KX3 using the same PC lead. There's a host of menu items for making the radio do what you want it to and macros can be written with ease for personal settings. I found the dual VFO settings was very useful because it stored mode and selectivity settings as well and each band could have different settings. I am really impressed."

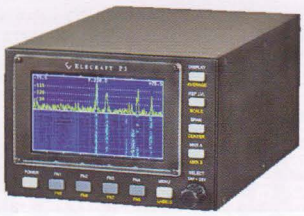
Peter Waters, G3OJV.

KPA-500 Linear 500W 160-6m - 4 inches high

A 500-watt solid-state amp that's so well integrated, you'll think its reading your mind. The KPA-500 features 160-6m coverage, instant RF based band switching with any radio, alphanumeric status display, bright LED bar graphs, and a rugged, built-in linear supply. The amp's manual band switches can also be used to change bands on the K3. Also the K3 can even select per-band amplifier drive levels automatically when the amp is placed into operate mode, so you'll rarely need to adjust power output. But the KPA-500 is not just limited to use with the K3 – It is fully compatible with most radios.

Built £2199 D Kit £1999 D

P3 Panoramic 2.5 - 200kHz Bandwidth



It feels like a real PC screen, and is the perfect partner for the K3.The P3 PanAdapter display adds a visual dimension to signal hunting with fast real time spectrum and waterfall displays of band activity. The P3 offers superior sensitivity and DSP processing, giving you the ability to see signals down to the K3's noise floor. The P3 can also be used with any other radio that provides an IF output of 455 kHz to 21.7 MHz looking for band openings. The front panel makes it very easy to change the vertical response to suit band conditions & noise levels. Horizontal scan width can likewise be adjusted from 200kHz down to 2kHz. The P3 is great for monitoring the beacon area of the 6m band. Integration is total with the K3 and using the control knob it is very easy to click on a signal for automatic QSY via the K3. As the RSGB review says, the P3 is up to lab standard.

Built £759 D Kit £709 D

The KX3 Receiver. Voted All-Time "Best Ever Tested"
See www.sherweng.com

You are looking at a transceiver that has got everyone talking. It has a front end with the best dynamic range, bar none. And yet it costs a fraction of the price of many of its competitors. No wonder there was a waiting list. The KX3 has projected Elecraft onto a level that has got the attention of DXers around the world. It's highly portable and has all the features that you could wish for, and more! Take it with you anywhere and enjoy ham radio from your hotel, campsite or car. It's large front panel architecture offers more operating space than any other QRP Radio, and the internal AA cells make it extremely compact and small enough to fit in your hand luggage. Make no mistake, the KX3 will change your ham radio operation and enjoyment for the better.

KX3-F 10W Built £959.95 D **KX3-K 10W Kit £899.95 D**

K3 A Serious Transceiver for 160-6m

We can build that dream radio. Take the K3 basic transceiver and then add the 100W PA for less than £2,000. We can install the wide range auto ATU that really can match your G5RV. Perhaps you would like a second receiver that is a mirror image of performance of the main receiver? There are a host of extra roofing filters we can advise you about. Many want the extra I/O board for transverting & independent receive antenna. Perhaps you want 2m operation or a voice keyer. Let us build your dream machine. We take pride in building exactly what you want. Phone or email us with your needs.

The K3 has all the normal features you would expect from a top radio, but goes a lot further than most. QRP operators like the ability to turn power down accurately to milliwatts and when the power goes below 10W the main PA is switched off to save current and users the lower level 10W driver. There is an 8-band graphic equaliser for both transmit and receive and a true RF compressor can give real punch. CW operators love the keying and QSK which is totally transparent. There is also a very nice auto CW net control which puts you dead on the other station's frequency at your chosen sidetone frequency.

Data enthusiasts will be delighted to know that not only can you decode CW on the screen, you can also decode PSK31 and RTTY. But the K3 is unique in that you can also send PSK31 and RTTY without the need for a PC. How's that for a neat trick! There is so much logical thinking in the design!

For noisy band conditions the noise blanker is one of the best and the DSP noise reduction has an excellent number of options with its built in algorithm. AGC is another area where extensive user programming is possible. All these user settings can be downloaded and saved on a PC (Windows or Mac).

Then there are all the options, including roofing filters down to 200Hz and an optional I/O board for use with transverter at milliwatt level and IF out for the P3 panadaptor. The K3 is the only radio to offer a true independent second receiver option that matches the main receiver performance. And if 2m is a band you use, there is an optional 2m transverter that can be built in.

To learn more, why not download the full manual from www.elecraft.com

K3/100-F 100W Built £1999.95 D **K3/10-F 10W Built £1599.95 D**
K3/100-K 100W Built £1899.95 D **K3/10-K 10W Built £1499.95 D**

Carriage Charges: A=£4, B=£5, C=£8.50, D=£11

The Yaesu FTdx3000D transceiver provides ultimate weak signal receiver performance in crowded, strong signal environments. General coverage receive is available from 30 kHz to 56 MHz. Power is adjustable 5 to 100 watts for the amateur bands from 160 to 6 meters. A built-in 4.3-in TFT wide full colour high resolution display provides superior operability and visibility for the FTdx3000D user. A High Speed Spectrum scope located just below the LCD display gives the operator all the information needed to place them at the right place on the band with the right receiver set-up to have a satisfying experience with a casual QSO chat or while digging out a rare desired weak signal contact. Other refinements include: USB interface, 9 MHz IF output, RX-only antenna input, RTTY/PSK encoder/decoder, High speed antenna tuner and a specialised 50MHz amplifier.

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Introducing the new, exciting mid-size base from Yaesu - the FTdx3000D

- TX Frequency Coverage: 160 - 6m
- RX Frequency Coverage: 30kHz - 56MHz
- Operating Modes: USB, LSB, CW, AM, FM
- Digital Noise Reduction
- IF DSP
- Large 4.3 inch (dia.) colour TFT display
- Power Output: 5 to 100 watts HF - 6m
- Built-in Electronic Keyer
- Built In Antenna Tuner
- High Speed Spectrum Scope

The FTdx3000D requires 13.8 VDC at 23 amps. This radio comes with the MH-31B8 hand mic, DC cable spare fuses and plugs. 14.4 x 4.5 x 12.4 inches 22 lbs. (10 kg).
Priced at around £2500, we are able to offer excellent trade-in values, finance & cash or credit card purchases.

Call 0345 2300 599 and be the first to own this brilliant piece of Yaesu stock.

As Yaesu's Official Largest UK Dealer first deliveries should be with us by early 2013.

Please see www.HamRadio.co.uk/ftdx3000 for more updates.

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