RadCom

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

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0710

Dayton Hamvention®

Presidents of RSGB and ARRL meet up at the world's premier show

Commonwealth Contest

Idyllic shack in St Lucia

Construction

Build a remote display for the FT-817

Antenna features

Moxon Plus, fishing rod portable & extreme DX

RSGB Convention

Horwood House – new home of the RSGB Convention

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At Waters and Stanton we want to offer you the best possible prices and service. This means tracking market deals, price movements and reacting to supplier's offers. So the prices in this advert may now be even lower or there may be "Deals." Check our web front page and see just what our latest ***"Smashing Prices"*** prices are. Check any item showing the Smashing Prices logo: SP

ICOM

ID-E880 NEW SP

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

£499.95 D

NEW IC-E80D SP

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* Extensive GPS Compatability
* CTCSS & DTCS + Airband Receive
* 1000+ Memories

FREE software on Icom site

In Stock Now **£369.95 D**

NEW IC-9100 SP

VHF/UHF Satellite + HF + D-Star

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Arriving Soon

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

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Dual Band 2m/70cm Handy

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Triple band 6m, 2m, 70cms.

£234.95 D

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

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IC-E2820 SP

Great dualband mobile.

£424.95 D

Fitted with UT-123 D-Star module. **£579.95**

HF Transceivers SP

IC-7600 FREE USB keyboard!

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

£3379 D

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

Other Radios

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

NEW The HF AlexLoop

Easy thumb tuning

* 7-Band Loop Antenna
* 40/30/20/17/15/12/10m
* Manual tune in seconds
* 1m diameter loop
* Packs in case 40x27cm
* 20W QRP design
* Includes loop mast
* Easy handheld

£279.95 D

SDR-IQ Receiver

NEW

The SDR-IQ is a high performance receiver covering 500Hz to 30MHz. It is powered directly from PC USB socket and work with Windows or Linux systems. A highly stable unit with dedicated software. **£469.95 D**

New **IF-2000** SDR IF feed for FT-2000 & FT-950. Feed your transceiver IF out into an SDR receiver at 10.5MHz **£219.95**

FlexRadio Systems

FLEX-1500 ARRIVES!

* 160m - 6m All Modes Transceiver
* 5 Watts of clean RF-Power
* USB connection
* Selectivity to 25Hz!
* Use with laptop for easy portable

£549.95 D

Arrives This Month

W&S Exclusive Distributor!

Gerald Youngblood (designer) presents Jeff Stanton with the first Flex-1500 during USA visit.

Flex-3000 100W 160m-6m

Includes auto ATU! Firewire connection.

£1399.95 D

Flex-5000 100W 160m-6m

The ultimate SDR radio with amazing front end, extra RX option and 2m & 70cm options.

£2495.95 D

FAST SAME DAY DESPATCH SERVICE!

Orders must be received before 3pm.

KENWOOD

TS-590E NEW

W&S are pleased to announce the new HF radio from Kenwood. Prices to be announced.

HF Transceivers

TS-2000E SP £1489.95 D

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

TS-2000X +23cm **£1749 D**

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

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

Handheld SP

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

VHF Mobiles

TM-V71E SP £289.95 D

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

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

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

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

Full Package **£489.95 C**

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

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

WiNRADiO

A radio system that is built to give value and performance with the very latest technology. There is a great choice!

COMING SOON

'Excalibur' Receiver

- 9kHz - 49.999MHz - USB Interface
- Software Defined Radio
- 3 Parallel Demodulator Channels.

The WR-G31DDC "Excalibur" receiver heralds a new standard of performance at a very affordable price. The robust front end handles today's busy bands with ease. You will love the live spectrum display (up to 50MHz wide) and absence of significant spurious signals.

Call for further details.

WR-G303e 9kHz - 30MHz **£659.95 D**
This is the basic short wave receiver with external hardware interface. The PD version offers professional demodulating software. The "I" version is on an internal PC plug-in card.

WR-G303e/PD	£759.95 D
WR-G303i	£559.95 D
WR-G303i/PD	£639.95 D

WR-G305e 9kHz - 1.8GHz **£699.95 D**
The wide band coverage version, again with PD and "I" versions.

WR-G305e/PD	£799.95 D
WR-G305e/WFM/PD	£899.95 D
WR-G305i	£589.95 D
WR-G305i/PD	£699.95 D
WR-G305i/WFM	£699.95 D
WR-G305i/WFM/PD	£799.95 D

WR-G313e 9kHz - 30MHz **£1275.46 D**
A high performance receiver covering the entire LF to short wave spectrum. The "I" version is mounted on a PC card.

WR-G313i	£1065.43 D

Waters & Stanton Appointed AOR UK & Ireland Distributors.

AOR Japan have chosen W&S as their new UK & Ireland distributors. This follows the closure of AOR UK. However, there will be continuity of supplies & after sales service because Richard Hiller from AOR UK will be working with us in a consultancy capacity as well as progressing commercial & government orders for AOR professional equipment.

AR-MINI - Pocket sized scanner covering 100kHz - 1299MHz. AM FM & WFM. Inc. NiMH batt. & charger. ***FREE*** Software download available on AOR site. Accessory lead needed. **£219.95**

AR-8200 - The famous scanner with the quality performance. 530kHz - 3GHz AM FM FMW & SSB. Inc batts, charger + cigar lead. **£439.95**

AR-8600 - Base station receiver covering 530kHz - 3GHz. All modes AM FM FMW & SSB with standard rotary tuning. Requires external 12V or optional internal batt pack. **£629.95**

MFJ

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

MFJ-998
W&S £649.95 C

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

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

MFJ-929
AUTO TUNER 1.8-30MHz 200W

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

W&S £209.95 C

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

MFJ-112B

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

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

VIBROPLEX UK Distributors

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

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

Watson Cross Needle Meters

NEW

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

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

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

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

Butternut Vertical Antennas

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

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

Watson Coax Switches

NEW

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

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

Radio Works Carolina Windom Ants

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

All windoms include WARC bands

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

Baluns

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

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

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The FTDX5000 heralds a new era in Yaesu HF engineering. Unlike the one recently supplied for review, our stock is genuine European approved and meets EU standards.

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Phone Us For Full Details & Prices

FT-2000 PEP 100-200W 160m-6m

The FT-2000 needs little introduction. It is the standard by which many rigs are compared. And if you select the FT-2000D you get 200W of output power complete with AC power supply. All our models are "PEP" versions with the latest firmware update.
Check: www.wsplc.com

£2079.95 D

FT-950 100W 160m-6m

The FT-950 was made to give performance that matched the wallets of hams around the world. It benefits from Yaesu's engineering developments & many of the design features have been taken from its more expensive family members. If you are looking for a radio that will take strong signal levels & adjacent QRM in its stride, then the FT-950 may be exactly what you are looking for.
More info: www.wsplc.com

£1099.95 D

FT-450 100W 160m-6m

Don't let the low price mislead you! This radio has lots that you might think impossible in this price bracket. It includes 400MHz IF DSP and a superb roofing filter network. And you will love the variable if tuning and width.
Check: www.wsplc.com

£589.95 D

IS THIS THE BEST HAM DEAL?
100W of Base/Portable 160m - 70cms for £579!

FT-857D 100W HF-2m

Sometimes you look back and think - "I wish I had bought that rig." The FT-857 is just that "IWIHBT" radio. Look at the spec; look at the possibilities; look at the quality. Where else could you get all this in one very versatile and punchy radio?

£574.95 D

Mobiles & Handhelds

FTM-10SE	50/40W 2m/70cms stereo FM	**£269 D**
FT-1900	NEW 2m mobile 55W FM	**£129 D**
FT-2900	NEW 2m Mobile 75W wideband receiver	**£139 D**
FT-7900	NEW Dualband 50W mobile, AM airband	**£229 D**
FT-8800	Dualband Mobile 50W / 30W	**£289 D**
FT-8900	10/6/2m & 70cm Mobile	**£334 D**
VX-3E	2m / 70cm Handheld Wideband receive	**£139 D**
VX-7R	Waterproof dualband handy (silver or black)	**£259 C**
VX-8DE	NEW Triple band 6m-70cms APRS etc.	**£399 D**
VX-6E	2m/70cms handy, 5W Wideband Receive	**£199 C**
FT-60E	2m/70cms, 5W handy Wideband Receive	**£142 C**

COMING SOON **FTM-350E New Dual Bander**

** High Speed Bandscope * 500 + 500 Alpha Memories*
** Bluetooth Ready * Built-in Barometric Pressure Sensor*
** Large Dot Matrix Display * Selectable 8 Colour Display*
** Extended Receive * AM & FM, FM Stereo Broadcast Bands*

Due July/August

HF Transceivers

FT-2000D	PEP 200 Watt version of FT-2000 + built-in PSU	**£2649.95 D**
FT-450AT	100W HF - 6m with automatic ATU & latest updates	**£679.95 D**
FT-DX9000contest	200W HF - 6m "formula one" contest machine	**£3999.95 D**
FT-DX9000D	Deluxe fully loaded base station	**£7695.95 D**
FT- DX9000MP	Amazing 400W "legal limit" radio	**£7995.95 D**
FT-817ND	HF - 70cms 5W all-mode transceiver	**£439.95 D**
FT-817BHIDSP	Fitted with DSP module exclusive to W&S	**£549.95 D**

RadCom

THE RADIO SOCIETY OF GREAT BRITAIN'S MEMBERS' MAGAZINE

MANAGING EDITOR:
ELAINE RICHARDS, G4LFM
E-mail elaine.richards@rsgb.org.uk

TECHNICAL EDITOR:
GILES READ, G1MFG
E-mail giles.read@rsgb.org.uk

RSGB ADVERTISING:
KIM MEYERN

All contributions and correspondence concerning the content of *RadCom* should be posted to: The Editor, *RadCom*, 3 Abbey Court, Fraser Road, Priory Business Park, Bedford MK44 3WH
Telephone. 01234 832700
Facsimile. 01234 831496
E-mail. radcom@rsgb.org.uk

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Tel./Fax. 01603 898678
E-mail. adsales@rsgb.org.uk

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

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RSGB President Dave Wilson, M0OBW meets ARRL President Kay Craigie, N3KN.

News and Reports

Could you talk to Alpha Centauri with this? See p60

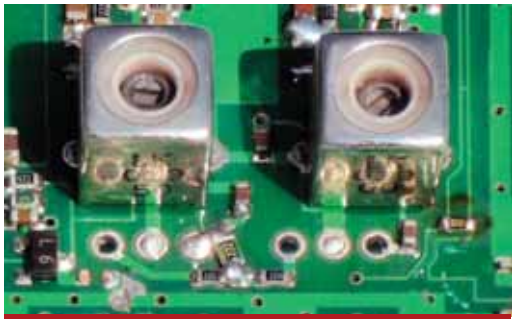
Reviews

Features

Inside Icom's new home – p64

Technical Features

Regulars



Improving the sound on your ATV transmitter – p68

Forthcoming IARU activities at the ITU

ITU Working Parties 1A and 1B will meet in Geneva between 21 and 28 June. A major item of discussion will be protection of radio services from interference from Power Line Communications (PLC) also known as PLT or BPL. IARU has already contributed to the ITU-R report SM2158 Impact of power line telecommunication systems on radiocommunication systems operating in the LF, MF, HF and VHF bands below 80MHz where the acceptable criteria for degradation of the HF radio noise floor caused by PLT is defined as being 0.5dB. Work in WP1A will concentrate on the protection of radio services from the effects of PLT in range from 80 to 200MHz.

The IARU delegate to SG1 and its working parties is Peter Chadwick, G3RZP: three input contributions have been prepared for this meeting. One of these is a report on the effects of intermodulation in power supplies causing the amateur band frequency notches in the PLT spectrum to be degraded: this report has been prepared from the work by Richard Marshall, G3SBA published in *RadCom* and also points out the difficulty such effects could have on the PLT system itself.

A further input establishes the protection criteria for amateur stations operating in the 2m band: Ian White, GM3SEK contributed to this input and it is considered that the amateur and amateur satellite services require protection such that PLT interference does not exceed -45dBμV/m in the main lobe of the antenna, with a separation between antenna and the PLT installation being at least 10 metres.

The third input is of a more general character showing that there are a number of non-amateur services that could suffer interference from PLT or its harmonics, such applications including social alarms for the elderly, pagers, medical implant telemetry, as well as broadcast, and when aggregation of radiation is concerned, aircraft navigation and communications. When the differences in range between PLT and mains leads and the social alarms and medical implant 'base' stations etc, are taken into account, the acceptable levels of radiation to protect the amateur services are of the same order as those needed to protect these other services.

Corrections

June *RadCom* page 8 contained an incorrect callsign. In the news item Chorley Foundation Success, please note that it should read Ness, MONES. Our apologies to Ness.

Gremlins also crept into the Solar Panel Competition. The closing date is 1 July, not 1 June as incorrectly stated.

QSL Matters

Germany took the top spot for despatches last month with 20kg, followed by 10kg each to Italy, Finland, Russian, Switzerland and USA. 3.5kg packages are on their way to Cyprus, Denmark, Estonia, Latvia, Luxembourg, Macedonia, Portugal, Thailand and South Africa. We completed our biggest UK despatch cycle to date with some 201,215 cards being sent to UK volunteers.

This month we have a plea from a number of sub managers. They tell us that they receive enquiries about envelope availability and are often promised that more will be sent. When these don't arrive the manager then has the dilemma of how long to wait before disposing of cards. Please, if you promised to send your manager envelopes – don't delay!

We've recently had a new rubber stamp made to return cards with the words QSL Direct Only, see www.QRZ.com. Every day we have to limit ourselves to spending one hour checking cards with no obvious QSL route and that only deals with around 45 cards. In that same time we could have potentially placed many more cards that come in correctly in DXCC country and QSL route order, something for which we are extremely grateful. Unfortunately, some amateurs (including very keen and well known operators!) appear more than willing to sit in a pileup for hours to work rare DX but when it comes to that all important QSL card route they pay little or no attention. Here's a good tip. Before writing or printing your DX QSL card use your favourite search engine and check the callsign and QSL route.

If you've been around long enough (like me) to remember the Soviet Union you can recall that all callsigns beginning with R or U went to a single bureau at PO Box 88 Moscow, where they were sorted and distributed by volunteers from the Soviet Youth Movement. All this has changed now. To save valuable time, please pre sort your cards as follows: R prefix cards remain unchanged. U prefix cards should be sorted separately into the following groups and not mixed randomly:

UA-UI – Russia
UJ-UM – Uzbekistan
UN-UQ – Kazakhstan
UR-UZ – Ukraine (EM-EO is also Ukraine and can be bundled with UR-UZ)

There are also a number of other separate bureaux:

ER – Moldova
ES – Estonia
EU-EW – Belarus
EY – Tajikistan
EZ – Turkmenistan

There is no bureau for EX Tajikistan so listen carefully to the QSL info given or check the internet.

5MHz Experiment

Following the extension of experimental access to 5MHz channels, Alan, G0TLK has kindly written a software 'patch' to allow his 5MHz logging program (5MHzLog) to work until 30 June 2015. It will otherwise stop working at the end of June 2010. The patch can be downloaded from, and installation instructions found at www.5mhzlog.g0tlk.me.uk. This page is linked from the '5MHz Station Logging' web page at www.rsgb.org/spectrumforum/hf/log.php.

IARU Contest Sponsorship

Icom UK has kindly agreed to sponsor the QSL cards and trophies for GR2HQ in the IARU HF Championships, which takes place from 1200GMT on 10 July until 1200GMT on 11 July. Trophies will be awarded to the top three UK and European clubs that make contact with GR2HQ and individual awards will go to those individuals that manage to work GR2HQ on one mode on at least 6 bands. The operating team at GR2HQ intend to try and win the HQ stations section of the contest, which is fiercely competitive. There will be 12 hand-picked super-stations dotted around the UK, located so that the team can take maximum advantage of propagation to the major amateur radio populations within the UK, Europe and the USA. These stations will be operating simultaneously and continuously on all of the 6 main HF amateur radio bands, for the 24 hour duration of the contest. For more information on this event, check out the GR2HQ website at www.gr2hq.com.

Frank Featherstone, VQ4RF

The RSGB QSL Bureau is often asked for help in tracing old friends or what to do with silent key QSL cards. Once in a while something more unusual arrives, such as this request from Mary Hinds who is researching her father's history.

Frank Featherstone was active in the UK from 1945 to 1947 but there is no callsign detail. Thereafter he was active as VQ4RF in Kenya East Africa and Mary recalls that he built and operated one of the most powerful transmitters in Africa. Everything was home-brew and his expertise was called upon during the Mau-Mau uprising to provide communications for the Police back to Nairobi when their own equipment failed.

A quick search of the internet under his call brought an amazing array of information and it's obvious that Frank held many awards and was a keen contester. His charging rhino QSL cards can be found on a number of sites. At the time of writing there is even one being offered for sale on eBay and Mary is hopeful she can obtain it.

As children, Mary and her sister remember the many hours that their father spent in his shack. If you have a QSL card or memories of VQ4RF please get in touch with Mary Hind by e-mail to marycorn1@yahoo.com.

CONGRATULATIONS

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

60 years

Mr F E A Green	G3GMY
Mr G Halse	G3GRV
Mr F Robins	G3GVM
Mr R Wheeler	G3MGW
Mr D F Willies	G3HRK

50 years

Mr A R Bond	G8BJP
Mr B P Carter	G3ODU
Mr G W Jenner	G3KIW

RSGB Convention

Taking place on 8 and 9 October, there are special offers available on one or two night packages for the RSGB Convention if you book before 14 August. The package includes bed & (full English) breakfast accommodation at Horwood House Conference Centre, Milton Keynes. All rooms have private bathrooms, TV and direct dial phones. Both packages include Saturday and Sunday admission to the event and Saturday evening DX Gala Dinner. Two night packages also include the Friday evening dinner in addition to the extra night of B&B accommodation. Complimentary transfers from Milton Keynes railway station are also included in package bookings if required.

You can also book day tickets for either the Saturday or Sunday. Details at www.rsgbevents.org.

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.

2E0OAD	Mr A Haigh
2W0BUQ	Mr S D Gibbon
AB9MZ	Mr G D Rosenberg
AE2J	Mr A Koshigebolg
DL3KF	Mr K Floer
EI7GWB	Mr A Keaveney
G3SOU	Southampton A RClub
G4MLB	Mr R Padmore
G7HDJ	Mr P J Fitzgerald
G7TQG	Mr R Burrell
G7UTR	Mr G Kelsall
G7WIB	Mr C Rose
GI7TFK	Mr S McCormick
GM4UPN	Mr P Ingram
GM7LJE	Mr J Freer
K3DCS	Mr D Schmitt
K3MMB	Mr M M Barrett
K4ML	Mr R Tingle
K5IC	Mr A Kaupman
K6XC	Mr R Luttringer
K9AM	Mr M Anthony
KA3FQS	Mr T Frederiksen
KA8IMZ	Mr M J Luberto
KA8SYV	Mr F Powell
KB0PKO	Mr C M Alton II
KB1SRO	Ms J Attaya-Harris
KB3LAN	Mr M Azzarello
KB5VP	Mr D Price
KB8LEF	Mr V Senger
KC9NZP	Mr D White
KC9OPV	Mr M Cicchetti
KD8BWV	Mr J Boyce
KE5JCB	Mr K Frazer
KIMWP	Mr M DeBerry
M0DGQ	Mr B Zarucki
M0GDE	Mr G D Hobbs
M0KYR	Mr K Orfanidis
M0PJK	Mr P J Knappett
M3ZQC	Mr M C Hackett
M3ZVR	Mr B Bateman
M6AAP	Mr K Metcalfe
M6ABD	Mr M Edmonds
M6ABK	Mr D Hall
M6ADB	Mr A D Banks
M6BHX	Mr E Underhill
M6CKP	Mr C Prior
M6DNF	Mr D Featherby
M6GIB	Mr R Gibbs
M6GTO	Mr B P Thomas
M6HBB	Mr H B Buckley
M6NOT	Dr S J Leask
M6ROW	Miss C D Hartshorn
MI0DFG	Mr J Stoole
MI6TCA	Mr B W Burns
MI6WJK	Mr JWJK Kelso
MM1EJK	Mr J Mckeown
MM6IAB	Mr J G Joyce
MM6LJQ	Mrs L Quin
MM6MRQ	Mr M R Quin
MW6ADZ	Mr A Lewis
N3GHT	Mr W Powers
N3XPD	Mr M D Warner
N4BKT	Mr W Laakkonen
N5EN	Mr S M Niles
N8BHF	Mr A Verdun
N9WBJ	Mr D Williamson
NY9H	Mr B Steffey
ON4SG	Mr G Schepens
PJ2BR	Mr B Ruiz
PJ2KC	K Chang
RS204026	Mr C K Farmer
RS205890	Mr R H East
RS205905	Mr G Haddock
RS205906	Mr B Kilbride
RS205907	Mr G R Ziegler
RS205908	Mr R N Olson
RS205909	Mr M R Pfeiffer
RS205910	Mr K W Walby
RS205941	Mr D Clapperton
RS205952	Mr WTJ Knight
RS205960	Mr C J Newberry
RS205962	Mr D Jones
RS205975	Witton A R Club
RS205981	Mr C S Queiroz
RS205992	Mr M Cahill
RS206011	Mr G Shorter
RS206014	Mr D H Percy
RS206020	Mr P E Woodburn
SP5BMS	Mr R Pszczolkowski
VE3AJ	Mr J Byers
W0AFQ	Mr L A Anderson
W1RAG	Mr R Green
W2YR	Mr J Gagen
W5MRW	Mr R Wilson
W6MMA	Mr V L Wright
W9DDD	Mr J Koster
W9IUF	Mr J Sissom
WA2BCK	Mr T H Nail
WA3ENK	Mr R Kreuter
WA3WSJ	Mr E R Breneiser
WB3BFC	Mr R Deal
WB6MTA	Mr M Klatt
WB6VVA	Mr E Swenson
WF4Z	Mr J P O'Connor

Spectrum Defence Fund

The membership of the Chester & District Radio Society recently voted to donate £450 towards the RSGB's Spectrum Defence Fund. Pictured in the photo is Treasurer Brian Levett, G3TXH handing over the Society's cheque to Chairman John Langan, G0KKO. The Society is increasing its own on air activities with regular operating evenings from the club room and outdoor venues and sees the fund as important in securing the interests of amateur radio in an increasingly commercial world. Details of Society activities are on their web site at www.chesterdars.org.uk.

QSL Sub Manager Change

Dave Bourne, the QSL sub manager for the BRS short wave listener series of QSL cards is stepping down from his post, which he has held for 35 years. The Society and the listening community is greatly indebted to him for this long service. His place is being taken by another long time avid listener, Rob Small, BRS8841. All cards waiting and collection envelopes have been transferred to the new manager, whose details can be found in the members section of the RSGB website and will appear in the 2011 *RSGB Yearbook*.

UK World Radiosport Team

The 6th World Radiosport Team Championship will take place in Moscow on 10-11 July and the UK will be represented by Andy Cook, G4PIQ and Dave Lawley, G4BUO.

Unlike all other HF contests where entrants are separated geographically, WRTC brings two-man teams together in the same geographical region so that, as far as possible, differences in location are eliminated. The Russian organisers have gone further than previous WRTCs by arranging for all fifty teams to be located close together in three large flat field areas near Domodedovo, south of Moscow. The stations will be set up 'field day' style in tents with identical triband beams and dipoles for 40 and 80m. Two transceivers are allowed, with only one transmitted signal at any time. The power limitation is 100W. Each team will be monitored throughout the event by an on-site referee to ensure that the WRTC rules are strictly followed. Separation between adjacent stations will be at least 500m.

For WRTC 2010 there was a qualification process based on contest results over the last three years and Andy, G4PIQ qualified in top position in the first zone of Europe that covers the UK, Ireland, France, Spain, Portugal and Italy. Andy was also in Team UK in 2002 in Helsinki when he was partnered by G4BWP; this time he joins up with Dave, G4BUO. Dave is a veteran of the first WRTC that was held in Seattle in 1990 and he competed again in Slovenia in 2000. Both were lead operators at the M6T contest station in Suffolk when the European Multi-multi record was set in the CQ Worldwide Phone contest in 1999, a record that still stands today. Andy and Dave have recently been getting some practice for the unique demands of the WRTC competition at the M6T station.

The WRTC event takes place at the same time as the IARU Radiosport contest and WRTC teams will be assigned callsigns in the range R30A-R39Z. Operation will be on phone and CW, and the exchange is RS(T) and zone number – the UK is in ITU zone 27. Another feature of the IARU contest is the Headquarters section – see previous editions of *RadCom* for information about the RSGB HQ station GR2HQ.

The organisers of WRTC are keen for as many contacts as possible to be made with the WRTC stations and on the website www.wrtc2010.ru you can see details of various awards which are available, including a certificate for making fifty QSOs with WRTC stations (out of a maximum possible 500!) and a T-shirt for making 180 QSOs. Join in the fun on 10-11 July starting at 1200UTC and hunt for those WRTC stations. We wish Andy and Dave every success in WRTC 2010.

The UK team, left Dave, G4BUO and right Andy, G4PIQ. Photo courtesy G4ADM.

EU Directive

The European Parliament published the 'Second Progress Report on the Operation of Directive 1999/5/EC on radio equipment and telecommunications terminal equipment and the mutual recognition of their conformity", which might affect the amateur radio service in the future. Thilo Kootz, DL9KCE highlights some areas of concern on the IARU Region 1 website (www.iaru-r1.org). "Some terms might be redefined as the following citations from the report indicate...

"1. The Directive contains in Article 3 a number of essential requirements to protect health and safety, ensure electromagnetic compatibility and to avoid harmful interference. The way in which these essential requirements are defined in the Directive is generally considered appropriate by stakeholders. However, the concept of 'intended use' of the equipment seems to create some confusion between the essential requirements of the Directive and other public interests, such as public security or freedom of communication, which are beyond its scope.

"2. There has also been some evidence suggesting that harmonised standards may sometimes be too stringent. Market surveillance campaigns have shown that a proportion of unlicensed low power devices appear to be non conformant with the harmonised standards (cf. § 2.5). However, the recorded level of harmful interference does not seem to have been affected by this.

"3. The scope of the Directive needs to be reviewed. For instance, the radio and TV receivers which are not able to transmit by radio or cable do not fall within the scope of the Directive, while those which are able to transmit signals do."

Thilo warns that radio amateurs need to keep an eye on the progress of this Directive.

RSGB shop

NEW

Edgar Harrison:

Soldier, Patriot and Ultra Wireless Operator to Winston Churchill

By Geoffrey Pidgeon

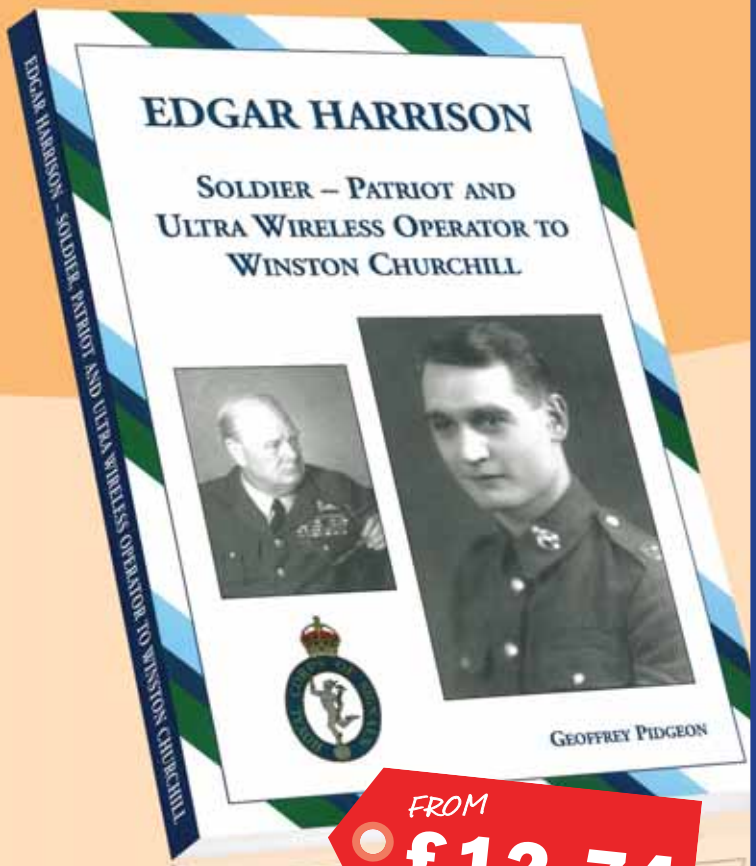
Edgar Harrison had the most extraordinary adventures in World War II. This book details the life of the man from his earliest years through a career in the Royal Corps of Signals an abrupt move into MI6. The story of his numerous missions on all fronts and his time as an Ultra operator for Winston Churchill, is fascinating.

Edgar joined the Army as a 14 year old apprentice and was soon heading on a posting to China for five years. Posted back to Britain in 1938 with war looming Edgar signed on for further military service. In January 1940 he was moved out of the blue into MI6 and the British intelligence HQ at Waddon Hall. By April he was in Norway at the time the Germans invaded, from where he had to beat a hasty retreat. He was then in Brussels during the Blitzkrieg before escaping back to England via Dunkirk. Posted to Greece he was again on the retreat when the Nazis launched their overwhelming attack, he however, refused to surrender with other Allied troops. Instead, he made his escape via Kalamata in a rowing boat before being rescued by a British warship. He landed in Crete and was soon retreating again and was later evacuated to Cairo where he spent time recuperating from the wounds. Edgar was then parachuted into Yugoslavia with wireless gear for General Mihailovic and he became involved in close-quarter fighting between the various factions. Following a submarine withdrawal he was then sent to the Ukraine, for his sixth retreat of the war whilst ostensibly training Russian tank crews in the use of British wireless equipment. After returning to Cairo and Rommel's successful drive into Egypt, Edgar was ordered to set up the agents' wireless station for the SAS and the Long Range Desert Group deep in the Libyan Desert down at Kufra Oasis. From there he was posted to Algiers, becoming involved in the invasion of Sicily and setting up stations in Italy. Eventually Edgar returned Whaddon Hall, five miles west of Bletchley Park, before going to France and Germany. During this time he was also assigned to Winston Churchill as the MI6 wireless operator at meetings with Allied leaders passing the leader the decoded German Engima signals know as Ultra. After the war Edgar became the Principal Signals Officer of the Foreign Office.

This biography has been written by an acknowledged expert on Britain's clandestine activities Geoffrey Pidgeon. This book provides a glimpse of one of the great WWII stories and is recommended to everyone interested in MI6 the work carried out by its signals operators.

Size 177x255 mm, 232 pages, ISBN: 9780-9560-5150-9

Non Members' Price £14.99 **RSGB Members' Price £12.74**



Other related titles

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ENIGMA U-BOATS: Breaking the Code
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www.rsgbshop.org

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Spectrum Defence Fund

NEWS IN BRIEF

• Churches and Chapels on the air 2010 will be on Saturday 11 September from 10am to 4pm. John, G3XYF is compiling the list of active stations. If you intend to put your local church or chapel on the air please contact John by e-mail to g3xyf@btconnect.com or look at the website www.wacral.com.

Northern Ireland Activations

Castles And Stately Homes On The Air (CASHOTA) in Northern Ireland will have a major activation on 16 July. Bobby, MI0RYL has obtained permission to activate both the Stormont Parliament Buildings and Stormont Castle within the Stormont estate in Belfast. To commemorate this activation, a special QSL card will be issued to any contacts that are made. Propagation permitting, they hope to cover as many bands and modes throughout the day to allow as many people as possible the opportunity to make contact. The station should be up and running by 10am with the castle activation number GI022 and WAB No J37.

NI on the Air

Ballymena Amateur Radio Club and Antrim & District Amateur Radio Society came together for the June bank holiday to activate Shanes Castle, Antrim as part of the Steam Traction Rally and Fair. The clubs worked over the Sunday and Monday Bank holiday to make as many contacts as possible despite the very difficult propagation conditions at the time. They also showed members of the public amateur radio in action. Lord O'Neil visited the clubs setup and was very impressed with the activities of both clubs.

RSGB NI Regional Rep Peter Lowrie, MI5JYK, also awarded both clubs activation certificates on behalf of CASHOTA-NI, thanking both clubs for their hard work. It is hoped that more clubs will follow their example and take part in this award scheme.

New Interference Forum

A new online forum for discussing radio interference has been launched by Nigel Coleman, G7CNF. The forum is pitched at all levels of technical ability and its purpose is to collect together, in one place, technical discussion regarding radio interference and EMC. The forum comprises sections relating to specific interference sources, along with areas for discussion of legislation, Standards, Agencies, test equipment and others.

Connected with the forum are two new databases; the first, called the 'EMC Blacklist' will be a repository for all positively identified sources of interference and it is hoped this will aid radio users to identify unknown sources or avoid products with poor EMC history.

The second database is compendium of Ofcom Spectrum Abuse cases. This database is part of ongoing research into the types of interference being reported to Ofcom and the magnitude and effect these cases are having on the victims. The database will also serve as a public record of Ofcom's performance with respect to interference complaints.

Nigel, G7CNF would like to stress that the databases and the forum are still in their infancy and need data and content from members of the Society in order to become useful tools in the fight against constantly increasing noise levels across the radio spectrum.

The forum can be found at www.qrm.me.uk where you can also find links and further information regarding the databases.

York Exam Passes

Dave Ebbs recently passed the Foundation exam at the York Radio Club. His success was followed by Sam Bloomfield who passed his Foundation exam a few weeks later. Sam is a cadet with 110 (City of York) Squadron Air Training Corps. York Radio Club wish them both well in their new hobby and look forward to helping them progress further.

NEWS IN BRIEF

• The W9DXCC convention in Elk Grove, Illinois will take place on 10 and 11 September, (www.w9dxcc.com). One of the lectures will be the G3RZP talk on ATUs, as given at the 2009 RSGB Convention.

NEWS IN BRIEF

• GB2RB was on the air on 29 May at the Mauchline Holy Fare, activated by members of Kilmarnock and Loudoun ARC. The station was set up in the Robert Burns Monument in Mauchline and the station in use was an FT-100D and a half size G5RV inverted V. Conditions on 40m were not the best with plenty of noise.

New Course in the Midlands

The Midland Amateur Radio Society (MARS) Birmingham will be starting a Foundation course on 8 September at 7pm at the club QTH. Help between classes has been arranged using Skype (details will be given out at the first class). The club will also be starting a Morse for Beginners class on 27 October at 7pm. Practice in between classes will be arranged via Echolink (details will be given out at the first class). If anyone wishes to take part in either course, please contact either Jim or Martin by e-mail to GX1MAR@live.co.uk. The Foundation course will run even if it only has one person taking it, but the Morse course requires a minimum of five people. More information can be found on the club website www.radioclubs.net/mars or via GX1MAR on QRZ.com.

Glenrothes ARC moves house

Glenrothes & District ARC has completed the move to Scotland's Secret Bunker on the B940 north of Anstruther, Fife. There are issues with noise at the site that have to be investigated, as well as a repair to the floor. In keeping with the mood of the Bunker, the van has been painted in very fetching camouflage colours. There are two vertical antennas on the van, one each for HF and VHF/UHF and the club is looking into the possibility of a dipole or two. The management at the site are hinting that they would like them to put on a period (1960s) operating setup – some members have volunteered to do this as it means dressing up!

GB0HW on the Air

Members of the York Radio Club, G4YRC, recently activated GB0HW from Holgate Windmill in York as part of the Mills on the Air weekend. The mill is unusual in that it uses five sails instead of the more usual four and is undergoing refurbishment at the present time.

Harrow Foundation Success

In May, at the RS of Harrow exam centre saw five students successfully pass the Foundation examination. The chairman of the society, G4AUF, handed out the certificates. The Radio Society of Harrow wishes them well in their further studies to obtaining their Full licences, and looks forward to hearing them with their new callsigns on the air. Left to right: William Shelley, Richard Nagy, Chris, G4AUF, Alistair Sanders, Gerry Bouchier and Ernie Johnston. Photo courtesy G0CAG.

Tartan Trophy

The Tartan Trophy is awarded to the leading Scottish Group in the Open Section of the VHF Field Day. Last year it was won by the Cockenzie & Port Seton ARC. It was presented to Bob Glasgow, GM4UYZ by Rob Ferguson, GM3YTS, Chairman of the GMDX Scotland Group at the annual GMDX Convention.

Photo courtesy Nigel, G3TXF.

Torbay Training Weekend

Torbay Amateur Radio Society held a Foundation training weekend in May. Five candidates took the course and, on Sunday afternoon, they took the exam with a 100% pass rate. TARS regularly holds Foundation and Intermediate training weekends, with the next being an Intermediate course held over two consecutive weekends in early October. Further details can be obtained from www.tars.org.uk. Courses are open to anyone and you do not have to be a member of TARS. Those interested in the club's activities will find meetings held every Friday at 7.30pm in the Teignbridge Scout Headquarters, Newton Abbot.

Cromer Windmill Activation

Members of the Stevenage & District ARS once again activated GB6CW from Cromer Windmill in Ardley, near Stevenage. Because of the very wet, windy and cold weather, they set up inside the windmill instead of operating outside in previous years' sunshine! Again, they were able to rig an aerial around the perimeter of the windmill's sails. Despite this, band conditions were very poor and it was a struggle to find stations. Noise levels this year were moderate; it was just the lack of signals on 40 and 80m. All in all, those involved still had a good time and are looking forward to the Heritage Weekend in September.

QRP in the Country

On 18 July, all radio enthusiasts are invited to QRP in the Country to be held at the farm of Tim Walford, G3PCJ, at Long Sutton, Langport, Somerset TA10 9NJ. The gates open at 10am and entry is free. The theme for the day is homebrew radios.

There will be many attractions, including special event station GX3CMH/P, WS 19 HF sets, WS17 VHF 6m operational on phone/CW and an informal home built competition – bring your entries. There will be a construction and advice clinic as well as display of Walford kits and antique domestic radios. Rob, G3XFD, the editor of *Practical Wireless* is due to award the Bath Buildathon Competition prize. The RSGB will also have a bookstall at the event. In the event of poor weather, all will be under cover in the cattle sheds!

If you need further information, please contact Tim, G3PCJ by e-mail to walfor@globalnet.co.uk.

President visits Satellite Station

On 31 May, President Hu Jintao of China visited the amateur radio satellite station in the China Science and Technology Museum in Beijing. The visit took place around 10am and several children operated the amateur radio satellite HO68 while President Hu Jintao was watching. Radio amateurs BA1DU, BG1TTA, BA1EO, BG1HOB and BD5RV accompanied the President on his visit.

Pictures of the event can be seen at www.bd5rv.info.

President Hu Jintao with the children at the Science and Technology Museum in Beijing. In the background is a model of the amateur radio satellite HO-68.

NEWS IN BRIEF

• GB4BAH will be operated by members of the Coventry Amateur Radio Society on 3 July only from The Almshouses, All Saints Square, Bedworth. The station is celebrating the 170th anniversary of the founding of Bedworth Almshouses by Rev. Nicholas Chamberlaine.

The Hernia Cup

The Inter Club Challenge Cup, otherwise known as The Hernia Cup, is awarded to the winner of an annual fun amateur radio quiz and contested between Dorking & District ARC, Farnborough and District ARC, Guildford and District ARC and Wey Valley ARG Guildford. This year the cup was won by Wey Valley ARG Guildford. The questions were set by Roger, G3SXW and Olof, G0CKV.

The winning team of Bob, G4HZV, Mike, GOEFO (with the trophy), Brian, G3GJX and Mike, G3IAF.

Wouxun Handhelds

ML&S are very pleased to have been appointed UK & Ireland Distributor for the Wouxun Electronics range of communication handhelds. Wouxun manufacture a complete range of high performance very low cost hand portables for both amateur & professional communications. Many features found on Wouxon handies are unique – speech announcement, for example, to aid visually impaired operators, is typical of their attention to customer needs. Unlike many other Chinese manufacturers, Wouxun have their own design and product engineering division with up to date manufacturing capability in Fujian, China. Their latest KG-UVD1P dual band handy is an example of how advanced their product range is.

NEWS IN BRIEF

• GB4BLC will be operated by members of the Coventry Amateur Radio Society on 4 July only. The event will be a joint venture between Coventry Amateur Radio Society & Bedworth Lions Club, operating from 30th Signals Regiment Gamecock Barracks Bramcote near Nuneaton. The station will be promoting amateur radio & Lions Club International to the public.

First Contest Result

Angel Armstrong, M6APA operated in her first major contest just one week after passing her Foundation exam. Her father Eric, M6EKA was her logger in the recent WW WPX Contest. After a slow start, Angel was soon up to speed, keeping her father busy – at times he had difficulty keeping the log up to date. She managed to keep pace with the incoming calls with the confidence of someone with more experience and years. Their equipment was not at all sophisticated – TS-440 with 10W into a G5RV with a North/South orientation, but the results for this new radio amateur were outstanding. Angel achieved 10th place in UK listings with her score of 92,700 points. Within European results she was 322nd from 738 entries and overall achieved a placing of 517 out of 1464 entries.

All the members at her local club, Hull and District Amateur Radio Society, are very proud of her achievement.

Did you know G4OX?

Harry Norman Barr originally and held the Artificial Aerial call 2DYD before becoming G4OX. He lived many years in Luton and worked for SOE at The Frith during WWII. Although Harry died some years ago, his daughter would like to know more about her father's radio life.

If you think you have any information she'd find useful, please contact Neil Whiteside, G4HUN, RSGB Deputy Regional Manager for Bedfordshire & Cambridgeshire, by e-mail to neil@g4hun.net.

Homecoming Scotland Quaich

On a recent visit to the LZ9W contest station in Bulgaria, Gordon, MM6YET met up with Boytcho, LZ1BJ. Boytcho was one of the recipients of a Homecoming Scotland Quaich that was awarded by the GMDX Group to the three operators outside of the UK with the most contacts with Scottish stations using Homecoming Scotland callsigns.

Loughton & Epping Forest ARS

Staged by Brian Reay, G8OSN and Alan Betts, G0HIQ, Loughton & Epping Forest ARS (LEFARS) hosted an informative and enlightening Train the Trainers session at their HQ in Chigwell Row, Essex. The course was attended by members of Loughton & Epping Forest ARS, Silverthorn RC, Barking R&ES, Colchester RA and Harlow & District ARS.

The second LEFARS weekend course of 2010 has seen a further six new Foundation Licensees pass through their hands. This was the 16th course staged by the club since 2002 and another course is to be scheduled for the autumn.

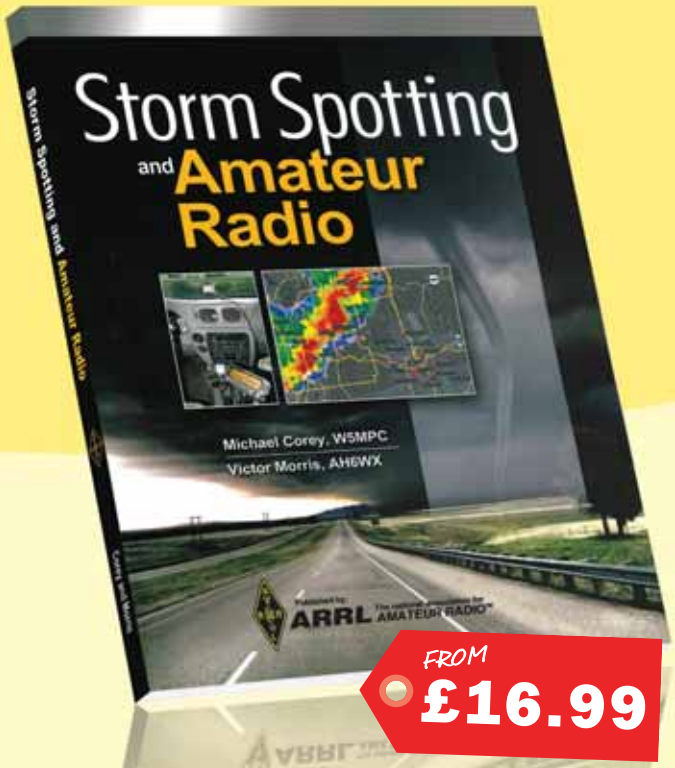
This photo from the Foundation course shows, left to right, Mark Dear, Simon Kapadia, Wioletta Kapadia, Lee Clark, Paul Miller and Spencer Baptiste.

Following the completion of their Intermediate practical assessments in April, John, M6RML, Paul, M3VLT, Tomasz, M3ZSN, Ted, M6EAW and Eduardo, M3YWV all passed the Intermediate exam held at LEFARS in May. Ted, an Australian national who lives and works in France, attended the exam after arriving from Paris via Eurostar (as he did for the LEFARS September 2009 Foundation Licence course and the April Intermediate Licence practical assessments). He also holds the Australian Foundation Licence callsign VK6FEAW.

Left to right: John, M6RML, Paul, M3VLT, Tomasz, M3ZSN, Ted, M6EAW and Eduardo M3YWV.

RSGB shop

NEW



Storm Spotting and Amateur Radio

By Michael Corey, W5MPC and Victor Morris, AH6WX

This book is aimed directly at those who are interested in tornados and other severe weather phenomenon. Using the assistance of thousands of volunteer storm spotters the American SkyWarn® program of the National Weather Service provides a first line of defence against severe weather. Many amateur radio operators are trained storm spotters and this book includes information on resources, training and equipment available to them. The book starts with a straightforward introduction to the subject moving to practical safety information for this hazardous activity and details of what to expect. There are extensive guides to meteorology and hurricanes and storm spotter activation procedures. Readers will also find reportable weather criteria, how to develop a local storm spotter manual and the experiences of storm spotters from around the US. Thoroughly recommended reading for those interested in all severe weather, including hurricanes, tornadoes, hail, floods, damaging wind and winter weather.

208x274mm 160 pages, ISBN 9780-8725-9090-8

Non Members' Price £19.99 **RSGB Members' Price £16.99**

Virtual Radar Explained

By Mike Richards, G4WNC

Virtual Radar Explained covers the world of aeronautical Virtual Radar which is the common name given to the reception and plotting of ADS-B transmissions from aircraft. The use of ADS-B by commercial air traffic has revolutionised the amount of information available to aviation enthusiasts and this unique book covers the subject from just about every angle.

Virtual Radar Explained provides full details and shows how to get the most from all of the mainstream hardware and software offerings including: *AirNav Radarbox*, *Kinetic SBS-1*, *PlaneGadget* and *PlanePlotter*. There is also coverage of how to install effective antennas and feeders for Virtual Radar systems. For home-brew fans, there is information on the "build your own" options that are available via the internet, along with an explanation of some of the technicalities of ADS-B reception. *Virtual Radar Explained* is a very comprehensive book will be of great interest to all the aviation enthusiasts and existing users of Virtual Radar alike.

Size 174x240mm, 64 pages, ISBN 9781-9050-8660-3

Non Members' Price £6.99 **RSGB Members' Price £5.94**

Radio Society of Great Britain
3 Abbey Court, Fraser Road,
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Tel: 01234 832 700 Fax: 01234 831 496

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Spectrum Defence Fund

Eling Tide Mill on the Air

Eling Tide Mill, situated at the northern end of Southampton Water, was the scene of amateur radio activity during Mills on the Air weekend. The earliest surviving reference to Eling Tide Mill appears in the 1086 AD Domesday Book and, over the centuries, it has had to be rebuilt many times. Today, the mill is the only fully working and productive tide mill in the UK, which harnesses the power of the tide to grind wheat into wholemeal flour. Waterside New Forest Radio Club set up and operated GB0ETM from the attic at the very top of the mill. They had a G5RV aerial stretched between the mill building and a mast belonging to the nearby yacht club. They used an FT-757 GX II transceiver. Several club members visited the mill during the weekend and took part in activities by helping to operate the radio station and to dismantle it on Sunday evening. 80m conditions were poor but they did make 40m contacts with Mills on the Air stations in Holland. The club are indebted to John Hurst for his help and cooperation at the mill and to Totton and Eling Town council for allowing them to set up and run the station.

Success at G3BRS

Bury Radio Society held their first Foundation exam in May with a 100% success rate. The Club also holds its main meeting every second Tuesday of the month and a natter evening every 4th Tuesday in the month and anyone is welcome at either meeting.

Left to right: Neil, M6NNH, instructor Norman, G1HHU and Geoff, M6GEF. Thanks to Jim, M0ANQ who also helped during the course. Photo courtesy Steve.

UNITEC-1 spacecraft

Travelling with UNITEC-1 on its epic journey to Venus were the research satellites Venus Climate Orbiter (Planet-C) and Ikaros. The launch took place on 20 May at 2305UTC from the Tanegashima launch centre in Japan. Shortly after launch the 5.84GHz CW and FSK signal with the callsign JQ1ZUN was received in Japan. At that time it was 30,000km from Earth and was a good signal but some frequency instability was noted.

Radio amateurs from AMSAT-DL and AMSAT-UK listened for signals from UNITEC-1 using the 20 metre dish at the amateur radio facility in Bochum, Germany. On 21 May at 1900UTC they heard Planet-C and Ikaros on 8.4GHz but not the 5.84GHz signal from UNITEC-1. Further attempts to hear it at Bochum on subsequent days were also unsuccessful. In Japan attempts have been made to hear it using a 32 metre dish but so far without success.

Keen New Amateurs

Three more candidates have been successful in passing their Foundation exam. Congratulations to Dorothy Clayton who, after many years of being a radio widow, decided to go for it herself and passed with no problems. Her husband Bob, G0DAM had better watch his radio equipment now! Samuel Smith passed, taking only 11 minutes to complete the paper. Not to be outdone, Barry (Sam's dad) also passed.

The club have had one student upgrade from Foundation to Intermediate. Mark Raynor now has the callsign 2E0VAT and he is now studying for the Advanced level.

Congratulations to Kev, M0KVM. Roy, G0VJY and Darryl, G0FUO who all took the Morse proficiency test and are now Morse Proficiency Test Examiners, based at Mexborough & DARS.

The new Foundation licensees.

NEWS IN BRIEF

• A YouTube video of the Belkin adapters interfering with VHF can be viewed at www.youtube.com/watch?v=z3yVu5IfaEY. The video is aimed at broadcast VHF FM and DAB users. Both services enjoy very high power transmitters, resulting in high field strength, yet the adapters still cause interference.

Radio Scouting Recognition

Three UK Radio Scouters from across the UK met up at The Queens Scouts Parade at Windsor Castle after the Queens Scout St Georges Day Parade and Service reviewed by HRH Prince of Wales. Frank, M0AEU, Richard, G7BIV and Nigel, GW7VJK were awarded the Silver Acorn and Bar for services to Scouting. UK Radio Scouting supports many Scout events in the UK and this year has also supported Girl Guiding UK during their Centenary. The most well know event is Jamboree on the Air that takes place during October annually. Pictured are Nigel, GW7VJK and Val Cole.

Harlaxton Gathering

The recently rearranged Harlaxton Gathering organised by Jim Wheeldon, M0JHW and his wife Sam (with help from family members and Billy, 2E0XAL and David, G4MQM) was a sunny success. The special event callsign GB0GRA was on the air and around 25 amateurs attended the event. Amongst the gathered crowd was Jim, G0EJQ, RSGB Regional Manager for Region 13. As usual, M0JHW and his team laid on a great event with lots of amateur radio – not to mention the barbecue.

Sutton & Cheam Pass Inspection

Sunday 28 March was the conclusion of Sutton & Cheam Radio Society's Intermediate course, with 13 out of 14 students passing. Two of the students scored 100% and several got more than 90%. The training team also had a surprise exam inspection.

It was good for the inspectors to see the course had attracted a wide spectrum of students from teenagers to those enjoying their retirement, one with a disability and one for whom English is a second language. The club is also very pleased that a number of these students carried on with their study and sat the Advanced licence exam in June. They are now nervously waiting their results.

Congratulations to Colin, 2E0PMC, Chris, 2E0CTH, Neil, 2E0NBH, Griff, 2E0GRF, Dee, 2E0BZV, Eric, 2E0MUM, Mike, 2E0MRE, Mike, 2E0RKL, Mark, 2E0OMZ, Alex, 2E0WOL, Richard, 2E0RSJ, Alan, 2E0VAV and Anibal (new callsign unknown). Also in the picture are some members of the training team Martin, M1MRB, Denis, M0NDJ, Darren, M0PRV, Steve, G3WZK. Missing are Tim, 2E0TTA and Paul, M0TZO.

NEWS IN BRIEF

• The D-Star protocol developed by the Japanese Amateur Radio League (JARL) is open and freely available. However, the AMBE voice encoding scheme currently used by the D-Star protocol is patented by DVSI, Inc. Development on an open source, freely available alternative to AMBE has been spearheaded by David Rowe, VK5DGR. This open voice codec is called Codec2 and is in a highly experimental stage at this current point. Learn more at www.rowetel.com/blog/?p=128.

• Flight Refuelling ARS is operating a Special Event Station at Kingston Lacy House, Wimborne in Dorset on 11 and 12 September as part of the National Trust open day. The NT administration has asked if other radio clubs in the UK are likely to have a Special Event Station at other NT sites for their open day. As this is good advertising for amateur radio, perhaps clubs in the UK could think about this and get in touch with their NT regional coordinator.

NEWS IN BRIEF

• South Tyneside Amateur Radio Society will be working from Souter lighthouse with the callsign GB2SJ over the weekend of 21/22 of August for the International Lighthouse and Lightship Weekend, not as previously stated on the 7th. They plan to be working all modes and bands including data modes. Visitors are always welcome and Souter lighthouse is one of only two to have a permanent callsign. Details can be found on the club website at www.starsradio.co.uk.

Chepstow Exam Success

Chepstow & District ARS continues to experience a renewed enthusiasm with good attendances at meetings and more exam successes. Seven candidates recently passed their Intermediate exam thanks to instructors Steve, GW4ZOE and Nick, G8YJM. The candidates were Paul Dekker, Susan Gillard, Jim Hewitt, Adrian Hewitt, Bernard John, Adrian Lane and Wil Oliver. There was also one successful candidate for the Full Licence, Derek Embrey. An Advanced course is scheduled to start in September and interested parties should contact Steve Trott by e-mail to gw8zoe@btinternet.com

WiNRADiO Products

Waters & Stanton PLC are pleased to announce that they are now the UK & Ireland distributors for the WiNRADiO range of products. The state-of-the-art Excalibur radio model WR-G31DDC was recently launched at the Dayton Hamvention in the USA and will be shown again at the forthcoming Friedrichshafen Hamfest in Germany in June.

The complete range will be available from all good radio dealers or direct from Waters & Stanton and can be viewed on their website www.wsplc.com.

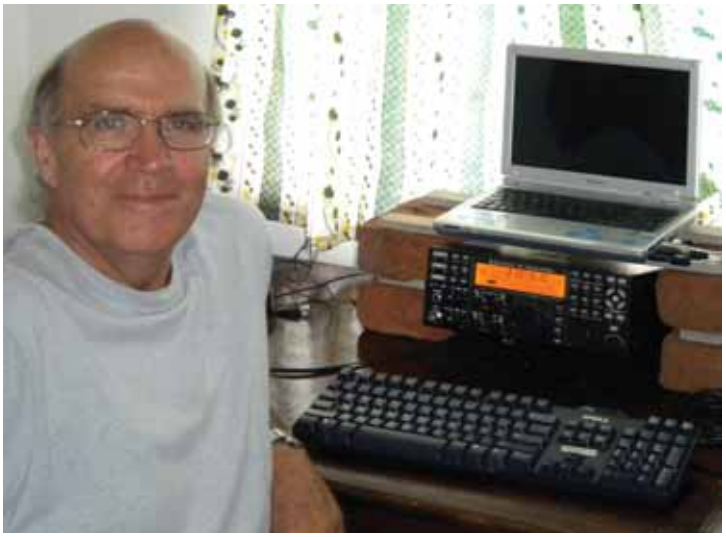
Transmissions from Leith Hill

Dorking and District Radio Society has a privileged arrangement with the National Trust to operate from the summit of Leith Hill, near Dorking, the highest point in SE England. During the summer months, the Society will be active from the site using the callsign G7DOR. The 'expeditions' might be of special interest to participants in the Summits on the Air programme.

4 July:	VHF Field Day
20 August:	0900 - 1200GMT
10 September:	0900 - 1200GMT

The club welcomes QSOs and skeds may be made with John by e-mail to windflowersuk@hotmail.com. Listen on on 3.772MHz, 50.230MHz, 144.775MHz and 145.500MHz.

The 73rd RSGB Commonwealth Contest



Nick, 5X1NH, part of Team Africa.

POPULAR CONTEST. Once again the number of logs received continues to grow. The Traveller concept seems to be extremely popular, with the result that many quite exotic DX locations are available for Commonwealth amateurs. Once again, the level of participation from India was remarkable, and many entrants commented that they cannot recall having ever heard so many on the bands at one time! Despite some indications of light at the end of the 'tunnel of sunspot minimum', conditions on 10m were patchy. Many people gratefully grabbed the opportunities available, whilst others, often in the twelve-hour category, missed out completely.

The number of HQ stations active seems to have more-or-less settled now, with eight available in 2010. Excluding those HQ stations, there were 62 valid call areas represented in entrants' logs, marginally fewer than last year. A total of 264 entries were received, together with fourteen check-logs.

RESTRICTED SECTION. The Restricted section showed a further significant rise in popularity, with 104 entrants this year.

First place, and the Junior Rose Bowl, goes to long-term enthusiast Bob, G3PJT, operating with a J6 prefix from the Caribbean island of Saint Lucia. Peter, G3LET was the top UK station, in overall second place, whilst Gary, VE1RGB managed third position despite finding no 10m contacts. Nick, 5X1NH drops two places from last year to take fourth place, as does Mike, G3IAF in fifth. However, Mike does win the John Dunnington Trophy by doing so, as Peter was ineligible having won it in 2009. There was nothing to separate John, G4CZB and Geoff, G4FKA in joint sixth position, just ahead of Mike, G3VYI, who takes eighth spot. Having found 23 QSOs and 14 bonuses on ten metres, Andrew, V51YJ is placed at number nine, and it is a real pleasure to welcome an Indian entrant to the top ten in the form of Gajendra, VU2BGS.

The highest-placed twelve-hour entrant is Dave, G3ZQH who is in equal twelfth position.

OPEN SECTION. Retaining the Senior Rose Bowl this year, with an unassailable lead, was John, VE3EJ. Second place goes to Nick, G4FAL who achieved a fine score as VP2MCC from Montserrat. Ontario seems to have been the beneficiary of some good propagation this year as, in addition to leader VE3EJ, four more residents gained top-ten ranking – Ron, VX3AT in third, Dave, VE3OI in seventh, Chris, VE3FU who was ninth, and Richard, VE3KI who took tenth place. Cyprus was another 'hot spot' where good 10m openings helped Steve, ZC4LI to fourth spot, Andy, ZC4VJ to fifth, and Alan, P3J to sixth. The remaining eighth position was filled by Dave, G3TBK operating as J88DR from Saint Vincent.

We have to read down to eleventh place to find the leading UK entrant, G6PZ operated by Gerry, GI0RTN, who, nevertheless, is awarded the Col Thomas Rose Bowl. Leading twelve-hour entrant is Cris, GM4FAM who is placed thirtieth overall.

HQ STATIONS. Obviously utilising the advantageous conditions previously noted in the Open section, VA3RAC, operated by Bob, VE3KZ, takes the honours in the HQ section. A short distance behind is GB5CC, with Chris, GM3WOJ on the key from his Scottish Highland QTH. In an unaccustomed third position is the New Zealand station, where the callsign ZL6HQ was used by a team comprising ZL1AIH, ZL1BHQ and ZL1GO. The remaining entrants were VK4WIA (Keith, VK4TT), VE7RAC (Brian, VE7JKZ), VO1RAC (Paul, VO1HE) and VU2MTT.

MULTI-OPERATOR & ASSISTED SECTION. This year eleven stations entered this section, whether due to DX Cluster use, decoding the CW using CW Skimmer, or as genuine multi-operator stations. Topping the table is Terry, G4AMT, followed by two west-coast Canadians – Ralph, VE7XF and Les, VA7RN.

TWELVE-HOUR AWARDS. The Ross Carey Rose Bowl, awarded to the highest-placed UK station in the 12-hour category (regardless of section), goes to Cris, GM4FAM who is placed thirtieth in the Open section. The VP8GQ Trophy, awarded to the equivalent non-UK station goes to Scott, VE1OP with his thirty-third place finish in the same section.

COMMONWEALTH TRAVELLER. The Traveller Award is proving to be a major success. Not only do participants invest much time and effort into organising entries from some interesting places, but, knowing that these rare entities are available with less QRM than usual, act as a further attraction to serious and casual entrants alike. The end result is increased activity around the Commonwealth, which is good for everybody. This year's winner is Nick, G4FAL who travelled to operate as VP2MCC from Montserrat where he managed to take second place in the Open section. Another very creditable effort was by Bob, J6/G3PJT who won the Restricted section from Saint Lucia. Such dedication should be rewarded, and so both will be receiving a certificate.

COMMONWEALTH TEAM CONTEST. Once again, seven teams battled it out to claim bragging rights for another year. Last year's

The St Lucia QTH of Bob, J6/G3PJT, winner of the Junior Rose Bowl.

Colin, G3VCQ eating 'on the run' at J38CW.

Chris, GM3WOJ at second-placed HQ station GB5CC.

winners, the Rest-of-the-World, retained their title with a record-breaking 75,757 points, but only just! Team Canada took full advantage of conditions to amass 74,725 points, an amazing score for a team entirely based north of the equator. Once again, Team Great Britain is third with 59,640 points, although their points total has increased. Australia dropped back to fourth position with 52,549. Africa gained fifth place with 46,693, with New Zealand pressing hard in fifth with 45,164, although the latter were unable to field a full team on this occasion. Newcomers in 2009, Team Asia, more than doubled their previous score to 32,769, although remaining in seventh.

The team members were:

Team Rest of World: J88DR, J6/G3PJT, VP2MCC, J38CW, ZC4LI, ZC4VJ, P3J, C4Z, VP8NO, ZB2EO.
Team Australia: VK6LW, VK2BJ, VK6HG, VK4BUI, VK4EMM, VK6DXI, VK6HZ, VK6AJ, VK6BN, VK2NU.
Team Great Britain: G4TSH, G6PZ, GM3POI, G3LET, MD0CCE, G3SJJ, G3KMA, G3WPH, GM4FAM, GW3NJW.
Team New Zealand: ZL2BR, ZL1T, ZL1AZE, ZM4G, ZL3TE, ZL3GA, ZL3IO.
Team Canada: VE3FU, VX3AT, VE3EJ, VE3KI, VE3OI, VE3UTT, VX7CC, VE1RGB, VO1TA, VY2SS.
Team Africa: V51YJ, ZS6KR, ZS1EL, 5X1NH, 3B9WR, ZS4JAN, 5H3EE, 9G5XA, 9J2BO.
Team Asia: VU2PTT, 5B4AGN, 9M6XRO, VQ9LA, VU2BGS, VU2CDP, VU2PAI, VU2RMS, VU2TS, VU2UR.

QRP CERTIFICATE. This year, six entrants indicated that they were using an output power of five watts or less. Receiving the certificate, with a score of 1615 points, is Chris, GM4YLN. Last year's winner, Dave, G3YMC, was runner-up with 1435 points, whilst there was a tie for third place between Joseph, 9H1CG and Bob, VA3RKM who scored 1195. Also in this sub-category are G3NFB and G6CSY.

ADJUDICATION. 2010 was the year of the robot! The vast majority of entrants submitted their logs without problem, many commenting how easy it was. For those that failed to actually read the rules, and sent their logs as e-mail attachments in the old way, I was lenient. So I submitted those logs to the robot myself, whilst directing the resultant output to the entrant's own e-mail address. Such generosity may not recur in 2011, so please heed the published rules!

Naturally, there were a few questions resulting from robot responses, and these were answered directly. Some of the questions, and their answers, may be of relevance to the wider community, so I will mention them here. Missed and duplicated serial numbers are a fact of life. Although the robot will draw attention to such occurrences, the adjudication process will cope and will not impose penalties. Entrants in the twelve-hour sections should NOT place their operating periods within the body of the Cabrillo file, as this will attract the wrath of the robot. The correct place for such information is in the Soapbox. There is no separate category for QRP entrants, but such adherents will be noted and listed, provided that QRP is included within the Soapbox comments. There are no penalties for duplicate contacts, nor for contacts with stations outside the Commonwealth. The adjudication software will detect these, and disregard them in the re-scoring process. Finally, don't worry if your favourite software cannot cope with the unique scoring system for this contest – a claimed score is not a requirement.

It goes without saying that paper logs are still welcome from those of you who log without computer assistance. There are no plans to change this policy in the future. However, such logs still have to be typed-up to enter the adjudication process, and your assistance in making this task as easy as possible for our volunteers is requested. First, it must be legible! Second, it should be a single log in sequential order, not as separate sheets for each band. Third, please do not waste your time sending a 'dupe sheet'; it is not required and merely adds unnecessary postal costs for you. My thanks go to Steve, G3UFY who did an admirable job in converting paper logs to Cabrillo format this year, despite suffering a painful hand injury.

An online version of these results is available on the Contest Committee website at www.vhfcc.org/hfcc/results/results.shtml

SELECTED SOAPBOX

On conditions >>> Much improved HF conditions at the expense of 80m (G3LET) >>> 15 metres open for far longer than last year (G3PSM) >>> a great opening on 10m on Sunday morning (P3J) >>> No sign of that early morning opening on 10m at this end! (J38CW) >>> 10m band opened nicely bringing hope for coming months and years (VK6DXI) >>> Conditions on the higher bands were a real improvement over recent years (ZL2BR)

On external factors >>> Had a stomach bug on Friday and had to quit 1730-ish on Saturday (3B9WR) >>> Mains power all contest - a unique miracle! (5X1NH) >>> all fitted around family stuff after new junior op Nathan was born a week before (G4RCD) >>> Lost an hour early on when Police came to investigate robbery which occurred just before the start (J88DR) >>> Aged 97 on 21/04/10 & hands packed up. Only my 64-year-old bug enabled me to make these few QSOs (VK4XA)

On the contest generally >>> Please keep the 12hr category for those of us with families (G0HVQ) >>> Thanks to the travelling fraternity who greatly add to the interest (G3KKP) >>> Canadian stations … can always be relied on to provide a good turnout (G3KMY) >>> Very pleased to work so many UK stations this year (V51YJ) >>> Best BERU in recent years (VA3RAC) >>> first time in this contest - didn't have much time but liked it very much (VE3MIA) >>> teams add an interesting dimension (VK4EMM) >>> usual problem with non-commonwealth stations calling (VP8NO)

whilst Bob, G3PJT's BERU website at www.beru.org.uk is also well worth a visit as it contains additional factual and visual material. Thanks Paul, EI5DI, author of the dedicated SDC logging program, for sponsoring prizes for the team competition this year.

Check logs are gratefully acknowledged from 5B4AGQ, 9M2CNC, G3GMM, G3RWL, G3VQO, G3XMM, G3XQX, G4BYG, G4VSS, GM0AXY, GM4ZUK, MM0GPZ, VE7YL and VU2NKS.

CALL AREAS ACTIVE IN 2010. 3B8, 3B9, 4S, 5B, 5H, 5N, 5X, 5Z, 6Y, 7P, 7Q, 8P, 9G, 9H, 9J, 9M2, 9M6, 9V, 9Y, A3, C6, G, G-HQ, J3, J6, J8, V5, V8, VE1, VE2, VE3, VE3-HQ, VE4, VE5, VE6, VE7, VE7-HQ, VE9, VK2, VK3, VK4, VK4-HQ, VK5, VK6, VK7, VK8, VO1, VO1-HQ, VP2M, VP8, VQ9, VU, VU-HQ, VY1, VY2, ZB2, ZC4, ZF, ZL1, ZL2, ZL3, ZL4, ZL6, ZL6-HQ, ZS0, ZS1, ZS2, ZS4 and ZS6.

NEXT YEAR. The 74th Commonwealth Contest will take place on 12/13 March 2011, starting at 1000UTC. Please check the website nearer the time to see if there are any changes to the rules for 2011.

Homebrew

We continue the VHF synthesiser project

CENTRAL ELEMENTS. The three key components of a radio frequency PLL synthesiser are the VCO, the phase-detector/loop-filter and the reference oscillator. The VCO unit for our project was described last month. This month, we will build the phase-detector and the reference oscillator units for the VHF synthesiser project. At the heart of this design is the DDS board from March 2010 **[1]** and the USB PIC board from November 2009.

Most PLL synthesisers use a crystal oscillator as the frequency reference. Simple crystal oscillators as shown in **Figure 1** make ideal PLL references at HF and the lower VHF region. This oscillator is based on a design from Homebrew for April 2006. This type of oscillator can offer stability of a few parts-per-million if high quality components are used and great care is taken with construction.

For higher frequencies or where extreme stability is required, a more stable reference is desirable. Temperature compensated crystal oscillators (TCXO) can be stable to about 1ppm. Even this excellent level of stability will result in drift of more than 144Hz on the 2m band. Frequency standard oscillators are now widely available on the surplus market. Ovened crystal oscillators (OCXO) and high-spec devices like rubidium frequency standards are easy to find and relatively cheap to buy. This type of oscillator offers part-per-billion stability, which is good enough for SSB, CW and other narrow bandwidth modes, even on the microwave bands.

Some of the circuits in the PLL synthesiser are extremely sensitive to noise. Signals with rapid rise and fall times like the square wave reference clock and other digital signals from the control and frequency display systems must be kept well away from sensitive circuits like the VCO and loop filter. To ensure that these circuits have a clean power supply, it is a good idea to use separate voltage regulators for these critical stages.

Figure 2 (a) shows the classic three terminal voltage regulator circuit. The regulator input and output are bypassed to ground using a pair of capacitors. The input bypass capacitor filters out high frequency noise from the unregulated DC input. The output capacitor reduces high frequency noise generated within the regulator. **Figure 2 (b)** uses additional capacitors that provide more effective filtering over a wider bandwidth. **Figure 2 (c)** has a revised output circuit, which can be very effective at removing higher frequency noise.

Some regulators are prone to instability when they are terminated in a reactive load. Always check the output using an oscilloscope or AC voltmeter to make sure the regulator is stable.

THE REFERENCE OSCILLATOR. I used a 10MHz OCXO as the reference oscillator. As the CMOS phase detector used in the PLL is only reliable at frequencies up to 3-4MHz, I need to divide the reference down to a suitable value. If a suitable OCXO is not available, a 10MHz crystal oscillator of the type described earlier can be used instead. The simplest possible solution is to use a 1.25MHz crystal oscillator and remove the frequency divider. Suggested capacitor values for this option are 1.8nF in place of 220pF and 390pF in place of 47pF.

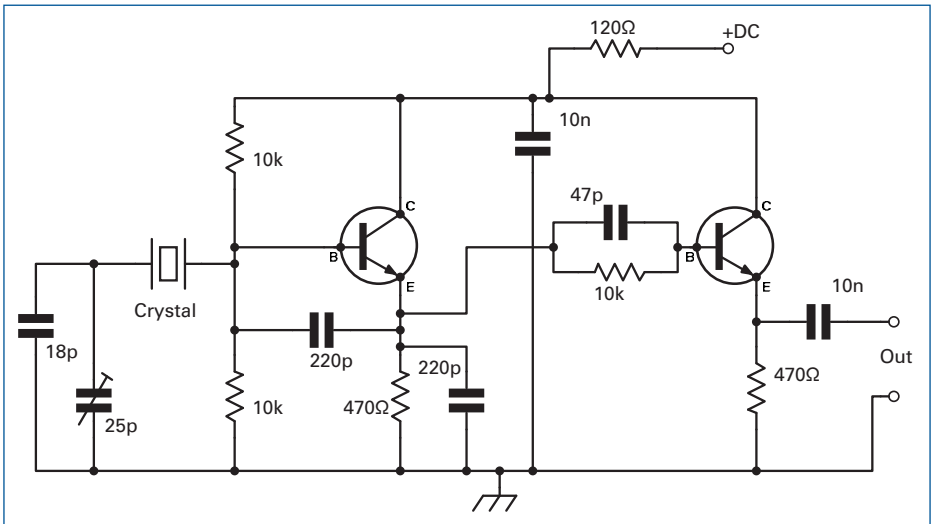


FIGURE 1: Simple crystal oscillator circuit that is stable enough for HF and low VHF.

Figure 3 shows the schematic of the reference oscillator. The OCXO I used is designed to work with a 3.3V power supply. This is provided by a 3.3V regulator. The frequency divider is a 74LS393 binary counter. Only one of the two four-bit counters is used. This gives division ratios of 2, 4, 8 and 16, resulting in output frequencies of 5, 2.5, 1.25 and 0.625MHz. The 1.25MHz output is used as the PLL reference. The 5MHz output is useful for frequency calibration because it is easily measured against the 5MHz output of my shack frequency standard using a dual trace oscilloscope. The 5V supply for the divider IC is provided by a dedicated 7805 regulator configured as in Figure 2 (b). Details of the OCXO supply are not shown because 3.3V is not a very common supply voltage for surplus OCXOs. A 10k multi-turn pot is used for fine adjustment of the output frequency. **Photo 1** shows the finished reference oscillator unit.

PHASE-DETECTOR/LOOP-FILTER UNIT. The 4046 low power CMOS PLL IC has a pair of phase comparators. Comparator 1 is a simple 'type 1' phase detector consisting of a single exclusive-or logic gate. Comparator 2 is a 'type 2' phase/frequency detector (PFD). The 4046 also has a built-in VCO which is not used in this application. The entire package is rated for use at frequencies up to about 1.5MHz when powered by an 8V DC supply. The maximum frequency is limited by the VCO section. When the VCO is not used, the phase detectors have proven to be reliable up to 3-4MHz. To keep within the HEF4046B data sheet **[2]** limits, I have chosen to use a 1.25MHz reference input. The other 1.25MHz phase comparator input signal comes from the output of the AD9851 DDS. The HEF4046B is available from Maplin (QW32K) and many other component suppliers.

Figure 4 shows the PFD and loop filter circuits. The 4046 is powered by an 8V DC supply provided by a 7808 regulator IC. The circuit is built dead-bug style on a strip of copper PCB laminate. **Photo 2** shows the partially built unit. Note the way the IC ground pins are connected directly to ground using the shortest possible connections. The power supply HF bypass capacitors (10n and 100n) are also soldered directly from the IC Vcc/Vdd pin directly to ground. The VCO in the 4046 is disabled by connecting pin 5 to the 8V

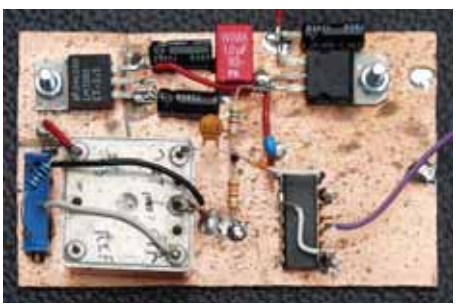


PHOTO 1: Completed reference oscillator.

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Optional, YAESU Exclusive, Fully-Automatic -Tuning Preselector System!

Fully automatic, Ultra-sharp, External µ-Tuning Preselector (optional) features a 1.1" (28 mm) Coil for High Q

On the lower Amateur bands, strong signal voltages can impinge on a receiver and create noise and intermod that can cover up the weak signals you're trying to pull through. YAESU engineers developed the µ (Mu) Tuning system for the FT DX 9000/FT-2000, which is now available as an option for the FT-950. There are three modules available, the MTU-160, MTU-80/40, and MTU-30/20); these may be connected externally, using the optional base kit, with no internal modification required.

When the µ-Tuning module is engaged, the VRF system is bypassed, but the fixed Bandpass Filters are still in the received signal path.

Optional External Data Management Unit (DMU-2000) Provides Many Display Capabilities

Enjoy the ultimate in operating ease by adding the DMU-2000!

Enjoy the same displays that are available with the FT DX 9000 and FT-2000: Band Scope, Audio Scope, X-Y Oscilloscope, World Clock, Rotator Control, Extensive Transceiver Status Displays, and Station Logging Capability. These extensive functions are displayed on your user-supplied computer monitor.

Shown with after-market keyer paddle, keyboard, and monitor (not supplied).

DMU-2000
Data Management Unit (option)

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

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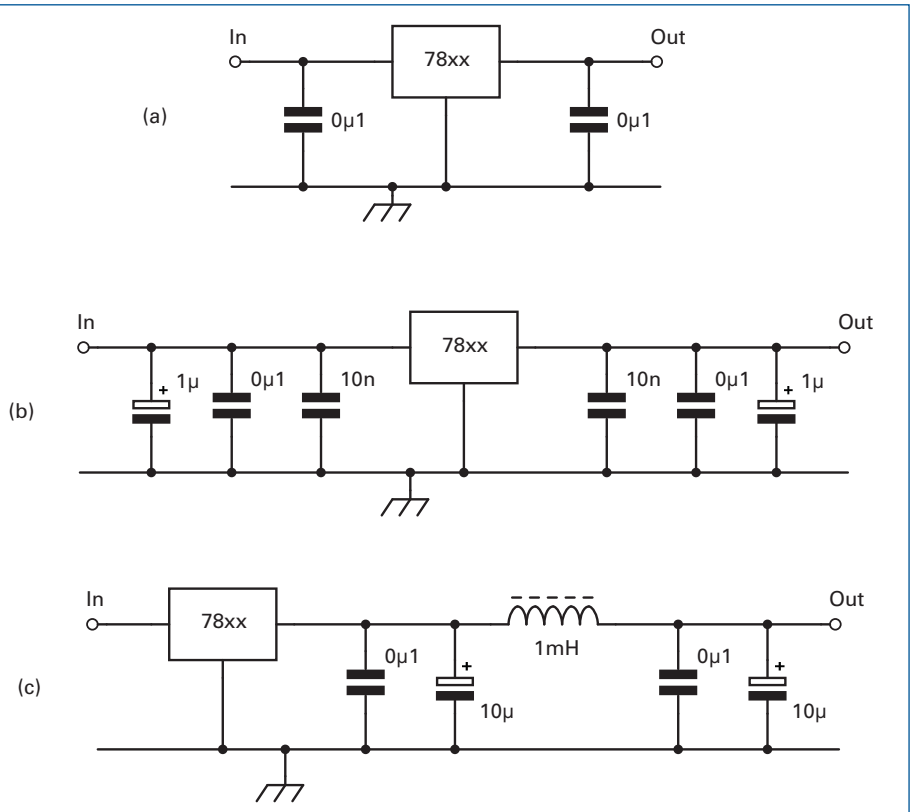


FIGURE 2: Three methods of removing noise from three terminal regulator circuits. (a) – standard, (b) – better, (c) – better at removing high frequency noise (see text).

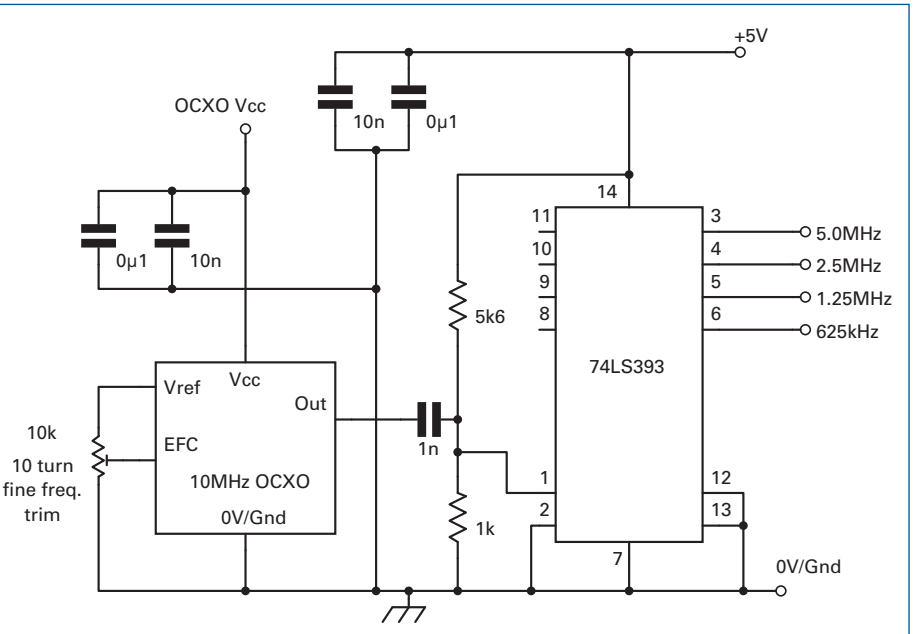


FIGURE 3: Reference oscillator circuit diagram using a 10MHz OCXO.

supply. I wasn't sure what to do with the VCO resistor inputs, so I decided to ground them via 10k resistors. The phase detectors are very simple and easy to use. The inputs of the two phase detectors are connected in parallel so that only two input pins are required. The 2.5MHz reference and the 2.5MHz DDS output signal are fed to the phase detector inputs. Both signals are fed to the IC via 4.7nF coupling capacitors.

Phase comparator #2 is used as the main phase detector for the PLL. Comparator #1 was not used in my original circuit. When I was testing the circuit, I realised that it could serve a very useful function as a lock/unlock indicator. The loop filter is an op-amp configured as an integrator/LPF. In the past, I have used op-amps with CMOS inputs and outputs for this type of application. CMOS op-amps like the CA3140 can swing the output voltage almost all the way to the positive and negative supply rails. Because of the critical nature of the PLL loop filter, I decided to use a low noise op-amp on this occasion. The

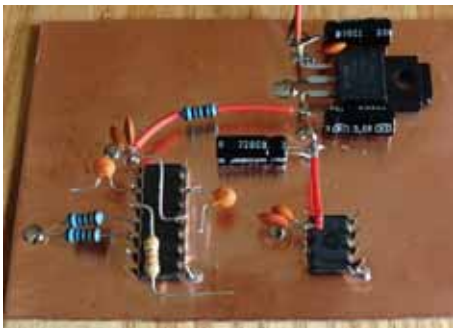


PHOTO 2: Partially built PFD and loop filter.

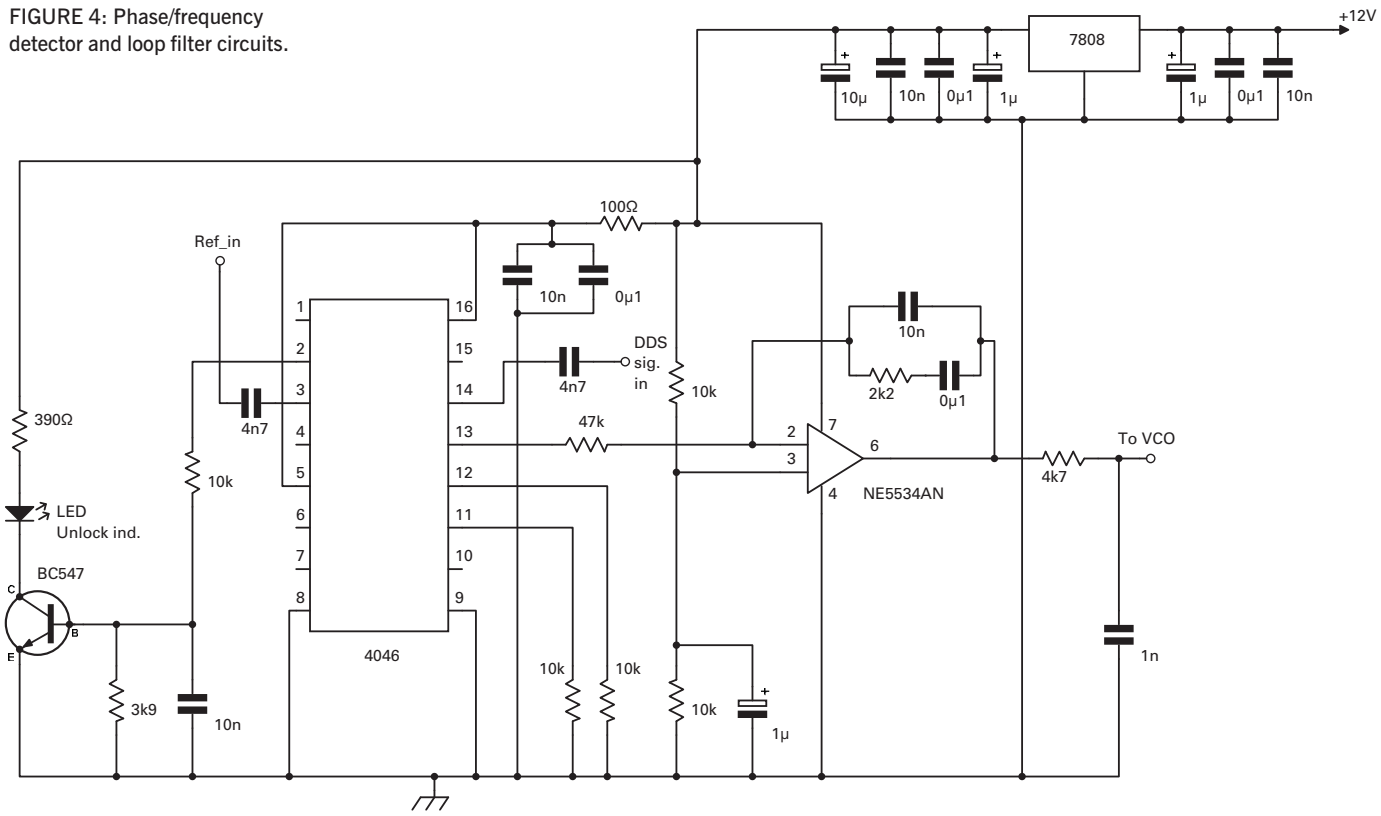
op-amp is an NE5534AN (Maplin YY68Y) which was chosen because of its low output noise and relatively wide bandwidth.

THE DDS UNIT. The AD9851 DDS unit and PIC18F4550 control system are based on the same design as the DDS system described in the March 2010 Homebrew. The LCD display, frequency entry keypad and VFO rotary encoder configuration is exactly the same as was used in the previous project. The REFCLOCK signal for the DDS is taken from the output of the VCO unit. To help maintain good isolation between the VCO output and the noisy digital circuits in the DDS, a simple emitter-follower buffer amplifier has been added to the output of the VCO. **Figure 5** shows the modifications to the VCO. The output signal from the VCO buffer is at a frequency of approximately 133MHz. **Figure 6** shows the circuits surrounding the DDS PCB. The DDS PCB has already been described in detail in our previous project and in [1].

To achieve reliable clocking of the DDS REFCLOCK input, it was necessary to bias the IC input pin to 50% of the supply voltage using a pair of 10k resistors. These components and the 1nF coupling capacitor were grafted onto the existing PCB. The 5V supply for this potential divider comes from the Dvdd (Digital vdd) supply of the DDS unit. The DDS output is passed through a 5th order LPF with a cutoff frequency of about 1.5MHz. The 7µH inductors are each 11 turns of enamelled wire on a T37-61 ferrite toroid. The 4.4nF capacitor is made from a parallel pair of 2.2nF capacitors. This filter is designed for an I/O impedance of 50Ω. The DDS DAC output resistors are chosen for an output impedance of 50Ω. The correct values are 25Ω and 50Ω. I used the nearest available values of 22Ω and 47Ω. See the schematic at [1]. The DDS output is amplified to a 5Vpp clipped sine wave using a simple BC547 transistor amplifier. This amplifier takes its power from the 5V Avdd (Analogue vdd) supply for the DDS.

SOFTWARE. The PIC firmware is derived from the program used for the previous DDS projects. At the time of writing, this software is a bit rough around the edges, but it is functional and reliable. Software routines for driving the LCD display, keypad and rotary encoder were lifted directly from our previous

FIGURE 4: Phase/frequency detector and loop filter circuits.



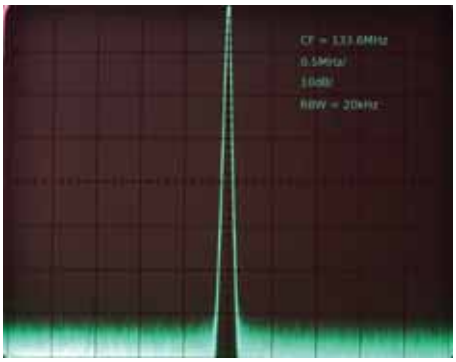


PHOTO 3: Output spectrum of the DDS ±2.5MHz. No spurs were detectable.

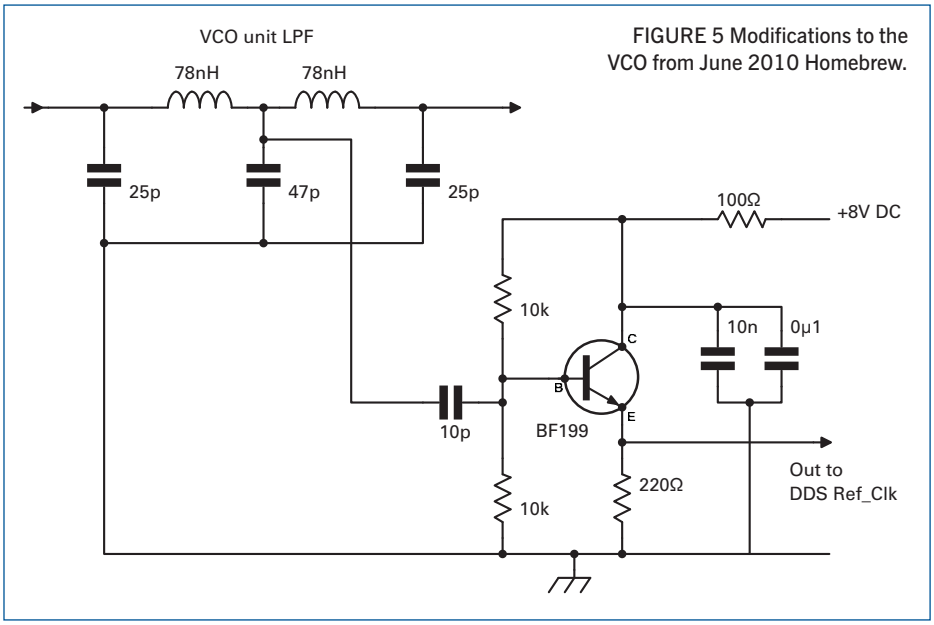


FIGURE 5 Modifications to the VCO from June 2010 Homebrew.

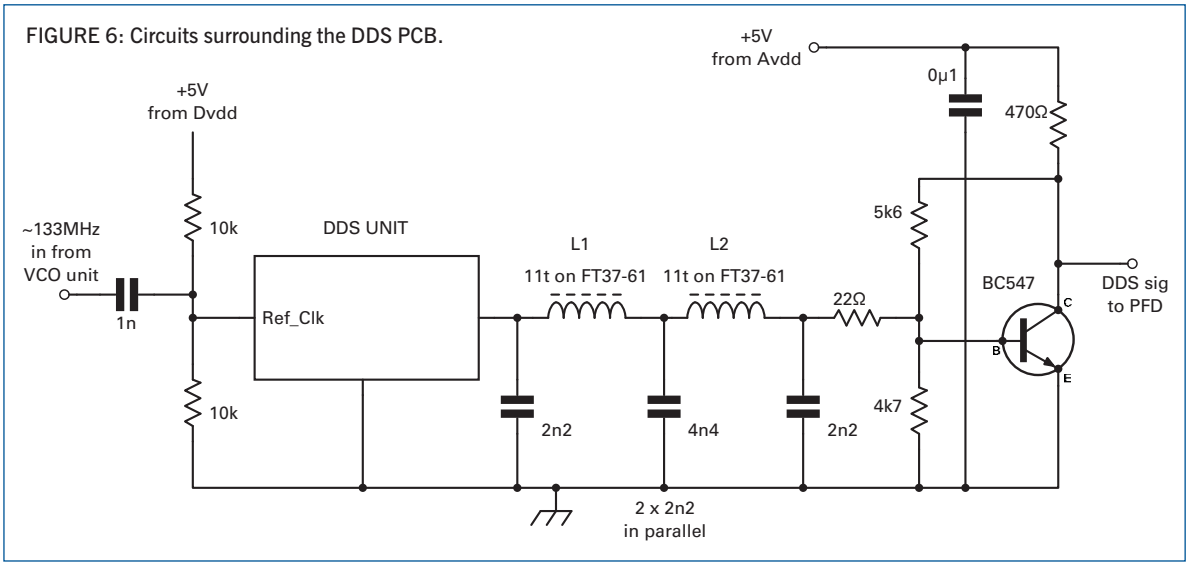
projects. Changes had to be made to the frequency determining parts of the code because of the fact that the DDS REFCLOCK frequency is not constant. The DDS clock is variable over a span of greater than 2MHz and the DDS output frequency is constant at exactly 1.250MHz. The PLL varies the VCO frequency so that the output from the DDS unit is always kept in phase with the 1.25MHz reference. A -10.697MHz IF offset is included in the Pinguino software; this matches my USB IF filter. This offset is easily removed or modified to suit a different IF. The keypad allows direct frequency entry in the sequence 14xxxxxxx. The '#' key is used as a shortcut to enter the full frequency. The '*' key is used to abort frequency entry and return to the previous frequency. To tune to 144.100,00MHz, just enter '1441#'. The first two digits will always be 1 and 4. My firmware is customised so that a first digit of 0, 9, 8 or 7 will bring me to my four favourite frequencies. This early version of the code has no boundary checking, so it will cheerfully allow you to enter 1Hz or 999MHz, even though the PLL can't possibly lock at those frequencies. The C based Pinguino source code is available on the DDS project web page. A full description of the program is not possible in the space available, but the two lines of Pinguino code below sum up the key changes to the code from the original DDS.

```
// Calculate DDS step
min_step=(float)(dial-10697000)/0xFFFFFFFF;

// Calculate DDS frequency word
freq = (unsigned long) 1250000/min_step;
```

The first instruction works out the DDS step size for a given VCO frequency. In this case, the VCO frequency is the 'dial frequency' ie: 144300000Hz minus the IF offset. The second instruction calculates the required 32 bit DDS frequency word for a frequency output of 1.250MHz. It will be obvious from the above that these values are easily changed to accommodate different offset and reference frequencies. There is nothing magic about 1.25MHz; you could just as easily use a different reference. For example: you could use a standard 12.8MHz TCXO and divider to give a reference frequency of 1.6MHz.

FIGURE 6: Circuits surrounding the DDS PCB.



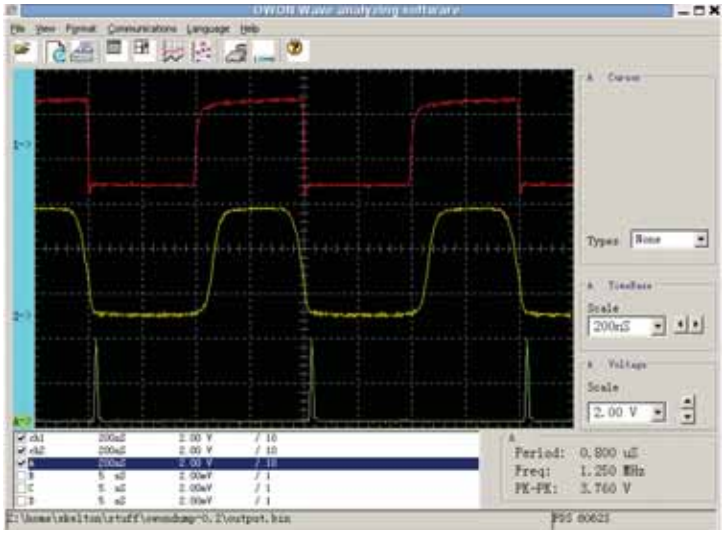


FIGURE 7: Oscilloscope traces of the 1.25MHz reference signal (red), the DDS output signal (yellow) and the output from Comparator 1 of the 4046 (green).

TESTING. The various modules were lashed up on the bench using a few lengths of hookup wire. I was very surprised to see that the PLL locked immediately. I didn't even need to tweak the core in the VCO coil. The 133.6MHz (144.3-10.7) output signal looked quite clean on the spectrum analyser except for a pair of reference spurs 1.25MHz above and below the carrier at a level of -70dBc. I found this slightly disappointing at first. Disconnecting the VCO control line caused the loop to go out of lock, but it did not reduce the level of the reference spurs. This indicates that the spurs are caused by a screening or isolation problem and not by a deficiency in the loop design. Mounting each of the units on a single metal chassis and screwing the lid on the VCO unit resulted in a very clean signal with no measurable spurious signals. **Photo 3** shows the measured output spectrum of the VCO over a span of 5MHz when the loop is locked. Increasing the span to 200MHz (33-233MHz) shows no sign of any spurious outputs. Apart from the 133.6MHz carrier the only other signal detectable is the -57dBc second harmonic at 267.2MHz.

Figure 7 shows oscilloscope traces of the 1.25MHz reference signal (red), the DDS output signal (yellow) and the output from Comparator 1 of the 4046 (green). The output from Comparator 2 is not easy to see on the scope because the pulses are relatively infrequent. Comparator 1 is a simple exclusive-or gate, which means that it will only produce a high output level when the two inputs are not at the same logic level. As the PLL works to keep both inputs exactly in phase the two inputs will, theoretically at least, always be at the same logic level and the XOR output will always be zero. As you can see, this ideal situation is not achieved in practice, probably due to the less than perfect square wave signal from the DDS. However, the Comparator 1 output pulses are quite narrow, making up a stream of pulses with a duty cycle of less than 5%. These pulses are averaged using a simple RC network to produce a DC voltage of about 0.1VDC. This voltage is applied to the base of a transistor in the unlock warning indicator circuit. As this voltage is not enough to forward bias the transistor base, no collector current is drawn and the LED is not illuminated. If the loop is unlocked, the phase relationship between the two phase comparator inputs is changing rapidly and the duty cycle of the XOR output will tend to average out at 50%. This is enough to switch on the transistor and light up the warning LED. A more sophisticated version of this circuit could be used to disable a transmitter if the PLL is out of lock for any reason.

I spent a lot of time tweaking the loop filter component values using various software tools **[3]**. I eventually took a more empirical approach by monitoring the VCO signal with an SSB receiver and adjusting the capacitor values for lowest audible noise at frequencies of 5-10kHz above and below the carrier. The final component values result in a VCO signal which produces a lovely pure tone in the receiver and is not detectable against a very quiet VHF background at frequencies beyond ±5kHz. As the circuit is built dead-bug style, it is very easy to experiment with the loop filter component values. My RF spectrum analyser is hopelessly inadequate for this kind of work; I am planning to build a test jig for phase noise analysis. A 133MHz crystal oscillator, high-level mixer and LPF should make a good basis for such a device.

For the final test, I used the receive converter from the 2m transverter project (April 2007) as a VHF front end for a 2m receiver. The converter output matching network was modified for an IF output of 10.7MHz instead of the original 28MHz IF. The synthesiser was used as the local-oscillator and the IF/AF from the recent LF receiver project was used as the 10.7MHz back-end. Using my 9 element Yagi, I could easily hear the GB3NGI beacon from Antrim at 380km and the newly reinstated GB3VHF beacon from Kent at 608km. Because of its excellent frequency stability and accuracy, GB3VHF **[4]** is a very useful resource for VHF enthusiasts. Observing the received beacon signal using *Baudline* spectrum analysis software provided much useful information about the long and short term stability of the new synthesiser project. The long term stability of the VHF synthesiser depends on the quality of the reference oscillator. After a week of testing, my test rig is running at just under 0.5Hz HF.

Next month: A high performance VHF receiver front-end.

REFERENCES

[1] http://homepage.eircom.net/~ei9gq/dds.html
[2] Philips HEF4046B data sheet 1995.
[3] www.aubraux.com/design/pll-design-tool.php
[4] www.g0afh.com/gb3vhf/

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Examination Visits

The Quality Manager explains why exam visits are essential

The view is looking down the room from prime to secondary invigilator. Whilst the good gangway width is obvious, what is less so is the door at the back is for a small adjoining room where Chelmsford & District ARS can handle special needs candidates (eg if a reader is needed) - it's also where they quietly mark the papers away from the candidates.

CONFIDENCE. In Mid 2009 I was appointed Quality Manager to the Radio Communications Foundation (RCF). I believe it would be helpful to all those involved in our examination system, and to help those considering getting involved, to explain certain aspects of my post, particularly the unannounced visits to examinations whilst explaining how important it is that candidates can have confidence in our procedures.

I have been charged with the responsibility of ensuring the delivery of examinations involved in amateur radio meets and, hopefully, surpasses a level of compliance that has been set down by the RCF Standards Committee and the RCF Examinations Committee. These two Committees require that a candidate wishing to take a Foundation, Intermediate or Advanced exam will be able to do so in a suitable location that is welcoming and comfortable. The candidate should also be confident that any other candidate taking the same exam anywhere in the UK will do so in similar conditions and that everyone will be subject to a set of rules that are both fair and equal and applied in an even handed manner.

FOLLOWING THE RULES. The overwhelming majority of Examination Secretaries who receive examination papers from RSGB in Abbey Court carefully and scrupulously follow the rules and ensure that the envelope containing the exam papers is opened in front of the candidates and at the correct time; that only those who are supposed to be in the examination room are there; that the desks are arranged correctly and that a clock is clearly visible. Other requirements include the identity of candidates, the start and finish times, a 'Quiet Exam in Progress' sign outside the door, removal of distracting or overly informative posters and that all other exam rules are followed. In this way well in excess of 98% of exams are conducted fairly and equally for all candidates.

Unfortunately a small number of people seem to struggle with the idea of ensuring that candidates have an enjoyable and stress free exam. In a few cases people who should not be in the exam room come and go throughout the exam session. How unfair to people who have studied so hard for a long period of time!

At the end of all exams the marking process commences. In the case of the Advanced Exam the papers are marked at RSGB in Bedford. Good invigilators will always endeavour to let the candidates see their answer papers put into the return envelope and sealed in front of them. Sadly this does not always happen and when, from time to time, problems arise after the papers have arrived back in Bedford it can quickly leave the candidates disillusioned. Sometimes the first a candidate knows of a problem is when they receive a communication from Bedford asking for their views. If the papers have been taken from the exam room 'unsealed' and subsequently the Examination Committee is faced with what appears to be unprofessional or improper activity with the papers this can reflect very cruelly on candidates, particularly if changes in a different colour of ink have somehow crept onto their answer paper. It has happened!

CAREFUL CHECKING. The Intermediate and Foundation papers are marked locally, quite often after the candidates have all left the room. In every case where papers have been marked in the very best manner they have been cross marked by both invigilators and should a candidate fail a further double check has been made of every mark. Intriguingly that is not always the case and in a tiny number of instances only one person has marked and then compounded things by adding the marks up wrong. How would you feel if you were one of the affected candidates and your result had been wrongly counted?

The result of every exam paper, whichever way it goes, is the property of the candidate and RSGB/Ofcom. No other person, not involved in the marking process, should have any knowledge of an individual result. In a few cases some candidates have managed to pick up marked papers of another candidate and seen that person's work. That should *never* happen!

STATISTICS. The Foundation Exam currently consists of 25 questions with the pass mark being 18. The total number of passes and the total number of failures, with all personal details stripped away, is fed through several University computers that produce statistical information. These statistics have several benefits. They allow the Examination Committee to be sure the questions are being set at the correct level, they allow the Standards Committee to see if the Process for Foundation Exams is working well and they allow Ofcom to be confident in the examination system. Similar procedures are applied to the other two examinations.

I mention this because on a few rare occasions it has been reported that results have been miscounted so that a true mark of 17 has been wrongly tallied to 18. Eventually, should the candidate discover the truth, it may be more damaging than helpful and create in their minds mistrust of all examination systems. We must avoid any possibility of this happening. All Invigilators and Examiners are asked to count very carefully. The University computers will eventually expose inaccuracies. Be honest with everyone, even if it is emotionally hard at the time.

CLEAR THE ROOM. Inspectors will always take note if documents or similar material are in the exam room when they should not be there. I would like to remind all Invigilators and Examiners that text books, such as *Foundation Now* are not allowed in the exam room.

AVAILABILITY. Finally, I wish to touch upon the idea of exams being available when candidates are ready. The Foundation and Intermediate exams are prepared in response to requests by Examination Secretaries or others involved in delivery of instruction. Accordingly they usually meet the needs and desires of candidates who have prepared themselves for the examination. The Advanced Exam, currently, is only available on pre-set dates decided by the Examination Committee after consultation with other members of the exam team. When a Club or Group 'signs up' to be an examination provider to candidates there is an expectation that the Club or Group will take into account the wishes of candidates as well as being aware of pressures elsewhere. Every Club or Group should endeavour to provide what a candidate wants.

Several candidates have expressed disappointment when, in response to a request

In May 2008, Region 12 Manager Phil Brookes did a surprise inspection of an Intermediate exam and reviewed how Chelmsford & District ARS had run and marked an exam for ten candidates (papers all laid out on the desk in the rear marking room).

for that exam, they are told Advanced exams can only be held on 'Club Night' as that is the only time the Club is prepared to gather the necessary invigilators and helpers. Disappointment of this kind impinges on candidate confidence.

If a particular club's meeting night is Thursday and that is the only night they can hold an Advanced exam then this in effect means that the club can only hold ONE advanced exam a year. This confuses some candidates who have been led to expect that an exam will be available once they have struggled to learn the Advanced syllabus. Indeed this creates a situation of exam availability at that Club well below that offered by City and Guilds.

If your Club believes that it can only offer one exam a year; then I hope that every Club member will consider volunteering to help to ensure that the Advanced exam is offered whenever a candidate requests it. Progression to a Full licence is the dream of every amateur and all of us should ensure nothing prevents that dream being fulfilled. Make your club the best examination centre in your region.

BE THE BEST. I have earlier in this article touched upon information reaching the RSGB, myself or members of the RSGB Regional Teams, that on occasion, improper things happen. We cannot allow things to be 'wrong' and are determined that our examination procedures are on a par with any other examination system. Many of our candidates are teenagers and will be involved in school examinations every year and GCSE's and 'A' levels as they reach the end of their school life. We are adamant that the RCE will equal the rigour and standard of both GCSE and A level and accordingly have in place a process of unannounced examination visits, almost identical to the unannounced visits a school might suddenly have, to reach and maintain that standard.

Hopefully you will by now realise that almost all of the problems I and my fellow Inspectors have concerns about can be described as 'careless behaviour' and not anything worse than that. Nevertheless we will endeavour to encourage every person involved in the delivery of Radio Communications Examinations to reach a target of 'excellent behaviour' so that all licensed amateurs can be proud of our systems.

RSGB/RCF administers over 2,000 individual examinations on behalf of Ofcom each year. Things have gone wrong but fortunately have only involved less than a handful of instances. We must prevent even 'a handful' of cases of silliness and immature error so that our examination process can stand any inspection.

I ask you all to welcome an Inspector should one suddenly arrive at your exam and, as has happened to me at every visit I have made, make him or her realise they are visiting a professional event. Once the exam is over; get the kettle on and talk about how well you have delivered that exam. Take a picture of candidates, including the Inspector, and get it published in *RadCom* to show you reached the best standards and thereby advertise yourselves, your Club and how professional you are to prospective candidates. Remember that we are one big team working together for our hobby.

Exam visits are essential to maintain and improve standards. Accordingly I do not apologise for writing, yet again, 'Candidates MUST have confidence in the Radio Communication Exams' and that confidence is enhanced by such visits.

I and my fellow Inspectors look forward to meeting you.

Previewing What's On

RSGB Convention

Friday 8 October to Sunday 10 October 2010

Horwood House near Milton Keynes is the new venue for the ever-growing RSGB Convention.

ANNUAL HIGHLIGHT. The RSGB Convention is one of the highlights in the amateur radio calendar and it just keeps on improving year after year. This year the venue is different. Having outgrown the Wyboston Lakes location, the RSGB Convention is moving to Horwood House near Milton Keynes. An early 20th Century manor house, complete with indoor swimming pool, spa, sauna, gym, tennis court and putting green, this new venue has plenty to offer. When you add the diverse lecture streams into the mix, it has all the potential for a fascinating weekend.

TECHNICAL. The Technical stream is well on its way to being finalised with a mix of exciting new ideas and the return of some old favourites. This year Len Paget, GM0ONX is going to talk about planning applications. Len is the chairman of the RSGB Planning Advisory Committee and has a great deal of experience dealing with planning issues. Who better to answer your questions?

Returning with a new subject is Ian White, GM3SEK. Ian will be updating his work on ferrite RF chokes that can be used both as antenna baluns and to help solve EMC problems. These chokes deliver very high performance at low cost and they are very easy to make.

To see what this is all about, start with the 3-page article in the May *RadCom*, and then go to the In Practice web page for an extended and updated version of the article. To go straight to the web page, Google for the three words "GM3SEK IN PRACTICE".

At the talk itself, GM3SEK will also be presenting some new chokes using different types of ferrite cores. If you are considering making a balun, or have EMC problems that could be solved by ferrite chokes, this talk is not to be missed.

VHF & UP. This year the VHF & Up team have a wealth of great lectures planned. Amongst the best of the talks booked is The Study of Coronal Mass Ejections by Dr Lucie Green. Readers may already be familiar with Lucie Green from her appearances on *The Sky at Night*. Her area of research is the study of activity in the atmosphere of the Sun, in particular in understanding how immense magnetic fields in the Sun's atmosphere build up to the point where they erupt as a coronal mass ejection. But don't be put off thinking this talk will be 'too scientific' for you; Dr Green recently won the 2009 Royal Society Kohn Award for Excellence in Engaging the Public with Science.

A favourite with Convention visitors is weatherman Jim Bacon, G3YLA. He's returning to the Convention to discuss the latest developments in the research on Sporadic-E prediction.

This is one of the rooms that will be available for talks and lectures during the weekend.

This alcove is part of a much larger room that will be turned into a lecture room for the weekend.

OTHER STREAMS. The IOTA, DX & Operating and the Contest University streams are all being prepared and details will be available over the next few weeks. Keep an eye on the website (www.rsgb.org/rsgbconvention) as details of the talks and lectures will appear soon.

BOOKINGS. The shop is now open for bookings (www.rsgbevents.org) where you will find details of the 1 and 2 night packages, gala dinner and day tickets. Book before 14 August for money off the 1 and 2 night packages.

SPONSORSHIP. Martin Lynch and his team will be celebrating the company's 20th year of trading at the RSGB Convention in October.

Martin first appeared in retailing as far back as 1978, working for Bernie and Brenda at the Amateur Radio Exchange and then went on to open the doors to his original small corner store in London in September 1990. Twenty years later, Martin wanted to celebrate this special anniversary of his company at the new venue at Little Horwood in Buckinghamshire.

The Friday buffet is to mark this occasion titled the ML&S 20th Birthday Buffet followed by two days of trading alongside the RSGB's Co-Sponsor, Icom UK. Martin looks forward to greeting everyone at the event if only to see twenty years of wear and tear on his face!

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Previewing What's On

National Hamfest

FRIDAY 1 AND SATURDAY 2 OCTOBER 2010

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

THE 2010 EVENT. Many of the visitors to the first National Hamfest had high praise for the event. Some things were very right such as the number of traders, helpfulness of the stewards and ease of access. Then again, some things didn't go quite as well as everyone wanted – after discussions with the Newark Showground caterers, improvements have been promised. There should be a wider choice of food and drink with an improvement in quality! But, overall, the feedback was very positive indeed, so we have all taken note of what the visitors said and have a few changes and additions to make the 2010 event even better.

At the first National Hamfest last year, many visitors marvelled at the engineering on the LUSO towers. The tower was transported by container and unloaded inside the hall a few days before the public arrived. This year LUSO will have a site in the hall and an outside exhibition too. Organisers (and visitors) will have to wait and wonder what will be in the container when the doors swing open.

Several visitors thought that the event would be improved by a lecture stream. This is being put together and the organisers would like to hear from anyone who could make a 45 minute presentation on a communications based topic. Offers please to chris@nationalhamfest.org.uk.

The layout inside the hall has been changed to allow more area for traders so there will be a lot more to see. The exhibition hall will still have wide and spacious access to the stands. The bright and airy atmosphere was commented on by a number of last year's visitors.

Outside the main hall the trading area is being extended to around twice that used last year. The outside traders did brisk business at the last year's show. There will also be a large area for car booters. Pitches can be booked via the National Hamfest website.

TRADERS. As well as being able to visit the three main manufacturers – Icom, Kenwood and Yaesu – visitors can look forward to seeing the wide variety of smaller traders and larger dealerships too. This year it is hoped that all three manufacturers will have new radios to show visitors. Everyone is looking forward to seeing the Yaesu FTdx-5000 in real life and, who knows, perhaps the Quadra VL-2000 will be around too. There may be a glimpse of the Icom IC-9100 and Kenwood TS-590 if the Dayton Hamvention and Freidrichshafen shows are anything to go by.

So who has already booked their space at the National Hamfest 2010? Twenty different companies have already signed up to the show, so visitors can look forward to seeing the noise cancelling products from bhi and software from Chase Electronics. Luso are making the trip from Japan with another monster tower and Sandpiper Antennas and Moonraker will have their usual large display of antennas and antenna accessories. If you are looking for a new radio, a second-hand radio or amateur radio accessories, you'll be pleased to know that LAM will be there as will RadioWorld. Other accessories will be available from JBT Trading, Rig Expert and SGS Electronics. Tecadi will be bringing their portable masts all the way from Germany and Nigel Booth, M0CVO will be there with antennas for the amateur enthusiast. If it's cable you are looking for then Westlake is the company to look out for. Rob Mannion, G3XFD, editor of *Practical Wireless* is planning to join his colleagues on the PW Publishing stand, so if you want to talk about either *PW* or *RadioUser*, the National Hamfest is the place to be.

The main hall didn't stay this quiet for very long once the doors opened to the public.

Soon the hall was bustling with visitors.

There was plenty to see from the largest rigs to the smallest components.

Brought to you by the RSGB in Association with Lincoln Short Wave Club

Many of the smaller traders are looking forward to either returning to the National Hamfest or exhibiting for the first time. Simon Poyser, MW0GS from the Snowdonia Radio Company said that they are really excited about attending in 2010 as the Hamfest is a great platform for the smaller companies to meet future and old customers, and gain valuable feedback. Snowdonia Radio Company will be using the National Hamfest to showcase the SRC HF Mobile. Keep an eye on their website to download your chance to win one of the SRC products at the show.

After an exciting Hamfest last year, Peak Electronic Design Ltd is delighted to be exhibiting at Hamfest 2010. This year they'll be offering a range of new products, product enhancements (including a fantastic range of new probe fittings) and also a personalisation service. So whether you've already got a Peak Atlas product or not, you can take advantage of the fabulous new probe fittings and have your callsign or name on the instrument's display. Ron Stone from Vine Antennas is looking forward to bringing a wide range of stock to the National Hamfest including antennas, power amplifiers, rotators, transceivers and other equipment for your shack. New at this year's National Hamfest will be 'Component Alley' with everything for the constructor. A number of suppliers offering those hard-to-find components will be there.

Yaesu had their full range of radios on show with plenty of expertise on hand to explain what each radio could do.

REAL LIFE STORIES. We heard from Dennis, G3HCM after the first National Hamfest. He wrote to say that he had taken his Kenwood hand-held with him because the push-to-talk switch was a bit dodgy and he was looking to get it fixed. Kenwood couldn't help him as they don't carry out repairs, the dealership networks takes care of that.

Dennis tried one of the larger dealers but, unfortunately, they found it difficult to help as the rig was rather old and they didn't keep spares for that particular model. He asked the same question at LAM Communications and they were sure they could help out. Dennis went for an indifferent cup of coffee – his words, so he'll be pleased to read about the improvements planned – and went back to find everything fixed (and without charge on this occasion).

YOUR RSGB THE BEST EVENTS

RSGB SERVICES. The RSGB will once again be there with a book and services stand manned by HQ staff and volunteers. With several new titles amongst RSGB books this year, visitors will have the chance to decide which one (or more!) suits them best. If you have questions regarding exams, propagation, contests, planning or want to share your experiences of interference, the National Hamfest gives you the ideal opportunity. Volunteers from the various committees will be on hand to help with your queries.

The main RSGB stand was busy all day – both days of the show.

HAM WEEK UK ACTIVITY. A special station, GB10NH, is being set up at Newark Showground in the days running up to this year's National Hamfest, through the weekend and then off-site for Ham Week UK. Bands being used will be HF and 2m. The 2m operation will probably be suspended during the show as activity within the showground is likely to be heavy. The station will QSL with an attractive card with the National Hamfest Logo as its front. During the show the station will be running from the Information Tent. The organisers and operators would also like all visiting amateurs/SWLs to bring a QSL to pin on the visitors board in the tent.

Lincoln Short Wave Club will also activate the club's special event callsign, GB2CWP, in the week after the show. It will be operating from the Lincolnshire Aviation Heritage Centre, which is sited at the former RAF East Kirkby. The shack in the radio room at the centre is 30 metres west of the Greenwich Meridian, which runs through the airfield. A restored T1154 and R1155 WWII installation will be put on the air by club members as part of the activity and members hope to arrange skeds with other operators with similar equipment. The club has no shortage of operators because the centre has a NAFFI selling 'proper mugs of proper tea' and home-made cakes. During that week, the star of the centre, Lancaster Bomber 'Just Jane', will do taxi runs on the airfield.

TICKETS. Those who purchase tickets in advance will be able to buy their tickets for only £3.50 rather than the on the gate price of £4.50 saving £1.00. This is not the only discount as if you buy 4 tickets at the discounted price you will get an extra ticket free. So why not organise a group of friends to visit for the day. If you have a bigger group you can buy 10 tickets and get 3 extra tickets free.

What are YOU doing for Ham Week UK? Tell us and we'll tell amateurs around the world.

www.nationalhamfest.org.uk

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Alinco DR-435E Mk3 Latest version single band 70cm **£229.95**
Alinco DR-135E High power single band 2m **£199.95**
Alinco DR-435FXE High power single band 70cm **£179.00**

Base/Portable

Alinco DX-SR8 100W 1.8-50MHz All mode base station **£549.95**

KENWOOD

Hand-helds

Kenwood TH-F7E Dual band 2/70cm RX 0.1-1300MHz **£229.95**
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Kenwood TH-K2E Single band 2m **£159.95**
Kenwood TH-K4E Single band 70cm **£159.95**

Mobiles

Kenwood TM-D710E Dual band 2/70cm with APRS RX 118-524MHz & 800-1300MHz, 50 Watts **£429.95**
Kenwood TM-V71E Dual band 2/70cm with EchoLink RX 118-524MHz & 800-1300MHz, 50 Watts **£289.95**
Kenwood TM-271E Single band 2m, 60 Watts **£165.95**

Base

Kenwood TS-2000X All mode transceiver HF/50/144/430/1200MHz 100 Watts All mode transceiver **£1,749.95**
Kenwood TS-2000E All mode transceiver HF/50/144/430MHz 100 Watts All mode transceiver **£1,489.95**
Kenwood TS-480HX HF/6m 200 Watts Transceiver **£849.95**
Kenwood TS-480SAT HF/6m 100 Watts Transceiver **£749.95**

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Hand-helds

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Yaesu FT-60E Dual band 2/70cm RX 108-520/700-999.99MHz, 5 Watts output **£142.95**
Yaesu VX-3E Dual band 2/70cm RX 0.5-999MHz, 3 Watts output **£139.95**
Yaesu VX-170E Single band 2m, 16 digit keypad, 5 Watts output **£95.95**
Yaesu FT-270E Single band 2m, 144-146MHz, 137-174MHz Rx **£99.95**

Mobiles

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Base

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Yaesu FT-950 HF/6m 100 watt transceiver with DSP & ATU RX 30kHz – 56MHz **£1,099.95**
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Yaesu FT-450 Compact transceiver with IF DSP, HF+6m 1.8-54MHz, 100 Watts output **£589.95**

ICOM

Hand-helds

ICOM IC-E80D D-Star dual band 2/70cm handheld with wideband RX 0.495-999.99MHz **£369.95**
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Mobiles

ICOM IC-7000 All mode HF/VHF/UHF 1.8-50MHz, 100 Watts output **£1,089.95**
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Base

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ICOM IC-7600 HF/6m 100 Watts successor to the IC-756 ..... **£3,379.95**
ICOM IC-7400 HF/6/2m 100 Watts with auto ATU transceiver **£1,339.95**
ICOM IC-7200 HF/VHF 1.8-50MHz RX 0.030-60MHz, 100 Watts output (40w AM) **£799.95**
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eton

Eton Globe Traveller G3 AM/FM/Shortwave Digital Radio with SSB, RDS and Synchronous detector RX:150-30000kHz 118-137 MHz **£99.95**
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Antennas

Lightning and another look at small loops

PHOTO 1: A tree destroyed by lightning.

LIGHTNING. I started writing this column in a hotel in Singapore. At the time a severe electrical storm reminded me of a subject I had been considering for some time and that was how best to protect your antenna and rig from lightning.

I must confess to having a bit of a phobia regarding lightning – and for good reason. In the early 1960s, when I lived in Sierra Leone, my antenna mast was struck by lightning. The incident occurred in the early hours of the morning before daylight and I experienced a blinding blue flash with the sharp sound like a pistol shot being fired close to my ear.

All the security lights went out so I found a torch and shuffled out to the pantry, where all the electrical switches and fuses boxes were located, to reset the over-current trip. I found that all the electrical items had disappeared – with just the electrical wires sticking out of the wall where the fuse boxes and switches had been. The floor of the pantry was covered with bits of broken Bakelite and annealed copper. Furthermore, the glass envelopes of the bulbs in the security lights had all burst.

The antenna mast comprised a tapered steel 60ft steel tube supporting an all-metal 20m quad antenna. The coax feeder from the antenna to the transceiver in the outside shack had also been earthed and the equipment suffered no damage. I was intrigued to know why so much damage had been done to the mains electrical components of the house. I think the reason was that the mains supply was routed to the house on overhead wires, fairly close to the antenna.

I also had a 7MHz dipole strung between trees some distance from the house. The 50Ω RG8 feeder to this antenna had been damaged, with holes punched in the braid where it touched the ground.

REAL HIGH POWER. The power of a lightning strike is quite phenomenal. An example of damage done to a tree is illustrated in **Photo 1**. In this case, the damage was probably caused by the sap flashing off to steam and blowing the tree apart. This is a very good reason for not standing under a tree in a thunderstorm!

Although all this seems a bit scary, one has to keep the risk in perspective. G3MYA **[1]** has calculated that the chances of a direct strike on a single property works out at once every 500 years. This calculation is for average properties with perhaps a single TV antenna. Radio amateurs tend to put up larger metallic structures in their quest for better DX radio communications, which may change the odds a bit. If you have a metal tower near the centre of your property that is a few metres taller than anything else around, it should provide protection from a direct strike to your shack and house.

G3MYA recommends a short thick copper rod with a sharp point at the top be fixed to the top of the mast; it should have a good electrical connection to the mast. The base of the mast should be connected to an earth rod of 0.5in galvanised steel or, better still, a hardened copper rod or 'T' sectioned earth rod. This earth rod should be 4ft long for normal ground. I personally rely on the RF ground system, which is made up of buried lengths of old coax cable and thick electrical wire.

There is a further issue with lightning and that is EMP (electro magnetic pulse). It used to be a real problem in the days of overhead telephone wires. Telephone exchanges were fitted with protection panels comprising resistors and fuses to protect the exchange from voltages induced into the telephone wires due to nearby lightning strikes. These same voltages can be induced into your antenna system and damage the front end of your receiver. Coax spark protection devices are often recommended but I feel the best method is to disconnect the coax to the back of the transceiver if an electrical storm is imminent or if you will be away for a while.

SMALL TRANSMITTING LOOPS. Earlier this year Mike Underhill, G3LHZ, gave a lecture to the Worthing and District Amateur Radio Club on the subject of small transmitting loop antennas. He brought along a commercial transmitting loop that had been modified using a shunt coupling arrangement instead of the loop coupling supplied with the antenna.

G3LHZ connected this antenna to an IC-706 and fired up the transmitter. It must have radiated reasonably well – the next moment an irate building maintenance man put his head around the door and wanted to know who had set off the b#@&* fire alarm.

Most early descriptions of transmitting loops repeated the claim that the performance at the higher end of the HF bands could approach that of a halfwave dipole provided the loop was well constructed. In 1991, G4XVF **[2]** wrote a two part article in *RadCom* giving well reasoned doubt as to the efficiency of small transmitting loops. His study was based on calculating the Q from the measured bandwidth of a small loop whose inductance could be calculated. He concluded that the radiation efficiency was below 10%, compared with a dipole efficiency of near 100%.

However, there have been difficulties in relating these theoretical calculations with on-the-air results by radio amateurs using home made and commercial loops. In 1994, Peter Hart, G3SXJ, reviewed four models of loops from three manufactures **[3]** and was surprised at how effective these small loops could be. He noted that these loops were roughly equivalent in performance to a dipole or a multiband vertical provided

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they were mounted vertically and clear of electromagnetic obstructions.

G3LHZ's lecture to the Worthing club was based on material he presented to the IEE **[4]** and was centred on the commercial AMA3 loop antenna. These loops were manufactured by Advanced Antennas and Ancillaries, no longer trading. The AMA3 antenna is a German design intended for use over the range 14 to 29MHz. It is constructed from 32mm aluminium tubing and the loop diameter is 0.9m.

The loop antenna demonstrated by G3LHZ and shown in **Photo 2** has an interesting feed variation compared to the normal loop coupling. In Photo 2 the original small loop feed is disconnected and is now grounded at the feed point. The horizontal pattern has typical loop nulls, which implies there is no dominant feeder radiation. If there was, these nulls would disappear and the horizontal pattern would become omnidirectional. It is not! However, the nulls are actually displaced in a downward direction in practice. This ties up with the observation that the loop always radiates best towards the capacitor.

G3LHZ describes his work with the feed method as follows. "There are various ways of putting the twist in this 'twisted gamma' match. With 2.5mm single core PVC covered mains wire, I use either a left hand or a right hand screw winding. There is no discernable difference. There can be two different lengths of gamma wire that allow a perfect 1:1 50Ω match. With these I use a movable crocodile clip termination to fine match to 50Ω. Q and efficiency measurements show no discernable difference between the short and long twisted gamma matches. I prefer the longer gamma wire length choice. It allows the loop to be matched with an ATU for operation above its highest tuning frequency; for example for the AMA3 operation on 6m and 4m is possible. The pattern is then omnidirectional.

"The twisted gamma match shown in the AMA3 pictures has a double twist. One half is left-handed and the other half is right-handed. A coaxial cable outer conductor is used as the gamma wire. Coarse matching is achieved by altering the position of the jubilee clip. Fine matching is achieved by rotating the cable under the cable tie. (Note that any shift in tuning as the match is changed can always be cancelled by normal retuning of the loop.) Once again there is no discernable change in loop Q or loop efficiency.

"In summary, the twisted gamma matches are easier than the small loop feed to adjust to exact 1:1 SWR. In fact, the loop feed as shown does not achieve exact 1:1 SWR at all. It has to be distorted in shaped and or rotated out of the plane of the main loop. The best way of adjusting the loop feed is to make it slightly oversized and then slide the loop so that only part of it overlaps the main loop. The rest of it remains outside the main loop.

PHOTO 2: G3LHZ's AMA3 transmitting loop antenna with the 'twisted gamma' match. The original coupling loop shown is disconnected.

In terms of loop Q, bandwidth and efficiency there is no discernable difference between the various feed methods."

LOCATION. I have made the point before, that it is perhaps more important as to where an antenna is than what it is. VK5KLT, in his paper An Overview of the Underestimated Magnetic Loop HF Antenna [4] has some interesting findings and comments regarding the best location for a transmitting loop antenna. He notes, "In comparison to a vertically mounted/oriented loop, the bottom of the loop does not need to be more than a loop diameter above ground, making it very easy to site in a restricted space location. There is no significant improvement in performance when a small loop is raised to great heights; all that matters is the loop is substantially clear of objects in the desired direction of radiation! Mounting on an elevated roof ground-plane yields excellent results.

"Failure to pay very careful attention to construction details in relation to eliminating all sources of losses and making bad siting choices such as close proximity to ferrous materials are the two main reasons why small magnetic loop antennas sometimes fail to live up to their performance potential. When the loop is mounted over a perfectly conducting ground plane reflector or copper radial wire mat an electrical image is created that effectively doubles the loop area. This in turn beneficially increases the loop's radiation resistance by the substantial factor of four times.

"Conversely if the loop is placed over average ground (a reasonable reflector) the radiation resistance increases but a reflected loss resistance is also introduced due to transformer effect coupling near-field energy into the lossy ground. Similarly when ferrous/iron material is too close, the magnetic near-field of the loop will induce, by transformer action, a voltage across the RF resistance of the material, causing a current flow and associated I^2R power loss. This situation might for example arise when the loop is mounted on an apartment balcony with nearby iron railing or concrete rebar etc; the deleterious influence can be minimised by simply orienting the loop to sit at right angles to the offending iron or steel material. Another loss-contributing component is due to current flowing in the soil via capacitance between the loop and the soil surface. This capacitive coupling effect is again minimised by keeping the loop at least half a loop diameter above the ground."

REFERENCES

[1] Alan Martingale, G3MYA. Lightning, The nature of the beast and how to survive its fiery fingers. *RadCom* January 1984. Also included in The HF Collection by G4LQI.
[2] Loop Antennas- Facts not Fiction, Tony Henk, G4XVF, *Radio Communication* September/October, 1991.
[3] Loop Antennas for the HF Bands, *Radio Communicat*ion July 1994, Peter Hart, G3SJX.
[4] www.qsl.net/vk5bar - go to 'Papers' and select 'Small (loop) antennas'.

Portable

Getting Lost!

APRS. The idea of having your every movement tracked may not appeal to everyone. Recent experiments by SOTA and WOTA activators have proved that real-time position reporting can add an interesting new dimension to portable radio. Several people have been experimenting with APRS, the Automatic Packet Reporting System developed by Bob Bruninga, WB4APR. Bob is keen to stress that APRS is not just a vehicle tracking system but is a real-time information distribution system, and indeed it is this aspect of APRS that makes it so attractive for portable operating.

APRS first came to my attention when Tom, N2YTF used it on some of his SOTA activations on the East Coast of the USA. Due to the time difference between the USA and Europe, these activations took place in our evening. The position reports were relayed by 2m radio to the internet, where a website developed by Hessu, OH7LZB enabled anyone to see where Tom was during his ascent. Because the web-based system uses the Google mapping API, Tom's location was superimposed on detailed satellite photographs of the route. This was hugely engaging and dozens of people from Europe followed every metre of his ascent. APRS is not just about tracking though and Tom was able to use it to pass short messages too. These were typically status updates and details of which bands and modes he was on.

EXPERIMENTS. Enthused by Tom's success, Robert, G0PBE has also been experimenting with APRS. Robert uses an FT-817 with a Tiny Trak3+ APRS/GPS Encoder, GPS and rucksack antenna to allow his position to be relayed by 2m digipeaters to the internet. While activating mountains in Wales, his position is regularly relayed by digipeaters in Ireland and by a digipeater set up specifically to support SOTA APRS by John, GW4BVE. The technology is relatively cheap and easy to set up and is obviously fun to experiment with. Robert's experiments have generated a lot of interest in the UK and I expect that more will follow his lead this summer.

Julian, G4ILO has also been experimenting with position reporting in West Cumbria. His relatively isolated location, plus his liking for lower hills, means that he cannot reliably access amateur radio digipeaters. Thus he is using APRSISCE software developed by Lynn, KJ4ERJ, which runs on a Smartphone. Julian acknowledges that this is not quite amateur radio but it does provide similar facilities to amateur APRS (and was developed by a radio amateur for use by other amateurs!). Julian has found the messaging dimension of APRS to be an attraction, adding significantly to its value as a basic position reporting system. On an ascent to test his reporting system, Julian was amused to get an unexpected message from an American amateur asking if he was enjoying his walk.

Over and above the obvious enjoyment of the technical challenge, APRS users feel a little safer in the hills as others know where they are and allowing them to be 'connected'. However, as with all technology options, APRS should never be relied upon for safety applications!

Comments and suggestions for future columns are always welcome.

WEBSEARCH

APRS Website: www.aprs.org/
APRS Web Display: http://aprs.fi
APRSISCE Discussion Group:
http://groups.yahoo.com/group/aprsisce/
Byonics – supplier of APRS interfaces:
www.byonics.com/tinytrak/
Julian, G4ILO's Blog: www.g4ilo.com
SOTA Summits on the Air: www.sota.org.uk
WOTA Wainwrights on the Air: www.wota.org.uk

G0PEB's position displayed on the aprs.fi website during a SOTA activation.

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

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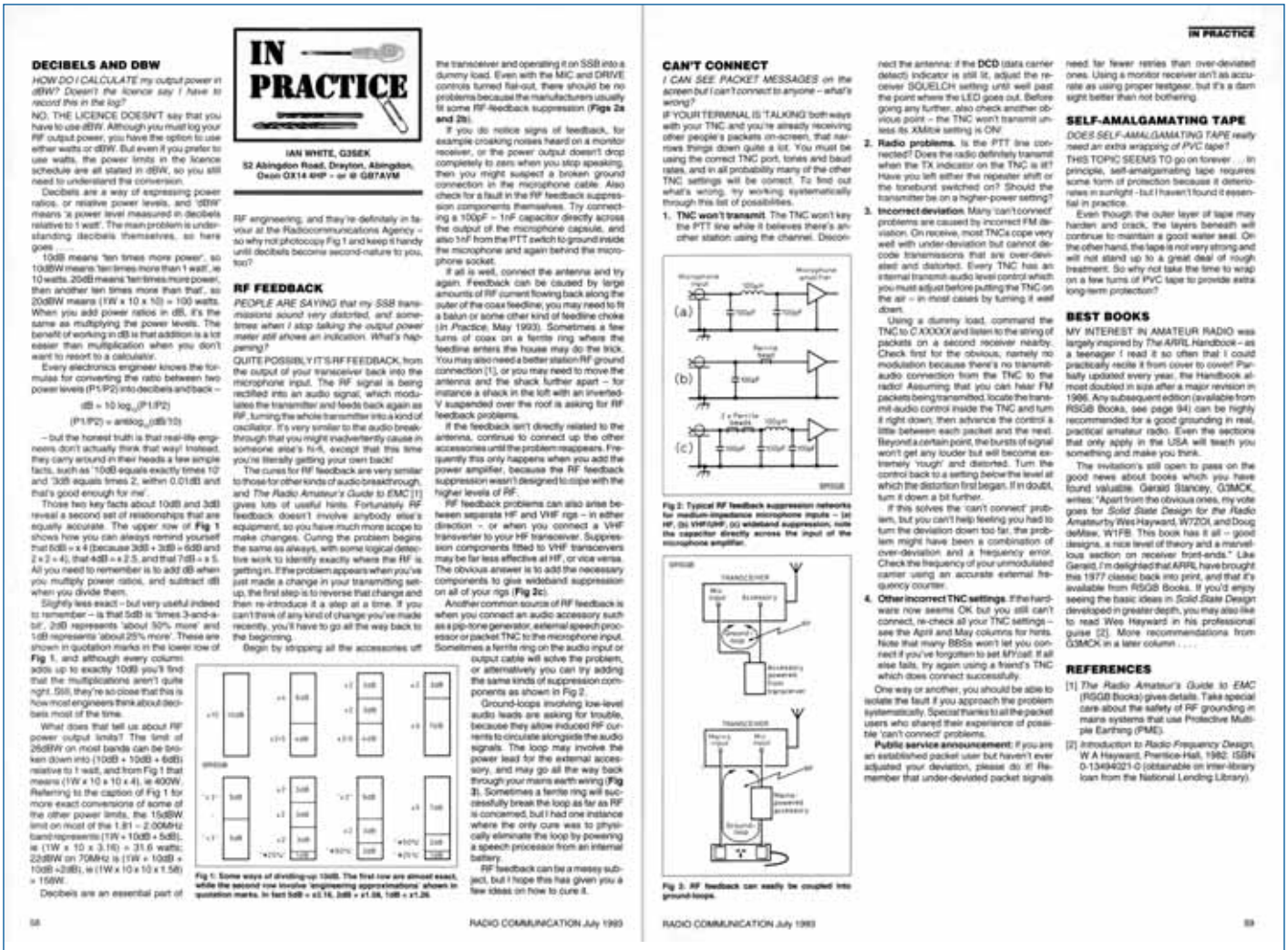


IN PRACTICE

IAN WHITE, G3SEK
52 Abingdon Road, Drayton, Abingdon, Oxon OX14 4HP – or @ G8TAVM

DECIBELS AND DBW

HOW DO I CALCULATE my output power in dBW? Doesn't the licence say I have to record this in the log?

NO. THE LICENCE DOESN'T say that you have to use dBW. Although you must log your RF output power, you have the option to use either watts or dBW. But even if you prefer to use watts, the power limits in the licence schedule are all stated in dBW, so you still need to understand the conversion.

Decibels are a way of expressing power ratios, or relative power levels, and 'dBW' means 'a power level measured in decibels relative to 1 watt'. The main problem is understanding decibels themselves, so here goes ....

10dB means 'ten times more power', so 10dBW means 'ten times more than 1 watt', ie 10 watts. 20dB means 'ten times more power, then another ten times more than that', so 20dBW means (1W x 10 x 10) = 100 watts. When you add power ratios in dB, it's the same as multiplying the power levels. The benefit of working in dB is that addition is a lot easier than multiplication when you don't want to resort to a calculator.

Every electronics engineer knows the formulas for converting the ratio between two power levels (P1/P2) into decibels and back –

$$dB = 10 \log_{10}(P1/P2)$$

$$(P1/P2) = \text{antilog}_{10}(dB/10)$$

– but the honest truth is that real-life engineers don't actually think that way! Instead, they carry around in their heads a few simple facts, such as '10dB equals exactly times 10' and '3dB equals times 2, within 0.01dB and that's good enough for me'.

Those two key facts about 10dB and 3dB reveal a second set of relationships that are equally accurate. The upper row of **Fig 1** shows how you can always remind yourself that 6dB = x 4 (because 3dB + 3dB = 6dB and 2 x 2 = 4), that 4dB = x 2.5, and that 7dB = x 5. All you need to remember is to add dB when you multiply power ratios, and subtract dB when you divide them.

Slightly less exact – but very useful indeed to remember – is that 5dB is 'times 3-and-a-bit', 2dB represents 'about 50% more' and 1dB represents 'about 25% more'. These are shown in quotation marks in the lower row of **Fig 1**, and although every column adds up to exactly 10dB you'll find that the multiplications aren't quite right. Still, they're so close that this is how most engineers think about decibels most of the time.

What does that tell us about RF power output limits? The limit of 26dBW on most bands can be broken down into (10dB + 10dB + 6dB) relative to 1 watt, and from Fig 1 that means (1W x 10 x 10 x 4), ie 400W. Referring to the caption of Fig 1 for more exact conversions of some of the other power limits, the 15dBW limit on most of the 1.81 – 2.00MHz band represents (1W + 10dB + 5dB), ie (1W x 10 x 3.16) = 31.6 watts; 22dBW on 70MHz is (1W + 10dB + 10dB +2dB), ie (1W x 10 x 10 x 1.58) = 158W.

Decibels are an essential part of RF engineering, and they're definitely in favour at the Radiocommunications Agency – so why not photocopy Fig 1 and keep it handy until decibels become second-nature to you, too?

RF FEEDBACK

PEOPLE ARE SAYING that my SSB transmissions sound very distorted, and sometimes when I stop talking the output power meter still shows an indication. What's happening?

QUITE POSSIBLY IT'S RF FEEDBACK, from the output of your transceiver back into the microphone input. The RF signal is being rectified into an audio signal, which modulates the transmitter and feeds back again as RF, turning the whole transmitter into a kind of oscillator. It's very similar to the audio breakthrough that you might inadvertently cause in someone else's hi-fi, except that this time you're literally getting your own back!

The cures for RF feedback are very similar to those for other kinds of audio breakthrough, and *The Radio Amateur's Guide to EMC* [1] gives lots of useful hints. Fortunately RF feedback doesn't involve anybody else's equipment, so you have much more scope to make changes. Curing the problem begins the same as always, with some logical detective work to identify exactly where the RF is getting in. If the problem appears when you've just made a change in your transmitting set-up, the first step is to reverse that change and then re-introduce it a step at a time. If you can't think of any kind of change you've made recently, you'll have to go all the way back to the beginning.

Begin by stripping all the accessories off the transceiver and operating it on SSB into a dummy load. Even with the MIC and DRIVE controls turned flat-out, there should be no problems because the manufacturers usually fit some RF-feedback suppression (**Figs 2a and 2b**).

If you do notice signs of feedback, for example croaking noises heard on a monitor receiver, or the power output doesn't drop completely to zero when you stop speaking, then you might suspect a broken ground connection in the microphone cable. Also check for a fault in the RF feedback suppression components themselves. Try connecting a 100pF – 1nF capacitor directly across the output of the microphone capsule, and also 1nF from the PTT switch to ground inside the microphone and again behind the microphone socket.

If all is well, connect the antenna and try again. Feedback can be caused by large amounts of RF current flowing back along the outer of the coax feedline, you may need to fit a balun or some other kind of feedline choke (*In Practice*, May 1993). Sometimes a few turns of coax on a ferrite ring where the feedline enters the house may do the trick. You may also need a better station RF ground connection [1], or you may need to move the antenna and the shack further apart – for instance a shack in the loft with an inverted-V suspended over the roof is asking for RF feedback problems.

If the feedback isn't directly related to the antenna, continue to connect up the other accessories until the problem reappears. Frequently this only happens when you add the power amplifier, because the RF feedback suppression wasn't designed to cope with the higher levels of RF.

RF feedback problems can also arise between separate HF and VHF rigs – in either direction – or when you connect a VHF transverter to your HF transceiver. Suppression components fitted to VHF transceivers may be far less effective at HF, or vice versa. The obvious answer is to add the necessary components to give wideband suppression on all of your rigs (**Fig 2c**).

Another common source of RF feedback is when you connect an audio accessory such as a pip-tone generator, external speech processor or packet TNC to the microphone input. Sometimes a ferrite ring on the audio input or output cable will solve the problem, or alternatively you can try adding the same kinds of suppression components as shown in Fig 2.

Ground-loops involving low-level audio leads are asking for trouble, because they allow induced RF currents to circulate alongside the audio signals. The loop may involve the power lead for the external accessory, and may go all the way back through your mains earth wiring (**Fig 3**). Sometimes a ferrite ring will successfully break the loop as far as RF is concerned, but I had one instance where the only cure was to physically eliminate the loop by powering a speech processor from an internal battery.

RF feedback can be a messy subject, but I hope this has given you a few ideas on how to cure it.

Fig 1: Some ways of dividing-up 10dB. The first row are almost exact, while the second row involve 'engineering approximations' shown in quotation marks. In fact 5dB = x3.16, 3dB = x1.58, 1dB = x1.26.

RADIO COMMUNICATION July 1993

CAN'T CONNECT

I CAN SEE PACKET MESSAGES on the screen but I can't connect to anyone – what's wrong?

IF YOUR TERMINAL IS 'TALKING' both ways with your TNC and you're already receiving other people's packets on-screen, that narrows things down quite a lot. You must be using the correct TNC port, tones and baud rates, and in all probability many of the other TNC settings will be correct. To find out what's wrong, try working systematically through this list of possibilities.

1. **TNC won't transmit**. The TNC won't key the PTT line while it believes there's another station using the channel. Disconnect the antenna: if the **DCD** (data carrier detect) indicator is still lit, adjust the receiver SQUELCH setting until well past the point where the LED goes out. Before going any further, also check another obvious point – the TNC won't transmit unless its *XMitok* setting is ON!
2. **Radio problems**. Is the PTT line connected? Does the radio definitely transmit when the TX indicator on the TNC is lit? Have you left either the repeater shift or the toneburst switched on? Should the transmitter be on a higher-power setting?
3. **Incorrect deviation**. Many 'can't connect' problems are caused by incorrect FM deviation. On receive, most TNCs cope very well with under-deviation but cannot decode transmissions that are over-deviated and distorted. Every TNC has an internal transmit-audio level control which you must adjust before putting the TNC on the air – in most cases by turning it *well* down.

   Using a dummy load, command the TNC to *C XXXXX* and listen to the string of packets on a second receiver nearby. Check first for the obvious, namely no modulation because there's no transmit-audio connection from the TNC to the radio! Assuming that you can hear FM packets being transmitted, locate the transmit-audio control inside the TNC and turn it right down, then advance the control a little between each packet and the next. Beyond a certain point, the bursts of signal won't get any louder but will become extremely 'rough' and distorted. Turn the control back to a setting *below* the level at which the distortion first began. If in doubt, turn it down a bit further.

   If this solves the 'can't connect' problem, but you can't help feeling you had to turn the deviation down too far, the problem might have been a combination of over-deviation and a frequency error. Check the frequency of your unmodulated carrier using an accurate external frequency counter.
4. **Other incorrect TNC settings**. If the hardware now seems OK but you still can't connect, re-check all your TNC settings – see the April and May columns for hints. Note that many BBSs won't let you connect if you've forgotten to set *MYcall*. If all else fails, try again using a friend's TNC which does connect successfully.

One way or another, you should be able to isolate the fault if you approach the problem systematically. Special thanks to all the packet users who shared their experience of possible 'can't connect' problems.

Public service announcement: If you are an established packet user but haven't ever adjusted your deviation, please do it! Remember that under-deviated packet signals need far fewer retries than over-deviated ones. Using a monitor receiver isn't as accurate as using proper testgear, but it's a darn sight better than not bothering.

SELF-AMALGAMATING TAPE

DOES SELF-AMALGAMATING TAPE really need an extra wrapping of PVC tape?

THIS TOPIC SEEMS TO go on forever ... In principle, self-amalgamating tape requires some form of protection because it deteriorates in sunlight – but I haven't found it essential in practice.

Even though the outer layer of tape may harden and crack, the layers beneath will continue to maintain a good water seal. On the other hand, the tape is not very strong and will not stand up to a great deal of rough treatment. So why not take the time to wrap on a few turns of PVC tape to provide extra long-term protection?

BEST BOOKS

MY INTEREST IN AMATEUR RADIO was largely inspired by *The ARRL Handbook* – as a teenager I read it so often that I could practically recite it from cover to cover! Painfully updated every year, the Handbook almost doubled in size after a major revision in 1986. Any subsequent edition (available from RSGB Books, see page 94) can be highly recommended for a good grounding in real, practical amateur radio. Even the sections that only apply in the USA will teach you something and make you think.

The invitation's still open to pass on the good news about books which you have found valuable. Gerald Stancey, G3MCK, writes: "Apart from the obvious ones, my vote goes for *Solid State Design for the Radio Amateur* by Wes Hayward, W7ZOI, and Doug deMaw, W1FB. This book has it all – good designs, a nice level of theory and a marvellous section on receiver front-ends." Like Gerald, I'm delighted that ARRL have brought this 1977 classic back into print, and that it's available from RSGB Books. If you'd enjoy seeing the basic ideas in *Solid State Design* developed in greater depth, you may also like to read Wes Hayward in his professional guise [2]. More recommendations from G3MCK in a later column ....

REFERENCES

[1] *The Radio Amateur's Guide to EMC* (RSGB Books) gives details. Take special care about the safety of RF grounding in mains systems that use Protective Multiple Earthing (PME).

[2] *Introduction to Radio Frequency Design*, W A Hayward, Prentice-Hall, 1982, ISBN 0-13494021-0 (obtainable on inter-library loan from the National Lending Library).

Fig 2: Typical RF feedback suppression networks for medium-impedance microphone inputs – (a) HF, (b) VHF/UHF, (c) wideband suppression, note the capacitor directly across the input of the microphone amplifier.

Fig 3: RF feedback can easily be coupled into ground-loops.

RADIO COMMUNICATION July 1993

FIGURE 1: In Practice, July 1993 covered five different topics. Why not today?

THE END IS NIGH. As some of you noticed last month, this will be the last of my regular In Practice columns. After 17 years and more than 200 columns, I'm ready to enjoy the freedom to do something else in amateur radio. However, I have no intention of giving up writing!

In Practice has always been driven by questions from you, the readers. My job has been to find the answers. Some questions had to be edited to make them capable of being answered, but you have never failed to provide the makings for a good column. That regular challenge to learn something new has been my greatest source of pleasure in writing the column. I can't thank you enough for giving me that opportunity.

In this final edition I will look back at some changes in the column since the early 1990s, driven by changes within amateur radio itself. Let me add that my analysis of those changes is strictly my own; a departing columnist's privilege.

CHANGES, CHANGES. The format of the column has almost always been two A4 pages, but the early column reproduced in Figure 1 shows two major differences between the 1990s and today. One is very obvious, the other more subtle but equally important. The obvious difference is that in the 1990s we could generally get through several different topics each month (where 'we' means you and me together) while in recent years we have seldom been able to cover more than one topic. There are several reasons for this change.

RadCom used to be written almost entirely for experienced radio amateurs, so most technical articles could take a running start… or so we liked to believe. But even in that imagined golden age, I wonder how many people were actually being left at the starting-post and were afraid to admit it? As a professional technical author and editor, I have spent all of those years (and more) explaining highly technical subjects in a way that readers can understand, and helping other writers and engineers to do the same. Today, writers are much more aware that a running start will leave too many readers behind, and readers are standing up to demand that this doesn't happen. The first step for a writer should always be to set the scene, so that readers can start from something they already know. I have tried to apply those principles when writing In Practice, beginning each new subject at roughly the level of the Full amateur licence, and then taking several

paragraphs to lay a clear trail into the main topic.

Admittedly that trail has sometimes been steep, because some areas of amateur radio require a lot of background knowledge before you can even get started. It takes time to understand and assimilate new information, so don't expect the opening paragraphs of any *RadCom* article to pour all the necessary background knowledge into your brain. That simply isn't realistic. What you *are* entitled to expect from the writer is a series of clear signposts indicating the things you'll need to understand before progressing much further into the article.

Therefore it is quite normal to revisit some technical articles several times over, in the meantime looking around for other sources to help fill in the background. In amateur radio, the best introduction to a completely new subject is usually one of the big bibles, the *ARRL Handbook* or RSGB's own *Radio Communication Handbook*. Then go back and look at the technical article again. Sure enough, this time you'll understand a little more, and if there are still some gaps you can go around the loop again.

This process is called *learning* and I recommend it highly. The Full licence is merely the point at which the exam system stops pushing you to learn new things, but don't let the engine stall – carry on learning under your own motive power. As amateurs we are free to follow our own personal interests and learn at our own pace; and we're also free to ignore some subjects that don't interest us at present. When you do feel a need to learn about a new subject, remember that you're entering into a partnership with other people. Their responsibilities are to explain, inform and teach; but only you can *learn*.

The other source of change affecting In Practice has been increasing numbers of older *RadCom* readers asking for a clearer and more readable page layout. Successive Editors have done their best to meet these demands, and there is a clear and worthwhile improvement in readability between the pages in **Figure 1** and the pages you're reading today. But it came at a price: the word count has been reduced by about 10%. That doesn't seem much, but it had a profound effect on the technical level that could be achieved within these two pages. I have already explained why every article needs a thorough introduction before coming to the meat of the topic; and then, to counterbalance the lower-level introductory material, I have always tried lead on to the more advanced technical details. But when an article has to be edited down to a smaller number of words, it was inevitably those advanced details that had to go. Thus a perfectly justifiable request had a very unwelcome side effect, a salutary reminder to 'be careful what you ask for'.

For all of those reasons, in recent years I have tended to concentrate on a single technical issue each month, introducing it fully and then treating it in reasonable depth and at a reasonable pace. Many readers are also unaware that when they ask an apparently simple question, they may be lifting one corner of a much bigger subject, which then needs to be explained before the question can be answered… so even now, we still run out of space.

Fortunately, the printed page is no longer the only medium available. Printed magazines like *RadCom* are increasingly becoming the monthly guide and gateway to an immeasurably greater body of information on the world wide web.

THE IN PRACTICE WEBSITE. Obviously, the other major change since the 1990s has been the spread of Internet access and the explosion of information on the web. As soon as the web became generally available, I created the In Practice website as a stable anchor point for each month's links, references and file downloads. In the early days, when relatively few amateurs had access to the web, I tried not to include any content that had not already been mentioned in *RadCom* itself. That limitation no longer applies, so the In Practice website has become a true extension of the printed column. The site consists of four main areas:

1. **The In Practice main page** that contains additional information, images, links and updates for recent monthly columns.
2. **Best Of In Practice**, containing information and links that have proved to be of more permanent value.
3. **In Practice Cumulative Index**, going all the way back to the beginnings of the column **[1]**. This index is fully searchable, both by topic headings and by using your web browser to search for likely keywords (Ctrl-F). Over the years, your questions have managed to cover most technical subjects within amateur radio and many subjects have been revisited several times.
4. **UK Component and Tool Suppliers** – where to buy components and tools, and how to order them. The value of this list is that it's compiled from a purely UK perspective, heavily biased towards the technical and constructional side of amateur radio, and totally non-commercial. All the information is based on customer reports from yourselves, supplemented by my own experience.

The existing In Practice website will remain available indefinitely. The quick link to the main page – http://tinyurl.com/inpractice – will also remain valid for as long as TinyURL.com continue to offer that service. All the existing information related to previous columns can now be found in the Best Of In Practice archive, so from now on I will use the main page as a technical notebook about ongoing topics. For example, please look there for more information about the ferrite chokes and baluns.

The Cumulative Index and Best Of In Practice pages will remain as permanent archives with stable links. However, I will continue to update the UK Component and Tool Suppliers page because there is no other UK-based equivalent. Please continue to support this page by sending me your updates and recommendations based on personal experience as customers.

WHAT IT'S ABOUT. The whole point of In Practice has been to demonstrate that 'being technical' has real practical advantages. If you enjoy amateur radio and want even more, then sooner or later you're going to find yourself drawn into its technical and constructional side. Don't let anyone put you off (and one of the least attractive features of amateur radio is that some people will try to do just that) but go for it!

Finally, don't believe anyone who tells you that theory and practice don't mix – they don't understand what the word 'theory' means in this context **[2]**. In everyday language, a 'theory' is a speculation that may have little or no basis in fact; but in science and engineering, 'theory' means the exact opposite: it means the entire bedrock of hard facts about the physical world that underpins everything we see around us. If you ignore that brand of 'theory', you're ignoring reality itself.

Good RF engineering is about connecting theory and practice together at every step, so you really understand what you're doing and have something solid to build on. There's a reason for everything… and if that doesn't seem to be working, then either you're missing some practical information, or some of the information you already have is wrong, or you don't yet understand enough theory to make sense of it. The opposite can also happen, of course –something does work when you really didn't expect it to – but there still has to be a good physical reason. RF engineering is actually not about 'black magic' [2]. In either case, just stick to reality, keep going forward and you'll eventually work it out.

Above all, enjoy finding out about things and then enjoy the results on the air.

THE BEST PART. The very best part of having to learn about such a wide range of topics is that it has made me think. Again, thank you for giving me that opportunity, and thanks for reading.

REFERENCES

[1] The title 'In Practice' was invented in 1989 by John Nelson, GW4FRX, who was Deputy Editor of *RadCom* and wrote a few unsigned columns in the following two years. After a gap, In Practice commenced as a regular column in 1993.

[2] Or else, like Einstein, they were only joking (and should have stuck to the day job). In the same vein, the subtitles of two highly respected textbooks on RF and high speed digital design are A Handbook of Black Magic and Advanced Black Magic; a little joke that takes two whole volumes to explain.

FT-817 remote display

Simple design for safer mobile use

PHOTO 1: Remote display installed on car air vent. The mount was created from a mobile phone holder like the one on the right (see text).

INTRODUCTION. I was given my FT-817 about 6 years ago and have always loved the compact nature of this radio but I have never been able to mount it in a modern vehicle in such a way that I can read the display. The small LCD can be seen in daylight, just, but after dark with my ageing eyes it becomes absolutely impossible to read without pulling to the side of the road, removing my glasses and staring hard. To attempt this whilst in motion would have been suicidal.

I had a look on the web and found that Keith Dix, ZL1BQE had developed a hand held remote for a friend. He very kindly sent me a processor and EPROM and I assembled it into a working unit. Unfortunately the chip he used is no longer available and so I decided it would be a good learning experience to design and build a similar display module.

UPDATING THE DESIGN. I looked at doing this using a modern PIC chip such as the 16f628 and fairly early on decided that my assembly language skills were not up to the job. I think this puts a lot of people off having a play with these very useful devices. I decided I would program the chip using Basic and purchased *Oshonsoft Basic*, which comes bundled with a simulator package [1]. I wrote a few simple programs to flash LEDs and get a feel for the package then started on the FT-817 and the serial port. I wrote the routines in sections and actually did the two line display routines first. I then moved on to attempt to acquire 'real' data to display from the FT-817s serial port. Initially I was getting nowhere until by using the very useful serial port data display module in the simulator; I found the FT-817 was sending two spurious characters when the interface was turned on. I've not found out why they are generated but once I read them and discarded that data we were off and running. The unit requires external power but it is usually quite easy to provide a low current 12V DC in a car. An alternative is to use an inline socket and plug to tee the power supply to the FT-817. The completed unit is shown in **Photo 1**.

My program outgrew the 16f628 so I moved it onto the 16f648, which has more program space. I used the Velleman Pic Programmer and experiment board available from Maplin; other development boards are available elsewhere and would have achieved the same result. The PIC HEX file can be downloaded from [2] and burned into the PIC with any suitable programmer.

HARDWARE CONSIDERATIONS. The hardware was designed around a standard 16 character x 2 line LCD module with 14 connecting pins on the short edge of the display. These are commonly available from a number of suppliers on eBay and

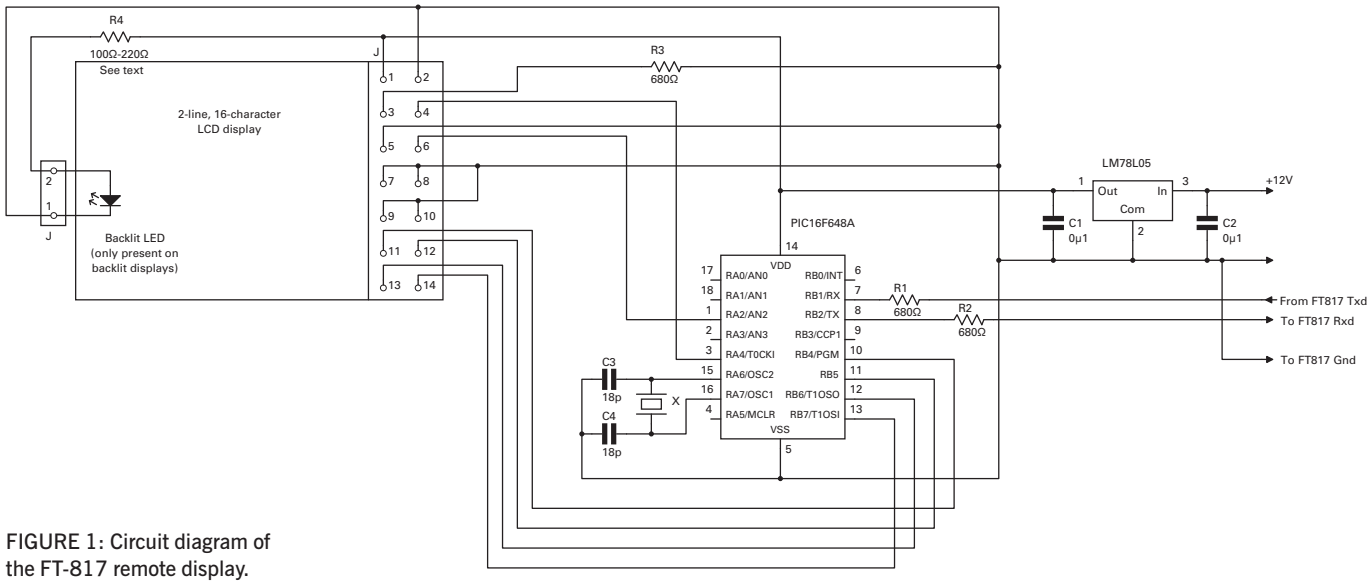


FIGURE 1: Circuit diagram of the FT-817 remote display.

elsewhere, as is the PIC. (Be careful; many 16 x 2 LCDs have a single row of pins on the long edge – check you're buying the right type!). The crystal is a 16MHz low profile type (normal crystals will work but may need to be laid flat on the PCB).

The full circuit diagram is shown in **Figure 1**. Note the very low component count! The circuit simply consists of the LCD connected to a minimum-component-count PIC driver circuit with a simple resistive interface out to the FT-817. All the clever stuff is done in software.

I designed the PCB (**Figure 2**) so that the display could be mounted on top of the board. Figure 2 is reproduced at 100% size, and you can download the PCB CAD files from [2].

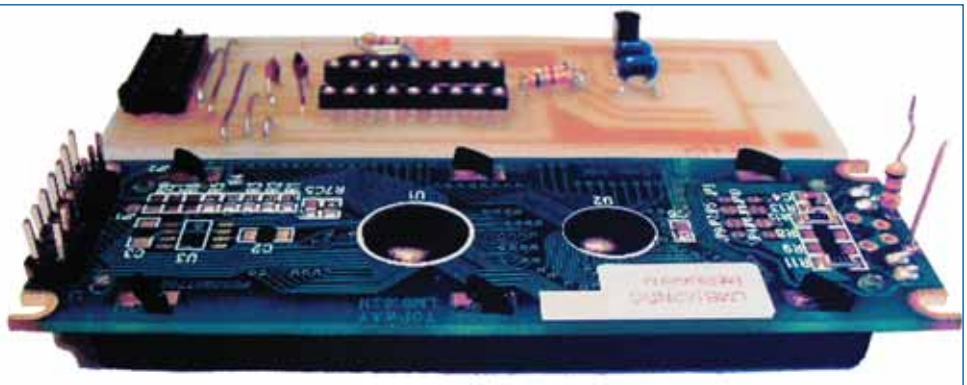


PHOTO 2: General view of the display and controller PCB. Note pins, resistor and wire on LCD and modified socket on left of controller PCB.

PHOTO 3: Controller and display assembled together.

CONSTRUCTION. The component overlay is shown in **Figure 3**. Basic construction is straightforward, other than the connections between the LCD and processor PCB. I soldered 0.1" matrix pins salvaged from an old computer board into the data/power connector on the LCD. The pins plug into a 14 pin DIL socket on the processor PCB that has been modified to 0.2" spacing (instead of the usual 0.3") by cutting it in half lengthways and removing the remaining pieces of the centre frame. Solder the resulting socket strips onto the board so that what was the outer face of each socket now touches in the middle. I found the cheap sockets work best for this - turned pin types are no use because they will not accept the large square connecting pins. Socketing the PIC will allow you to remove it to allow reprogramming if required.

If you are using a backlit LCD you will need to fit R4 and the ground link wire on the opposite end from the pins. I decided that soldering these in place was acceptable because the unit is not likely to be disassembled often; the resistor and wire form a useful hinge for the display assembly so you can access the PIC. R4 should be around 100-220Ω, lower values giving brighter backlighting. Check the unit's current consumption from the 12V supply with the backlight on; it must not be more than 50mA or the 78L05 voltage regulator will overheat.

Photo 2 shows the general arrangement of the populated PCB and display with the pins and sockets visible, and **Photo 3** shows how the two boards sandwich together for final assembly.

I leave the choice of case to you. I used a diecast box with a cutout for the display; you can use metal or plastic. The only important points to note are that you need an on/off switch and some way of getting power and data signals through the case.

I used a modified car phone holder to mount the completed box on the car vents. I obtained this from a supermarket for £2.99 and removed the phone jaws. I was then left with the back plate and the vent clip parts. The one I chose had two screws that held the two halves together so it was then easy to screw the back plate to the back of the display box. Photo 1 shows an intact phone mount alongside the one used for the display. I'm sure you'll find a way to mount your display so you can see it easily!

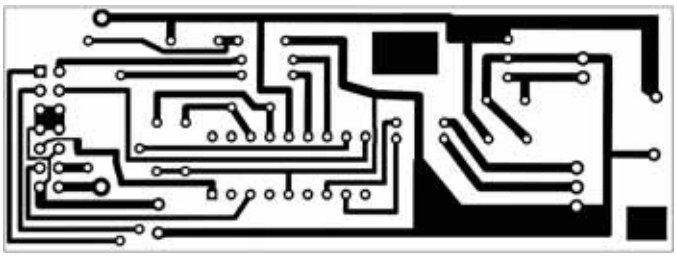


FIGURE 2: PCB foil pattern, reproduced at 100%.

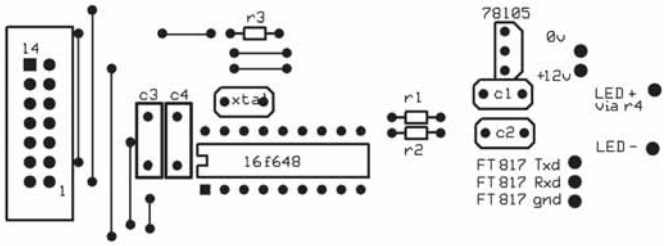


FIGURE 3: Component overlay. Note that there are 8 wire links.

IN USE. You must always switch on the FT-817 before the remote display. If you don't, the display just sits blank and will need its power cycled on and off before it will work. This is because of the spurious characters from the FT-817 mentioned earlier.

I found I was getting some interference from the unit at various spot frequencies in the bands. 2m and 70cm were clean, as were most of the HF bands apart from 10m and 6m. I found the best solution was to wind 10 turns of the data cable round a ferrite ring (Maplin 25mm diameter type) as close to the FT-817 end of the cable as possible. This filter then sits down under the radio between the seats – out of sight and out of mind. The unit has now had well over a year road test without any issues.

CONCLUSION. It has been suggested that this display will also work with the FT-857 and FT-897. Although I have not had a chance to test this, I believe this is probably the case. Maybe when I get some time I'll design a keypad section to go with the display. I'm sure other PIC Basic packages would work just as well if you want to experiment with your own code.

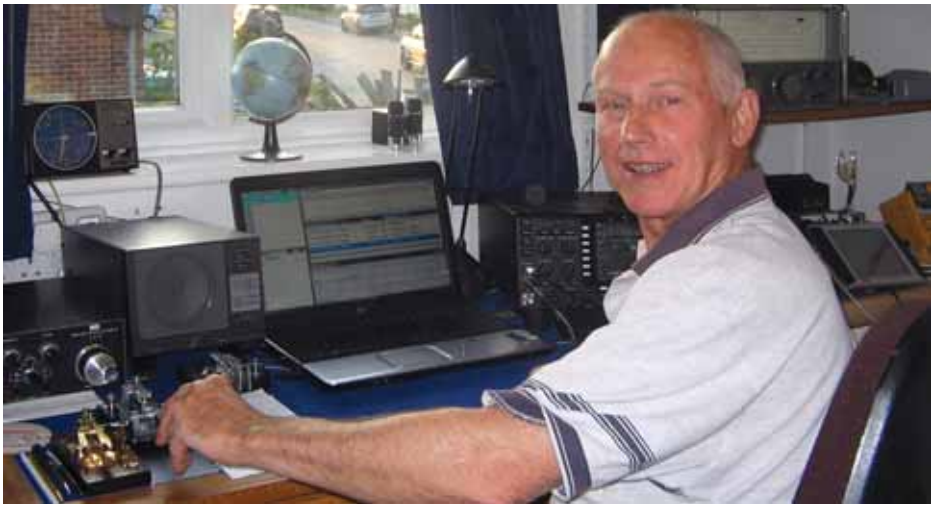
My thanks to Keith, ZL1BQE, for sparking off this project.

WEBSEARCH

[1] Oshonsoft – http://www.oshonsoft.com
[2] PCB CAD and PIC files plus a longer version of this article with a detailed description of the BASIC source code are on the *RadCom* Plus website.

Membership Focus

The GB2CW Protocol



Andy Kersey, G0IBN, one of the GB2CW volunteers.

OUTLINE. GB2CW was instigated a number of years ago to allow prospective amateurs to complete their radio amateur examination (RAE) to allow them to use HF. Volunteers helped prospective licensees attain their 12 wpm test, which was then mandatory.

When Morse was removed from the exam and all amateurs allowed access to HF, the scheme more or less disintegrated. A few carried on tutoring but very little publicity appeared and it was in 2007 that I questioned the viability of revising the GB2CW scheme. The rest, as they say, is history.

CURRENT SCHEME. We now have a working scheme with between 35 and 40 transmissions on a more or less even split between HF and VHF from a team of volunteer tutors. Not only that, but we have a list of volunteer assessors that can invigilate at an organised Morse test, with a very attractive certificate being available from the RSGB. This is endorsable for speeds up to and including 30 wpm.

Some view Morse as an avoidable chore, especially when the dreaded word 'practice' is mentioned! At the other end of the spectrum, the devotees regard Morse as the most efficient means of communication, an art form and a pleasure to use on the air. Those in the former camp don't realise what they are missing – this usually applies to the newbies. The majority seem to be stuck on two metres and soon become disillusioned by the limitations of the band. It is therefore incumbent upon older amateurs to educate the newbies and show them just what can be done on HF with Morse and also point out to them what DX they are missing. Limiting themselves to SSB-only immediately makes 40% of the HF bands territory that they cannot use. Working DX using Morse is also much easier, especially with limitations of small aerials and low power.

YOUR CLUB. In order to address this situation it would be good to see every RSGB affiliated club in the UK have their own GB2CW scheme. There already is a pool of volunteers scattered around the country but, despite requests in various places, DX magazines and so on, there is not exactly a deluge forthcoming! It only takes an hour per week on 2m FM to put something very worthwhile back into the hobby that we all enjoy so much. It is hard work, as we have found, to try to persuade amateurs to learn Morse and gain a certain standard, but it is also very rewarding when another good CW operator matures and goes on to use the mode on HF and achieve the same satisfaction and enjoyment that we do – especially when helping to boost the scores in the RSGB CC contests! It is quite likely that your club has a few CW operators and also an influx of new amateurs, so why not consider putting a GB2CW scheme into operation? You can even share the slot between several people, thus reducing the workload.

HOW IT WORKS. It's quite simple and straightforward really. As co-ordinator for the GB2CW Project, I have to issue a letter of authorisation to each volunteer. The information needed in order for me to do that is:

1: Your RSGB membership number.
2: Your full name and address, contact e-mail and/or telephone.
3: Day, time and frequency you will operate.

You can use either HF or VHF. The schedule is published in the *RSGB Yearbook* and also online at www.rsgb.org/morse. If it is a local club project aimed at members then VHF, 145.250MHz FM would be better. You can have interaction between you and the class, using your own call and use GB2CW when transmitting the Morse to the class. I find this is better because you do attract a regular class each week and build up a knowledge of their progress, plus it becomes a fun thing to do too, with the banter that goes on. Plain language, groups of figures, some punctuation and standard QSO formats are all used. I download some news items from the NASA site because these contain mixed text, a lot of which cannot be anticipated.

When I run my session here in Norwich, I play to the audience. In other words, if I have a class with a standard of around 12 wpm, I will start at around 15 wpm, just to give them brain-strain. If I have a beginner, then obviously go through the whole code with them and get them started. If, however, someone signs in capable of 25 wpm but just wants a little practice, then 30 wpm will be sent. We have a target locally of 30 wpm, which I think is about right. After that, they can go their own way.

Andy Kersey, G0IBN, is one of our volunteers. Here's what he had to say: "Operating GB2CW at 2015 on a Wednesday evening, on or around 3555kHz, makes me feel I am doing my little bit for our fantastic hobby. I get a great sense of achievement when one of my pupils plucks up the courage to call me back at the end of my slow transmission. I think it is important that newcomers to CW get used to listening to Morse that is not perfect! Yes, I make mistakes, but with the help of my ex GPO PS213 key they are kept to a minimum. Please feel free to give me a call at the end of my GB2CW transmission: I will be using my own callsign, G0IBN."

THE PINNACLE. The other reason for doing all this is to enable the students to gain a Certificate of Proficiency. With the abolition of the Morse Test, there is nowhere else to gain one of these. We have a pool of assessors to carry out the Morse Test, at whatever speed you wish to be examined and it is a proper test with an invigilator. There is a very attractive certificate to be gained and makes it all worthwhile.

As well as volunteers the GB2CW Project will always welcome assessors, so if you feel you are competent enough for that, please do apply. Ideally we need the same number of each! Check out the website for details of the schedule and the GB2CW scheme in full at www.rsgb.org/morse.

Thanks to those already doing this worthwhile job and I look forward to the deluge of e-mails from new volunteers and assessors!

KENWOOD

STOP PRESS!
Kenwood announce a new HF/6m Transceiver
TS-590S

Still using that K3?
You may just want to stick it on EBay.

It's not often we see a new HF product from Kenwood, but when we do it's usually been worth the wait. The new TS-590S can be seen as a modern day TS-570. Similar in size (and even front panel appearance and layout), the brief was to beat the performance of its obvious rival, the Elecraft K3. Mr Hart has already been booked to confirm or otherwise, but having met Mr Torii, (head of engineering at Kenwood Japan), you can bet your life he and his team will have done a good job.

The Kenwood TS-590S held its debut at the 2010 Dayton Hamvention and promises impressive, yet affordable amateur operation on the HF and 6 metre bands. It utilises the very latest technology including down conversion with the 1st IF at 11MHz, true 32 bit IF DP, roofing filters, USB power, etc. Excellent DSP receive performance is expected, combined with ergonomic operation.

Image courtesy of G0DWV

160-6 metres
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For further information see our website: www.hamradio.co.uk

KENWOOD

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CG-3000 shown with optional remote switch.

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- SWR: <2:1
- Power supply voltage: 12V +/- 10%
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- Memory channels: 800
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RBA-1:1	Probably the best 1:1balun out there	£35.71
RBA 4:1	Probably the best 4:1 balun out there	£35.71
FT-Meter	Neat Analogue back-lit Meter for FT-897/857. S-meter, TX Pwr, ALC Etc	£45.95
NEW FTL- Meter	Jumbo version of the famous FT-Meter	£79.95

Palstar New! Palstar Commander HF-2500 1.5kW Amplifier

Palstar are pleased to announce a new range of HF Linear Amplifiers built to the highest standard. We have started with the "Commander HF-2500" which is available from stock. The 2m & 6m versions will be available during early 2010. ML&S: £3499.95

AT-500	600W PEP Antenna Tuner	**Special Price £349.95**
NEW AT-Auto	Now handles a massive 1500W	**£1099.95**
AT-1500DT	1500W Differential Antenna Tuner	**£449.95**
AT-2KP	(2000W) Antenna Tuner	**£459.95**
NEW AT-2KD	The AT-1500DT and the AT-1KP have been combined into a new 2Kw Tuner	**£429.95**
AT-4K	(2.5kW) Antenna Tuner	**£769.95**
AT-5K	(3.5kW) Antenna Tuner	**£999.95**
BT-1500A	Balanced Antenna Tuner	**£599.95**
PM-2000AM	Power/SWR Meter	**£159.95**

Palstar Dummy Loads

DL-1500	(1.5KW)	**£119.95**
DL-2K	(2kW)	**£229.95**
DL-5K	(5kW)	**£349.95**

Palstar R30A Receiver
Palstar R30A, fitted Collins filters for SSB & AM **£649.95**

MW550P	Active preselector & ATU for AM & 160M reception	**£259.95**
SP30	Matching Desk Speaker	**£69.95**
AA30	Active Antenna Matcher 300kHz-30MHz	**£109.95**

MASSIVE PRICE INCREASES DUE on YAESU. Call now for availability and latest prices. ML&S have the largest stock of Yaesu in the country but will not last forever. Prices quoted are for current stock. Please call now and beat the price rise. YAESU PRICE INCREASES CONFIRMED MID – JUNE 2010. Please call to check stock availability at pre-increase prices before ordering. All prices shown on these pages are inclusive of 17.5% VAT.

20 Celebrating years ML&S

YAESU

FT-817ND

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

£449.95

NEW! Yaesu FTdx5000D

ML&S were the **FIRST** to have a new FTdx5000D on demonstration in their main showroom and were very happy to offer this exciting new bench-mark setting radio to Peter Hart for review in RadCom last month. It goes without saying that all three versions sold by ML&S will be Yaesu UK sourced and first stock is due to arrive August/September. 2010.

See www.FTdx5000.com for more details.

Yaesu FT-857D & ATAS-120A Package

Still our best selling HF Mobile Radio.

FT-857D only £589.95 or with ATAS-120A £819.95

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

Yaesu FTM-350E

Latest Dual-Band APRS Mobile from Yaesu!

Available soon. Price TBA

Yaesu FT-897D

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

ML&S: £669.95

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

FT-450 shown with optional Bail Stand.

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

Yaesu FT-450 without ATU: £589.95
Yaesu FT-450AT with ATU: £679.95

Options:

MyDEL MP-8230 23Amp PSU	£69.95
Stand-FT450 Bail Stand	£19.95
ATU-450 Optional internal ATU	£163.43
MMB-90 Mobile Bracket	£19.36
MHG-1 Carry Handle	£10.17
MH-36E8J DTMF Mic	£71.48
MD-100 Desk Mic	£149.95
MD-200A8X Super Deluxe Desk Mic	£199.95
YH-77STA Headphones	£56.14
MLS-200 High Power weatherproof speaker	£28.55
ATAS-120A Fully Auto Mobile 7.50MHz Antenna	£239.95

Yaesu VX-3E. ML&S £138.95
Micro Handie 2/70 with scanner. Complete with Li-ion battery, charger & antenna.

Yaesu FT-60R. ML&S £145.95
Latest twin band handie complete and ready to go.

Yaesu VX-6R. ML&S £199.95
Yet another 2/70 handie from Yaesu.

Yaesu VX-7R. ML&S £259.95
The UKs best selling Triple Band Handie.

FT-7900 New! Similar to FT-7800. £249.95

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

FT-7800 FREE CARRIAGE UK MAINLAND if quoting RadCom at time of order.

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

FT-2900 NEW! Replacement for FT-2800. MiL spec, high performance. £139.95

See Website for details of these new Yaesu mobiles

Yaesu FTM-10R. ML&S £269.95

Yaesu FT-8800. ML&S £295.95
Similar to the FT-7800 but can receive on 2 & 70 simultaneously.

Yaesu FT-8900. ML&S £329.95
High-power FM on 10m, 6m, 2m & 70cm. When your local repeater is busy, slip onto 10m & work DX!

Yaesu FT-897D
High Power version of the FT-897. Use as a transportable, (20W) or as a base/mobile (100W) **Bundle Price: £CALL (Rig only: £669.95)**

Yaesu FT-857D The Ultimate HF Mobile Installation! Plus ATAS-120D 40m-70cm Auto Antenna
Bundle Price: £819.95 (Rig only: £589.95)

Yaesu FT-817ND Only £449.95
The world's only all-band portable transceiver.

Yaesu FT-2000 PEP

Performance, Excitement, Perfection!

The DX choice of 3B7C.

Always in stock. Always on demo. Two flavours, 100W or 200W, you choose.

FT-2000: £2099.95
FT-2000D: £2695.95

FT-2000 Accessories

Yaesu CABPC-YAESU-USB At last we have USB Cables for FT-450/950 & FT-2000. These can be used for programming and Control of these radio's (Note to Firmware update the FT-2000 you will also need the FT-2000-PROG-PLUG at £5.00 inc VAT) **£25.49**

Yaesu Com Port Control and Programming Kit This allows computer control of the Yaesu FT-2000/FT-950/FT-450 and the programming of firmware updates without removing the feet of the radio. **£25.54**

Yaesu FT-2000 Memory Stick This 1GB memory stick includes Yaesu control software and the latest (ver.133) firmware update. **£24.95**

MyDEL 9-PD to USB The MyDEL 9-PD to USB is a 9-pin to USB cable which allows you to connect your Yaesu FT-2000 to your Windows XP computer for firmware upgrades. **£29.96**

Yaesu MD-100A8X The Yaesu MD-200A8X is a ultra high-fidelity desk top microphone **£204.30**

Yaesu MD-100A8X Yaesu MD-100A8X is a desk top microphone **£153.21**

Yaesu FH-2 The FH-2 is a Remote Control Keypad built for the FT-2000 ..... **£43.89**

Yaesu FT-2000 & FT-2000D Mini-Manual. Size, 4.5x8 inches. Twenty high-quality laminated pages, loaded with detailed instructions covering all aspects of using these superb HF rigs **£19.99**

Yaesu MTU-160 The MTU-160 is an external µ-tuning unit for the FT-2000 on the 160 meter band. This MTU unit requires the external µ-tuning base kit. **£449.51**

Yaesu MTU-80/40 The MTU-80/40 is an external µ-tuning unit for the FT-2000 on the 80 and 40 meter band. This MTU unit requires the external µ-tuning base kit. **£449.51**

Yaesu MTU-30/20 The MTU-30/20 is an external µ-tuning unit for the FT-2000 on the 30/20 meter band. This MTU unit requires the external µ-tuning base kit. **£449.51**

Yaesu YF-122C 7-pole Collins CW Filter (500Hz/2Khz: -6db/-60db) for FT-817, FT-857, FT-897 and FT-2000 ..... **£118.48**

Yaesu YF-122CN 7-pole Collins Narrow CW Filter (300Hz/2Khz: -6db/-60db) for FT-857 and FT-2000. ..... **£129.71**

FT-950 HF Base Transceiver

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

Only £1129.95 Available from stock

FT-950 Accessories

CABPC-YAESU-USB
USB Cables for FT-450/950 & FT-2000 ..... **£25.49**

Yaesu FT-950 (Mini-Manual) **£16.99**

Yaesu Com Port Control and Programming Kit **£25.54**

DVS-6 Voice Memory Unit **£44.90**

MD-100A8X Desk top microphone **£153.21**

MD-200A8X Ultra high-fidelity desk top microphone **£204.30**

MTU-160 External µ-tuning unit for the FT-2000 on the 160 meter band. This MTU unit requires the external µ-tuning base kit. **£449.51**

MTU-30/20 External µ-tuning unit for the FT-2000 on the 30/20 meter band. This MTU unit requires the external µ-tuning base kit. **£449.51**

FP-1030A 13.8 VDC at 25 amps continuous or 30 amps surge. Input is 234V and 50Hz Dual meters showing voltage and amperage are featured along with a RED LED for overload indication **£314.65**

FH-2 Remote Control Keypad built for the FT-2000 ..... **£43.89**

Quadra - VL-1000 1 kW, HF & 6M Solid State Linear Amplifier and PSU (VL1000 & VP1000) **£3,799.95**

SP-2000 Base station external speaker built for the FT-2000. ..... **£136.87**

YA-30 Broadband folded dipole antenna working between 1.5-30 Mhz, which comes with 30 meters of cable. **£250.28**

Yaesu VX-8E

Latest 6/2/70 Handie with optional Bluetooth, APRS & GPS £299.95

Buy a Yaesu VX-8E, the FGPS-2 GPS & MH-74 Mic for only £399.95

New version VX-8DE with enhanced APRS £399.95

VX-8E Accessories

Nifty HT Desk Stand mkII
Convenient desk top holder **£35.76**

Maldol MMG-SM Minimag
Quality, stable, Maldol miniature magnetic mount. **£20.39**

Yaesu BH-1 Stereo Bluetooth Headset **£134.82**

Yaesu BH-2 Bluetooth Headset **£123.58**

Yaesu BU-1 Internal Bluetooth Unit **£82.71**

Yaesu CD-40 Charger Cradle for BH-1/BH-2 ..... **£10.17**

Yaesu CD-41 Rapid Charger Requires NC-86U **£17.32**

Yaesu CN-3 SMA to BNC Adaptor **£8.12**

Yaesu CSC-93 Soft Case **£15.28**

Yaesu CT-131 Microphone Adaptor Cable **£30.60**

Yaesu CT-134 Cloning Cable **£36.74**

Yaesu CT-136 GPS Antenna adapter for FGPS-2 ..... **£27.54**

Yaesu E-DC-5B DC Cable with Cigarette Plug **£29.58**

Yaesu E-DC-6 DC Cable for Handhelds **£7.10**

Yaesu FBA-39 Dry Cell Battery Case **£22.44**

Yaesu FEP-4 Earpiece for BH-1 Bluetooth Headset **£16.30**

Yaesu FGPS-2 GPS Unit Requires CT-136 or MH-74A7A **£71.48**

Yaesu FNB-101LI 7.4V 1100mAh Lithium Ion Battery **£45.94**

Yaesu FNB-102LI 7.4V 1800mAh Lithium Ion Battery **£61.26**

Yaesu MH-74A7A Waterproof Speaker Microphone **£43.89**

Yaesu NC-85U AC Charger for BH-1/BH-2 ..... **£22.44**

Yaesu NC-86U AC Charger for VX-8 ..... **£10.17**

Yaesu VX-8E (Mini-Manual) Sixteen high-quality laminated pages, loaded with detailed instructions. Ideal for setting-up and operating the VX-8R quad-band transceiver **£14.99**

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

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The World's Favourite Ham Store

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E-mail: sales@hamradio.co.uk

NISSEI *One of the oldest names in Ham Radio*

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

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

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

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

DAIWA

Beautifully constructed.
Benchmark perfomance.
Cross Needle SWR Power Meters

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

NEW Mini VNAPro
Now with Bluetooth!

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

Only £349.95

MiniVNA original still available (without Bluetooth): £259.95

New! Alinco DJ-G7E
2m/70cm/23cm Handie Transceiver. Simultaneous full duplex operation between any two bands. £299.95

MicroBit Remote Rig Interface

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

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

The previous model is still available.
Microbit-1258 mkI £349.95. Including Lead Set
Microbit-1258 mkII £399.95. Leads included
For more info see **www.hamradio.co.uk/rrc-1258.shtml**

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

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

A complete remote control system for Amateur radio
Using Microbit's advanced technology, full remote control of your rig is available today.

Flex SDR Radio

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

Miracle Antenna

Miracle Antenna is back!
With some important Hot New products.
Introducing the New MMD Mixed Mode dipole.
The first and only electrically centre-fed mechanically end-fed dipole ever offered to the Ham Radio market, the MMD provides a host of benefits never available in an end-fed dipole.

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

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

Wonder Wand Antennas U.K.

The UK's favourite rig-mounted antenna system

NEW! WonderWand Widebander
1.8-460MHz with Monster 1.8M Whip! £119.95
NEW! WonderWand Mk4
7-432MHz antenna with 1.8m Whip £89.95
Wonder-TCP
40-10m Tuneable Counterpoise £59.95

HF Linear Amplifiers

Yaesu VL-1000 Quadra	£3799.95
Icom IC-PW1Euro	£3979.95
Ameritron ALH-811HXCE	£999.95
Linear Amp Ranger 572B	£1275.00
Linear Amp Challenger Mk1V	£2295.95

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

ML&S are pleased to announce their appointment as distributor for RF Space Inc SDR-IQ™ Software Defined Radio, Spectrum Analyzer and Panoramic Adapter. Now available from stock ~~£469.95~~ **£469.95**

IF-2000
IF Interface board for the FT2k & FT-950. £219.95
See http://www.hamradio.co.uk/acatalog/RF_Space.html for more details. Both on DEMO at Chertsey.

Perseus VLF-LF-HF Receiver

PERSEUS is a VLF-LF-HF receiver based on an outstanding direct sampling digital architecture.

See Peter Hart's review in May 2010. "Currently my new No.1 in terms of close-in dynamic range"

ML&S are Sole Distributors for Perseus in the UK and Ireland NOW IN STOCK!

£699.95

PERSEUS = Pretty Excellent Receiver for Software-Eager Unperceivable Signals

It features a 14 bit 80 MS/s analog-to-digital converter, a high-performance FPGA-based digital down-converter and a high-speed 480 Mbit/s USB2.0 PC interface.

A COMPLETE SDR RECEIVER FOR SHORTWAVES The PERSEUS analog front-end has been carefully designed for the most demanding users and includes a 0-30 dB, 10 dB steps, attenuator, a ten bands preselection filters bank, and a high dynamic preamplifier with a top-class input third-order Intercept Point of more than 30 dBm. The resulting third-order dynamic range is more than 100 dB in SSB and more than 105 dB in CW. Believe us, there's no other so performant and complete shortwave SDR receiver in the market today. The PERSEUS receiver can be operated also in a wide band mode as a 10 KHz - 40 MHz spectrum analyzer with more than 100 dB dynamic range in a 10 KHz resolution bandwidth.

SOFTWARE FOR DEMANDING USERS Being a software defined radio, the PERSEUS receiver relies on software applications to carry out the demodulation process. Besides providing all the required software signal processing for the PC platforms, the PERSEUS software has a comfortable graphical interface, is simple to use and runs under Microsoft Windows 2000, XP and Vista. All the controls a listener is used to see on a radio are there, in the application main window. The interface to third party software is provided in several ways, by means of the Microtelecom Software Defined Radio Developer Kit, virtual audio ports and virtual communication ports.

HB-1A Ultra Compact 3 Band CW Transceiver

Offering up to 4 Watts output on 40/30/20M Bands, this tiny HF portable is powered by 8 x AA cells and is aimed at the serious QRP enthusiast and has performance similar to that of the Elecraft KX-1.

- 20 meters, 30 meters and 40 meter amateur bands.
- CW Transceive, SSB receive.
- Receiving from 5 MHz to 16MHz.
- Maximum transmission power of about 4 watts on external 12V.
- Weight 350Grams (approximate).
- Battery compartment to hold 8 rechargeable AA cells.
- Built-in auto function keys.
- DDS VFO with 20 frequency storage memory.
- Digital dial with LCD technology.
- Automatic keyer with the CQ programmable with your call.
- RIT 10 Hz, 100 Hz.
- Frequency conversion super- heterodyne receiver.
- Unit will operate with voltage supply from 8-14 VDC.
- Built in AGC function.

ML&S Price: £249.95.

Call or see website for further details.

BACK IN STOCK!

The SR2000A Frequency Monitor

ML&S: £2295.95

Combines a spectrum display unit and receiver in a single cabinet. Up to 40MHz display bandwidth may be selected and minimum 1kHz RBW. The embedded receiver provides continuous coverage from 25MHz to 3GHz in AM, FM & WFM modes. The FFT SEARCH function enables you to locate elusive transmissions FAST, a free PC package (from the AOR web site) further enriches operation. Video images can be displayed on the LCD (PAL + NTSC). The interconnections are incorporated "in the box" along with an internal speaker.

VENTUS WX-928-ULTIMATE

The NEW WX-928 really is the ULTIMATE in professional weather stations, offering the usual feature set of the WX-831 but uses a Anemometer with solar cells , Satellite Meteotime forecast over the next 4 days and a massive split screen.

Only £199.95

Description
This weather station is as called the ultimate weather station. It provides you with local weather data from anemometer, rain gauge and thermohygrometer sensor. All these local measurements from your garden can you save on your pc by using the pc-software included. Furthermore it receives a 4 days forecast by satellite from cities all around in Europe. Just find your city and the weather station updates automatically.

VENTUS WX-831

New much improved wireless Weather Station

ML&S Price: £119.95.

Options: Additional wireless temperature monitors: £24.95. PSU to run the WX-831 from 240V: £19.95

ONLY £49.95

VENTUS G730 GPS-LOGGER

This USB memory stick sized unit is a fascinating pocket device with multiple commercial and personal uses for individual movement tracking. It's very light, extremely easy to use and logs your route automatically. It also adds your GPS location to digital pictures. It presents the route you have taken in 3D via Google Earth™ on your PC and it can export in different formats.

Want to dabble in D-Star without the expense of a radio?

New Product!
DV-AP-Dongle

The DV Access Point Dongle, (DVAP for short) by Internet Labs, provides a way to connect to the international D-Star network. The DVAP is used with a PC/Mac and an Internet connection. Unlike the DV Dongle, the new product allows amateur radio operators to walk away from the computer and transmit/ receive D-Star voice and data using a two meter D-Star radio. Note that a D-Star radio is required to communicate with the DVAP and an Internet connection is required to communicate with the D-Star network. Due August 2010.

NEW

Price TBA. See web for more details.

DV-Dongle

The DV Dongle connects to your PC or Apple Mac via a USB port and provides encoding and decoding of compressed audio using the DVSI AMBE2000 full duplex vocoder DSP chip. AMBE technology is used in all D-Star radios to provide efficient voice transmissions. It is also used in some HF digital protocols by vendors like AOR. The DVTool application used with the DV Dongle may be installed and run on Microsoft Windows XP/Vista, Mac OS X Leopard, or many flavors of Linux.

In stock, works with MAC or PC. £199.95

Morse Keys at ML&S

Begali

For the entire range with choice of bases and contacts and prices please see our website or BEGALI on www.i2rtf.com

Begali Sculpture

Begali Signature

Begali Camel Back

Begali chose ML&S because they wanted a quality company to sell the very best Morse Keys in the World. ML&S are sole distributors for these beautifully crafted keys in the UK.

For full details see our website or send 40p in stamps for full colour catalogue.

Kent Morse Keys

The best British range of keys money can buy!

The Kent twin paddle Morse key. £84.95. Kent Single Paddle Key. £72.85. Kent KT-1 Professional. £79.90.

DX Engineering Products stocked at ML&S!

New! DXE-UT-8213 Coax Cable Stripper ONLY £45.99!

This tool prepares RG-8, RG-213, 9913F7, LMR-400 (not LMR-400UF) and other similar size coax cable for installation of a PL-259 connector - or DXE-N1001S two-piece Type N connector (requires a slight additional trimming of the cable center conductor length).

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

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

New! GAP Antennas Available from stock

Eagle-DX 6-Band, 40-10m 2kW .....Only £325.95
Titan-DX 8-Band, 80-10m 2kW .....Only £345.95
Voyager-DX 4-Band 160-20m, 2kW 45ft tall!.....£385.95
Challenger-DX 8-Band 80—2m (no 17).....£295.95

Alpha Delta Antennas

Alpha Delta are a USA Manufacturer of high quality coax switches, lightning (surge) protectors and the best wire antennas money can buy.

Delta-2B	2-way position SO-239 switch (1kW) for use up to 1.3GHz	£54.15
Delta-4B	4-way position SO-239 switch (2kW) for use up to 500MHz	£75.60
Delta-4BN	4-way position N-type switch (1.5kW) for use up to 1.2GHz	£86.80
AD-ATT3G50	0MHz to 3GHz (200W) surge protector. N-Female Connector	£49.95
AD-ATT3G50/HP	0MHz to 3GHz (2kW) surge protector. N-Female Connector.	£48.89
AD-ATT3G50U	0MHz to 500MHz (200W) surge protector. SO-239 Connector	£39.95
AD-ATT3G50U/HP	0MHz to 500MHz (2kW) surge protector. SO-239 Connector	£44.95
End Insulators	Dog Bones. They are extremely rugged, UV and RF resistant	£1.53
Delta-DX-A	160m, 80m and 40m 1/4 twin slope trap antenna. This antenna combines the tremendous DX firepower of the 1/4-wave slope with the wide bandwidth of the 1/2-wave dipole. One leg is 67ft long and the other is 55ft long	£79.95
Delta-DX-B	160m, 80m, 40m and 30m single slope trapped antenna. This antenna is designed for limited space installations, were room does not allow for large wire antennas; it only requires 60ft of space providing amazing DX performance at installation heights of 35ft	£84.96
Delta-DX-CC	80m, 40m, 20m, 15m and 10m dipole. This antenna is parallel length dipole with no traps; overall length is 82ft	£136.90
Delta-DX-DD	80m and 40m dipole. This antenna is parallel length dipole with no traps; overall length is 82ft	£89.95
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Mark, G8AWO showing off the assembled 10/15/20 & 40/80m Combo Isotron's before mounting on the roof at ML&S HQ.

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HF

DXpedition news and reports of improving conditions

Bob Locher, W9KNI (see text) and son Rob, W7GH.

NEWS. As I write this the E4X Palestine DXpedition is busy on the bands and easy to work from the UK. The bad news in May was that the T31X Canton Island operation was cancelled when the SV *Southern Cross* of Pacific-Expeditions, which was taking them to the island, suffered engine failure. All the more frustrating, therefore, that YT1AD's plans for a big T31 effort for later in the year had been cancelled when T31X was announced. It looks as though T31 is set to remain high on the Most Wanted lists for a little longer. The team did operate from Samoa as 5W0OX before departing for Canton, and were worked on several bands from the UK. Rumours about the planned Annobon (3C0) trip (see my May column) continued to circulate during May, and as I write this new dates have just been announced for 7 to 21 June, so hopefully by the time you read this it will be history. This is another that is much sought after. The good news is that ZS8M has now started operations from Marion Island and hopefully will be increasingly active as the year goes on.

DX NEWS. Regular correspondent Andrew, G7COD is now in Angola and there for the next 12 months on a work assignment. He will be operational nearly every day signing D2AK, 80 through 10, SSB and CW. Check his D2AK website for the latest information.

Three DXCiting Group (see websites) DXpeditions are on schedule for July. These are Seychelles (S79BWW) by CT1BWW from 17 to 31 July, Senegal (6V7EA) from 25 to 31 July by four Spanish operators with three stations active simultaneously and, thirdly, Sardinia (IS0E) from 16 to 24 July by a further four Spanish operators.

During the DX Forum at Dayton, Eric K3NA announced that N5E will be the callsign for the Jarvis Island DXpedition scheduled for November. This operation will be organised by the same folk who were responsible for VP6DX (Ducie Island) in 2008. In making the N5E announcement, Eric talked about 'DX Insight', a new web-based 'gateway' to be used between DXers and DXpeditions. More information about this is promised in the near future.

Dave, N2NL, recently transferred back to Guam and will be there for three years, living in US Navy housing, and planning to be very active on all bands. Once he's there he'll find out what he can put up for antennas and will probably focus, he says, on whatever bands he has the best antennas for. He will use the callsign NH2T for most contests, and KH2/N2NL the rest of the time. QSL via W2YC. I well recall Dave's last spell on the island, as I still needed KH2 on 40 and he was kind enough to come up for a schedule, which we completed without difficulty.

A US group will be active from the Bahamas (C6) using their individual C6 callsigns from 9 to 25 July, with three stations active on all bands and modes.

JA2NQG, JH2BNL and JI2UAY will be on from Wallis Island (OC-054) 14 to 24 July. The team members have requested FW5M, TO2BNL and FW5FM respectively. QSL via the operators' home calls. They will also operate from Fiji on 13/14 July while en route.

At this year's GMDX Convention I particularly enjoyed the VP8DIF presentation. Lars is a research scientist, based in Scotland, but doing regular trips to South Georgia. His work is described in some detail on his website. While there he makes an effort to activate this rare DXCC entity, but it obviously has to be in his spare time. I say 'obviously', but he commented on the number of irate and abusive e-mails he gets from DXers around the world because he is not on their particular 'needed' band(s) at times that suit them. Maybe the trouble is that we are used nowadays to dedicated DXpeditions who can be on the air 24/7, but without folk such as VP8DIF (ZS8M, mentioned earlier, is another example) we would miss out on some nice DX opportunities. Patience and understanding are the key!

Six special event stations are active from Venezuela to celebrate the 200th anniversary of independence. They are: 4M200AJ, mainly on PSK on 40/30/20/15/10; YV200D, mainly on RTTY on 30; YW200A, PSK and SSB on 20/15; YW200ER, SSB on 40/20/15; YW200L, RTTY and PSK, on 30/15; and YW200T, SSB, RTTY and PSK, on 40/30/20/15. A 'Bicentenary of Venezuelan Independence Award' is available by working all six calls. See the website for details.

60m REPORT (from G4TRA). The main news this month is that following negotiations between the RSGB, Ofcom and the MoD, UK full licence holders have access to the 60m band for a further 5 years under the same conditions as before. NoVs have to be reapplied for and the application form can be found on the Ofcom site where you will need to reaffirm what sort of experiments you wish to carry out. Experiments with antennas, propagation, QRP and portable operation are popular, so why not join in and give 60m a go?

In the USA the FCC is proposing some possible changes to their rules for 60m including possible changes to frequency, increased power and additional modes too. On the band this month CT1EEB has been very active; he has a three month permit. Also for the first time Ernie, ZB2FK with

N2NL will be active again from Guam (see text).

10 watts to a vertical has been putting a good signal into the UK from the Rock.

ZB2FK has been making some 60m operators happy recently (see text).

DX HALL OF FAME. Two new members were inducted to the DX Hall of Fame at this year's Dayton Hamvention. They are W4NL and W9KNI. Lynn, W4NL, is one of the founders of the Southeastern DX and Contest Organization (SEDCO) and holds the ARRL DXCC #1 Honor Roll as well as "many awards in DX and contesting". He is an avid CW operator and a member of the A1 Club. Lynn is currently serving on the INDEXA board and has been an active member in multiple DX clubs and national amateur radio organisations. W4NL also has a column in *The DX Magazine*. Bob, W9KNI, is probably best known by DXers for his book *The Complete DXer*, which has gone through three editions, selling close 30,000 copies! He is a former member of the ARRL DX Advisory Committee (DXAC) and was the chairman for several years. Bob has worked all countries (338/376 – current/total) on Mixed and all but one on CW. He's on the very top of the CW DXCC list with 353 (337 active) countries confirmed at the ARRL DXCC Desk. W9KNI was the founder of Idiom Press and the co-founder of Bencher Inc. He was the motivating factor for *CQ Magazine* re-establishing the 'CQ DX Marathon'. Several years later Bob, from his Oregon QTH, tied the European winner (OM3EY) in the 2008 running of the CQ DX Marathon with a total score of 328 points (288 countries and 40 zones). His latest book project *A Year of DX* was a direct result of his participation in the 2008 CQ DX Marathon and has been on the market since May.

DX SUMMIT. The DX Summit website now allows you to register and set up a personal profile. This can be useful, for example by allowing you to generate e-mail warnings when that needed entity is spotted. Having finally upgraded to a decent mobile phone on which I can receive e-mails, I am finding this extremely handy. The DX Summit website itself is a bit over-the-top for display on a mobile phone, incidentally, but G7VJR's DX Lite is designed specifically for the purpose – you can display all spots, or band-specific spots.

CORRESPONDENCE AND TABLES. Simon, M0VKY has been busy again and reports TR8CA on 10 FM, FR/F4EGZ, D2CQ, YV200ARV, 5R8UI and P29CS on 15 SSB, J28KO on 17 SSB, E51JD, BX2AAL, D2AK and AL7FD on 20 SSB and VK2QS, YV4GD, HJ6CGS, C91IW and V5/DH8AF on 40 SSB. Jim, MM0DXH mentions just JD1BMH and E4X, both on 20 SSB and both new ones for him.

Peter, G3HQT is up to 102 countries on 30m so far this year, with some very nice DX on the band. He mentions 9M8DX/2, HL2DYS, A65BP, SU1SK, T88CF, J28AA, YN4SU, OD5/DL6SN, VK7GK and V84PMB on CW, LU5FF and C5YK on PSK and ZA/OK7RY on RTTY. 12 PSK produced CX2AQ while 10 was responsible for OD5/DL6SN on CW and CE2WZ on PSK.

Terry, G1UGH reports TC7SWAT and 6W/LA9DL on 20, PY2VA, 5N7M, LU1ECZ and D2AK (for a new country) on 17, TR8CA, OD5NH, LV5EE and LR1ECZ on 15, plus a number of Europeans via Sporadic-E on 10, all SSB.

Peter, G4XEX worked 9M2ZAK for a new country, along with UA0IT, both on 20. He comments that UA0IT was a little further away than he had expected; indeed, UA0 is a big place, stretching from the edge of Europe right across to Vladivostok and encompassing three CQ zones (18, 19 and 23). It can be tricky keeping track of just where any given UA0 is located, but in actual fact the Oblast (similar to a county or region) can be determined from the first letter of the suffix. There are several sources of this data, a useful one being on AD1C's website (AD1C maintains the callsign database that is used by many contest logging programs).

Dave, G3TBK lost no time in getting back on the bands after returning from the Caribbean and mentions 5W0OX, T2A and JD1BMH on 20 CW, T2A and TT8PK on 17 CW, plus 9U4T and JD1BMH on 30 CW. He also caught plenty of activity on 10 and 12, but it was mainly around Europe via Sporadic-E.

John, G4ATA sends a long list of 40m DX worked in April/May, including (SSB except where noted) YC6NE, 9K2YM, LU5FC, LW4EU, VP5/PY2WAS, 5R8GZ (CW), CO8EC, CO7HG, TT8PK (CW), YY5CAR, CO6YI, RP9H, PT7AT, A71FJ, LU1ECZ, YV5NEA, 4S7NE, VP8LP, 6Y1X, TS8P, VP8AWU, OX3KQ, FM1AG, YB6CA, HK4FLT, 4K6FO (CW), PJ2/PE2B, A71EL/M, HI7MC, PS7PC, ZA/F4DTO, C35US, VK7AC, C35CA, 4Z4TI, 3B8MM (CW), XE1YYD, CX1DDO and YI9PSE. 80m produced TS8P, TF2LL, ZB2FK (CW), A41KJ, YI9PSE, VK5PO, JA2KIW and JA5AQC. He comments that many operators seem to think that propagation on 80 is non-existent after the end of March and don't even bother trying. While propagation on the more northerly paths is difficult, with the shorter hours of darkness, southern hemisphere DX is there to be worked in what is their winter. John has been trying a delta-loop on 40 as a comparison against his phased verticals and found it quieter on receive, but one or two S-points down on transmit and lacking the facility which the verticals provide in being able to select different directions.

Finally, I was sorry to hear of the passing of Dave, G3XYP who used to be a regular correspondent of this column. After a period of hospitalisation he had hoped to be active again but never regained enough strength to use his rig which he had asked Dave, G3TBK to set up in his bedroom. Rob, GW0RYT reports that it was Dave who inspired him to send his reports into this column, and that he and Dave kept each other abreast of the latest news via Twitter.

THANKS. Special thanks go to the authors of the following for information extracted: *OPDX Bulletin* (KB8NW), *The Daily DX* (W3UR) and *425 DX News* (I1JQJ). Please send items for the **September** issue by **Friday 23 July**.

WEBSEARCH

6V7EA: http://6v7ea.dxciting.com/
D2AK: d2ak.freewebspace.com
DXCiting: www.dxciting.com/
DX Lite: http://dxlite.g7vjr.org/
DX Summit: http://www.dxsummit.fi
IS0E: http://is0e.dxciting.com
Russian prefixes (AD1C):
http://hamradio.ad1c.us/russia_a.htm
S79BWW: www.ct1bww.com/s79bww/index.html
VP8DIF: http://www.lars-boehme.de/vp8dif/
YV Award: www.radioclubvenezolano.org/concurso.htm

2010 ANNUAL TABLE

(starting 1/1/10, sorted this month by 80m totals)

Call	10m	12m	80m	160m
G4ATA	0	0	105	0
MD0CCE	13	94	85	101
G3HQT	16	30	81	0
G3TBK	35	58	79	100
MU0FAL	12	41	61	50
G3SED	27	85	46	68
G6CSY	0	0	41	20
GW4BLE	36	24	39	57
M0VKY	13	0	38	38
MM0DXH (SSB)	2	0	25	10
G4XEX	0	6	25	1
G4FVK	0	0	23	0
MW0DNF(QRP)	5	7	10	0
GW0RYT	15	20	6	0
G1UGH	14	22	0	0
GW1PJP	4	17	0	0
GW0LKJ	0	9	0	0

VHF/UHF

Sporadic-E brought excellent results this month

PHOTO 1: The impressive shack of Sergio Puddu, IS0AWZ.

NORMAN FITCH G3FPK. Twenty-one years ago Norman Fitch, G3FPK, having been writing his VHF column in *Practical Wireless*, moved on to this VHF column in *RadCom*. At that time I commenced writing the monthly VHF DXER article in *Practical Wireless* and, twenty-one years later, following the untimely death of Norman, I am now permanently taking over VHF/UHF column. Norman will be a hard act to follow but I hope to be able to maintain the high standard that he achieved.

PROPAGATION SYNOPSIS. Ionospheric propagation on the VHF bands was excellent during May with numerous Sporadic-E openings being reported on both the 50MHz and 70MHz bands throughout the month. These conditions were so intense at times that they even reached as high as the 144MHz band. Auroral back-scatter propagation was also reported during May with DX contacts being made on the 50MHz, 70MHz and 144MHz bands. Tropospheric propagation was generally poor with little in the way of enhanced conditions being reported on either the 144MHz or 432MHz bands.

THE 50MHz BAND. Apart from an aurora that occurred on 2 May, the 50MHz band was open every day during May via Sporadic-E (Es) propagation. This type of propagation can produce some very intense openings that enable stations with low power and a small antenna, a dipole or vertical whip, to work extraordinary distances. At times multiple hops formed that allowed even greater distances to be achieved with contacts being made into Asia, Africa, South America, the Caribbean area and other countries in North America.

My records show that over 80 DXCC countries were contacted from the UK during May. The majority of these were located in Europe within a single-hop distance of up to 2000km. What did surprise me was the large number of stations that are using PSK31 around 50.250MHz. I have never heard so much activity like this before and this is all for the good as it enables the smaller station to make some really good contacts. Amongst the PSK31 operators heard working into the UK during May were EB3BRJ (Spain), ED8DDC (Balearic Islands), ES3BR (Estonia), F6EQZ (France), HA1DRA (Hungary), IW2CXJ (Italy), JY4NE (Jordan), LY2CG (Lithuania), OK2JS (Czech Republic), SA0BDC (Sweden), TR8CA (Gabon), UR5EDU (Ukraine), YO2FMZ (Romania), ZB2GG (Gibraltar), 4Z4TL (Israel), 5B4AHY (Cyprus) and 9H1BW (Malta).

Single-hop Es paths can produce some shockingly loud signals, far greater than you would normally expect. After noticing that the 28MHz band was open on 3 May, Jeremy Smith, M0XVF (Co. Durham, IO94) thought he would have a listen on the 50MHz band to see what all the fuss was about. Although he was only using a G5RV doublet antenna he was pleased to hear some Spanish stations coming in very loudly. He said it made his day when he made his first ever 50MHz QSO by contacting the SSB station of EA1XT (Spain).

"It was a fantastic opening" reported Iain Fisher, EI5GN (Ireland, IO62) who also experienced his first ever Es opening on the 6m band. Running 100W from an Alinco DX-70 transceiver and a 4-element Yagi he filled in over 4 pages in the log book on 13 May when he contacted stations in Austria (OE), Czech Republic (OK), Germany (DL) and Hungary (HA).

Andy Morgan, GD1MIP (Isle of Man, IO74) was pleased to report a contact he made on 18 May with the German station DJ6XH in Munich, some 1290km distant. Andy was using a Yaesu FT-817 transceiver running 5W SSB into a ¼-wave magmount vertical on top of his car.

Conditions were particularly good during the afternoon of 23 May with the 50MHz station of Ron Adam, GM4ILS (Morayshire, IO87) making a total of 70 CW contacts. Best of the bunch were IS0AGP (Sardinia), LZ2LT (Bulgaria), ST1AR (Sudan), SV1NZX (Greece), YU7AU (Serbia) and 4X1IF (Israel).

Among the less common European stations to be found on the 50MHz band during May were those of CU1EZ (Azores), ER1SS (Moldova), OH0/PA3BAG (Aland Islands), TA2ZAF/M (Turkey), TF2JB (Iceland), T77C (San Marino) and ZC4VJ (UK Bases on Cyprus). The maritime mobile station of Andy Adams GM0KZG/MM was operating on the 50MHz band from the Scottish Marine Patrol Ship *Norna*. Running 100W into a 3-element Yagi he made many contacts via Es and auroral propagation from 'wet' squares IO56, IO58, IO68, IO69, IP50 and IP60 in an area north-west of Scotland.

The 50MHz band is commonly known as the 'magic band' for a very good reason. Openings can suddenly develop from nowhere and the band becomes full of loud signals. However once you have mastered the technique of listening for very weak signals you will discover what the 'magic' is really about. During a regular European opening on 31 May some operators in south-east England heard weak CW signals from the station of 9M2TO (West Malaysia, OJ05). As far as I can ascertain the following UK stations, G3FPQ, G3WOS, G4CCZ, G5WQ and G7RAU, managed to work 9M2TO between 1045-1055UTC. The distances involved were considerable, the furthest being made from G7RAU (Isle of Wight, IO90) at 10351km. Truly magic!

Other Asian and African stations heard working into the UK during May included 4L3Y (Georgia), EY8MM (Tajikistan), UK8OM (Uzbekistan), A92IO (Bahrain), E4X (Palestine), JY4NE (Jordan), ST2AR (Sudan), SU1SK (Egypt), TL0A (Central African Republic), TN5SN (Congo) and TR8CA (Gabon). Transatlantic openings via multi-hop Es propagation to North and South America were reported on 16, 27, 28, 29, 30 and 31 May. Some of these openings were very intense, with signals strengths many dB over S9. The DX stations included 9Y4AT, 9Y4D, 9Y4VU (Trinidad & Tobago), FG5FR, FG5GP (Guadeloupe), FM5AA (Martinique), FY1FL, FY5KAC (French Guiana), HI3TEJ (Dominican Republic), HK3O, HK7AAG (Colombia), KP4EIT, KP4YI, NP3CW, WP3UX, WP4G, WP4LUU, WP4NIX (Puerto Rico), KP2BH, NP2X (Virgin Islands), PJ2BVU (Netherlands Antilles), PV8ADI, PV8AZ (Brazil), VO1KVT (Canada), VP9GE (Bermuda), YN4SU (Costa Rica) and YV1DIG (Venezuela). In addition to these were dozens of USA stations in the W1, W2, W3, W4, W5 and W8 call areas. It really was an amazing month.

THE 70MHz BAND. There is a considerable amount of DX activity on the 70MHz band now that a number of European countries have either permanent or temporary access to the band. Many of these countries are located at an ideal distance away from the UK (greater than 1000km) and this enables easy Es contacts to be made when conditions are right. Interestingly the 70MHz band is unique insofar that there is relatively little off-the-shelf equipment. So apart from using a transverter or the Yaesu FT-847 that can be modified to work on 4m many operators use ex-private mobile radio (PMR) equipment operating on FM. Ordinarily, FM is not thought of as a DX mode but it does work rather well during the Es season where received signals are often very loud. Kevin Jennings, M0KSJ (Kent, JO01) reports that on 31 May he left his Alan HM70 PMR scanning the FM channels. Suddenly at 0924UTC it stopped on 70.450MHz and the station of S56KZ (Slovenia) was heard calling CQ. He was a strong 59 signal and Kevin was able to exchange details to make a complete contact. Kevin mentioned that as a newcomer to 70MHz this was an amazing experience especially as he was only running 25W into a Sirio CX4 vertical antenna.

During May there were 15 days during the period when Es propagation was reported by operators throughout the UK. Contacts on CW, FM and SSB were made with stations located in Belgium (ON), Croatia (9A), Czech Republic (OK), Denmark (OZ), Estonia (ES), Faroe Islands (OY), Finland (OH), Germany (DL), Greece (SV), Dodecanese (SV5), Crete (SV9), Italy (I), Norway (LA), Portugal (CT), Romania (YO), Sardinia (IS0), Slovakia (OM), Slovenia (S5), Spain (EA) and the Balearic Islands (EA6). Unfortunately many of these countries do not share the same 500kHz of bandwidth that we do in the UK. For example stations in Belgium and Germany are allocated a spot frequency of 69.950MHz, Slovakia 70.250-70.350MHz and the Faroe Islands an allocation between 70.088-70.112MHz (and other spot frequencies). Calling CQ for these and other countries on 70.200MHz (the SSB calling frequency) is a complete waste of time and causes needless interference to other stations. To keep up to date with the latest allocations simply log onto the 4m website www.70mhz.org and navigate your way to the Operating section.

I am quite active on the 70MHz band running a Kenwood TS-690S transceiver at 28MHz, driving into an RN Electronics transverter, a TE Systems 150W solid-state amplifier and a pair of DK7ZB 7-element Yagis. During May I made CW and SSB contacts with the stations of 9A6R, CT1DHM, CT1FFU, CT1FJC, CT1JAD, CT1HAR, EA1BLA, EA1YV, EA3GRA, EA6DD, EA6SX, EA6VQ, EA7BIH, EA7BYM, EA7HG, EA7RZ, EC7AMY, ES1CW, ES2JL, ES3RF, IS0AWZ (see **Photo 1**), OH1ND, OH1ZAA, OH3UW, ON4KHG, ON5VW, OM5KM, OY9JD, OZ2LD, OZ8ZS, SV1DH (2590km) and SV2DCD (2253km).

Propagation has also been good in the far north of Scotland. Martin Andrew, GM6VXB (Aberdeenshire IO97) is active on the 70MHz band (and others up to 10GHz) running a modified FT-847 transceiver (details on the 4m website), a BNOS 100W solid state amplifier and a 6-element Yagi. He made SSB contacts via Es on 25-26 May with the stations of S57A, OK6TW, OM3CLS, OM5KM and SV5BYR at an amazing distance of 3236km.

Conditions were indeed very good on 26 May with an opening between 1200-1500UTC to Portugal and Spain. At 1800UTC the 70MHz band opened up with DX stations being worked as late as 2300UTC. This event saw UK stations making contacts with stations such as OZ3ZW (Denmark), LA4LN (Norway), OH6PA (Finland), ES2JL (Estonia), OK1TEH (Czech Republic), OM3CLS (Slovakia), S51DI (Slovenia), EA1HMK (Spain) and CT1HAR (Portugal).

THE 144MHz BAND. Two excellent Es openings that reached the 144MHz band were reported on 17 and 24 May. The opening on 17 May was most unexpected. There had been a little activity on the 50MHz band but nothing particularly strong. At 1715UTC the 70MHz band suddenly opened up to Greece and within the hour the maximum usable frequency (MUF) shot up to the 144MHz band. At my QTH in Herefordshire (IO81) I made SSB contacts between 1800-1805UTC with the 70MHz stations of SV1DH (KM18) at 2590km and SV2DCD (KN00NF) at 2253km. Then the opening reached the 144MHz band and between 1817-1820UTC I made SSB contacts with SW6KRV (KM09) at 2286km and SV2JL (KM09) at 2300km. Four other stations, SV2DCD (KN00), SV3BSF (KM08), SV3CYM (KM08) and SV9CVY (Crete KM25), were also known to have worked operators in southern England. All this on 144.300MHz - it was chaotic!

One of the great advantages of making 144MHz contacts via Es propagation is that by its very nature it creates a level playing field. For example you can have a multi-Yagi, high-power station who cannot hear any DX stations and yet literally only a few kilometres away the propagation may favour the very low-power, small antenna station. A report from Wayne Thomas, M0WAY (West Midlands, IO82) shows an example of this. He was only using 25W into a Halo antenna at 3m above ground yet managed to contact the station of IK0BZY (Italy, JN61) with a 59 report. The QSO over a path of 1611km was Wayne's first ever 144MHz QSO outside of the UK. Congratulations! This Es opening on 24 May was actually quite lengthy, commencing at 1330UTC and lasting for 3 hours. Operators located in central and southern England reported making SSB contacts with stations mainly in Italy and to a lesser extent in Croatia, Slovenia, Greece, Hungary, Poland, Austria and Germany. Some of the DX stations worked on the 144MHz band included IW7EBE/M, 9A5CY, S51ZO, SW4LRJ, HA6NY, SP9APC, OE3DSB and DL5MAE.

TABLE 1: TOP VHF DX contacts made from the UK during 2010.

Band	Mode	Date	UK/Locator	DX/Locator	Distance
6m	Es	31 May	G7RAU (IO90)	9M2TO (OJ05)	10351km
4m	Es	26 May	GM6VXB (IO97)	SV5BYR (KM46)	3236km
2m	Es	1 June	GM4VVX (IO78)	RA3WDK (KO81)	2526km
2m	Au	2 May	G4RRA (IO80)	LY2WR (KO24)	1943km

CQ AURORA! Auroral (Au) back-scatter propagation was reported on 2 May and, 27 days later (one rotation of the Sun), on 29 May. It affected the lower VHF bands, with inter-UK activity being generated on the 50MHz and 70MHz bands. Bill Tracey, GM4UBJ (Motherwell, IO75XT) reports that he managed to make a few contacts via the aurora during the evening of 2 May. Working on the 50MHz band he made CW and SSB contacts with EI6IZ, G0DQS, G4IGO, G8BCQ, GI6ATZ, GM8IEM, MM0AMW, MM0BQM, GS3PYE/P (the expedition to the island of Harris) and LB7Q (Norway, JP50). Bill mentions that he was using an Icom IC-7400 transceiver running 100W into a 5-element ZX Yagi and that most stations were peaking around 53A.

Although it is at a higher frequency, the 144MHz band always seems better for making DX contacts. At the beginning of the event on 2 May, around 1450UTC, the stations of G4RRA (IO80), G4ZFJ (JO01) and G7RAU (IO90) reported making a CW contact with the Lithuanian station LY2WR (KO24) some 1900km distant.

The summer season has got off to a tremendous start with numerous contacts being made on the VHF bands. To show what is possible on these exciting bands I've introduced a list shown in **Table 1** of the best DX contacts made during 2010 on the VHF and UHF bands. Challenges to these claims are fully accepted!

DEADLINES. If you make any DX contacts you are particularly pleased with or just want to pass on news or other information then send it, preferably by e-mail, to g4asr@btinternet.com to reach me *by the end of each month*. Alternatively you can send letters to Yew Tree Cottage, Lower Maescoed, Herefordshire HR2 0HP.

GHz Bands

High activity levels in the recent contests

PHOTO 1: GM4GUF/P's portable station on Beinn Lora, IO76HL, looking towards the north with snowy Glencoe in the far distance. The site is 5 miles North of Oban. The antenna is the 23 element Tonna fed with 6m of Ecoflex 10. Photo: GM4GUF/P.

BAND ACTIVITY. April and early May activity levels have been good on the GHz bands. It is now usual for most of the activity to occur during the contest periods with little (reported) activity at other times. The major activity periods were therefore during the RSGB UKAC Low Bands contest on 20 April that covered 1.3 and 2.3GHz and the RSGB 432 and up contest on 1 and 2 May. The RSGB 10GHz Trophy and the UK Microwave Group's first 24, 47 & 76GHz Cumulative were also held on this same weekend.

RSGB UKAC CONTEST. In spite of the lack of aircraft movements over the UK due to volcanic ash clouds, UK activity levels were once again high on 1.3GHz and improving on 2.3GHz. Aircraft movements were getting under way again over Europe, so not all EU DX potential was lost.

Ray, GM4CXM (IO75) comments that the contest was a challenge for UK operators since a check on aircraft radar identified an increase in continental airspace activity whereas over the UK you could count the number of aircraft on the fingers of one hand. There appeared to be a large increase in the numbers of operators active and even the *ON4KST* GHz chat room was noted to have over 130 connected on occasion and substantially more UK stations than normal.

Eight stations were active from Scotland including GM4CXM and only Jim, GM3UAG (IO87), went unheard or worked. Gordon, GI6ATZ (IO74) was his usual good signal but nothing was heard from David, GI4SNA (IO64), which would have been a nice multiplier. Ray felt that further south is where the difference was found. Bill, G3JYP (IO84), is usually worked on CW, but on this occasion they made it on SSB. David, M0GHZ (IO81), and Tony, GW8ASD (IO83), were also worked on SSB and Roger, G3OHH on CW early on when he was still ignorant of how dire things were to become.

Despite Neil, G4BRK and Bryan, G8DKK, both in IO91, usually being very easy to work on aircraft scatter or troposcatter, nothing was seen or heard of them. It was a similar story with John, G4EAT (JO01), though they both heard each other briefly when an aircraft from Doha, bound for Heathrow, appeared. It had taken an un-typical route across the North Sea and circled a few times off the Teesside coast before suddenly heading directly south to London Heathrow. Ray felt that if they had taken 15 second transmit/receive periods they may have completed but the 1 minute periods they chose were far too long. Ray finished with 12 contacts, of which half were GM.

The next report comes from Simon, G8ATB (IO83). He comments that conditions were below normal with nothing worked towards the south. However, after working 'locals' GW8ASD, G3OHH and G8OHM, GM4GUF/P provided the only GM contact, followed later by Gordon, GI6ATZ (IO74) and Richard, GD8EXI (IO74), allowing him to complete the evening with a respectable 17 contacts over two hours of operating. All contacts were made on 1.3GHz by either responding to CQ calls or calling CQ, indicating the high level of activity despite conditions.

Rob, MODTS (IO94), also felt conditions were down. With more activity than usual he managed to work 16 stations by comparison with the previous month's 12. He comments that it was really difficult to work much outside of IO83, although he did manage to work Ian, G8OHM (IO92) and was able to copy G4BRK, G3NNG and GI6ATZ but they were not workable with his 30W and 19 element antenna.

Robert, GM4GUF/P (IO85) says he did his best to beat GM4CXM. It looked like this could have been the evening but he blew it, working 12 stations, like Ray. Jim, GM3UAG (IO87) was well down on normal and he heard G3OHH (IO83) working Ray but was unable to raise him. Robert was pleased to work G4BRK, G3JYP and several other regulars. **Photo 1** shows Robert's station on Beinn Lora, IO76, during an earlier portable foray.

GM4GUF/P currently has 18W to a 15 over 15 Jaybeam. This antenna proved much better for him than the previous 23 element Yagi antenna as it is shorter with a wider beam width and the gain difference is marginal.

There were no reports of any 2.3GHz band contacts, but a look at the RSGB CC VHF contest web page **[1]** shows that the leading station, G4EAT, worked eight stations with a best DX of 265km.

FORTHCOMING MICROWAVE EVENTS - 2010

Finningley Microwave Round Table, 10 & 11 July. Details: www.g0ghk.co.uk/table.php.

14th International EME Conference, Dallas, Texas, 12 – 14 August. Details: www.ntms.org.

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

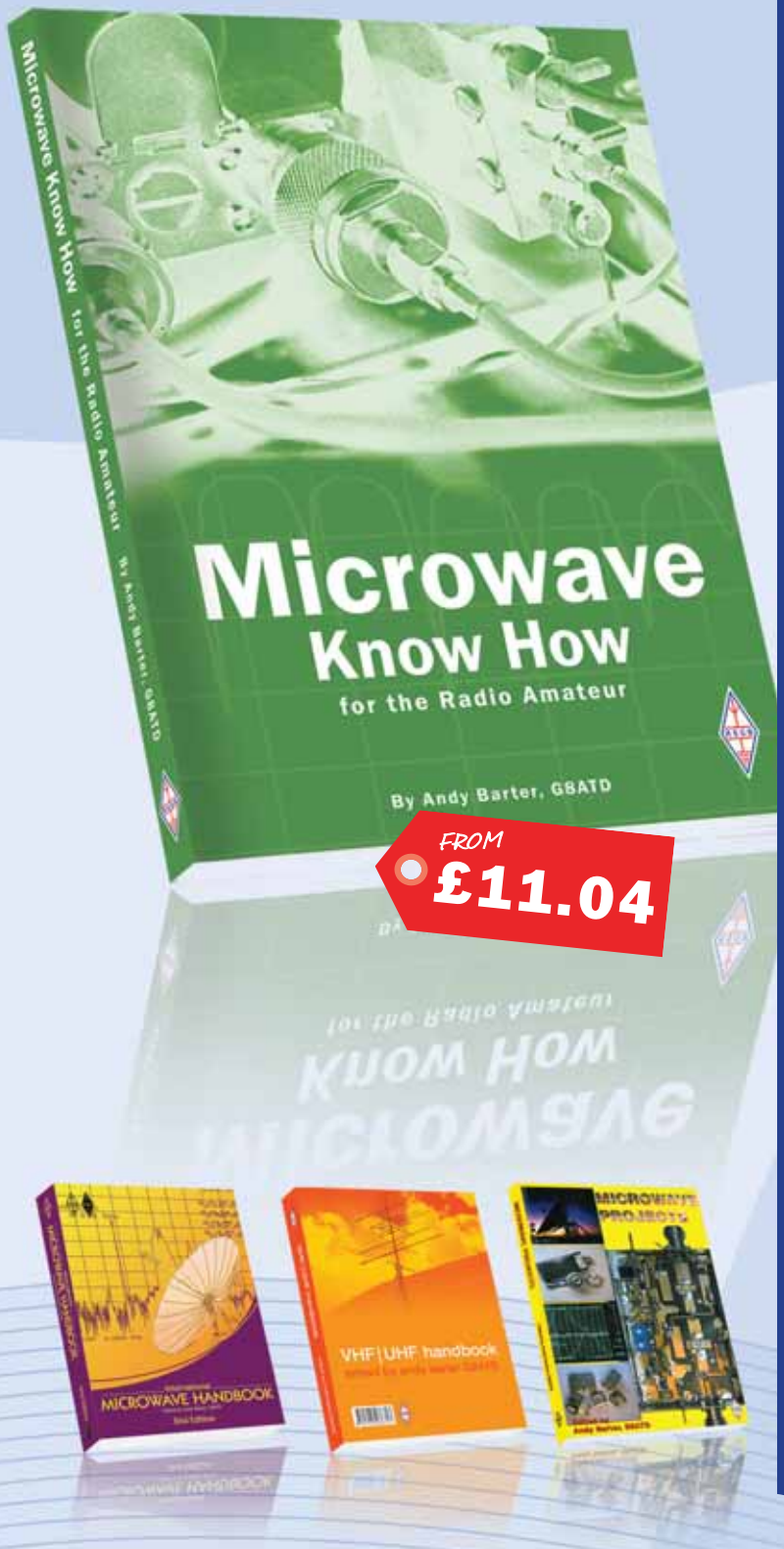
55th UKW Tagung (Weinheim), 11 & 12 September 2010. Details: www.ukw-tagung.de.

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

Microwave Update, Cerritos, California, 20 – 24 October. Details: www.microwaveupdate.org.

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

RSGB shop



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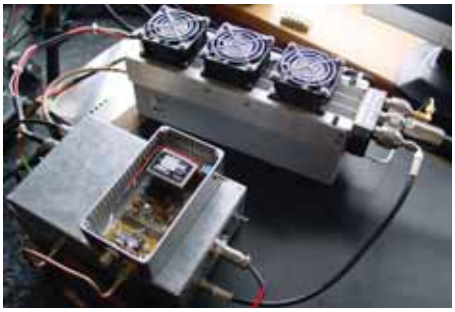

PHOTO 2: 2.3GHz band transverter and Spectrian 60W amplifier used by G3VKV to work GM4BYF/P at 360km on SSB during the May contest. Antenna used was a 16dBd Wimo Yagi fed with Ecoflex 15. Photo: G3VKV.

PHOTO 3: G3Z/P on 24GHz - what you do when you forget to bring along the right tripod. Chris, M0ECM and Martyn, G3UKV in QSO with Keith, GW3TKH/P. Photo: G3UKV.

PHOTO 4: GM3SBC Ed's planar array for 1.3GHz. He uses two of these to provide a very wide beam width pattern. No rotator is necessary. Photo: GM3SBC.

BUSIEST WEEKEND. The RSGB May 432 and Up contest, the RSGB 10GHz Trophy and the UKuG 1st 24/47/76GHz Cumulative traditionally makes the biggest microwave contest weekend of the year. It coincides with a big IARU contest and several smaller events from other countries in Europe. Although not reported here, it also coincides with the San Bernardino 2GHz and Up contest and the Microwave Spring Sprint contest **[1, 2]**. I am talking about the first full weekend in May, of course. This year did not disappoint, with lots of activity to report. You should note that correspondents rarely admit which section of the contest they are going to enter and many are on the bands purely for the activity. You will need to read the contest results on the VHF Contest Committee website or *Scatterpoint* to see how the individuals eventually scored.

Ray, GM4CXM, provides the first report. He made 30 contacts which is the first time that milestone has been reached on 1.3GHz by Ray. ODX was PA6NL in JO21BX at 709km.

Tim, M0AFJ (IO92) was pleased to work GD0EMG (IO74) and GM4CXM (IO75) on 1.3GHz. His station is still being developed. He uses an ICOM IC910X with a GaAs FET mast head pre-amplifier. RF output is around 8W at the antenna, a 26 element FlexYagi. His QTH is only 80m AGL in the Milton Keynes bowl. Tim is really pleased with his results so far.

Neil, G3RIR (IO92), was able to spend an hour on the Sunday afternoon on 1.3GHz during the contest. He worked 10 stations including 4 PA with GM, GD, GW and G also worked. This increased his QTH locator total to 25. Neil's ODX on the band is now 539km, having worked PI4GN in JO33. He comments that the most interesting point about the QSO was that it started out at S9 both ways but such strength only lasted a few seconds and the QSO was completed with S1 signals. Would this have been aircraft scatter enhancement, he wonders?

In a report from two of the Bolton Radio Club members, they mention that their club station G0BWC/P (IO83) operated on 1.3GHz for a couple of hours on Saturday afternoon and three hours on Sunday morning. With just 10W into a single 27-ele, they had 15 QSOs in total, but only one from the continent (PA6NL). Surprisingly, in view of the high levels of activity on the UKAC 1.3GHz contest, they report very little local activity in IO83 square but that IO92 seemed quite busy.

They were also able to take a newly acquired 2.3GHz band DEMI transverter out portable. It was used with a 16 element Yagi. They worked John, MW1FGQ at about 60km followed by GD0EMG at about 150km; all this with just 25mW output. This bodes well for the future, as they have a number of amplifier options available, which will give them between 20-100W on this band.

The G0BWC/P group also took a newly rebuilt 10GHz transverter with an 85cm dish onto the contest site. They report hearing G0GHK/B (10GHz personal beacon at the QTH of the Finningley (Yorks) club) at up to S8 on the Saturday. They worked GD0EMG and G3Z/P at excellent signal strengths. Dave, G4MVU, lent his 24GHz band transverter to enable them to make a one way 150km contact with GD0EMG.

Back to Scotland and a report from Peter, GM4BYF. His group operates from IO74 with the callsigns GM3HAM/P on 432MHz and 1.3GHz; GM4BYF/P on 2.3 and 5.7GHz and GM8BJF/P on 10 and 24GHz.

He felt radio conditions were dire all weekend and asks how good an attenuator is volcanic ash? On the Saturday afternoon and evening the weather was foul with a very cold and strong north easterly wind blowing in heavy squally showers. Sunday's weather was much better but there was very sparse activity and many normally easy contacts didn't happen. His highlight was making a 2.3GHz band contact with G3VKV. In spite of trying, no contacts were made on the 5.7GHz band. G3VKV's 2.3GHz system is shown in **Photo 2**.

The final report comes from Martyn, G3UKV. He reports that the Telford and District ARS had six members operating from the summit of the Brown Clee in Shropshire (IO82). They activated G3Z/P on 7 bands, from 432MHz up to 24GHz. Conditions, both weather and propagation, were abysmal, but they managed 23 QSOs on 23cm with ODX PA6NL (JO21). They also worked four each on 2.3GHz, 3.4GHz and 5.7GHz, with GD0EMG being the furthest worked at 230km. They thought that the number of 10GHz stations was well down, working only nine on this band, plus GW3TKH/P on 24GHz. **Photo 3** shows the 24GHz station in action. Unplanned events included a collapsing mast with severe damage to a 5.7GHz dish feed, a 2.3GHz Spectrian PA catching fire and a brand new generator that didn't like inductive loads - and those were just the headline events.

Ed, GM3SBC, sent details of his unusual but very effective planar array for 1.3GHz that he used during the contest. **Photo 4** shows Ed with the antenna. It consists of 22 half-wave elements in phase. The overall length is 1.25 metres. The 3dB beam width is 30°. The return loss is 30dB, which is maintained over a 50MHz range. He uses two of these in a stack and for the total length of 2.5 metres it has a gain of 20.6dBd. Ed says the interesting thing is that you can have one antenna pointing, for example to the east and the other to the south. With 4 of them you could cover 120° or have them pointing north, south, east and west.

He says he has long-since lost interest in narrowband and very directional Yagis. Many amateurs have failed to get the expected performance with a bay of 4 due to their critical construction and matching. Usually, no two are the same.

My thanks to everyone who contributed to this bumper report on microwave activity. If I missed including your report this month, I do apologise. It has proven difficult to get everything into these two pages.

I had intended to cover reports on EME and a full report on the RAL Microwave Round Table. The RAL report should now appear on my web page **[3]**.

WEBSEARCH

[1] RSGB Contest web page - www.rsgbcc.org
[2] USA Contests - www.hornucopia.com/contestcal/contestcal.html
[3] RAL report - www.g4ddk.com/RAL

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Short Circuits

Getting the right time, and (not) getting it right first time

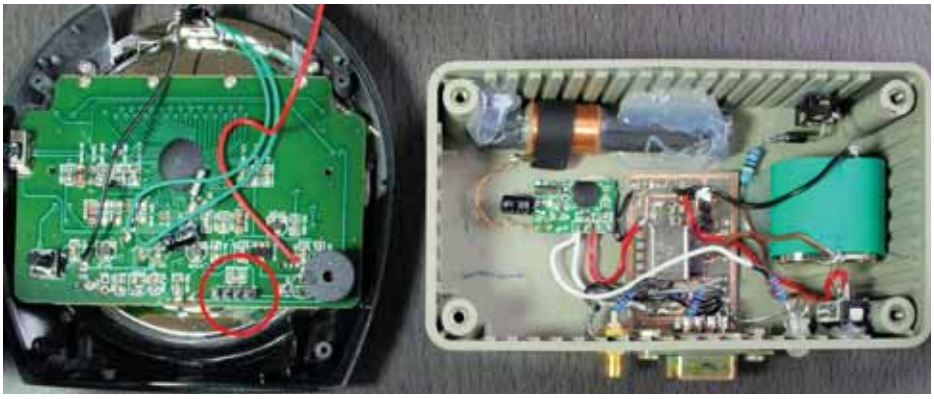

PHOTO 1: Circle shows original location of the MSF receiver module in the Acctim Radio Controlled Clock. The module (green PCB & ferrite aerial) has been transplanted into my time code generator project (right).

READER INPUT. Short Circuits has been running now for a little over two years, and aims to cater to the more experienced radio amateur constructor, looking at novel ideas and concepts, the more complex mini-projects and ideas just thrown around for discussion and further development. But so far they've just been my ideas and a few gleaned from data sheets. I'd like your input for future editions of this column. What ideas have you been working on? New receivers, transmitters, processors, software, control and signalling, construction – anything! Please send them in. Novel ideas that you've never actually tried, just thought about perhaps; that project that would have worked if given the time to develop it. Design ideas, programming – we'll look at them all.

MSF TIME CODE MODULES. Sometimes we need accurate time of day information for a project, or to feed into our PC for a particular bit of software that needs precise timekeeping. GPS receiver modules are good route for obtaining accurate UTC code as they all output a serial data stream containing time and date accurate to better than one second, as well as a pulse defining the UTC seconds mark accurate to a few tens of nanoseconds. But often we don't need quite this level of accuracy and time to the nearest second is usually good enough so another route to real-time off-air data accurate to a second of UTC would be useful. And there is a solution – use the MSF time code transmitted from Anthorn on 60kHz **[1]**. In days gone by, decoding time of day from this transmission would have meant building a custom LF receiver and decoder from scratch. Such designs have appeared over the years. Now, things are simpler and there is an enormous range of low cost radio controlled clocks on the domestic market that can be ripped apart or just modified to provide time code data to feed into your project.

Perusal of the Argos catalogue for the cheapest suitable products revealed two small digital clocks that might fit the bill and wouldn't break the bank if they ended up totally destroyed and useless (they also included thermometers as a bonus). While there were plenty of radio controlled analogue clocks listed, it was felt these may be more difficult to modify so the choice was limited to digital models.

The first one looked at was an Acctim Module costing £10.99, Argos cat. no. 255/3517. By pure fluke, this one proved to be the absolutely perfect first choice for modification. It appears to be identical to Maplin item N97GQ, at the same price. On opening the clock by removing four small screws holding the case together, the MSF receiver module is very obvious as a small postage stamp sized daughter board attached to the main PCB via four pins, with a separate ferrite rod antenna. Probing with a scope showed that the time of day code was being output from the module as a varying width pulse every second. The pins are helpfully labelled GND, VDD (+), PON (Power On, ground to operate) and OUP (Output). Ideal! **Photo 1** shows the innards of the clock with the module removed, and its relocation into my time code receiver box. The module was removed by cutting the pins and then transplanted along with the still-attached ferrite rod.

After reassembling, the now non-radio controlled clock still functioned after manual time setting and proved to keep remarkably good time while free running, losing only a couple of seconds a week.

The second clock looked at no longer appears to be in the Argos catalogue, had a nice transmissive LCD screen and was of a similar price, but proved to be less suitable for modification. Quite apart from being more difficult and fiddly to disassemble, the MSF receiver, whilst having several similarities in appearance to the components on the standalone module from the first clock, was built onto the main PCB and couldn't be removed. Probing around with a scope showed which pins were which, so flying leads were connected to these to bring them to the outside world. To save power and prolong battery life, most radio controlled clocks only enable the receiver and decode the time data for a short period during the middle of the night. The enable pin, driven from the clock's controller, is pulled low at the appropriate time (usually at 0200, 0300 and 0400 hours local time to catch daylight saving changes) and disabled as soon as a valid update has been decoded. To be able to make use of the receiver module it would have to be possible to enable the receiver at will. Simply shorting the enable pin to ground wasn't acceptable as the clock's main controller could be damaged, so the track on the main PCB carrying this signal was cut and a 3.9kΩ surface mount resistor inserted. Now the enable pin, bought out to the outside world, could be grounded to activate the module without influencing the clock's operation. Another similar resistor was inserted into the data output lead to prevent any damage if this was shorted. **Photo 2** shows the disassembled innards of this clock.

INTERFACING. The standalone module was perfect to use. It turned out to be either the EMS 2 type, which is a well established module used in many radio controlled clocks, or one very similar. Reference **[2]** suggests the EMS 2 can be used over a wide range of supply voltages from 3V to 12V (although this voltage range was not tested). When running from 5V the output is a clean CMOS compatible, active high pulse corresponding to the data on the carrier.

The connections from clock number 2 were more difficult to interface. The pulse was only 3V (the clock is powered from two AAA cells) and had a high impedance with only a limited drive capability, owing in part to my 3k9 protection resistor. This voltage is sufficient, just, to drive a 2N7000 MOSFET to interface to higher voltage logic circuitry.

And what do we do with the time code data now it's available? Well, that's up to you. Reference [1] shows how it can be fed directly to a PC serial port for accurate timekeeping. WSPR beacons are an obvious candidate, and the low power nature of WSPR with QRP transmissions is in keeping with the low power

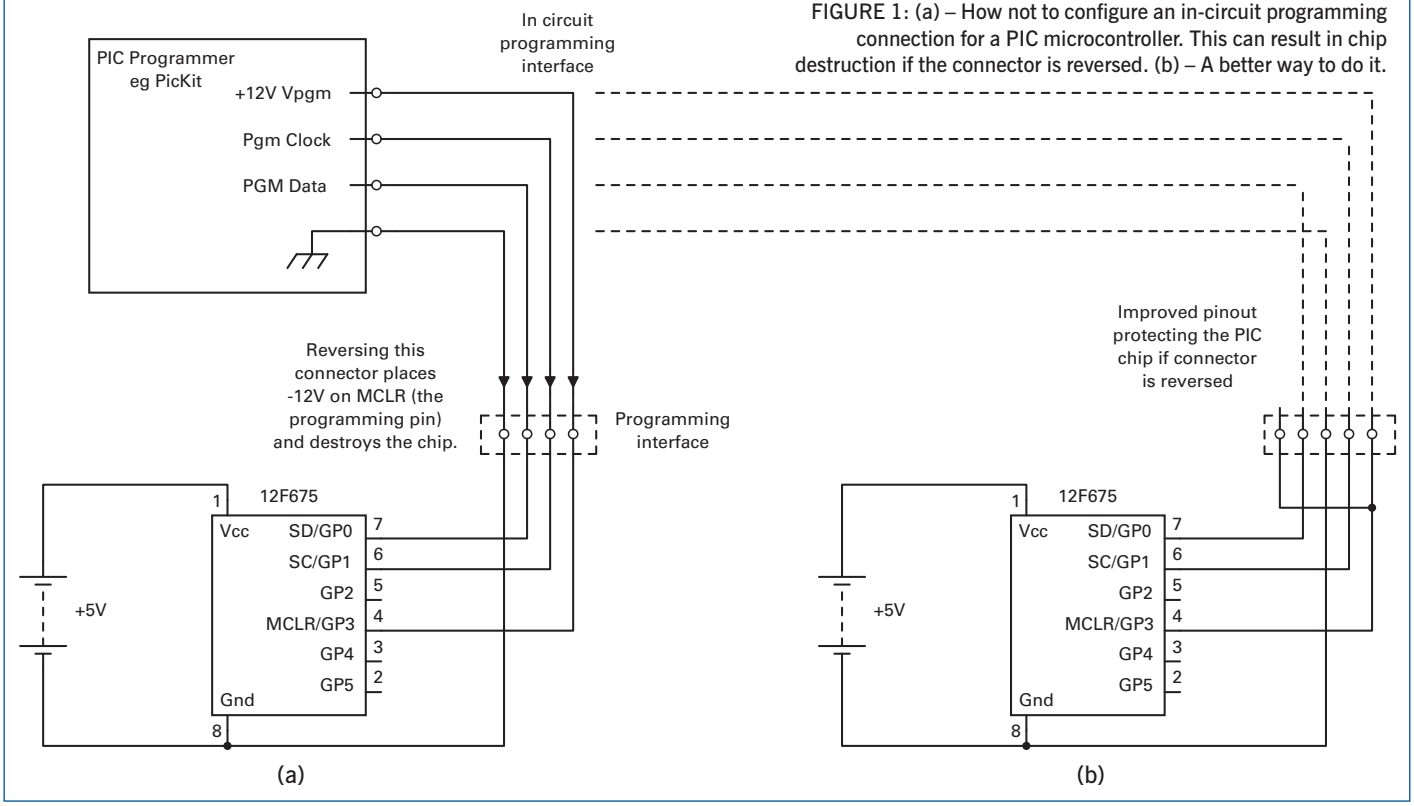

FIGURE 1: (a) – How not to configure an in-circuit programming connection for a PIC microcontroller. This can result in chip destruction if the connector is reversed. (b) – A better way to do it.

of these modules. The next stage at JNT Labs is to write PIC code to read the MSF data and convert it to an NMEA serial stream to emulate a GPS receiver.

THE "I WISH I HADN'T DONE IT THAT WAY" SECTION. Once in a while we may decide on a simple or obvious way of doing something. Some trivial little job, like a set of connections or a pinout that seems convenient at the time. The idea expands and becomes a 'personal standard'. Then, many years later, you realise you made a big mistake and it's too late to change things. And your original decision comes back to haunt you, time and time again. An example...

The PIC microcontroller is designed to be programmed in-circuit using just a four wire interface. In-circuit programming (ICP) is more convenient than repeatedly removing the device from a socket while developing the code, and is the only practical solution where surface mount chips are employed. The four connections carry ground, programming clock, data and the programming voltage V_{pgm}. During programming V_{pgm} is raised to 12V but sits at +5V during normal operation. Back in the year dot, I simply bought these four connections out to a single four pin header using the connections shown in **Figure 1 (a)** – the obvious connection set that comes to mind after reading the description of ICP. In many cases, as the programming pins on the device are just I/O pins during normal operation, this header could also double up as an external interface, eg for an RS232-type port.

I made up suitable programming interface leads for all three of my PIC programmers and designed several PIC-based projects using the interface. A couple of projects for work used the same pinout, and it was probably subsequently copied by others there, all without mishap. Then trouble struck. Now, a simple four pin header done on the cheap can be plugged in either way round – and guess what happened!

With the connections shown in Figure 1 (a) reversed, if there is no other ground connection by any other route to short things out, the connections to ground and V_{pgm} between the programmer and target chip end up being swapped over – meaning that during programming, the voltage on the PIC's programming pin becomes, effectively, -12V. PICs are robust devices, with clamp diodes on most of normal I/O pins and the ability to withstand over voltages provided current is limited. But not on the programming pin, which turns out to be quite delicate. Application of -12V to the MCLR/PGM pin destroyed the PIC. Or, more accurately, destroyed its programmability; what code was in there still worked – sort of – but couldn't be changed. The PIC had been soldered into circuit beside an expensive DDS chip and had to be replaced. That meant a delicate unsoldering job and a slightly damaged PCB. Then, a year later, I did it all over again, on a device with many more pins to unsolder!

A different pinout using an odd number of pins with ground in the middle such as **Figure 1 (b)** would mean that, whichever way round the header was connected, the ground connection would always be sound. Negative voltages could never be applied.

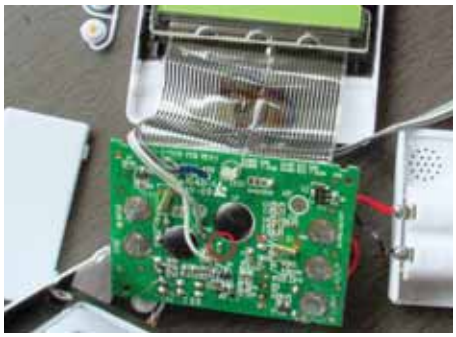

PHOTO 2: Flying leads connect the MSF receiver in this clock to the outside world. One of the added protection resistors is circled (see text).

But it was too late; dozens of PCBs and programming leads now existed. So the moral is, if we want a connection or interface for any purpose that might be replicated and used down the centuries, think very carefully whether the simple, obvious solution can be enhanced to make it foolproof. Don't rush into using the first connector that comes to hand. Connections for portable contest stations come to mind here...

HOW ABOUT YOU? Have you made any far reaching wrong decisions that others could learn from? Things you regret even thinking of? Please send them in (anonymously if you wish) for a future *"I Wish I Hadn't Done it That Way"*.

WEBSEARCH
[1] MSF For Time Setting, www.compulink.co.uk/~rrussell/msf/msf.html
[2] EMS 2 receiver module, www.atomic-clock.galleon.eu.com/msf-receiver/msf-receiver.htm. The EMS 2 may be available as a standalone module from some suppliers.

DX? How About Some *Real* DX

An affectionate and imaginative look at the possibilities of interstellar DX

PHOTO 1: The Lovell Telescope at Jodrell Bank is 76.2m (250') in diameter – that's 4560 square metres, or well over an acre. At microwave frequencies, its beamwidth is very narrow – and therefore its gain is huge. But would an amateur signal from it reach Alpha Centauri? (Photo courtesy Mike Peel, www.mikepeel.net).

MAXWELL, FARADAY, HERTZ… Imagine you're right back in your youth. Boy, have you enjoyed finding out about what Michael Faraday did with electricity and magnetism - and realised he mainly had to learn everything himself, his family was so poor? "Wow!" you exclaim when you see what James Maxwell did with Faraday's stuff, by applying advanced maths. You think to yourself, "Will I ever understand those vast equations? Oh, so that's where Hertz comes from…" Heinrich Hertz found the electromagnetic waves that Faraday hinted at and Maxwell rigorously predicted. "I'll certainly have to take up radio like my dad did," you say to your best friend.

So, let's assume you did just that and got your Foundation licence. Your radio ham dad arranges to take you on a trip to Australia to visit your uncle John as a reward. John works at the Parkes Observatory and does research on the 64 metre radio telescope there; he's also a radio amateur. Dad has brought the 23cm rig from home, perhaps to have a little microwave operating in Australia on the reciprocal licence. You quietly get round uncle to see if you can sneak a quick call on the Big Dish as a bit of youthful play. Dad and uncle are intrigued and ask you where to? "Er, just a quick 'CQ' towards, erm, Alpha Centauri," you say. They just laugh and say, "Huh, kids!", but then let you sneak a go on the big dish antenna.

Before even thinking about how you would tune around for a possible reply, you're back home then do your intermediate and advanced exams; take your GCSE and A Levels. Just about when you graduate with your BSc Electronics Degree, you suddenly realise, "Hey, I'd better send an e-mail to uncle John to start listening around 1296MHz. There might be a Q1, S2 or something signal in reply to my CQ nearly eight years ago."

Eight years seems a long time to wait for an over but no, it's actually very short. Hmm, it's still very good DX though, if you do get a reply. The station you hope will give you a report from *Alpha Centauri* isn't particularly distant - a mere 23,500,000,000,000 miles away - but far enough to take quite some time for the signals to pass back and forth on the overs - at least from our point of view…

LIGHT IS SLOW. The trouble is that our signals only travel at the snail's pace of 186,000 miles a second. (Thank goodness we're only miniscule, so signals get anywhere around the speck of dust on which we live within a fraction of a second.) On the other hand, the eight radio years for the signal to our next star system *Alpha Centauri* and back, really does mean you have to wait that long to have a chat with our next door neighbour.

Of course, the tradition is to talk of light years (LY) but, as light waves are just very short radio waves, radio years are the same thing.

Fortunately Alpha Centauri, our next nearest star, turns out to be rather like our *actual* nearest star, Sol (which we of course simply call the Sun). Therefore, it might possibly have a planet a few tens of millions of miles away orbiting in what's called the habitable zone round it, with cities, vehicles and radio stations - even amateurs! (More trouble though, would they have the same band plans?)

There's a bigger trouble than that. Very detailed searches have shown no likelihood of any planets there, let alone one with intelligent life on it in the way it is rumoured that intelligent life exists - at least perhaps for a limited time - on the third rock out from Sol.

LOOK ON THE BRIGHT SIDE. Let's be optimistic and assume we'll have some success. Amateurs have often confounded the professionals with unexpected results, therefore we'll have a go at *Alpha Centauri* from down South. I hope you've got access to a big garden, because you'll need a good-sized antenna to collect the miniscule amount of 'watts per square metre' available from, let's assume her name is Yalkoen, operating with a kilowatt at *Alpha Centauri* …

Now at 23,500,000,000,000 miles… oh heck, not all those zeros again! Readers of *RadCom* aren't frightened of simple maths, are they? At least, if you're going for the Advanced exam, a few numbers will turn up. So let's use the 'Law of Indices' to simplify things. Now, in 'standard form', you write that huge number for distance as 2.35×10^{13} miles. The little '13' up in the air is called the 'index' and shows how many times you have to multiply, in this case, 2.35 by 10 to get your big number: 2.35x10x10x10x … thirteen times in this example. Who said simple maths was difficult or not interesting?

WEAK SIGNALS. One thing all signals do, including yours and Yalkoen's, is to spread out - diluting as they travel. They weaken according to the *inverse square law*, as illustrated in **Figure 1**. That's why DX signals tend to be weak compared to your friend's in the next village. If you go twice the distance away, your signal drops to a quarter of the original strength. Three times away, it goes down to a ninth - and so on.

Let's find out how weak Yalkoen's signal would be from all those miles away. Miles? Why are we using miles? We're a scientific hobby aren't we? Come along, *metres, kilograms* and so on please. *Alpha Centauri* is near enough 3.8×10^{16} metres away. Aren't you glad for the index notation?

Here we go with a bit of real, but still simple

calculation. Spheres - the surface area of them - means that all your signal power must pass through the surface of any sphere completely surrounding your transmitting station antenna. The presence of the Earth and other things complicate matters a little as they're in the way and reflect the waves and so on, but we'll put that aside for a moment. The surface area of a sphere is $4\pi r^2$ square metres, where r is the sphere's radius in metres. Ah yes, you probably thought, 'π', pi, which equals 3.141592… would come in somewhere, what with circles, spheres and that.

A kilowatt total power radiating out all around through a sphere of one metre radius will have a power density of $P_d = \frac{1000}{4\pi \times 1^2}$ which is 79.6 watts per sq metre. Note the 'P_d' for power with its little label 'd' for density. You have $4\pi = 12.56$ sq metres on the surface of a one metre radius sphere, hence sharing out the 1kW or 1000W into each square metre of the total number 12.56 of them on the sphere's surface, gives you the 79.6 figure we found flowing through each. Now we have to ask the question about the power density from a 1kW transmitter going through the surface of the sphere 3.8×10^{16} metres in radius on which Earth sits with Alpha-centauri at its centre - er, a rather large sphere of course…

$$P_d = \frac{1000}{4 \times \pi \times (3.8 \times 10^{16})^2}$$

This shows that $P_d = \frac{5.5}{10^{32}}$ or, if you like, $P_d = 5.5 \times 10^{-32}$ watts per sq metre. There's another little 'index rule' for you, 'one over a number to a positive index, is the same as the number raised to a negative index'. So $\frac{1}{r^2} = r^{-2}$ (can you show it, or see it?)

The power density we've just found that arrives at your receiving station from that distance away is a little bit small - you will need a lot of square metres to gulp in enough power to run the usual front end of a receiver. Suppose your Rx needs 0.25μV across the 50Ω antenna terminals to give a discernible signal at its output (above the noise…), then the power you need the antenna to collect and feed into the 50Ω is $P_r = \frac{V_r^2}{50}$ watts, (remember Ohm's Law and power) where V_r equals the 0.25μV or 2.5×10^{-7} volts, (you have to get the units right - volts please in the basic equation, not microvolts).

In other words, $P_r = \frac{(2.5 \times 10^{-7})^2}{50}$.

This is 1.25×10^{-15} of a watt. Oh dear, the power density from *alpha…* is the value we worked out above, namely, $P_d = 5.5 \times 10^{-32}$ watts per sq metre and we need 1.25×10^{-15} watts. There's nothing left but to do the division, so the number of square metres antenna size we need, call it A_{eff} the effective area of the antenna, is given by $A_{eff} = \frac{P_r}{P_d}$

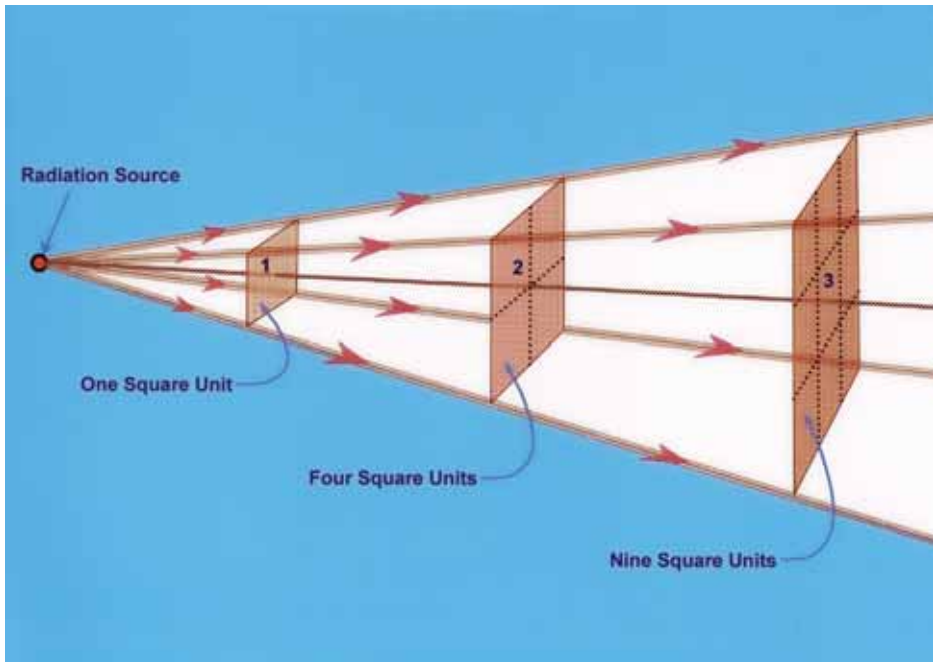

FIGURE 1: As the transmitted power from an antenna radiates away into the cone or pyramid shaped figure shown here, the *power density* 'dilutes' according to the *inverse square law*. The power streaming through a unit area, one unit of distance away, might be W watts. Going through the area twice as far away, the power through each unit area falls to a quarter as much – if you go three times as far, it's down to a ninth and so on.

(because the total power received is the power density multiplied by the actual collecting area). We call the collecting area of your antenna A_{eff} because the actual physical area is just about always bigger - the radiation doesn't manage to spread evenly right over the actual area. The contributions from the little areas near the edges are weaker than near the centre. But we'll assume the areas are the same…

You can see this is

$$A_{eff} = \frac{1.25 \times 10^{-15}}{5.5 \times 10^{-32}} = 2.27 \times 10^{(32-16)} = 2.27 \times 10^{16}$$

square metres, (watch what you're doing with those indices…), you have here another 'law of indices', I hope you can see it. This one has to do with dividing and multiplying such numbers, which involves subtracting or adding the indices. As I said, you need a rather large garden. Just for interest, the radius, r_E of the Earth is about 6.38×10^6 metres, so the cross sectional area of the Earth to radiation is πr_E^2 sq metres. This works out to be $\pi \times (6.38 \times 10^6)^2 = 1.28 \times 10^{14}$ square metres. So, dividing this into the A_{eff} you require shows your garden needs to be rather greater than the Earth's projected area - in fact 177 Earth cross sections! What an outrageous system you've got involved in. Yet the great lesson we've learned is for any hope of communication with very weak signals, you need a big antenna that has a very large effective gathering-in area A_{eff} to pick up the signal power arriving in the wavefront, which is the power density, P_d and from a long way off, that's *tiny.*

Ah, wait a moment, you've assumed poor *Yalkoen* is radiating 1kW with an *isotropic antenna* (same strength in all directions). We cannot even make an exact isotrope, but the idea is useful. Your remote contact needs to have built something better than a near isotropic radiator, which has the habit of spreading the transmitted power to all and sundry right round the Universe. Let's assume *Yalkoen's* civilisation is richer than we thought and that she's arranged to squirt all the transmitted power into a small pencil-beam pointing in your direction. Oh dear, another problem arises. How does she know in which direction to point the beam? A degree or two off and all the signal power will pass you by - the Solar System won't even be in the beam.

We'll have to assume *Yalkoen* says something like, "Look there, that other Yellow Dwarf star like ours. I got a very weak signal from roughly that direction a little while ago *blast blip blast blip, blast blast blip blast* I'll point the beam that way…" Imagine what she heard was your signal sent nearly four years earlier. So, thank your lucky stars (oh no, don't bring in superstition, just G Type yellow dwarf stars…) and assume *Yalkoen* has a big antenna too.

From all this, a very interesting point arises. A good transmitting antenna is also a good receiving antenna. That's called the *reciprocal theorem*. What this means is that a very large area for gulping in the signal power on receive, also yields a large *gain* (G_t) on transmit. The gain (which is how many times the signal power density is greater along the beam, compared to that from an isotrope) grows larger the bigger the antenna is and it's in proportion. Therefore $G_1 \propto A_{eff}$ (remember the *proportional sign*, $\propto$.

To get an equals, we need a proportionality constant, k for example. Therefore $G_t = kA_{eff}$. The reason for this relation arises from the fact that a large effective area A_{eff} produces a narrow beam width. It's as though all the

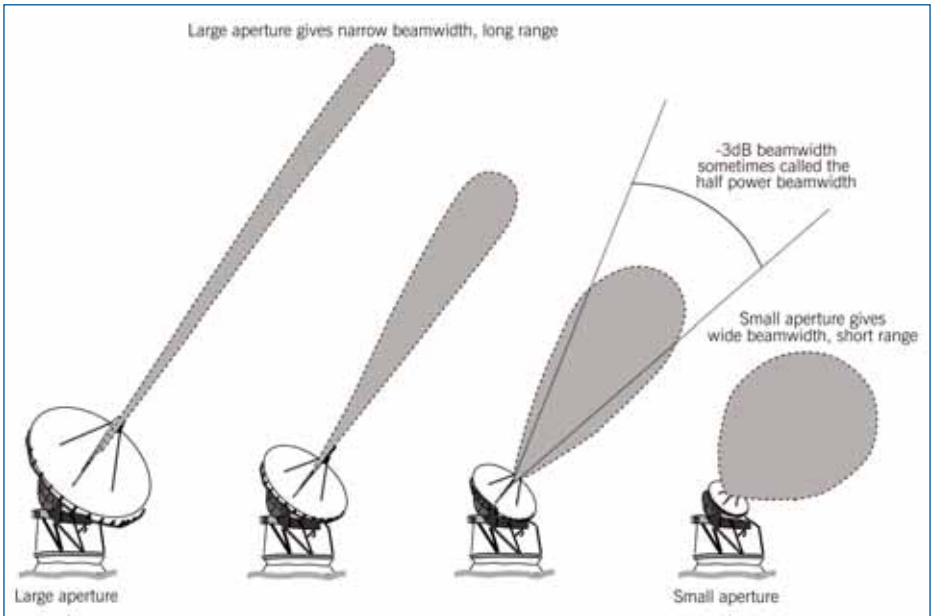

FIGURE 2: Large radiating areas send a thin intense beam virtually in one direction. Nearly all the power radiated goes in that direction (called the 'boresight'). Small antennas send wide beams, that spread out the power and distant receivers get only a small power density in the wave. The picture shows the definition of the *beamwidth*.

square units of area over the dish or rectangle of the antenna if it's that shape, radiate their bit of signal and all the bits add, cancel and jumble up in all directions except along the main beam direction, where they all add up. A small radiating area gives a wide beam, a large area yields the intense narrow beam I mentioned, as **Figure 2** shows.

There is one last tricky point about area. Nature doesn't care a damn about our metres, square metres, square miles or what have you. The natural 'unit' of length at any frequency in this work is the *wavelength* λ. This means the Lovell radio telescope at Jodrell Bank (see **Photo 1**) is a minnow at Top Band. Its 76.2 metre diameter is rather small compared to the Top Band wavelength, λ, of 160 metres. But at 1.2GHz, λ is 0.23m (23cm) - and Lovell looks vast for that band.

This means we have to drop the 'metres' as the unit and use λ instead. The antenna area of interest has to be in 'square wavelengths'. It can be shown (why do maths books always say that and then *don't* show it?) that the proportionality constant is

$k = \frac{4\pi}{\lambda^2}$ (oh dear, I haven't shown it either…).

We can now write the formula for the *gain-area* relation $G_t = \frac{4\pi A_{eff}}{\lambda^2}$.

Things are looking nice and technical now - when normally you'd stop reading! But do persevere. As you can see, for a given A_{eff} square metres, smaller and smaller λ's give bigger and bigger G_t's.

As a final final, let's assume that *Yalkoen* at *Alpha Centauri* now has a one megawatt Tx, into a dish antenna the same size as Jodrell Bank - yes I know, what a coincidence that would be! Jodrell is 76.2 metres in diameter and it has a collecting area 4560 sq metres – well over an acre. If the whole area is effective, then the gain of such a dish over an isotrope at 23cm will be $G_t = \frac{4\pi \times 4560}{0.23^2}$.

This works out to be 1083226 times, a bit over a million with respect to an isotrope or, if you like using decibels, about 60dBi. So if *Yalkoen* can rustle up a megawatt of Tx power, the Effective Isotropic Radiated Power (EIRP) from the *Alpha Centauri* region will be about a million megawatts (in our direction). The *power density* now at the Earth will be $P_d = \frac{1MW \times 1.08 \times 10^6}{4 \times \pi \times (3.8 \times 10^{16})^2} = 6.0 \times 10^{-23}$ watts per square metre.

The power you'll receive at Parkes (whose dish isn't quite as big as Jodrell, but we'll assume it is…) is now easy to find: it's $P_r = P_d \times A_{eff}$ which gives, in our case, $6.0 \times 10^{-23} \times 4.5 \times 10^3 = 2.7 \times 10^{-19}$ watts.

The signal still looks fearsomely small, but if you invest in a very low noise cooled front end, with a total Rx gain of $\sim 10^{18}$ times (180dB), you'll have just over a quarter watt output to operate your 'phones, recorder or whatever you're using. It's the noise from the background - the Galaxy, the receiver circuits, atmosphere etc that might scupper you, but radio astronomers regularly detect signals smaller than this, so there's hope.

PIPEDREAM. Of course, the whole story was a fiction. There seems to be no planet there. There might be an intelligent life form sending some kind of signal from, perhaps, 15,000 LY away. If you'd like to re-work the fascinating calculations for that distance, be my guest. Yet remember the inverse square law, 15,000 LY = 1.4×10^{20} metres, so is it worth thinking about? Hold on a moment, 15,000 years - wow, a CQ call and reply would take 30,000 years round trip - no, it's not worth thinking about unless you leave a will telling your kids - to leave a will telling their kids to leave a will… what, for 30,000 years?!

Yet I hope you found this little story full of interesting facts and figures about antennas; stuff very rarely discussed or thought about, but which applies to all your antennas.

Even your half-wave dipole has a capture area A_{eff} of ⅛ of a square wavelength, and a gain of 1.6 or 2dB over an isotrope, as **Figure 3** shows. As more amateurs consider taking up radio astronomy, the thinking discussed in our story here, might help somewhat.

SETI. We might yet receive a signal from 'out there' as the SETI group keeps up its work. But will amateurs ever be able to have QSO's to those out there that's the question? What do you think? You might find a look on the SETI website interesting; more and more amateurs are working and assisting with that project. Do you think it's all worth while? See www.seti.org/Page.aspx?pid=1241 or www.setileague.org.

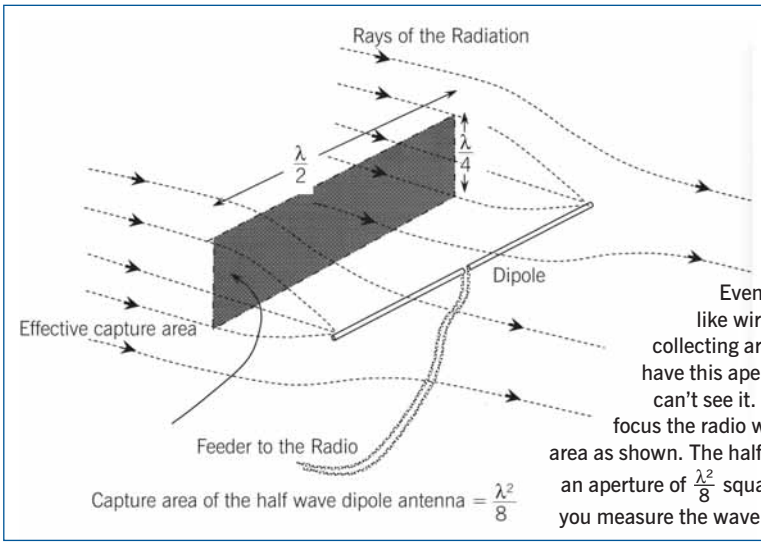

FIGURE 3: Even small antennas, like wire dipoles, have a collecting area. All antennas have this aperture, even if you can't see it. They 'draw in' or focus the radio wavefront over an area as shown. The half wave dipole has an aperture of $\frac{\lambda^2}{8}$ square metres, when you measure the wavelength in metres.

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New home for ICOM

Icom UK move to larger premises

The Icom UK premises with the warehouse at the right hand end of the building.

FIRST RADIO. More years ago now than I am prepared to admit, I travelled to a small radio shop in Kent to buy my first rig – an IC-2E. That was not my first visit to the shop as I had often accompanied licensed friends on their shopping expeditions. The shop was called Thanet Electronics in those days, a business set up by Dave Stockley, G4ELP and Paul Nicholson, G3VJF. Back in 1974 they sold all kinds of communications equipment, including Icom amateur radio gear. In June 2010, I made the latest in a long line of visits was to their new premises. I was accompanying the RSGB President, Dave Wilson, M0OBW, RSGB General Manager Peter Kirby, G0TWW and RSGB Commercial Manager Mark Allgar, M1MPA.

A lot has changed over the years, yet many things have remained the same. The familiar faces are there: Dave Stockley is supported by Philip Hadler, G4CZU, Bob Stockley and Andy Stockley, G8ELP but now they employ some 35 people, which is a big difference from the early days.

SOME HISTORY. As time went by, the company approached Icom Inc and obtained the sole distribution right for the UK and Republic of Ireland – and so Icom UK came into being.Not long after the business started, the company launched a hand portable for radio amateurs. This proved so successful that marine and commercial versions were soon on sale in the UK. During the Falklands conflict, the company received a large order from the UK Ministry of Defence, so it was all hands on deck for the small team who modified and inspected each radio to meet the strict MoD specifications.

The Reculver Road shop soon became too small for the growing company and so they moved to Sea Street in Herne Bay. Icom UK stayed at that address for 24 years. Then, at the end of 2009, they moved to new, purpose built premises just outside Herne Bay. It has taken a little while to arrange a visit but, in June, we finally got the chance to look around the new location.

Of course, amateur radio is only one part of Icom UK's business. They are involved in airband, business and marine communications. The workshop is just as likely to be modifying a commercial radio to the customer's specification as repairing an amateur or marine radio. The new premises have created a large open workshop space with an enviable component and spares stores.

ICOM INC. Today, Icom products are sold in over 80 countries in the world. It was Tokuzo

The management team (left to right) Bob, Dave, G4ELP and Andy Stockley.

The 10,000 square feet warehouse.

Inoue, JA3FA who founded the Icom company in April 1954, although it was called Inoue Seisakusyo back then – it didn't become Icom Inc until June 1978. Mr Inoue has been interested in amateur radio since his teenage years and it was in the 1960s that he built and sold his first commercial amateur radio, called the FDAM-1. It was a 6m mobile transceiver with a 1W output. Inoue Seisakusyo sold over 200 of that first radio, followed by more than 3000 of an upgraded version. The rest, as they say, is history.

AMATEUR RADIO SUPPORT. Many readers will be aware of the support that Icom UK gives the amateur radio hobby – and it's not only high profile support like the IOTA programme, RSGB Convention and Contest University either. The contest station at G6PZ, the GR7HQ station in the IARU HF Championships and the 2010 MS0INT IOTA DXpedition to the Flannan Islands are just some examples of the amateur radio activity that Icom UK support. We will be reporting on the efforts of both the HQ team in the IARU HF Championships and the Flannan Islands DXpedition in future issues of *RadCom*.

COMMERICAL RADIO. One of the interesting systems that Icom UK can supply to their business customers if the RMS-Net (Radio Management System). This monitors radio users movements on a computer screen and can also be used for radio communications, text and status messages. Another project that Bob Stockley described is a location beacon. I-Loc and I-Read is a way of locating staff in buildings and areas. An automatic location beacon records when the handheld radios pass that location and automatically sends that position back to the server. Bob explained that each system that Icom UK supply is unique to that customer's needs and specification.

MARINE RADIO. Icom UK are well known in the marine radio market, regularly exhibiting at both the Boat Show in London and Southampton. They are also very involved in supporting the industry, having sponsored the Honda RYA Youth RIB Championship and Cowes Week. To support those users of marine radio they are able to visit organisations to talk about issues such as the safety benefits of radio in general or the operation of a particular unit.

NEW PREMISES. Bob Stockley is quite rightly pleased with the new building and explained how the layout started as a blank sheet of paper. This enabled Icom UK to tailor the layout to their business – large open plan offices, quiet meeting rooms, lovely workshop and development area as well as a huge warehouse space.

The layout uses the upper floor for offices and meeting rooms and the lower floor for the workshop and document storage. The warehouse alone has some 10,000 square feet of space for stock – there is just a two and a half month turnaround on the stock too. The workshop is huge, with state of the art test equipment and an enviable component store. The technicians are a very friendly group, quite happy to break off from their work and explain what they are working on.

One unfortunate effect of the move was to take D-Star repeater GB7DS off the air. Restoration is, however, under way and we'll bring you full details of that work in a future issue of *RadCom*.

After the visit, RSGB President Dave Wilson, M0OBW, said, "Icom UK can be justifiably proud of their new premises – it is easy to see that a lot of hard work and thinking has gone into the design of the building and the processes taking place there."

Dave Wilson, M0OBW, RSGB President enjoyed visiting the new purpose built premises. Bob Stockley was an informative guide.

The workshop area. In the foreground you can see equipment being modified before it can be put on sale in the UK.

Steve Rooker, G4UUI busy repairing a radio in the workshop.

John Turner, G0KFO answering customer's questions. John is well-known at amateur rallies up and down the UK.

The components and spares stores.

Norfolk ARC has a field day

The A station antennas comprised a Strumech trailer mast with Cushcraft A4S beam with 40m extensions plus nested dipoles for 160 and 80m.

NATIONAL FIELD DAY. Norfolk ARC, based in Norwich, operated two stations in this year's CW HF National Field Day - the A station in the Open section and a B station in the QRP section. In addition it also took part in the 6m VHF contest.

To involve families and other non-CW club members it also ran its 'Radio-Active' weekend at which there were talks, workshops plus food and drink. The field day site was fortunately next door to a company premises run by one of its members, hence the ability to do all of this in civilised conditions. To make life even more hectic, a number of members attended two Advanced course training sessions at the club's usual meeting place, a school on the outskirts of Norwich.

SERIOUS CONTESTING. The A station, G4ARN/P, was operated by Malcolm, G3PDH, Roger, G3LDI, Peter, M0RYB, Chris, G0TZZ and Kim, G4WUG. Housed in a tent, the equipment comprised the club's own Icom IC-756 PRO3 + Microham2 interface and a PC notebook running N1MM. Outside was a Strumech trailer mast with Cushcraft A4S beam with 40m extensions plus nested dipoles for 160 and 80m. All was powered from the club's new Honda 2.6i generator, which has turned out to be a good purchase and very quiet.

Everyone was well aware of the station's aspirations – a notice stuck on the tent wall proclaimed that the target number of QSOs was 1,200 and that "If you aren't calling, you're not scoring."

The A station is traditionally for die-hard contesters with excellent CW skills. Running, rather than search and pounce, is the order of the day and these skills are usually honed further in the RSGB 80m Club Championship in the months running up to the event.

G4ARN/P's total QSO count before final editing was 1,090, aided by much better conditions on 28MHz (which scores double points). Norfolk sometimes seems too close to mainland Europe to fully benefit from these Es openings unless they are particularly strong. Last year the station made 935 QSOs with a score of 3,268, so while it didn't hit its target it beat the 2009 total.

Top Band (160m) and 80m both suffered from heavy static as a result of storms so results there were a bit lower than hoped. No specific problems were experienced with any of the equipment after clearing a slight RFI problem before starting.

GOING QRP. The B station, G6NRC/P normally runs in the 24-hour restricted section with a single antenna. The club has found it increasingly hard to find enough CW operators to field eight three-hour sessions and this year was no exception. The club has lost two CW ops in the last year after they moved away with work commitments. No newcomers have yet managed to get their CW skills up to the required 20-25 wpm level and as a result a decision was made to enter the station in the 12-hour QRP section instead.

The B Station was operated by Chris, G0DWV, Paul, G3SEM, Ian, 2E0IMW, Steve, G0KYA and Jim, G3YLA, again housed in a tent and using the Club's Icom IC-756 Mk1 plus Microham2 interface and PC notebook running N1MM.

The antenna was a 264ft doublet with 450Ω feed feeding through a cranky old Capco ATU with a broken turns counter! The solution was to run it with the covers off and manually position the pickup on the roller-coaster coil using a stuck-on piece of paper marked with calibration settings.

It seems that ATUs are always the weak point of the NARC B station. Last year it used an automatic ATU that refused to stay tuned on 10m and 160m (where maximum points can be scored). This was eventually put down to RFI problems or RF from the A station triggering the ATU to retune every few seconds. Such is life!

Power was supplied from a very large generator, which had to be heavily loaded with halogen lamps. The B station made 165 Qs during its 12-hour participation. This was somewhat disappointing, but not through want of trying. In his two-hour stint Steve, G0KYA found that no-one would come back to him at the 10W QRP level when he called CQ – on any band. But in search and pounce mode nearly everyone came back with the correct call first time.

This was frustrating and the best solution seemed to be to trawl the bands working from bottom to top picking up Qs and multipliers one by one in S&P. Maximum use was made of 10m Es openings during the day and 160m openings at and just after sunset (the station had to close at 9pm UTC until the Sunday morning).

The B station is traditionally used as a training station and for those who don't like the cut and thrust of flat-out CW. It also helps people get thoroughly used to using the excellent N1MM contest software, which has been known to leave many scratching their heads.

There were no technical problems, other than the ATU which made band changing somewhat tedious.

LOTS OF ACTIVITY. The weekend overall was a great success and with having all of the other activities going on at the same time there were lots of visitors and club members at the site making it seem all worthwhile. This is compared with a few old CW addicts just sitting alone in a tent in a sodden field, which is what it used to be before NARC introduced the 'Radio-Active' event to run alongside Field Day!

Roger, G3LDI concluded: "Comparing present day NFDs with those of the 1950/60s we make many more contacts in 24 hours now. However, in those days the number of G portables was a great deal higher. We need to keep up the emphasis on using Morse or our hobby will gradually lose out on a great mode."

The A station is traditionally for die-hard contesters with excellent CW skills like Roger, G3LDI.

Ian, 2E0IMW operated the B station that tried the QRP section this year.

Start Here

Logbook of The World (LoTW) part one

INTRODUCTION. In 2003, the American Radio Relay League (ARRL) started Logbook of The World (LoTW) as a means of verifying QSOs electronically in a secure way so that they could be used for the ARRL DXCC awards program without compromising the program's integrity. Nearly seven years later over 283 million QSO records have been entered into the system by amateurs around the world with 30 million 'QSLs' resulting. In this article, we explore setting up your LoTW account and next month we guide you through some of the basic operations that you can do in LoTW.

WHY SHOULD I USE LoTW?

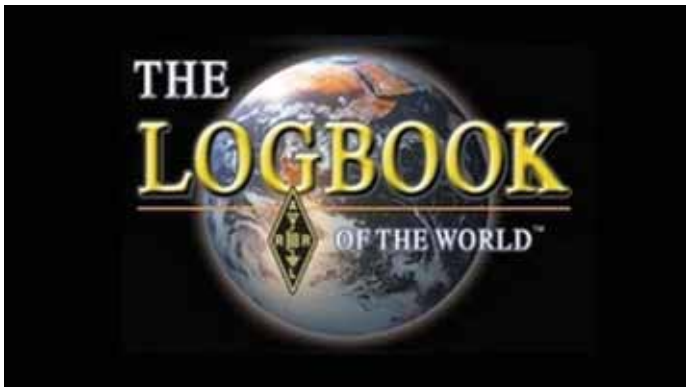
A common reason for using LoTW is hopefully to reduce the number of unwanted QSL cards you receive through the Bureau. Another reason you may want to use LoTW is to attain the nine band DXCC award without having physically to collect 900 QSL cards. It also minimises the risk of posting them to the ARRL and back without loss or damage. A final reason for using LoTW is as a courtesy to other amateurs – it costs nothing to use LoTW and requires minimal effort to upload your log. It also allows many amateurs around the world to enjoy confirmation of contacts they may have had with you.

CAN ANYONE SEE MY LOGS ON LoTW?

Each time you upload a file to LoTW it is digitally signed and encrypted by your computer before being sent to the ARRL computers for LoTW. Once there, the file can only be accessed by you and the LoTW administrators. To determine if you have any matching QSOs, the computer checks its database for any matches in logs that have already been uploaded. Once the initial matches to QSOs already in the database have been found, your log then waits for another amateur to upload one of their logs with QSO credit assigned if appropriate. Until the LoTW computer has determined a QSO match, neither side of the QSO can see the data associated with it or any other QSOs made by the other station.

GETTING STARTED. In order to use LoTW you need a Windows (95 or later), Linux or Mac OS X computer to run two pieces of software that are used to sign your logs. You also need an e-mail address capable of receiving small attachments, plus access to e-mail and the internet. Finally, it should be mentioned that LoTW is only available to licensed amateurs – currently there is nothing in place for short wave listeners.

A full set of instructions for getting started with LoTW is provided by the ARRL online at www.arrl.org/instructions. From this site you can download the Trusted QSL programs *TQSL Certificate* (TQSL Cert) and *TQSL*. It's worth making a separate folder before you begin playing with LoTW. This will help you keep all your files together in one place.



When you have downloaded and installed these programs you need to request a certificate for the main callsign that you use. To do this, open the *TQSL Certificate* program. If this is the first time you have opened the program, a window should say that you have no certificates and ask if you want to request one. Otherwise, under File, click on New certificate request. Follow the on screen instructions, being particularly careful to make sure you don't include any portable identifiers on your callsign and making sure the QSO begin date is the date that this callsign was first issued to you.

Just before you complete the certificate request, you will be asked if you want to create a password to protect the certificate that you'll receive. This is recommended as it adds another layer of security to LoTW. Be careful not to forget this password though as you'll need it in the future to use the certificate. If you forget it, you need to create a new certificate for that callsign using the new certificate request. The final step in creating your initial certificate request is to leave it as unsigned. This is because you haven't got a callsign that the ARRL has determined to be valid. Later, when you have your first certificate and perhaps wish to upload your portable logs, you can use your primary certificate to verify your other callsigns. Finish your certificate request by saving the .TQ5 file into the LoTW folder you created earlier. If you've managed to do it correctly, in TQSL Cert you'll have a yellow rosette with a no-entry sign through it next to your primary callsign.

Now that you've got a certificate request, you should send it to the ARRL. You can do this either by e-mailing it as an attachment to lotw-logs@arrl.org or uploading it at https://p1k.arrl.org/lotw/upload. If your certificate request was for a US callsign, provided the address you supplied matches your address in the FCC (US equivalent of Ofcom) database, there's no need to supply anything extra. For the rest of the world, depending on the rarity of your DXCC entity, you need to provide some additional verification. This is usually a copy of your licence (make sure it's the same call as you're requesting the certificate for) and a copy of one other official document that has your name on it, such as a driver's licence. For those lucky enough to live in very rare locales or places where it's hard to get permission to operate, sometimes you're required to submit extra proof that your operation is valid for DXCC (see https://p1k.arrl.org/lotw/docreq for a detailed break down of the documents required to validate that rare DXCC operation).

WHAT NOW? Having successfully completed everything above, it's time to wait for a postcard from the ARRL (if you're a US amateur) or to wait for an e-mail from the ARRL containing your LoTW login details and .TQ6 certificate to activate the certificate you requested.

Once you have your .TQ6 file, save it in the LoTW folder you created and then open TQSL Certificates. Under File, click on load certificate file and select the file you just saved. The no-entry sign should now disappear from next to your callsign and you're ready to start using LoTW with your main callsign.

Next month we'll guide you through uploading your log files/QSOs and explore some of the features available to you on the LoTW website.

ATV

Improving the audio sub-carrier level on Comtech transmitters

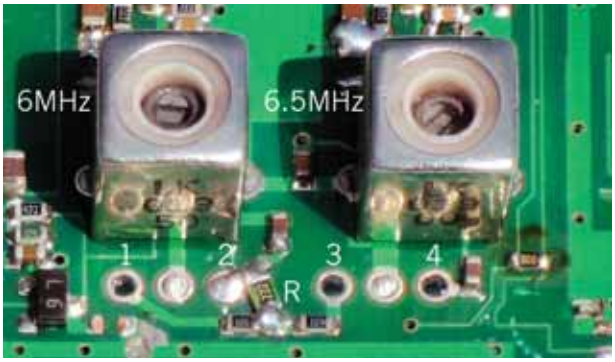


PHOTO 1: Component change to set sub-carrier level.

SUB-CARRIER LEVEL. Setting up the audio sub-carrier is simple – if you have a spectrum analyser. But for the average enthusiast with just a multimeter it can be rather difficult. Comtech modules have rather low audio sub-carriers, about -28dBc (dB relative to the vision carrier), but a simple resistor change/addition produces a satisfactory, nominal -18dBc without the need to measure the result. **Photo 1** is an enlarged view of the circuit area where the changes are made. The second (6.5MHz) sub-carrier has been disconnected as stereo sound is considered unnecessary. This also minimises bandwidth products.

There are usually 1kΩ resistors between 1-2 and 3-4. Removing the resistors gives easier access to fit the new SMD resistor (labelled R). Newer transmitter modules have the 1kΩ resistors replaced by SMD components and a slightly different layout. The SMD resistor in the equivalent position to the 3-4 points can easily be removed with a small side pressure from a screwdriver – one of the advantages/disadvantages of lead free solder. Resistor R needs to be SMD1206 to enable an easy bridge connection as shown. Different frequency band modules require a different value for the resistor. See **Table 1**.

Note that the FM2350TSIMP is the 200mW 13cm module. A word of warning: the 200mW 'demo' board from Comtech (**Photo 2**) uses a 'floating earth' technique to provide negative bias for the RF FET stages. Connecting the floating earth of this unit to an associated camera etc operating from the same power supply WILL DESTROY the RF module. Fortunately there is one source of an 'enhanced' version of this module that has a proper voltage inverter bias fitted and the bonus of about 500mW output.

It is possible to directly measure the audio sub-carrier level if a suitable narrow band receiver with signal level meter is available. DO NOT CONNECT THE TRANSMITTER TO THE RECEIVER. Tune the receiver into a locally-radiated signal from an unmodulated ATV transmitter. Note the signal level at the transmitter frequency. Then reduce the incoming signal level by 18dB and note the level again. Remove the attenuation and tune up or down in frequency by 6MHz to the sub-carrier, which can then be checked (or adjusted to the last noted level on the receiver signal meter). At the time of writing, Radiall 18dB and 9dB attenuators were on eBay for as little as £12.

SUB-CARRIER FREQUENCY. Setting the frequency can be approached several ways. A 'sniffer' coil (2 turns of insulated wire approximately 10mm diameter, held near the 6MHz sub-carrier oscillator) could be used with a sensitive frequency counter or a narrow band 6MHz receiver. Use CW setting and zero beating the sub-carrier signal should get it within a kilohertz or better, which is quite acceptable.

An alternative method is to use an old analogue satellite receiver such as the PACE Prima. Select Set Up Programme, then Frequency (Sub-C), usually 6.00MHz. Using the left-right menu keys this frequency can be adjusted in steps of 0.01 (ie 10kHz). With the receiver set to the transmitter frequency the sub-carrier should 'quiet' the receiver's audio output. Use the menu left or right key until noise pulses (chuffs) occur. Note the two frequency extremes. The centre of these two readings is the frequency of the sub-carrier. If this is not 6MHz, a very small tweak of the 6MHz oscillator and recheck by adjusting the PACE again will give the guidance to which direction and by how much the sub-carrier must be adjusted to get a satisfactory frequency setting.

The sub-carrier deviation standard for ATV is the same as that for broadcast satellite and FM radio, ie 75kHz max peak deviation with 75μs pre-emphasis. If your audio modulation sounds as loud as speech from a broadcast signal then you have got it right.

DIGITAL FEEDBACK. Several readers have asked what receivers are needed for digital amateur television. The majority of digital ATV uses the DVB-S system which does not work on a Freeview receiver. There are a limited number of surplus receivers available. I use an ALTEIA professional rack mount receiver with a low noise 30dB preamplifier. A couple of suggestions: ZENITH Model DTH311-9 (with 0160 software), a Nokia Media Master has been recommended and I have been told that Maplin sell a cheap DVB-S digital receiver for satellite which is 'near perfect for digital ATV'. For 23cm you will need a good pre-amplifier, and for 70cm a receive upconverter with some gain. Sky Digiboxes are not suitable for DATV.

If you are interested in generating your own digital signals, this is a bit more difficult. There are occasionally items of ex-professional equipment available. These are usually rack mounting and vary from 'acceptably big' to 'awfully large' – and power-hungry. Compact digital generation modules are known to have been developed in Germany, Italy and France, along with a 'software on PC' system previously mentioned. If any reader can supply more information on sources of ATV-friendly DVB-S digital receivers and/or transmitting equipment it would be appreciated.

DIGITAL EXPERIMENT LINKS
http://tinyurl.com/yk9hb6k
www.g4guo.blogspot.com
www.m0dts.co.uk

TABLE 1: Values of R to increase the sound sub-carrier level on Comtech TX modules.

Module Type	Band	R (Ω)
FM1200TSIMG	23cm	2k2
FM1394TSIM	23cm	2k2
FM2400TSIMG	13cm	22k
FM2350TSIMP	13cm	22k

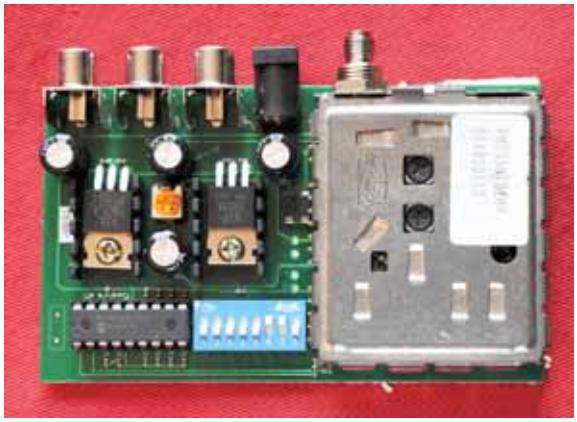


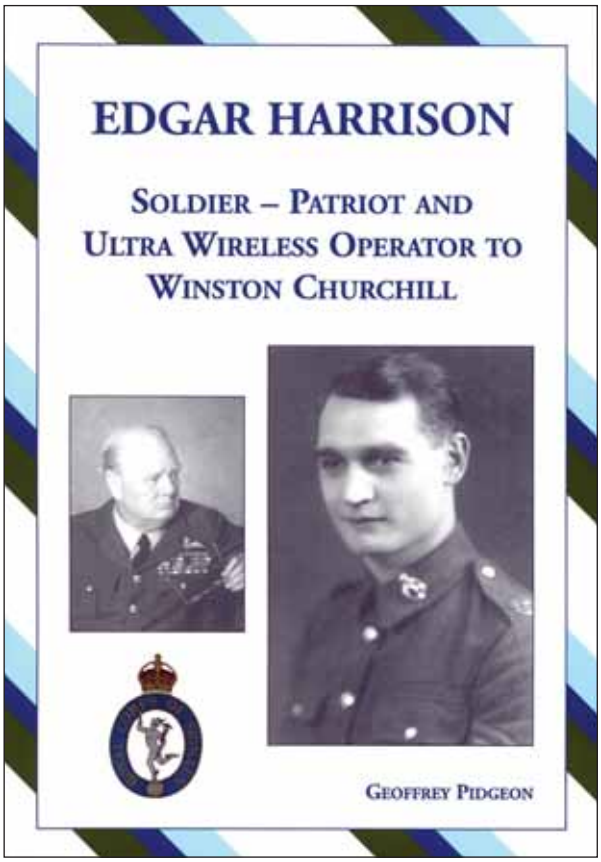
PHOTO 2: Comtech 200mW 13cm Tx 'demo' board – watch out for the floating 'earth'.

Book review

Tales of derring-do and scary weather

EDGAR HARRISON

by Geoffrey Pidgeon



I must admit I find tales of wartime SOE, MI6 and general derring-do very compelling. Subtitled "Soldier – Patriot and Ultra Wireless Operator to Winston Churchill", this biography presses all my 'buttons'. It is very readable, well illustrated and comprehensive. It filled in a lot of little gaps and rang many bells with other WWII-era books I have read.

Edgar Harrison was a resourceful, indefatigable radio operator whose career in the Royal Corps of Signals began in around 1933. He travelled widely in the Far East. By World War II he was working for MI6 section VIII (communications), putting to good use his skills as a radioman, signaller, code and cipher user and even horseman. His knowledge of trains came in handy when he used his skills to move a commandeered train full of troops across Greece.

There are a large number of little anecdotes that add local colour to Edgar's postings around the world. One I particularly liked concerned a Greek civilian in Athens who approached and invited him to lunch. During the meal – of particularly good steak – the local ascertained that Edgar spoke no Greek. So he helpfully taught him to pronounce two words, "logariasmo parakalo" and said they were all Edgar needed to know. The Greek excused himself at the end of the meal and was gone rather a long time, so Edgar summoned the waiter with "logariasmo parakalo" – and was promptly presented with the bill! Needless to say, he never saw his civilian 'friend' again.

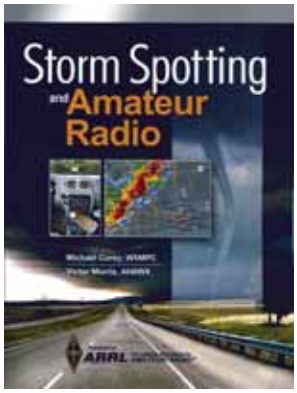
The early chapters paint quite a full picture of his work, but it is when we get to chapter 18 that we learn how all of this lead to his experiences with Churchill. Edgar provided 'Ultra' communications (above top secret, including Enigma intercepts) when Churchill had meetings in the Middle East. MI6 provided the top secret traffic from Bletchley Park and Edgar was the operator flown into the theatre of operations to be with Churchill. These radio circuits kept Churchill up to date with latest developments and allowed him to pass his instructions back to London in complete security.

The final third or so of the book comprises 16 Appendices plus bibliography and an index. The Appendices, which are referred to in the main text, contain valuable background and context material. Examples include a detailed look at the work of Richard Gambier-Parry (head of MI6 Section VIII, Communications),

ISBN 978-09560515-0-9
232 pages, 254 x 178mm
Published by Arundel Books
Non members' price £14.99
Members' price £12.74

Storm Spotting and Amateur Radio

By Michael Corey, W5MPC and Victor Morris, AH6WX



One of the benefits of living on a collection of relatively small islands such as the British Isles is that there is rarely any really serious weather to contend with. Not so in the United States though, which has much more to contend with. Storms, hurricanes, tornadoes, hailstones the size of cricket balls – these are just some of the forces that Nature throws out.

Severe weather causes much injury, loss of life and property damage. But storms are usually fairly visible things and, as such, can be observed with accuracy from the ground. These observations, properly co-ordinated, can provide vital and accurate warnings of the path of bad weather and allow people the time to get themselves out of harm's way and seek shelter.

This book explains how amateurs can contribute to these observations and how our unique communication skills can ensure that information gets through to the right places at the right time. Highly skilled and well trained storm spotters of the SKYWARN® network use their amateur radio abilities and equipment to make this happen.

For me, the most fascinating thing about this book was the meteorology. It keeps the level of information fairly high but explains how the various kinds of weather phenomenon are born, their effects and characteristics, how they change over time and how they are observed. There are many photos of different kinds of weather and its effects, including some quite amazing sights like waterspouts, tornadoes – and their aftermath.

Reading this book will give you a deeper understanding of the weather – and quite a lot of awe.

ISBN 978-0-87259-0908
160 pages, 210 x 275mm
Published by ARRL
Non members' price £19.99
Members' price £16.99

The GW3YDX Super Moxon

Adding extra directivity to the Moxon Rectangle for 6m, 4, and 2m

PHOTO 1: Completed 4m GW3YDX Super Moxon.

MOXON FAN. The author is a keen enthusiast of the Moxon Rectangle antenna, invented by the late Les Moxon, G6XN. In its basic form it's easy to build and is a great performer. The reduced wingspan of the rectangle also appeals to the QTH-restricted UK radio amateur and it is a surprise that the antenna has not become more popular.

Spending much of the day in the workshop, I wished to keep an eye (and ear) on the 6m band one June. Something is often happening on six, so I wanted a simple antenna to monitor the band. Although my neighbours are quite understanding of the structures that go up from time to time to be tested, this would be a semi-permanent antenna and thus something was required that was not too visually obtrusive. A Moxon rectangle was built for 6m and put on a short mast outside the workshop door. An FT-847 (a trusty test radio for antenna projects) was installed for monitoring the band.

Much interesting DX was worked, including a memorable evening in late June where more than 80 stations in the USA were contacted, extending as far as west Texas. This was just with 100W from a poor VHF QTH, and there seemed no difference in results compared with the (alleged) kilowatt-and-long-Yagi G stations on the band.

BASIC MOXON DESIGN. Making the Moxon rectangle was not difficult. There are some useful design formulae available that are quite accurate. The best one so far found is *Moxgen* (**Figure 1**), which allows input of wire gauge and frequency and that results in a dimensional guide. *Moxgen* is downloadable as free software from **[1]** and, most usefully, allows creation of a model in either NEC or *EZNEC* formats for further experimentation.

Continuing to use the Moxon rectangle, the fairly broad frontal lobe of the antenna (see **Figure 2**) of 80° between 3dB power points was sometimes not too good in QRM when beaming to Europe.

IMPROVEMENT. Something better was needed, but how could this be achieved without a greater wingspan, yet with a worthwhile increase in gain for not a huge increase in boom length? Lying in bed one night and thinking about radio antennas (as one does) the idea came to me of adding directors to the Moxon, but in the form of another rectangle, ie two directors with the ends bent back and joined with an insulator. Several evenings were then spent modelling the antenna using a combination of *4NEC2* and *EZNEC+*. For an increase in boom length to just under 2m (just over double the original boom length) and no increase in wingspan, another 3dB gain was achieved from the modelling, with a 26.5dB front to back ratio and a VSWR of less than 1.5:1 between 50.0 and 50.3MHz when the model was optimised for 50.1MHz.

Figures 3 and **4** illustrate the modelling results obtained. Note the decrease in -3dB power points to 60° compared with 80° for the original. This narrowing is where gain comes from. Front to back ratio of around 26dB is very respectable and the pattern has a nice clean 'light bulb' shape to it, with no minor lobes. Although modelling indicated that a 38Ω feed impedance was ideal,

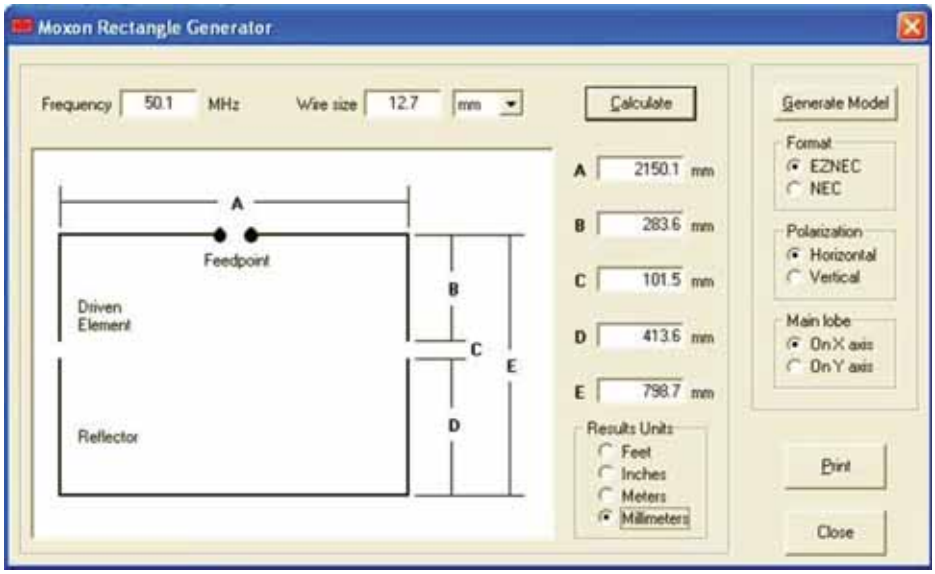


FIGURE 1: Calculating Moxon Rectangle parameters with Moxgen.

PHOTO 2: The 2m version of the Super Moxon is just 30" x 25".

practical models have been fed with 50Ω cable and VSWR plots that follow the model graphs have been obtained with just slight adjustment of the driven cell element lengths. VSWR bandwidth is probably a little narrower than comparable Yagi designs, but at below 1.5:1 for the most-used part of 6m is very acceptable. The author has quite extensive knowledge of Yagi designs and so far (this tempts fate of course) has seen no 6m antenna design with comparable performance on such a short boom. A regular Yagi with the same gain would need a boom length of nearly 50% more and a turning radius nearly double of this design. One can truly say that this design packs more dB into its size than anything else so far realised.

BUILDING THE PROTOTYPE. The next stage was physical implementation, which was done with aluminium alloy for the elements and fibreglass rod for the split driven element and the element-end insulators. This is a lightweight antenna, easy for one person to manage, and only a 1" square boom was required.

Construction of the antenna was principally with ½" aluminium alloy, with the bent corners in 3/8" material. 3/8" fibreglass rod was used for the element insulators both at the driven element centres and at the element ends. The 6m antenna has been tested with 1000W from an ACOM1000 without complaint. (The insulators on the directors on the 2m version are only 12mm long but at the 50W power level no arcing or instability was noted. Unfortunately no greater power was available on 2m for testing.)

Table 1 gives constructional sizes for 6m, 4m and 2m versions, the dimensions relating to **Figure 5**. The front part of the driver element is of course split at the centre and 50Ω feedline connected there through a balun.

Although the final dimensions are as set out in the table, it is useful to slit the ends of the main element tubes and install stainless hose clamps for fine adjustment, particularly if other antennas are nearby. It would be most interesting to hear of constructors using this design on other bands. 10m is currently in the doldrums, but a 10m version of this antenna or of the basic Moxon rectangle would be the most space-saving means of achieving a good 'gain' antenna on the HF bands.

TABLE 1: Tubing lengths for 6m, 4m and 2m versions of Figure 5. All dimensions in mm, measured to tubing centres.

	A	B	C	D	E	F	G	H	J	K	L	M
6m	2160	395	280	105	290	310	60	2140	0	780	1201	1861
4m	1572	275	175	110	195	202	43	1572	0	560	860	1310
2m	730	135	86	55	82	90	12	730	0	276	434	615

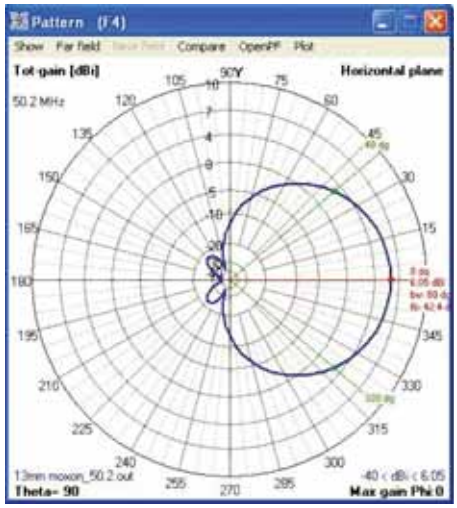


FIGURE 2: *4NEC2* plot of Moxon rectangle showing fairly broad frontal lobe and 80° 3dB points.

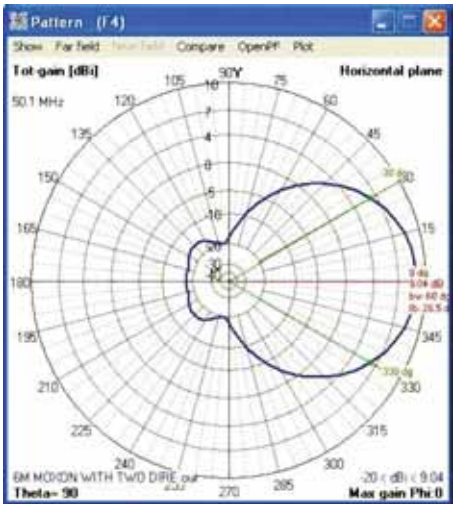


FIGURE 3: *4NEC2* plot of Super Moxon radiation pattern. Note narrower frontal lobe and improved forward gain with very smooth rear pattern.

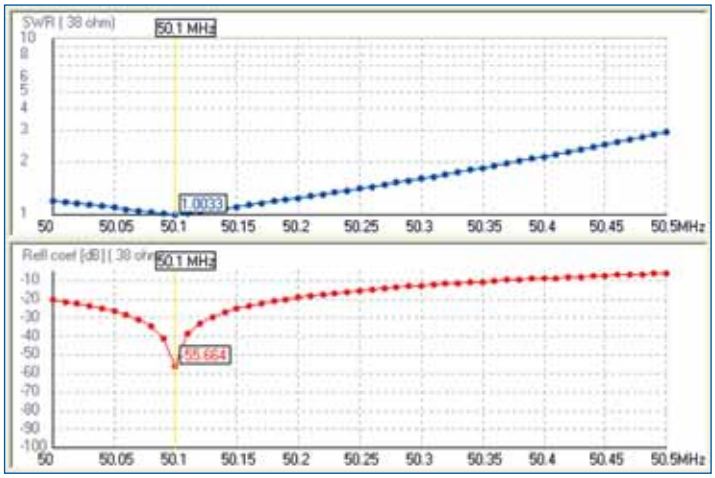


FIGURE 4: *4NEC2* plot of Super Moxon SWR and reflection coefficient.

REGISTERED DESIGN. This design is being registered and therefore commercial manufacture is not permitted without permission of the design owner. However, radio amateurs may freely construct and use this antenna for their personal amateur stations. Commercial versions of the antenna are available from Vine Antennas Ltd **[2]**.

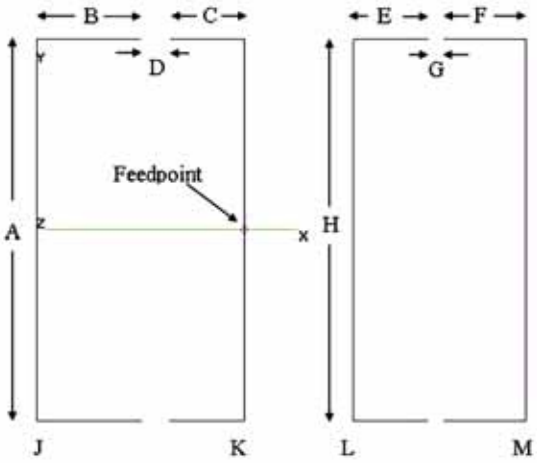


FIGURE 5: Basic design of the Super Moxon. See Table 1 for 6m, 4m and 2m version dimensions.

WEBSEARCH
[1] www.moxonantennaproject.com/design.htm
[2] www.vinecom.co.uk

Dayton Hamvention® 2010

The RSGB waves the flag at the largest amateur radio show in the world

The RSGB flying the flag in the USA. RSGB books are very popular with visitors.

FACTS & FIGURES. Going to the Dayton Hamvention is a little like an enjoyable endurance test. If you are going to be there for the whole show you need to be prepared for some long hours. The flea market opens to the public at 8am each day and closes as 6pm, 5pm and 1pm respectively. That's some 24 hours – and you need them if you want to make sure you see all there is on offer.

The main exhibition opens at a leisurely 9am each day and closes at the same time as the flea market. Whether that's enough time to visit the five trading areas with almost 500 stands and 227 different companies or societies is another matter. Of course, you still haven't fitted in any of the 44 forums or lectures!

NEW PRODUCTS. Icom, Kenwood and Yaesu all had new products on their stands. Icom and Kenwood had prototypes on display and Yaesu had a new amplifier but no information about the equipment available.

Icom had a prototype of the IC-9100 base station on display. There's very little information about a price or release date in Europe yet. The IC-9100 could best be described as a compact all-in-one transceiver that covers HF, VHF and UHF. The power output for the HF bands, 50MHz band and 144MHz is 100W, 75W on 70cm and 10W if you have the 23cm option. It will have something called a dual independent receiver that will allow the user to receive on two bands simultaneously. There will be three combinations of which bands can be received with which: HF/50MHz + VHF/UHF, VHF + UHF or 430 + 1200MHz. For the data enthusiast, the radio has a built-in RTTY demodulator and decoder that will allow you to read a RTTY message with no external units or PC needed.

The IC-9100 will have a number of options, it comes with a built-in 15kHz first IF filter and the user can opt for up to two additional filters – 3kHz and front of the first IF amplifier stage. Icom say that the 3kHz filter is especially effective in CW and SSB modes to eliminate overloading caused by strong signals just outside the passband. Another option is a D-Star module, which is available on the 28 and 50MHz bands simplex mode as well as on the VHF and UHF bands. If you chose the D-Star module this means you can use the GPS position reporting functions too. The IC-9100 will have a GPS button on the front panel and your position data is shown on the display and can be sent to other stations in DV mode 2. When a station is received that's transmitting GPS data via DV mode, the IC-9100 displays the distance and direction to the station.

The idea behind the radio is that whether you are interested in HF DXing, satellite working, moon bounce, datamodes or VHF and up, this radio will fulfil the whole hobby. There are no details of a European launch date or a price as yet. You can read up on the spec of this radio on the Icom UK website, where you can download a brochure (www.icomuk.co.uk/categoryRender.asp?categoryID=3785&productID=1123&tID=647).

Yaesu had an unexpected piece of equipment on their stand, the VL2000 Quadra linear amplifier. They also had two examples of the FTdx-5000 on the stand, one of which was hooked up and working. Information on the Yaesu Quadra was, unfortunately, a little thin on the ground at the show because it was a complete surprise to Yaesu USA when they unpacked the box! All we were able to find out is that it will be a high performance linear amplifier that covers the 160 to 15 metre bands and the 6 metre bands. There has been some debate whether it's a 1.5kW solid-state amplifier or a 2kW amplifier. It hasn't got either FCC or CE approval and, at the moment, we can't find out any more details. Amateurs all around the world will be interested when information becomes available as the amplifier and its matching power supply certainly attracted a great deal of attention.

Kenwood had a prototype of their new HF rig and a mock up of their proposed dual band FM portable. Tentatively called the TS-590, Kenwood is billing the radio as an affordable HF and 6m transceiver, although they haven't released a price or exact delivery date yet. Final features have also yet to be announced but we believe that it will have a 32-bit IF DSP, roofing filters and a first IF at 11MHz. The prototype will also be on show at the HamRadio exhibition in Friedrichshafen in late June and we may learn more at that stage. Otherwise it looks like we will have to wait until we are closer to the autumn or winter release date.

There was also a mock-up of the TH-D72 VHF/UHF hand held on the Kenwood stand. It wasn't a functioning prototype but it did give visitors the show an idea of the look and feel of the radio. Kenwood are talking about upgraded APRS capability and an internal GPS unit, along with EchoLink memory compatibility. Again there was no information concerning price and launch date other than they are expecting the radio this winter.

Elecraft did have a few more details available

Yaesu USA always have a huge stand at Dayton, this is just the section for hand-helds.

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The surprise addition to the Yaesu USA stand, the Quadra VL-2000 amplifier and power supply.

Just one of several Icom stands around the show, this one showing the new IC-9100 prototype.

for their power amplifier. The KPA-500 is a 500 watt solid state amp with a range of 1.8 to 54MHz. Due to be released this winter, there are no clues regarding price – as you would expect. Other features we are expecting is automatic band selection, full break-in and diode switching for transmit/receive.

We do have more details on the P3 Panadapter for the K3. The Elecraft P3 Panadapter is a new panoramic adapter that can give you a pictorial view of band activity around the current tuned frequency. In the case of the P3, the bandwidth on display can be set anywhere between 2kHz and 200kHz and this is expected to increase as new firmware updates are developed. Being able to see all the activity around the current operating frequency is a real boon and makes it very easy to spot new activity. To help make the display clearer the P3 uses multi-pass signal averaging which increases the visibility of weak signals by averaging-out the background noise. The display can also be set to show both waterfall and spectrum displays on the same screen. This gives the best of both worlds for signal spotting as the spectrum display is great for real-time activity spotting and the waterfall is particularly good for detecting weak data or CW signals over time.

The P3 operates from the IF output of your transceiver and it can be programmed to accept IFs from 455kHz through to 21.7MHz so should suit a very wide range of transceivers.

The VHF UHF addition to the FLEX-5000 range of radios.

When hooked up with the Elecraft K3 the display shows the frequency of the two VFOs and you can use the P3 controls to point/click and re-tune to any frequency of interest. The P3 is packed with user adjustments and features a buffered IF output that can be used to drive other equipment.

SIGHTS AROUND THE SHOW. Talking to the show organisers, they were very optimistic about the show as flea market bookings were up on last year, as were advance ticket sales. We didn't see the usual flood of Yaesu baseball caps until part way through the first day as their shipment had been held up, but visitors were still happy to queue for their cap. It's always an amazing sight to see something like 15,000 baseball caps neatly stacked behind the stand on day one and no sign of them towards the end of the show.

Visitors kept the exhibitors on the WiNRADiO stand very busy demonstrating the new Excaliber receiver. It uses the very latest in SDR technology with a direct sampling digital down-converter architecture that delivers an impressive specification. Direct sampling of the entire 9kHz to 50MHz frequency range is made possible through the use of a 16-bit 100MSPS (mega samples per second)

AMSAT-NA had a big presence at the show – here joined by Carlos, G0AKI from the amateur radio department of the RSGB.

analogue to digital converter. The entire sampled spectrum can be used to show a spectrum analysis of the frequency range with a resolution of just 1.5kHz. Alternative spectrum analysers are included covering the 2MHz down-converted segment, 62.5kHz channel spectrum and finally a 16kHz demodulated audio spectrum – each with 1Hz resolution. The digitised output of the front-end low noise amplifier and A/D converter combination is digitally down-converted in bandwidths of up to 2MHz. This bandwidth is available for demodulation or recording and the Excalibur includes three separate demodulators so you can simultaneously monitor up to three different frequencies within each 2MHz segment! The 24-bit digitised I & Q signal from Excalibur is sent via a USB 2.0 port for final processing in the computer. With a frequency coverage from 9kHz to 50MHz and a 3rd order intercept point of better than +31dBm we are looking forward to a review sample arriving for *RadCom*!

Staying on the subject of SDR, it was good to be able to chat to some of the team behind the Hermes SDR project that we featured in the May *RadCom*. The team are hopeful that boards will be available later this year for constructors to build their own. At the moment, more beta samples are being built to double check the repeatability of the design. You can keep up to date with the progress of this project by subscribing to the HPSDR reflector at http://lists.openhpsdr.org/listinfo.cgi/hpsdr-openhpsdr.org.

It was good to have the opportunity to talk to Luso Towers again. They had brought a 36m tower with them this year – and had sold it by the end of Saturday to KM8AM. We are looking forward to seeing them again at Friedrichshafen and at the National Hamfest in Newark on 1 and 2 October.

FlexRadio were there with a large stand and you could see the FLEX-1500 and FLEX-VU5K on display. The FLEX-1500 is a low power software defined radio with an RF output of 1mW (0dBm) PEP on 160 through to 6m using the transverter antenna connector. A nominal five watts RF output is available using the transceiver antenna connector.

The Elecraft P3 Panadapter for the popular K3.

Because of the ultra low power output and 10MHz input for an external high stability clock source, it can be combined with PowerSDR to become an IF deck for driving VHF and up transverters.

The VU5K on the other hand is a fully integrated all-mode, all-band (144-148/430-450MHz) full-duplex VHF/UHF module that adds both 2m and 70cm capabilities to the FLEX-5000 family of software defined radios. There's no UK date for either of these two pieces of equipment, but Waters & Stanton are the UK distributors.

A new kid on the block was Hamgadgets. Their MasterKeyer MK-1 is a self-contained, iambic Morse code memory keyer. The six multi-coloured, LED illuminated pushbuttons give instant access to stored messages any of five banks – so that means 30 messages with over 7500 total characters in total. Talking to Dale, N0XAS, these keyers may be making their way over the Atlantic either as kits or as ready built units as Hamgadgets looks to expand their market.

Finally, Wouxun were there with their hand-helds and they were certainly disappearing from their stand quickly. Priced at around $80 for a single band version, many amateurs decided it was worth a try. First reports are that the radios work fine, reception reports are good and amateurs seemed pleased saying that the radios seemed well made. In the UK, these radios are being distributed by Martin Lynch and Sons.

RSGB VISITORS. This year the RSGB signing-in book was as busy as ever. The RSGB always does very well both on membership and book sales at the Dayton Hamvention. In fact, far more new members are signed up at Dayton each year than any other show the Society attends. There are always a number of UK visitors enjoying the show and flea market. The other must-see, Mendelson's Surplus Store in downtown Dayton also got a thumbs up. Mendelson's is two buildings with seven floors of surplus equipment!

PRESIDENT TO PRESIDENT. The Dayton Hamvention was the first chance that RSGB President, Dave Wilson, M0OBW had to congratulate Kay Craigie, N3KN, the new ARRL President. Kay is the first woman to hold this top position in the ARRL. She has been licensed since 1983, although she has always been interested in computers and so has really enjoyed the data and digital side of amateur radio. Kay has held many jobs within the ARRL from Section Manager to the Enforcement Task Force. One area that Kay has been particularly active in the Education & Technology Program that supports schools in teaching science and radio technology. If you speak to Kay even briefly, her passion for bringing in young people and encouraging those young people to achieve is there for all to see. She enjoys seeing the young people discover how things work and how this technology can be used for the benefit of others, particularly during disaster situations.

One of the things that the ARRL has been working on is a Youth Lounge. The principle of this is to provide an area where young people can meet each other whether they are licensed or not. There were plenty of activities for them to get involved in both within the Youth Lounge area and going around the Hamvention too. The activities are all radio based, although cleverly designed so as not to put the non-radio youngster off. Any youngster visiting the area can join in any of the activities from puzzles to treasure hunts, grab something to eat or drink and collect prizes for many of the activities. The area at Dayton was being run by Andrea, KG4IUM and Scott, KF4PWI.

There's evidence that this sort of approach to attracting young people is working. Saturday saw a 3 hour Youth Forum with talks by young amateurs ranging in age from 10 to 16. It gave the opportunity for young people to talk to other young people about their areas of interest in amateur radio. They spoke about everything from starting to Youth Net to building it yourself and from satellite working to saving lives with Skywarn (a resource for storm spotters and storm chasers).

OVERALL. Dayton Hamvention 2010 was memorable for a number of reasons. The good reasons were that the show was busier this year with more traders, which is always a good sign. Those that had the opportunity to go to the lectures and forums have said how interesting they were – and well attended. On the bad side, some travellers had interesting journeys – diversions and delays due to volcanic ash – and that meant some very long journeys, sometimes involving trains and cars as well as plane. But we all got there – eventually – and we all arrived back safely, so the good points certainly outweighed the bad ones. Next year the Dayton Hamvention is booked for 20 to 22 May. Many UK amateurs make the trip and it is certainly a visit you won't forget.

The new Kenwood TS-590 was on show, but only as a prototype.

Members visiting the RSGB Stand at Dayton 2010

WJ1B	LEY	N8NOE
KC0G	KC9RJC	NY9H
K9XT/M0BBY	G3YSX	WA3ENK
G3YBO	W4PH	K9AM
AB9D	K4QQK	KA3FQS
W2YR	GD6IA	M0ZAF
G5VZ	G8EBM	G2KQ
W6TRI	AA0MZ	KC7DUU
KJ8O	N2WN	KE3D
AA3XV/G4NEJ	WB8OGT	WB6VVA
N5FVM	KY4MD	K3LR
K1OYB	G4DDK	G0SDO
N3ZEL	NK4Z	AJ4FM
N8RXR	AG4VF	KI4ODT
WA3WJT	K4PZT	N4KMC
W9IUF	VE3CRG	KD8KGI
KI4MWP	VE3KKB	WA8JIM
G3KEL	VE3KID	KC4C
K9TRV	N3GHT	N0WNV
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G4LUE	VR2PW	YV5EED
K3FP	AB9MZ	KA8IMZ
W9UX	KC9OPV	WA2BCK
WE3C	KD0EAG	KC4VG
VE3MWX	WF4Z	KB8LEF
N0UU	K5IC	GM7ATQ
WD8NVN	KA0HMQ	GM7LJE
W8TJK	K4JC	N8COZ
KE6WNQ	G0DWV	G8YEV
WR9H	W5FZ	WD8NVN
G4GXL	WA0F	KC7V
W3IV	G3LHZ	K7EUU
G5CSU/K7SZ	G3ZTB	W0AIH
VE3PTC/GM0	W3RFC	W1GHF

Part of the main Icom USA stand in the main Hara arena.

Portable fishing rod antenna

A simple way of erecting a good temporary antenna

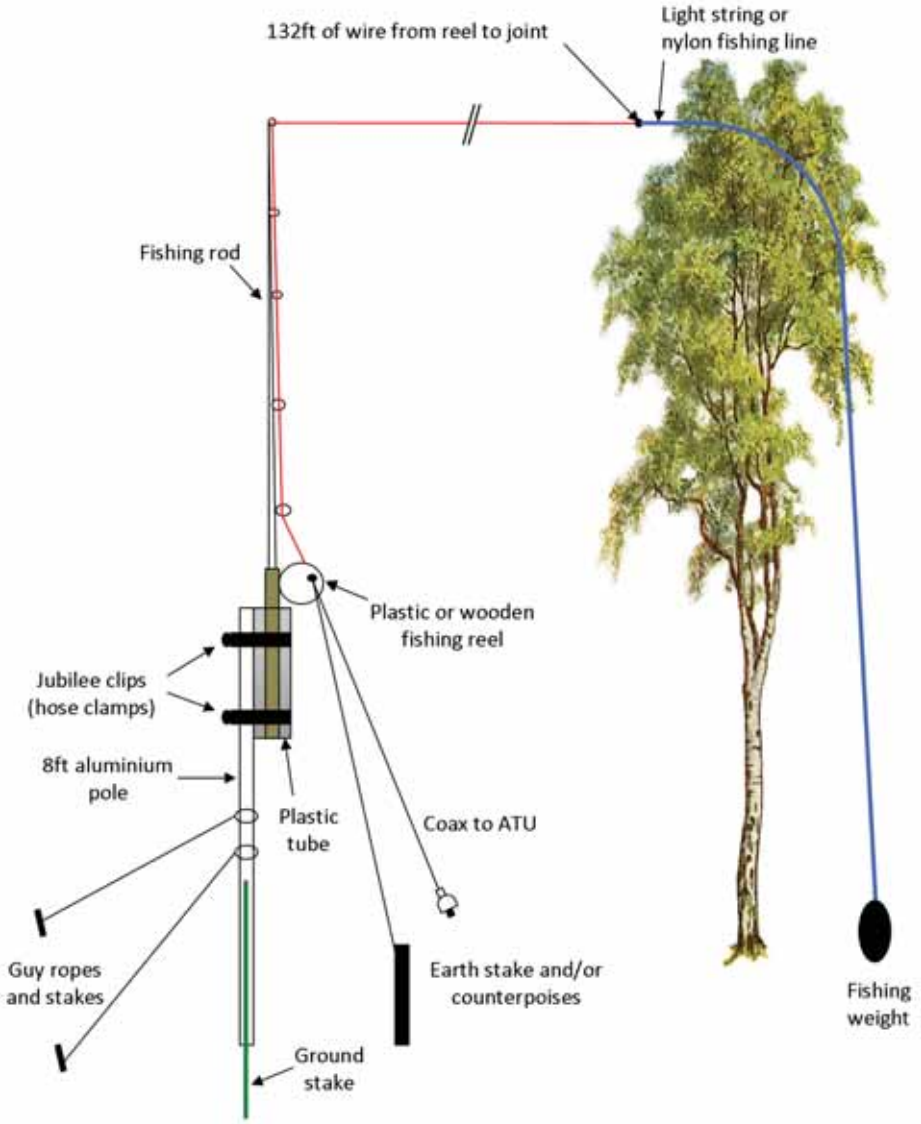


FIGURE 1: General arrangement of the fishing rod aerial system.

INTRODUCTION. In the June 2010 Last Word there was a letter requesting more articles on antenna construction. Spurred on by this, I decided to submit details of my portable fishing rod antenna. I have been using this simple antenna for many years with great success. It is very easy to construct and the results are remarkably good for an antenna that can be deployed in the space of a few minutes.

DESCRIPTION. The basic design of the antenna is nothing special – just a long wire – but the clever bit is how to keep it up in the air. Driving around the countryside one day I couldn't help noticing lots of big, tall wooden things dotted around. I think they're called 'trees', but whatever their name, they looked ideal for supporting one end of an aerial wire. But how to get the wire up there without the assistance of a trained squirrel? Fortunately, I have done some fishing in my time and I realised that with a little ingenuity I could modify a fishing rod and reel to help out.

The basic principle is to use a fishing rod and reel to loft a weighted, non conductive leader line to the top of a tree. The weight should cause the line to hook over a branch and head for ground level. The other end of the line is permanently attached to a 132 foot (40.2m) length of wire that acts as the aerial element. A stand for the fishing rod plus a couple of guys and some wiring completes the ensemble, as shown in **Figure 1**.

The parts are basic and quite easy to obtain. When the antenna is dismantled it will fit in a car for easy portability, ready for use at any time. The only really long piece is the aluminium support tube, which could be cut in half and then sleeve jointed. I find it takes less than ten minutes to erect once a suitable tree has been selected.

PARTS AND CONSTRUCTION. None of the parts are terribly critical, so just use the following as a guide. You will need a beach caster type fishing rod. I used a telescopic one, but any kind will do as long as it is about eight or ten feet long. Avoid the conductive carbon fibre types, though. You will also need a centre pin type plastic or wooden fishing reel. I made my own from a spool that once contained a lot of enamelled copper wire, but a commercial fly reel will be fine.

Make a connection point in the side of the reel – I just put a bolt through. You may find it convenient to remove the reel winder knob and put a bolt through in its place. Use a solder tag to connect one end of a 132ft piece of thin wire. I used 22 SWG stainless steel stranded insulated wire, although this is not ideal because of its high resistance. You can use any wire you like as long as it is strong enough and thin enough to fit comfortably on the spool with space to spare. Next, attach a long 'leader' of string or nylon fishing wire to the other end of the wire. About 60 feet (20m) is enough. A solder tag at the end of the wire provides a handy attachment point. Wind the string onto the reel on top of the wire. **Photo 2** shows the general construction.

The rod support is constructed from an 8 foot or so (~2.5m) length of aluminium tube, of roughly 1.5" (37mm) diameter. Dimensions are not at all critical. Attached to the support is a piece of PVC pipe of a suitable diameter to take the bottom of the fishing rod. The pipe is about 16 inches (40cm) long and doesn't have to be a tight fit to the rod. I used two jubilee clips (hose clamps) to attach the plastic pipe to the support rod. **Photo 3** shows how it all goes together.

I used a piece of steel reinforcing bar about four or five feet long as my ground stake. A slight point on the end will help it go into the ground, as will encouragement with a suitable implement (**Photo 4**).

The final parts to make are the feed and counterpoise. My prototype used a 10' (3m)

PHOTO 1: General view up the fishing pole showing the support pole, sleeve, reel and rod.

PHOTO 2: How I terminated the wire on the bolt and (inset, right) the bracket I made to fix my homebrew reel to the rod.

TABLE 1: Suggested counterpoise lengths

Band	Length
160m	39.5m / 129'6"
80m	20.5m / 67'5"
40m	10.5m / 34'8"
30m	7.4m / 24'4"
20m	5.3m / 17'4"
17m	4.1m / 13'7"
15m	3.5m / 11'7"
12m	3m / 9/10"
10m	2.7m / 8'9"

length of RG58 coax with a PL259 plug on one end to suit my ATU. The other end has an alligator clip on the centre conductor to connect to the end of the aerial wire (**Photo 5**). The counterpoise length is calculated as 75/frequency (MHz), which allows a bit of extra length for trimming. **Table 1** gives suggested values for the mid-point of the HF bands, though you may well find that trimming these by 5% or so will be better. I only use a single counterpoise wire per band, although I recognise that more might be better.

DEPLOYMENT. This description assumes that you know how to beach cast a fishing rod. If you don't have the knack then please find someone to teach you otherwise you could injure yourself or others. Select a suitable tree and make sure that there are no people or animals nearby that could be hurt when you cast the leader. Trees beside footpaths are particularly prone to people walking near them, and folks tend to get upset if you hit them with flying lead. Respect the wildlife that may be in the tree - after all it's their home!

Thread the leader through the rod loops (just like a fishing line) and attach the weight to the end of the leader. I let a goodly bit of slack off the reel, ensuring it doesn't tangle. I think it's called 'flaking out' the line. Don't try to cast straight off the reel or a 'bird's nest' (tangle) will result. Beach cast toward the top of the tree. With luck the weight will carry the leader over a high branch and fall to the ground. Pull the leader over the branch so that the end of the aerial wire is several feet from the leaf canopy. Tie off the leader at the base of the tree.

Go back to the rod and pay out the aerial wire as you walk away from the tree. When the wire is fully extended, set up the ground stake, slip the rod support over it and then put the rod in the top of the support. If the aerial wire is a bit saggy then you can go back to the tree and tighten it by pulling on the leader.

Depending on the stoutness of your ground stake and the weight of your aerial wire, you may find it necessary to use some guys to keep the rod support upright.

Finally, connect the feed to the bolt on the reel and arrange your counterpoises.

IN USE. The radiation pattern will mostly be to the sides as a figure of 8. However, if you select a very tall tree you'll find that it acts as a reflector and the radiation pattern approaches that which you'd get from a sloper attached to a tower.

There are other methods of feeding the aerial. One that may be attractive is to put an automatic ATU on the ground at the base of the aerial, with a single wire connecting to the driven element. The ATU earth can then be connected to counterpoise(s) or even just to an earth stake. I use a small LDG auto tuner and it has always served me very well.

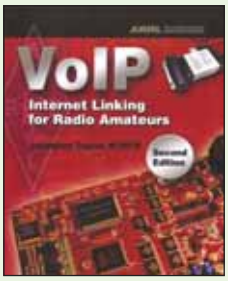
I have used this aerial for years with a Yaesu FT-840, an SWR meter and my trusty LDG auto ATU. If it's windy then the SWR will alarm you as the tree sways about but I've not had any real problems in practice. Happy DXing – or should I say "tight lines"?

PHOTO 3: General construction of the rod support. Note how the tube protrudes an inch or so above the support pole.

PHOTO 4: Encouraging the ground stake to stay vertical.

PHOTO 5: Attaching the feed (the antenna was not deployed at this point, which is why the antenna wire is not visible).

Technical



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Radio Nature

By Renato Romero, IK1QFK

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By George Brown, MW5ACN

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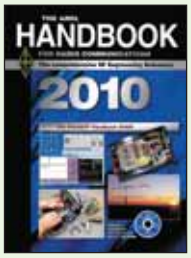

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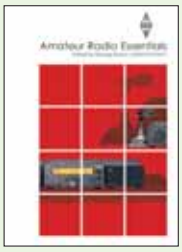

Amateur Radio Essentials

Edited by George Brown, M5ACN

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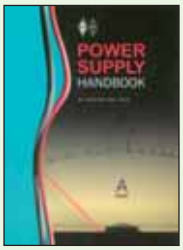

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By John Fielding, ZS5JF

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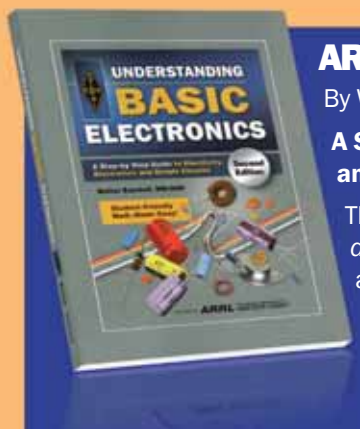

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By Walter Banzhaf, WB1ANE

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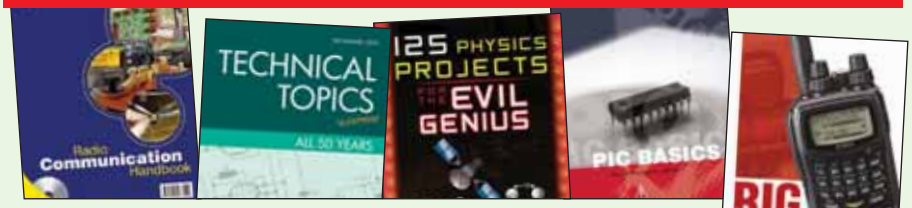

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Sport Radio

What constitutes an affiliated society; and how to help the UK HQ team win.

One of the two 80ft mobile Versatowers used to support 4-ele 20m Yagis for GB7HQ in 2009. Photo G3TXF.

SOCIETY AFFILIATION. There seemed to be some contesting confusion recently about what constitutes an Affiliated Society. The event that brought the discussion about was that a group of individuals, all RSGB members themselves, entered one of the legs of the Tuesday night UK Activity Contests and assumed that because they were all RSGB members, this made them an RSGB-affiliated society. I'm afraid not.

Whilst anyone can participate in an RSGB contest, there is usually a need to be a Society member in order to be listed in the results table, although there are notable exceptions. The exceptions are Club Championships, Affiliated Societies, Club Calls Contest and the UKACs, where it is the club/group/society that needs to be affiliated, rather than individual members. Affiliation is a straightforward process and provides the added benefit of third party insurance whilst taking part in field day type events.

So how do the contest adjudicators know who is (and what clubs are) affiliated? The answer is software. When a contest is adjudicated it's not only the validity of QSOs that's checked, the software checks the callsigns of entrants and names of clubs against the RSGB membership database.

BATTLE FOR BRITAIN. The World Radiosport Team Challenge (WRTC) is held every four years on the second weekend of July. This year it is taking place in Russia on 10th-11th, where 50 two-man teams from across the world will compete. Being selected to represent your country is no simple matter, because it is done on the results of events that operators have previously entered individually. In recognition of their efforts, Britain will be represented this year by Andy Cook, G4PIQ, and Dave Lawley, G4BUO, so let's all wish them success. The way that WRTC works is that there is a 'callsign lottery' on the day before the contest, but the envelopes containing the callsigns are sealed and not opened until 15 minutes before the contest starts. This means that competitors do have time to program a keyer and configure their software, but they don't have time to tell all their friends what their callsign is. This year callsigns will be random in the R31A - R39Z series.

Each team are allocated a station with identical antennas to use in the contest and everyone operates within a fairly small geographical area, so station potential and propagation are the same for all. Each team are also allocated a referee, the referees also being drawn from across the world. The referees are the people who hold the sealed envelopes containing the callsigns. This year the referee from Britain will be Stewart Cooper, GM4AFF, who – along with the other referees – won't know which team he will be refereeing until the day before 'kick-off'.

WRTC coincides with the IARU HF World Championship Contest. Over the past seven years the UK HQ team has done quite well in this event, but it has always been a case of 'always the bridesmaid, never the bride'. GB7HQ came 5th in the highly competitive HQ section in 2009. This year the UK HQ station has a new callsign with a unique prefix – GR2HQ – the hope being that it will attract more callers than a GB callsign does. The objective of the contest is to contact as many other amateurs around the world, especially IARU member society HQ stations. CW and SSB are used on all the HF contest bands.

Your country needs your help and there are a couple of ways in which an individual operator can boost the UK HQ team's effort.

1: Work GR2HQ (and of course other individual entrants and HQ team stations) during the contest. There are twelve band slots on which you can work stations – CW and SSB on each of the non-WARC HF bands.

2: If you're a club member, invite other members to your QTH to work GR2HQ or encourage them to work the station from their homes. As before, an attractive certificate is available for individuals working GR2HQ. This year, for the first time, there are also three trophies for UK clubs and three trophies for non-UK clubs who make a special effort to contact GR2HQ.

Finally, a tip about working GR2HQ. It will be active on CW and SSB on each of the HF contest bands for the whole 24 hours of the contest. This means that even when bands are closed for DX QSOs, GR2HQ will still be there, calling. On the upper HF bands it can be a really smart move to call when a band is closed for DX. This is because inter-UK signals are likely to be weak – as they are most of the time – and you'll stand a better chance of getting through because the QRM level will be much lower than when it is open. It's also worth remembering that if you have a modest station you may have to call numerous times, because there are likely to be lots of other callers. Please keep slugging away at it. Be assured that all the GR2HQ operators are experienced contesters. They are attuned to winkling weak stations out of the noise, so there's a very good chance they'll hear you.

LESS IS MORE. If you are a newcomer to contesting, the chances are you'll appreciate some tips on how to make more QSOs, more points and climb up the results tables. Quite apart from any of the things you might be

RSGB HF EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange
Jul 5	80m Club Championships	1900-2030	CW	3.5	RST + SN
Jul 14	80m Club Championships	1900-2030	SSB	3.5	RS + SN
Jul 18	Low Power Field Day	0900-1600	CW	3.5-7	RST + SN + power
Jul 22	80m Club Championships	1900-2030	Data	3.5	RST + SN
Jul 24-25	IOTA	1200-1200	CW/SSB	3.5-28	RS(T) + SN + IOTA ref

RSGB VHF EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange
Jul 3-4	VHF NFD	1400-1400	All	50-1296	RS(T) + SN + Locator
Jul 6	144MHz UKAC	1900-2130	All	144	RS(T) + SN + Locator
Jul 13	432MHz UKAC	1900-2130	All	432	RS(T) + SN + Locator
Jul 18	70MHz Trophy	1000-1600	All	70	RS(T) + SN + Locator
Jul 20	UHF UKAC	1900-2130	All	1.3/2.3	RS(T) + SN + Locator
Jul 27	50MHz UKAC	1900-2130	All	50	RS(T) + SN + Locator

BEST OF THE REST EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange (info)
Jul 10-11	IARU HF World Championship	1200-1200	CW, SSB	1.8-28	RS(T) + ITU zone (UK=27)
Jul 18	WAB QRO 2m Phone	1000-1400	All	144	RS(T) + SN + WAB square

able to do to improve your station, there's a very simple tip that takes no physical effort and requires no financial input… don't use any unnecessary words in the contacts that you make.

If you're at the stage of calling others – often known as 'S&P' for 'Search and Pounce' – here's a sample phone QSO. I'm putting myself in your position here, so simply substitute my callsign with your own in some QSOs and see how many more contacts you make.

CQ-ing station: "CQ Golf Nine Tango Bravo Alpha Contest"

Me: "Golf Three Zulu Victor Whisky" Note that I do not give the CQ-ing station's callsign, because he already knows who he is. I give only my callsign, in full, once, clearly, and in phonetics. If the operator of the CQ-ing station doesn't hear it all, he'll ask for a repeat. If he makes a mistake, I can give it again on my next transmission.

CQ-ing station: "Golf Three Zulu Victor Whisky 59123" (or whatever the exchange is).

Me: "QSL 59042" (or whatever the exchange is). Note that no callsigns are given, absolutely no unnecessary words are used and no pleasantries are exchanged.

CQ-ing station: "QSL. Golf Nine Tango Bravo Alpha Contest." And with that he's ready for his next caller and I can QSY to look for my next QSO.

Contest QSOs on VHF invariably take longer, because part of the exchange is the locator. This should also be given phonetically, although there is rarely confusion over the first two letters. Consequently, I can shave a second off a QSO if I give my locator as "I O Eight Zero Mike Sierra", with very little chance that the 'I O' will be misunderstood. Something I would like to recommend in VHF contest QSOs is to exchange information in the following order. First, the report, then the serial number, finally the Locator. This is because computer programs present the fields in that order and giving information in a different order leads to the operator on the receiving end having to tab back and forth furiously, slowing down the contact and increasing the possibility of a mistake being made.

THIS MONTH'S EVENTS. July is the final month of the 80m Club Championship Contest for this year. The CW leg is on the 5th, SSB on the 14th and datamodes on the 22nd. Between the latter two is Low Power Field Day, which takes place on Sunday 18th. Using appropriate and efficient antennas is key to success in LPFD, because with low power you need to direct as much as possible of your RF at the right angle for the kind of distances that you can expect to work. Most QSOs take place around Britain, but on 40m in particular the Continent will be worked. Of course you'll need a good pair of ears for this event, because the signals from some competing stations will be extremely weak. There are four sections to enter, two for portables and two for fixed stations, with a total of three trophies to be won. Finally, another RSGB flagship event – the Islands on The Air contest – takes place on 24-25th. Lots of groups and individuals operate portable for this contest, many from exotic locations, so it's a good event for casual operators to work some rare countries or island groups. Despite poor HF conditions over the past few years, the number of entries received has climbed. Last year was the first in which over 2000 were received, and now that the Sun is showing some signs of life I think even more people might be encouraged to participate.

Moving on to VHF, the first RSGB event is VHF Field Day. Although this is basically a 24-hour contest, there are exceptions, because the 50MHz part takes place during the first eight hours and the 70MHz part takes place during the last eight. It is interesting to note how VHF NFD has developed over the years. At one time there were just a few categories and the only

Dave, G4BUO attaching guys to the main tower for GB7HQ in 2009. Photo G3TXF.

awards were for portables, but now there are two categories for fixed stations as well – Open and Restricted. Next comes the first UKAC of the month. There are four Tuesdays in July, so the UKACs are on the 6th (2m), 13th (70cm), 20th (23/13cm), 27th (6m). The only other VHF event this month is the 70MHz Trophy on the 18th. Traditionally this event was held in August, but it has now been brought forward by a month to bring it into the Sporadic-E season. With the band available to an ever-increasing number of countries, last year just under 200 stations from twelve countries appeared in the logs. Compare this to ten years earlier, when nobody's Best DX was outside of the UK. The number of entries received has remained remarkably steady though, with 31 in 1999 and 36 in 2009.

In the 'Best of the Rest' department, this month I'm just highlighting two events. The first is the IARU HF World Championship on 10-11th. Individual entrants send RS(T) and ITU zone, while IARU member society HQ stations send RS(T) and the official IARU member society abbreviation ('RSGB', in the case of Britain). The Worked All Britain QRO 2m Phone contest takes place on Sunday 18th. Multipliers are WAB squares and DXCC countries. You don't have to be a member of the award scheme to partake or give points away and I gave information in the May column about how to calculate WAB areas if you don't already know what yours is.

ARDF

The British ARDF Championships 2010

John Marriott, RS205838 (left) receives the 144MHz plate from Don Field, the RSGB Board member responsible for Sport Radio.

CHAMPIONSHIPS. The sixth annual British ARDF Championships were held over that gloriously sunny weekend prior to the Spring Bank Holiday. The main venue was Swinley Forest just south of Bracknell by kind permission of the Crown Estate. Ten ARDF enthusiasts travelled from the Continent to take part; eight from Germany, one from France and one from Hungary.

The weekend had three separate competitions. On the Saturday and Sunday were events using the full IARU rules on 144 and 3.5MHz respectively. To start the weekend off on the Friday evening, a Sprint FoxO competition was held in a small park at Mytchett near Aldershot. There are no formal international rules for FoxOring (or FoxO as it is often called) and National Societies are at liberty to be innovative and pursue a variety of interesting formats.

FRIDAY'S EVENT. Ten micro power transmitters were placed around the park and each was programmed to send a different Morse letter for 30 seconds in every minute. The usual format for FoxO is to have the map overprinted with a circle in the vicinity of each transmitter. In this event, all the circles were omitted and competitors were given a blank map. The only viable technique was to run round the park and as different transmitters were heard, to locate them and mark the control card to prove that they had been visited.

This was all great fun and the majority of competitors were able to circle the park once and locate all ten transmitters.

SATURDAY'S EVENT. The Saturday saw the 144MHz race and this had quite a number of outstanding performances from RSGB members. Both the M21 and the M40 classes were required to hunt all five transmitters. Michael Dunbar, M6MDD, who competes in the M40 age group, was the fastest of the day just in front of the top German runner Alexander Hergert who had placed second in the M21 category at the last World Championships in 2008.

A surprise but well deserved winner in the W35 class was Jillian Ullersperger, M6JIL, who has been showing great promise for some time. She managed to beat two highly rated German competitors and did this by choosing the optimum sequence in which to visit her assigned transmitters. Using the optimum sequence was the exception in the W35 and M50 classes and it gave Jillian the edge needed to post her first win in a big competition.

The final unexpected result was the win by John Marriott, RS205838 who has come into ARDF from orienteering. He has been competing in ARDF for three years now and has had some good results but BC2010 was exceptional for him as he posted not only the fastest time in the M60 class but also the fastest time of the day for a UK competitor to win the 144MHz plate as the overall 144MHz champion. He was able to edge out Michael Dunbar by a mere 36 seconds.

The planner of the 144MHz course had selected a start location that was nearly 4km from the finish. The transmitters were then placed in a narrow corridor between the two locations. By exploiting the topography, to make a distant well sited 144MHz transmitter louder than the ones nearer to the start, he sought to trap competitors into running past transmitters they needed to find. Competitors who did this had to retrace their steps later to locate these transmitters and waste time in doing so. Combined with the ever present multi-path propagation in the well contoured terrain, the effect was to have a minority of competitors find their transmitters in the optimum order.

SUNDAY'S EVENT. The final day of the competition used the 3.5MHz band. Bearings and signal strengths are a much more accurate indicator of the location of the transmitter on this band. As a result, the faster runners generally do well. Every single competitor visited their assigned transmitters in the optimum order, which is quite unusual. The visitors from the Continent had the best of the day, posting wins in all but one of the classes. The UK winner in the M60 class was Robert Vickers who also took the overall RSGB title for the band. The M60 category was given an advantage by having only three transmitters to find and this is something that must be reviewed before the 2011 Championships.

The two trophies both have new names on them this year and this is a healthy aspect of the competition.

The weekend concluded with the presentations of the trophies and certificates. The RSGB Board member responsible for Sport Radio, Don Field, G3XTT, came to officiate. He was able to meet many of our visitors and learnt something of the growing enthusiasm for this form of competitive radio.

David Williams, M3WDD leads the walk to the start on Day 2.

Steve Stone, RS193217 and Jillian Ullersperger, M6JIL wait for the start signal on Day 2 of the Championships.

RadCom

HF F-Layer Propagation Predictions for July 2010

Compiled by Gwyn Williams, G4FKH

	3.5MHz	7.0MHz	10.1MHz	14.0MHz	18.1MHz	21.0MHz	24.9MHz	28.0MHz
Time	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220	000011111220
(UTC)	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020	246802468020
*** Europe								
Moscow	2.....177	75.....4788	67.....7888	..577767785.	....77..67..	.....	.....	.....
*** Asia								
Yakutsk	.....	.....	43.....35655	.56676677773	.....	.....	.....	.....
Tokyo	.....	.....	.....	.....	.....	.....	.....	.....
Singapore	.....22.	.....676.	.....2...	.....	.....	.....	.....	.....
Hyderabad	.....	354	3555	.....444.	.....	.....	.....	.....
Tel Aviv	9.....899	982....28999	.34....47886	.....783.	.....5..	.....	.....	.....
*** Oceania								
Wellington	.....	.....	.....	.....	.....	.....	.....	.....
Well (ZL) (LP)	.1.....	58.....264	897.....699	775.....98	54	.....	.....	.....
Perth	.....	.....46.3	.....33.4	.....	.....	.....	.....	.....
Sydney	.....	.....37..	.....56..	.....	.....	.....	.....	.....
Melbourne (LP)	.....	5895.....	99973.....8	878.....69	68	.....	.....	.....
Honolulu	.....	.....	.....	.....	....4.....	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.....3...	.....	.....	.....	.....
W. Samoa	.....	.....	.....	.....	....4.....	.....	.....	.....
*** Africa								
Mauritius	1.....22	3.....5776	7763	.....375..	.....	.....	.....	.....
Johanesburg	.....	.....	.....873.	.....58...	.....	.....	.....	.....
Ibadan	2.....11	77.....666	673....4777	..73...3787.	...6....78..	...4....88..	.....56..	.....
Nairobi	.....	5.....555	33.....3666	.....2666.	.....566..	.....6...	.....	.....
Canary Isles	76.....377	776....2788	8854...27888	4.74....8888	...998889987	...77776897.	.....5..	.....
*** S. America								
Buenos Aires	.....	543.....3	767.....78	3.3.....376	.....	.....	.....	.....
Rio de Janeiro	.....	55.....26	87.....588	3.....787	.....	.....	.....	.....
Lima	.....	533.....3	7672.....78	3.....77	.....	.....	.....	.....
Caracas	.....	33.....3	8874.....78	5.534....588	.....5.	.....	.....	.....
*** N. America								
Guatemala	.....	221.....	766.....7	3.....46	.....	.....	.....	.....
New Orleans	.....	662.....	765.....6	56	.....	.....	.....	.....
Washington	3.....	773.....5	776.....47	4....3334677	.....4.	.....	.....	.....
Quebec	5.....	77.....7	633.....67	.....67.	.....	.....	.....	.....
Anchorage	.....	.....	443.....34	44564	.....6.	.....	.....	.....
Vancouver	.....	.....	.....	.....	.....	.....	.....	.....
San Francisco	.....	.....	.....	.....	.....	.....	.....	.....
San Fran (LP)	.....	.....	.....	.....	.....	.....	.....	.....

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 July, August and September are respectively (SIDC classical method – Waldmeier's standard) 20, 22 & 24 and (combined method) 30, 40 & 45 The provisional mean sunspot number for May was Z.Z. The daily maximum / minimum numbers were 32 on 4 May and 0 on 9 - 20 May.

Getting listed here and on GB2RS is easy. E-mail details of your meetings as early as possible to GB2RS@RSGB.org.uk and we'll do the rest. We need to know your club name, RSGB Region number, contact name & phone number, date of meeting and detail of meeting. Example: South Bristol ARS, Region 11, Len, G4RZY, 01275 834 282, 29 October, On the Air. It's that simple. The deadline for the August *RadCom* is 1 July and for the September edition it's 1 August. For GB2RS, the deadline is 10am on the Tuesday for the week of broadcast.

1 SCOTLAND SOUTH & WESTERN ISLES

REGIONAL REP: LEN PAGET, GM0ONX, GM0ONX@RSGB.ORG.UK

COCKENZIE & PORT SETON ARC
Bob, GM4UYZ, 01875 811 723
3 VHF field day
24 RSGB IOTA Contest from Tiree

KILMARNOCK & LOUDOUN ARC
Graham, MM3GDC, mm3gdc@btinternet.com
13, 27 Club night

LIVINGSTON & DARS
Norman Stewart, GM1CNH, 07740 946192
6, 20 Club Evening
13 Operating Evening
27 Morse Code Practice

WEST OF SCOTLAND ARS
Fred Coombes, 2M0BIN, 01415 715512, fred.coombes1@ntlworld.com, www.wosars.org
2, 9, 16, 23, 30 Presentations, guest speakers, raffle & quiz
7, 14, 21, 28 Construction projects & licence training
18, 25 Main club meeting

2 SCOTLAND NORTH & NORTHERN ISLES

REGIONAL REP: DENNY MORRISON, GM1BAN, GM1BAN@RSGB.ORG.UK

ABERDEEN ARS
Lewis, GM4AJR, 01224 575 663, www.radioclubs.net/aars
1 Junk sale
8 OTA, beginners CW
15, 22 Closed

3 NORTH WEST

REGIONAL REP: KATH WILSON, M1CNY, M1CNY@RSGB.ORG.UK

BOLTON WIRELESS CLUB
boltonwireless@gmail.com
12 SOTA by Tom, M1EYP
26 2m DF hunt starting at Britannia Hotel

CHESTER & DARS
Barbara Green on 07957 870770, www.chesterdars.org.uk
13 Committee meeting
20 Radio operating evening
27 Pie 'n' pint evening

MORECAMBE BAY ARS
Martin Hazel, M0ZIF, 01524 848193, martin@mbars.internationalham.com
6 Fox hunt
20 Construction competition
27 Social evening

PRESTON ARS
Richard, M0RDZ, 07855873566, secretary@prestonars.co.uk
8 Club night
22 OTA
29 SBS radar by Rod, G1NGR

SOUTH MANCHESTER R&CC
Ron, G3SVW, 0161 969 3999
1 PC clinic with Dave, G4UGM
8 My Egyptian Tour by Bill, G4SVR
15 Quiz run by John, G6ISA
22 The Theory of Wireless by Ron, G3SVW
26 Monthly technical forum
29 Microphone preamp project by Peter, G0BHP

WORKINGTON & DAR&IT GROUP
Barry Easdon G0RZI, 01946 812092
5 Presentation
19 Vertical antennas by Steve, G0MTD

4 NORTH EAST

REGIONAL REP: HAROLD SCRIVENS, G0UGE, G0UGE@RSGB.ORG.UK

ANGEL OF THE NORTH ARC
Nancy Bone, G7UUR, 0191 477 0036, nancybone2001@yahoo.co.uk
5, 12, 26 OTA, natter night
19 SDRs by Bill Gleave, G8YWK

EAST CLEVELAND ARC
Alistair, G4OLK, 01642 475 671, alistair.mackay@talk21.com
4, 18 OTA
11 Bring in something interesting evening
25 Radio components catalogues evening

HALIFAX & DARS
Anthony Vinters, 01422 822636, tony@g0wfg.demon.co.uk
20 Members' favourite pieces of equipment

HORNSEA ARC
Gordon MacNaught, G3WOV, 01377 240573, gmacnaughtwov@yahoo.co.uk
5 80m CC CW - home stations
7 5MHz WSPR propagation: Andy, G0VRM
14 Super Duper demo, G4YTV; 80m Sprint SSB
18 Low power field day 0900-1600
19 Commence setting up for IOTA
21 Foxhunt, 7.30pm start
22 80m CC - Data - home stations
24 IOTA contest weekend event
28 Activity night & IOTA washup

OTLEY ARS
Paul, 2E0PAK, 07768 996370, m6wat@pekae.co.uk
3 VHF NFD
6 144MHz UKAC
13 Member presentation
20 General shack night
24 IOTA contest
27 50MHz UKAC & natter night

SCARBOROUGH ARS
Jerry Scarr, G6LBL, 01751 476601,
5 PJ9W-1990 CQWW SSB Contest
12 U2 Spy Plane by Robert, G0WHO
19 Semi Auto ATU by Ger Akse, G0UVR
26 Talk and radio demonstration by Yorkshire Air

SHEFFIELD ARC
Trevor Wood, M0TWS, trevorwood6@yahoo.co.uk
3 VHF NFD: G2AS/P at Wharncliffe Chase, IO93FL
5 Social night & RSGB 80m CW CC
12 Portable evening at Whitely Woods & club fields
19 Summer fox hunt
26 Talk

5 WEST MIDLANDS

REGIONAL REP: TREVOR BAILEY, M0KMB, M0KMB@RSGB.ORG.UK

COVENTRY ARS
John, G8SEQ, 07958 777363
2 Pennine Way & amateur radio by Tommy Read
9 Bunkers on the air – Meriden, Haseley Knob & Church Lawford
16 3rd Round G2FDC Trophy
23 Video night
30 Radio workshop HF/VHF/UHF

GLOUCESTER AR&ES
Anne, 2E1GKY, 01452 548478, daytime, www.g4aym.org.uk
5 Operating/workshop
12 Visit to Courtyard Books, Bishops Cleeve
19, 26 No meeting - school closed

MIDLAND ARS
Norman, G8BHE, QTHR, 01214 229 787
7 Ragchew, training classes
14 Committee meeting & training classes
21 OTA, training classes
28 Laptop computer evening & training classes

MID-WARWICKSHIRE ARS
Don, G4CYG, 019 2642 4465
13 2m fox hunt
27 Technical topics

SOUTH BIRMINGHAM RS
Don, 0121 458 1603
2, 9, 16, 23, 30 Construction evening
5 Shack clear out & painting
7 Lecture in the main hall
12 Contest planning meeting
19 Committee meeting
26 OTA & field day meeting

STRATFORD UPON AVON DRS
G0CHO, 01608 664488, cousbey@theiet.org
12 BBQ & OTA
26 Construction competition

TELFORD & DARS
Mike, G3JKX, 01952 299 677, mjstreetg3jkx@blueyonder.co.uk
3 VHF field day, Long Mynde
7 Open house / HF OTA / committee

WYTHALL RADIO CLUB
Christopher Pettitt, G0EYO, g0eyo@blueyonder.co.uk
3 VHF NFD
5 Intermediate course exam
6 2m UKAC contest
13 Committee meeting
20 Homebrew

6 NORTH WALES

REGIONAL REP: MARK HARPER, MW1MDH, MW1MDH@RSGB.ORG.UK

DRAGON ARC
Stewart Rolfe, GW0ETF, 07833 620733
5 RSGB film
19 IOTA preparation

7 SOUTH WALES

REGIONAL REP: JIMMY SNEDDON, MW0EQL, MW0EQL@RSGB.ORG.UK

CHEPSTOW & DARS
Wil Oliver, MW6KGB, 01291 621342
6 Mobile phone networks by Roy Phillips

LLANELLI ARS
Craig, MW0MXT, 01269 840292, craig@mw0mxt.co.uk
5 On Air Night
12 Club Raffle
19 DVD Night
26 Junk Sale & Club Raffle

8 NORTHERN IRELAND

REGIONAL REP: PETER LOWRIE, MI5JYK, MI5JYK@RSGB.ORG.UK

No entries received this month

9 LONDON & THAMES VALLEY

REGIONAL REP: ALISON JOHNSTON, G8ROG, G8ROG@RSGB.ORG.UK

AYLESBURY VALE RS
Roger, G3MEH, 01442 826 651
14 Barbecue with Gerry, G7VFV and Mandy

BROMLEY & DARS
Andy, G4WGZ, 01689 878089
20 Activity evening

BURNHAM BEECHES RC
Dave, G4XDU, 01628 625 720
5 Getting ready for the McMichael rally
19 RAYNET by 2E0PTM

COULSDON ATS
Andy, G8JAC, g8jac@btinternet.com
12 Talk by RSGB regional rep Alison Johnson, G8ROG

CRYSTAL PALACE R&EC
Bob, G3OOU, 01737 552 170
2 A history of Woodside Brickworks by Edward Handley

DORKING & DRS
Garth, G3NPC, 01737 359472, garth@swansons.org.uk, www.ddrs.org.uk
27 Radio evening on the South Downs

EDGWARE & DRS
Mike, G4RNW, 020 8950 0658, michael.stewart5@ntlworld.com
8 Life after School by Eddie, M0HIE
22 Sundials by Julian, G4ZOD

NEWBURY & DARS
Richard, G3ZGC, 01635 46241, richard.jolliffe@vodafone.com
7 Soaring by Geoff, G3NAQ (extra meeting not on the normal date)

READING & DARC
Pete, G8FRC, 01189 695 697
8 Building ATUs by Peter, G3RZP
18 McMichael rally

SHEFFORD & DARS
David, G8UOD, 01234 742 757, www.sadars.co.uk
1 2m pedestrian DF hunt
3 VHF NFD
8 Club BBQ

SOUTHGATE ARC
David Sharp, M0XDS, david.sharp1@tesco.net
14 Learning Morse by Nigel, G0RPM

SURREY RADIO CONTACT CLUB
Ray, G4FFY, 01732357474
3 VHF NFD weekend event
5 Summer BBQ
19 Club fix-it & natter night

SUTTON & CHEAM RS
John, G0BWV, 020 8644 9945, info@scrs.org.uk
15 Where do our wavelengths come from? by Peter Chadwick, G3RZP

YOUR RSGB
SUPPORTING YOUR CLUB

WEY VALLEY ARG
www.weyvalleyarg.org.uk
2 Summer BBQ
16 Club night

WHITTON AMATEUR RADIO GROUP
www.warg.info
9 Welcome to Hamtests.co.uk by M0TZO

10 SOUTH & SOUTH EAST

REGIONAL REP: GAVIN KEEGAN, G6DGK, G6DGK@RSGB.ORG.UK

BASINGSTOKE ARC
Clive, G4ODM, 01256 326050
3 VHF field day - weekend event

BREDE STEAM ARS
Steve, 01424 720815, M0NUC@aol.com
3, 6, 13, 20, 27 At the shack

FARNBOROUGH & DRS
Derek, G3OFA, mail@farnboroughradio.org.uk, www.farnboroughradio.org.uk
14 Talk by Julian, M0XPJ
28 Construction contest

HASTINGS E&RC
Gordon, 01424 431 909, gordon@gsweet.fsnet.co.uk
www.herc.uk.net
24 Surplus/used equipment auction

HORNDEAN & DARC
Stuart, G0FYX, 023 9247 2846, www.hdarc.co.uk
6 Natter night/social evening
27 HF mobile DXing by Richard, M0UOO

MID-SUSSEX ARS
Peter, G4AKG, 01444 239371
2 Prep for NFD
9, 23 Shack night
16 Chairman's BBQ at QTH of Sue, G6YPY
30 Shack night & table top sale

SOUTHDOWN ARS
John, G3DQY, 01424 424 319
5 Barbecue at G6GVM
7 Operating at Hailsham shack
11 GB2PW at Polegate Windmill Fete

SWINDON & DARC
Den, M0ACM, 07810 317750, www.sdarc.net, deryckg3ykc@btinternet.com
1 Natter night & prep for VHF NFD
8 DF contest
15 Talk on RF measurements by Ian, G8JHC
22 Natter night & prep for IOTA contest
29 Natter night

TROWBRIDGE & DARC
Ian, G0GRI, 01225 864 698, E/W
7 Editing the RSGB Yearbook by Steve White, G3ZVW

TROWBRIDGE & DARC
Ian, G0GRI, 01225 864 698, E/W
21 Natter night

WORTHING & DARC
Roy, G4GPX, 01903 753 893
7 Echolink & VOIP by Matt, G8XIT
14 Discussion evening
21 Friedrichshafen and radio trip in Europe by Phil, G4UDU
28 Annual 2m fox hunt

11 SOUTH WEST & CHANNEL ISLANDS

REGIONAL REP: PAM HELLIWELL, G7SME, G7SME@RSGB.ORG.UK

APPLEDORE & DARC
Brian Jewell, M0BRB, 01237 473251
19 Antenna capacitor loading by Terry, G4CHD

BRISTOL RSGB GROUP
Robin, G3TKF, 01225 420442
12 'Christmas' meal at the Toby Carvery, Henbury

CALLINGTON ARS
Chris Harris, G7UDX, g7udx@me.com, 07973 418 371
7 Antenna myths by Ray, G8AWB

CORNISH RADIO AMATEUR CLUB
Steve, G7VOH, 01209 844939, G7VOH@btinternet.com
5 Committee meeting
7 Outside visit to the Four Lanes transmitter mast
10 Setting up for the Cornish Rally
11 Cornish Rally at Penair School, Truro
12 Computer section meeting

SOUTH BRISTOL ARC
Len, G4RZY, 01275 834 282
1 Preparing for VHF NFD, G4XCB
8 VHF NFD debrief, G7LPP
15 Thermionic valves
22 Digital camera evening, Muriel, G4ZYR
29 OTA with David, G7PKJ

TAUNTON & DARC
William, G3WNI, 01823 666 234, g3wni@btinternet.com
14, 28 OTA
21 CW practice

THORNBURY & SOUTH GLOUCESTERSHIRE ARC
Tony, G0WMB, 01454 417048, tonytsgarc@btinternet.com
7 Mobile DF foxhunt
14, 28 OTA
21 Video night

WEST DEVON RC
Jules Cuddy, M1AGY, 01752 291588
27 Bring and buy sale

12 EAST & EAST ANGLIA

REGIONAL REP: PHILLIP BROOKS, G4NZQ, G4NZQ@RSGB.ORG.UK

BITTERN DX GROUP
Linda, G0AJJ, 01692 404154, secretary@bittern-dxers.org.uk
3 VHF NFD
8 Informal club meeting
24 RSGB IOTA Contest
29 Planning for August events

BRAINTREE & DARS
John, M5AJB, 01787 460 947
5 70cm DF hunt

CHELMSFORD ARS
Martyn, G1EFL, 01245 469 008, www.g0mwt.org.uk
6 Constructors competition by Carl, G3PEM
13, 20, 27 Club net night
14 Committee meeting - Danbury

COLCHESTER RADIO AMATEURS
Kevan, 2E0WMG, 07766543784, kevan2e0wmg@live.co.uk
15 Rally & event planning

DARENTH VALLEY RADIO SOCIETY
Ray, G0FDU@G0KDV.com
14 OTA & natter night
28 Fox hunt

GORLESTON ARS
David, G3OEP, QTHR, 01493 662 323
31 Lunch time meeting at the Short Blue Hotel, Gorleston

HAVERING & DARC
John, M0UKD, 07817365354, john@m0ukd.com
7 Quarterly business meeting
14 Club BBQ at Fairkytes Arts Centre
21 Informal club evening
28 A fun look at numerology by Fred Curtis

LEISTON ARC
Dave, G4HUP, 01473 737 717, g4hup@btinternet.com
6 Foxhunt on foot with M0BCT

LOWESTOFT & DISTRICT ARC
Phil, G0JSG, 01502585448, pholden433@btinternet.com
1, 8, 15, 22, 29 Club night at shack

NORFOLK ARC
Chris Danby, G0DWV, 01603 419204, cmdanby@btinternet.com
4 Barford radio rally
14 Informal, construction, workshop evening; RSGB club contest
21 Trophy fox hunt
28 Informal, construction, workshop & Bright Sparks evening

SOUTH ESSEX ARS
Norman, M0FZW, 01268 692776, secretary@southessex-ars.co.uk
10 Canvey Island Yacht Club Fun day
14 DVD & Radio chat night
18 Castle Point Show, Waterside, Canvey Island

13 EAST MIDLANDS

REGIONAL REP: JIM STEVENSON, G0EJQ, G0EJQ@RSGB.ORG.UK

BOLSOVER ARS
postmaster@g4rsb.org.uk, www.g4rsb.org.uk
7 Natter night
14 50MHz talk by Don, G4KXW
21 Morse night
28 Committee meeting

BRIGG & DARC
John, 2E0III, 01652 632938, info@bdarc.co.uk, www.bdarc.co.uk
22 Satellites

DERBY & DARS
Richard Buckby, radio@dadars.org.uk
6 Junk sale
13 Committee meeting

EAGLE RG
Terry, G0SWS, 01507 478590
13 Shackelton patrol by Brod, G4RPB

FRISKNEY AND EAST LINCOLNSHIRE COMMUNICATIONS CLUB
Chris M0MFP, 01507 442240
6 Kites & radar by G7AJP

HINCKLEY ARS
John, M0JAV, 07836 731544, 0jav@lowgables.co.uk,
7 Antenna workshop

KETTERING & DISTRICT ARS
Stephen Froggatt, G1LMN, stevelornaf@aol.com
1, 8, 15, 22, 29 Training night 7 -9pm
4 Open meeting 11am followed by social meet
6, 13, 20, 27 Operating night 7 - 9pm
7, 14, 21, 28 'Gentleman's group' afternoon
11, 18, 25 Social meet from 10am

LINCOLN SHORT-WAVE CLUB
Pam Rose, G4STO, 01427 788356, pamelagrose@tiscali.co.uk
3 VHF NFD at Brattleby, weekend event
7 Contest debrief
10 G5FZ/P at Boultham Summer Fair
14 Planning permission by M5ZZZ
17, 21, 24, 28 G5FZ OTA from the shack
31 GB2CWP at East Kirkby Aviation Heritage Centre; G5FZ OTA from the shack

LOUGHBOROUGH & DARC
Chris, G1ETZ, 01509 504 319
6 Radio ramble
13 Kite night (subject to WX)
20 2m DF - new rules
27 Practical evening

RAF WADDINGTON ARC
Judy Rowlands, M6LQO, 07544 456422
j.rowlands2@ntlworld.com
1, 15, 22, 29 Shack and chat night
8 Antennas talk by Bob, G3VCA
17 Special event station weekend at North Coates Flying School

SPALDING & DARS
Graham Boor G8NWC, 07947 764481, secretary@sdars.org.uk, www.sdars.org.uk
6 144UKAC at the Portakabin
16 Construction contest

STENIGOT CHAIN HOME ARC
Steve Burke, M5ZZZ, 01507 600202, m5zzz@btinternet.com
16 Modern radar techniques by Brian, G7AJP

FREE MEMBERS' ADS

Charges are waived for Members' Ads submitted by e-mail to memads@rsgb.org.uk. One ad per member per month; other important terms & conditions apply (see grey box on page 89).

FOR SALE

60ft VERSATOWER (4 x 16ft sections) with base, header unit, upper sleeve bearing, two winches; buyer dismantle and arrange transport. Daiwa DR 7500a rotator unused last 15 yrs, £100. Icom IC 751 £200; kept as standby since 1999. Peter, G2AFV, 01226 287301 (Barnsley).

ALINCO DX-77 HF all mode xcvr, as new with complete packing, manual, leads and completely boxed in carton. Separate 10W, 100W sections. Can be used mobile. £250. Trio as Kenwood, 520 analogue xcvr, not working but with Workshop Manual, £60. John, G3DQY, 01424 424319 (East Sussex).

AMATEUR RADIO WORLD PREFIX MAPS. Brand new world prefix maps, I will post rolled up in a postal tube so it will arrive uncreased and in pristine condition. £6.50 + £3.50 recorded delivery postage which includes insurance. Michael Whitehead, GM0PHW, 01501 822016, gm0phw@hamcall.co.uk (Strathclyde).

ATTENTION ALL DXers, 6kVA diesel generator mounted on a trailer ready to tow away (tow ball), £600 ono. GM1GEQ, 07733 231 232, QTHR (Edinburgh).

BHI NEIM 1031 noise eliminating module, £75. SONY PCS300P video conferencing high quality colour camera £60. Both items as new. Adrian, G4UVZ, 01823 421751, adrianwhatmore248@btinternet.com (Taunton).

DRAKE TR7, PS7 PSU, orig manual & non-Drake fist mic, all filters fitted, £425. Drake MN2700 2kW ATU (matches TR7) £200. KW E-Zee Match £50. Yaesu FT101ZD MK3 transceiver, orig manual & fist mic, boxed, late s/no, £250. All inspect / collect. Dave, G0MJK, 01604 469962, d.linnell@ntlworld.com (Northampton).

EARLY WIRELESS WORLD. Is anybody interested in October 1950, September 1951 and from January 1953 up to the current Wireless World? I would hate to recycle-bin something so central to my education and career so please come and adopt them! Brian Hughes, 01438 871531, whitwellsound@waitrose.com (Whitwell, Hitchin, Herts).

HEATHKIT DX-100 AM TX plus rare SB-10 SSB adapter both in near immaculate wkg condx. (JPEG's available). 100W AM / CW / SSB, VFO / Xtal, 80 through 10m. Original or copy of manual available. Offers, SMS only please, 07549 160011 (Suffolk).

HOLIDAY WITH YOUR AERIALS. Self-catering, smoke-free studio cottage near the middle of a long 3-acre garden. Sleeps 2. Peaceful, electrically quiet rural area; non-amateur owner is happy for you to erect temporary aerials. Under £200 per week, less in low season. Diana, 01308 485301 (W Dorset).

HOLIDAY LETS. Fully equipped 4 bedroom bungalow and static caravan in 1½ acre grounds located 1¾ miles from A39 and within easy reach of North Cornwall beaches. Pets welcome. Use my aerials or bring your own. Ring for brochure. Jim Winnard, G3SPE, 01566 781493 (Bude area).

MULTI-TAPPED 500kHz antenna loading coil with variometer. Length 23cm, diameter 17cm, 70 turns with 18 turn variometer. Heavy duty multi-stranded wire. Pictured in RadCom April 2008 page 80 (Antennas, G3LDO). £30 ono to include postage. Peter Ball, G3HQT, 01489 570735 (Warsash, Southampton).

PHILIPS DVDR5500 DVD RECORDER-PLAYER with Freeview built in. TV in analogue or digital, with remote and instructions. £45. Also seven computer DVD disc drives and AED PK232 mode control, £50. Ring for details. S F Sephton, G3IJL, 0208 749 1454 (London W12).

QRT DUE TO HEALTH. Complete station including FT2000 with PEP2000. Please email for list and prices; individual item photos if required. G0EOL, QTHR (enclose SAE), or billg0eol@o2.co.uk (Cheshire).

SPY SET MK 123. Very rare in good condx. Requires McMurdo plug. Set located in East Sussex. Offers around £450. Further details from Don, G4ABI / 5B4AGQ, mardon@cytanet.com.cy (Pafos, Cyprus).

STRUMEC P60 TILTOVER TOWER with head unit and winches. Rotator and TH6 beam (both needing repair), plus coax and control cables. Also 25ft tower with 9-ele crossed 2m beam with rotator. £600 ono. G3FFH, 01297 445518, jon.g3ffh@btinterhet.com (Lyme Regis).

YAESU FT-450 exc condx, boxed, manual, hand mic, £320. Racal RA17L, good condx, reprint manual, spare valves, £80. Sony ICF-2001D, VGC, manual, power supply, £130. BC221, internal PSU, £25. Buyer collects. Bob Hughes, G3HAG, 0114 274 7950 (Sheffield).

YAESU FT-60R in mint condition, very little used. Boxed with PSU and all accessories plus a spare battery pack. £75. Jack, G1NZH, 01892 784128, golf1nzh@virginmedia.com (Wadhurst).

YAESU FT2000 with PEP2000 HF/6m base, MH-31B8 mic, box and manual. As new, £1400. Kenwood TM-G707 2m/70cm dual band, mic, box and manual. As new, £165. QRT for health reasons. Full station available, please email for list/prices. Bill, G0EOL, 01606 594205, billg0eol@o2.co.uk (Winsford, Cheshire).

WANTED

COLLINS A-LINE AND S-LINE equipment etc to complete or improve my own personal collection. A good home will be provided. Can collect and pay cash. Steve Westell, G3YFG, 01254 822222 or 07793 665000, g3yfg@btconnect.com (Clitheroe).

DESPERATELY SEEKING some bits for ICOM 80's IC-211E - mic, manual and 13.8V power lead. Will pay ANY reasonable price - PLEASE HELP! Jeff, G8WQC, 07783 397460 (Slough).

ENTHUSIAST TO EXPERIMENT making, testing and erecting HF antennas in my fully equipped workshop and laboratory at Finsbury Park, London. Marcelo, LW3EOV, 07986 699554, marcelo0680@yahoo.co.uk.

HF TRIBAND YAGI. 3 or 4 ele preferred. Looking to purchase then I can donate it to Scout Group. Can dismantle / collect in South East / Midlands. Projects considered. Steve, M0BPQ, 07866 501288, steve@m0bpq.com (Enfield).

I RESTORE AND OPERATE valve clandestine radios and I would like to acquire further examples, especially wartime SOE equipment like a Mk. 3 transmitter or even a Mk. 7 Paraset. Can you help please? Ken, G3XSJ, 01453 845013 (Gloucestershire).

KW2000B & TR7 POWER SUPPLY UNIT. Collector looking for original working power supply for KW2000B transceiver, also power supply for Drake TR7 transceiver, any condition. Jan, G0BBL, QTHR, 01225 754542, Jan.Verduyn@gmail.com (Wiltshire).

MORSE KEYS wanted please. Avid collector looking for straight keys, bug keys, spark keys etc. In particular Marconi. Please ring or e-mail John, G0RDO, 01626 206090, john@morsemad.com (Newton Abbot).

SEMICONDUCTORS. LM211H. DM9099(N) or MC852(P). Other DTL. Unijunctions (not programmable). 2N4923. BCY70. Old / early logic chips (not TTL). Godfrey G4GLM, 0208 958 5113, cgmm2@btinternet.com, 63 The Drive, Edgware, Middlesex, HA8 8PS.

SILENT KEY CLEAROUT or just not needed. I collect QSL cards for their historic interest, preferably from periods before 1970. Please don't throw them away. I can collect or arrange collection. Tony, G4UZN, 01132 693892, AQuest1263@btinternet.com (Leeds).

TRANSVERTER INTERFACE required. Preferably made by Microwave Modules or Downeast Microwave but homebrew / other makes considered. Need to marry up a Mutek transverter and an IC7400 without butchering it! Peter, G4URT, peter.hutchison@btinternet.com (East Sussex).

WORKING HF TRANSCEIVER. Multi band, preferably with a built in ATU, but this is not a must. Can be collected within 50 miles of Luton. Cash paid. John, M6JVB, 07845 324091, johnscobb@hotmail.com.

YAESU FT840 HF transceiver. Must be in excellent condition with box if possible and original manuals etc. Prefer non-smoking owner. Standard C178 dual band VHF / UHF hand-held transceiver. In working condition. Also seeking a battery case for a Standard C178. Contact Ray, G4OWY, 0777 649 5381 after 6pm please, g4owy6@googlemail.com (Dorset).

Continued on page 88

SILENT KEYS

We regret to record the passing of the following members:

Mr S Southgate, G8FF	30/4/2010
Mr K A McGonigal, GI3ZSC	10/2/2010
Mr E R Flower, G0GCN	24/4/2010
Mr W G Lycett, G4EQG	9/3/2010
Mr P C Swann, G3WWX	10/5/2010
Mr G C Richardson, G0ESJ	19/4/2010
Mr G W Hill, RS90065	14/4/2010
Mr T R Lees, G8ROR	15/5/2010
Dr G A H Heaney, G3MDQ	8/5/2010
Mr D J Archer, G4GKE	
Mr T E Price, G3EMK	5/5/2010
Mr D Rollitt, G3XYP	15/5/2010
Mr P F Jones, GW3FPF	18/5/2010
Mr C J Pearson, G4VFO	
Mr S Mason, G0JMY	1/2010
Mr T A Wilson, 5B4AFB/G3PGG	27/4/2010
Mr K W Hedges, G3XMR	19/5/2010
Rev V H Jones, G0GSW	
Mr C Gutteridge, G7GIV	
Mr A G Edwards, G3MBL	7/5/2010
Mr E V Lawrence, G1EOQ	22/3/2010
Mr S W Rees, GW8XZJ	2/5/2010
Mr F J Ewing, GM4LHM	4/5/2010

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ACOM

ACOM amplifiers are without doubt the best-selling tube amplifiers in the world. This success is based on the selection of the best components, the factory's dedication to military-specification production techniques and our obsession with after-sales service. Hundreds of UK amateurs now have these fine amplifiers in their shacks and all say that for quality and value for a tube amplifier, ACOM simply cannot be beaten.

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We've a fantastic choice of VHF antennas to offer you, all top quality and excellent value for money. Choose from
- **G0KSC**-designed **Loop-Fed Antenna** with the cleanest patterns
- Traditional **Eagle** antennas with split dipole feed
- Our **Eagle Moxons** and **Supermoxons.**

We offer boom sizes from 2 to 50 feet, truly something for everyone.

Moxons - Moxon Rectangle

•The greatest gain per boom length available,
•Excellent front/back ratio
•Modest wingspan make them an excellent choice.
•Models for 2,4,6 and 10m
10M model is only 12ft 6" across, lightweight and **only £149.95**

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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.

New from ACOM - ACOM 1011. Uses a pair of rapid warm-up 4CX250B tubes for 700W SSB/CW and 500W RTTY output.

1011	**160-10**	**700W o/p**	**Manual tune**	**£1499**
1010	160-10	700W o/p	Manual tune	£1599
1000	160-6	1000W o/p	Manual tune	£1999
2000A	160-10	2000W o/p	Automatic	£4995
2000	160-6	2000W o/p	Manual tune	TBA

We picture opposite the highly-successful SPE Expert 1K-FA solid-state amplifier. Nothing comes near the Expert for operating convenience and versatility.

* 2 Antenna inputs, 4 outputs
* Choice of two ants settings per band
* Up to 1000W output, auto ATU
* Quiet, effortless operation
* CAT control from modern transceivers
* Full HF AND 6m coverage
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E & O E

RALLIES & EVENTS

Members of the RSGB Regional Team will be present with a bookstall at the rallies this month marked with an RSGB diamond.

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3 JULY - 1st STOCKPORT RALLY (formerly REDDISH RALLY) - Walthew House, Shaw Heath, Stockport SK2 6QS. OT 10.00, £1, TS, DIS, CP, C. Tables £10 each. Details Bernard, G3SHF, 01625 850088 (daytime) or Nigel, G0RXA, 0161 428 8413 (eves), info@reddishrally.co.uk [www.reddishrally.co.uk].

3 JULY - NEW DATE - NEW VENUE - BANGOR AND DISTRICT ARS RALLY - Donaghadee Community Centre, County Down BT21 0HB. OT 12 noon, TS, free B&B, SIG. Bill, GI4AAM, 028 9181 6707, e-mail bill.langtry@btinternet.com [www.bdars.com].

4 JULY - BARFORD NORFOLK RADIO RALLY - Barford, 9 miles SW of Norwich, close to A11 and A47. OT 9am (traders from 8am), £1, CP, TI, CBS, B&B, C. Contact David, G7URP, 01953 457322 or e-mail radio@dcpmicro.com [www.norfolkamateurradio.org].

11 JULY - CORNISH RAC 47th MOBILE RALLY - Penair School, Truro, Cornwall, TR1 1TN. TS, B&B, C, TI, CP. OT 10.30, £2. Details Ken, G0FIC, 01209 821073, e-mail ken@jtarry.freeserve.co.uk. [www.cornishamateurradioclub.org.uk].

18 JULY - HOT IRON QRP DAY - Upton Bridge Farm, Long Sutton, Langport TA10 9NJ. SIG, B&B, LEC, C, LB, FAM. Free entry. Tim Walford, G3PCJ, 01458 241224, e-mail walfor@globalnet.co.uk [www.walfordelectronics.co.uk].

18 JULY - MCMICHAEL RALLY AND BOOT SALE - Reading Rugby Club, just off the A4 east of Reading, £2, TI, CP, LB, C, SIG, WIN, TS, CBS. OT 9.30. Details Pete, G8FRC, 01189 695697, e-mail g8frc@radarc.org [www.McMichaelRally.org.uk].

18 JULY - MACMILLAN [NORTHAMPTON] HAMFEST - Roade Village, Northamptonshire. No entry fee, no traders fee, only donations to Macmillan. All refreshment monies to Macmillan too. Contact G6NYH on 01604 234333 [www.tetra2000.com].

23-25 JULY - LITHUANIAN NATIONAL CAMPING HAMFEST - "Oak Valley" ("Azuolu slenis"), near highway Riga-Siauliai-Kaliningrad, Lithuania. You can get a lift from Vilnius or other places – ask ly1dl@azzcardfile.net. See the Crazy Acoustic Contest live! Special event station LY2010LRMD operating 24h/day. Details at www.lrmd.lt/saskrydziai_en.htm.

25 JULY - HORNCASTLE SUMMER RALLY - Horncastle Youth Centre, Willow Road, Horncastle, Lincolnshire LN9 6DZ. £1.50, DF, C. Tony, G3ZPU, 01507 527835.

25 JULY - COLCHESTER RADIO AMATEURS ANNUAL RALLY - St Helena School, Sheepen Road, Colchester CO3 3LE. OT 10.00, TI, CP, TS, FM, CBS B&B, SIG. Details Brian, 01206 822547, e-mail brianfitz@aspects.net.

31 JULY-1 AUGUST - AMSAT-UK INTERNATIONAL SPACE COLLOQUIUM - Holiday Inn Hotel, Egerton Road, Guildford, GU2 7XZ. Presentations on amateur satellite communications and meet the satellite builders. GB4FUN in attendance. [www.uk.amsat.org/content/view/704/283].

1 AUGUST - KING'S LYNN ARC RALLY & CAR BOOT - King's Gaywood Community Centre, PE30 4DZ. OT 10.00, £1.50, TS, CBS, B&B, C, CS (by prior arrangement). Ray, G3RSV, 01553671307, e-mail ray-g3rsv@supanet.com [www.klarc.org.uk].

1 AUGUST - LORN RADIO AMATEUR RALLY - Crianlarich Village Hall, Crianlarich, near Oban FK208QN. OT 10.30 TS, C, WIN. GM0ERV, e-mail gm0erv@sky.com or MM1AVR, e-mail stewart.mciver@btinternet.com.

8 AUGUST - FLIGHT REFUELLING ARS HAMFEST - Cobham Sports and Social Club Ground, Merley, Nr. Wimborne, Dorset BH21 3AA. TI S22 (V44), CP, OT 10.00, TS, CBS, LB, C. Details Mike, M0MJS, 01202 883 479, e-mail hamfest@frars.org.uk [www.frars.org.uk].

13 AUGUST - COCKENZIE & PORT SETON ARC 17th ANNUAL MINI-RALLY NIGHT - Community Centre, Main Hall, Port Seton. Bring along your own 'junk' and sell it yourself. Tables on first come first served basis. £2 for everyone. OT 18.30 to 21.30.

15 AUGUST - FRISKNEY & EAST LINCOLNSHIRE COMMUNICATIONS CLUB RALLY - The Frisknet Village Hall, Church Road, Friskney, Lincs. 6.5 miles south of Skegness. OT 10.00 to 14.30, £1.50, CP, C, WIN, TI S22, DIS. Details Bren, 2E0BDS, 01754 820204, e-mail felcc@btinternet.com [www.felcc.webs.com].

22 AUGUST - NEW VENUE - NEW DATE - RUGBY ANNUAL RADIO RALLY - Princethorpe College, Princethorpe, Rugby CV23 9PX (SP395710). OT 10am – 4pm, £2, pitches £14 on the day. Contact Tony, 07759 684411. [www.rugbyats.co.uk].

29 AUGUST - MILTON KEYNES ARS RALLY - Bletchley Park, Sherwood Drive, Bletchley, Milton Keynes MK3 6EB. TI S22, TS, SIG, £2 (50p for 14 years and younger). OT 9.30. Why not make this a family day and visit the Betchley Park museum too? Steve Goodall, G6KJU, 07866 673 192, e-mail rally@mkars.org.uk [www.mkars.org.uk].

30 AUGUST - HUNTINGDONSHIRE ARS BANK HOLIDAY MONDAY RALLY - St Neots Community College, Barford Rd, St Neots, PE19 2SH. OT 10.00, TI, CP, CBS, B&B, C, TS, RSGB bookstall. E-mail hunts.hams@yahoo.co.uk [www.hunts-hams.co.uk].

5 SEPTEMBER - TELFORD HAMFEST - Enginuity Technology Centre, Coalbrookdale, Telford TF8 7DU. OT 10.30. TI S22 & GB3TF 433.200MHz. TS, SIG, discounted admission to Enginuity Centre. Details from Martyn, G3UKV, 01952 255416 [www.telfordhamfest.co.uk].

11/12 SEPTEMBER - GATWICK FAMILY RADIO WEEKEND - Hunters Moon, close to Gatwick on the A217, RH6 0HU, TQ 262438. Bring some vintage(ish) radio. Military vehicles of all radio types welcome. This year the Ferret Club are coming along. The site has lots of room to erect experimental aerials (surprisingly, there is no aircraft noise), is level and congenial for a caravan, vehicle or a tent - while you play radio the family can go to the local sports centre, swimming, Brighton or the Bluebell Railway, etc or just lay back and enjoy the sun and the surroundings. Saturday night BBQ and large bonfire. Mike, M1CCF, 0208 654 2582, m1ccf@talktalk.net [www.radioclubs.net/m0vog].

12 SEPTEMBER - BOOT FAIR/OPEN DAY AT THE MUCKLEBURGH COLLECTION - Muckleburgh Collection military museum, Weybourne, Norfolk. For one day only, admission to the museum, restaurant and shop will be free, providing an unusual opportunity to visit the country's largest privately owned military museum without charge and a great day out for groups, individuals and families. Radio clubs, individual amateurs, military enthusiasts and general stallholders welcomed. Pitches £5.00 on the day. No traders. All enquiries to Bob Finch, G0HYZ, 01263 838198.

12 SEPTEMBER - TORBAY ANNUAL COMMUNICATIONS FAIR - Newton Abbot Racecourse, Newton Abbot, Devon TQ12 3AF. TS, B&B, C, DF. Details by e-mail to rally@tars.org.uk.

13-18 SEPTEMBER - THE 15th WORLD ARDF CHAMPIONSHIPS - Opatija, Croatia [www.ardf2010.com].

18 SEPTEMBER - NEW RALLY - THE FOG ON THE TYNE RALLY - Whitehall Road Methodist Church Hall, Bensham, Gateshead NE8 4LH, organised by Angel of the North ARC & South Tyneside ARS. £1.50, C. Nancy Bone, G7UUR, 0191 477 0036 (eves).

19 SEPTEMBER - NEW DATE - GREAT NORTHERN HAMFEST - Metrodome Leisure Complex, Barnsley S71 1AN. OT 11.00, DF, TS, SIG. Details Ernie, G4LUE, 01226 716339.

26 SEPTEMBER - HOLSWORTHY AMATEUR RADIO RALLY - Holsworthy Community College, Victoria Hill, Holsworthy EX22 6JD. TI V36 (S18). Details Roger Williams, 07773 983691, e-mail g8yrw@yahoo.co.uk.

26 SEPTEMBER - 50 YEARS OF AMATEUR RADIO HISTORY GARAGE SALE - from the estate of G3IOZ (SK). Extensive valve collection, WW2 and vintage equipment, parts. Close to M40 J4 (High Wycombe). Details from Larry, G4GZG, by e-mail to g4gzg@yahoo.com.

26 SEPTEMBER - BELGIAN NATIONAL AMATEUR RADIO & COMPUTER RALLY - Exhibition Centre, Charleroi, Belgium. OT 09.00. International TS, FM. Details Michel, ON7FI, on 0032 64 849 596 or by e-mail to michel.dewyngaert@skynet.be [www.on6ll.be].

1 & 2 OCTOBER - NATIONAL HAMFEST - brought to you by the RSGB in association with the Lincoln Short Wave Club. George Stephenson Pavilion, Newark and Nottinghamshire Showground, Lincoln Road, Winthorpe, Newark NG24 2NY (close to junction of A1/A46/A17). TS, B&B, CB, C, SIG, Morse proficiency tests on demand, RSGB Bookstall, RSGB Services & Committees, DF, FM [www.nationalhamfest.org.uk].

3 OCTOBER - AUTUMN MILITARIA & ELECTRONICS & RADIO AMATEUR HANGAR SALE - Hack Green secret Nuclear Bunker, Nantwich, Cheshire, CW5 8AL. OT 10.00, £2.50. Contact Rod Siebert, 01270 623353 or e-mail coldwatr@hackgreen.co.uk [www.hackgreen.co.uk].

8-10 OCTOBER - RSGB CONVENTION - Full convention programme with lectures for all interests and all levels of technicality [www.rsgb.org/rsgbconvention].

17 OCTOBER - BLACKWOOD AND DISTRICT ARS RALLY - Coleg Gwent, Risca Road, Cross Keys NP11 7ZA.TI S22, CP, OT 10.30/10.40, £2. TS, B&B, SIG, C, WIN. Details Dave, GW4HBK, 01495 228516, e-mail gw4hbk@talktalk.net [www.gw6gw.co.uk].

17 OCTOBER - NEW DATE - HORNSEA AMATEUR RADIO CLUB RALLY - Floral Hall, 7 The Esplanade, Hornsea, East Yorks HU18 1NQ. OT 10.30, CP, TS, B&B, SIG RSGB, RAFARS, LB, C, DF, WIN. Details from Rick, M0CZR by e-mail to R106221@aol.com or Duncan, G3TLI, e-mail g3tli@hotmail.co.uk [www.hornseaarc.co.uk].

17 OCTOBER - GALASHIELS AND DISTRICT ARS RADIO RALLY - The Volunteer Hall, St Johns Street, Galashiels, Scottish Borders TD1 3JX. OT 11.00/10.45, £2.50. B&B, TS, C, WIN. Details from Jim, GM7LUN on 01896 850245 or e-mail mail@gm7lun.co.uk.

SPECIAL EVENT STATIONS FOR JULY 2010

These callsigns are valid for use from the date given, but the period of operation may vary from 1 - 28 days before or after the event date. Operating details are provided in an abbreviated form as follows: T = 160m; L = 80 or 40m; H = HF bands (30 - 10m); V = 6 and/or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet. Details published here are kindly provided by Ofcom.

Please note that the QSL Bureau sub-manager for all special event station callsigns (GBxAAA-GBxZZZ) has recently changed and is now Mrs Davina Williams, M0LXT, 20 Neale Close, Wollaston, Northamptonshire, NN29 7UT, e-mail QSLTREK@hotmail.co.uk, web site www.gb-special-event-qsl-status.webs.com. Will organisers of special event stations please ensure that they lodge plenty of envelopes with M0LXT?

Date	Callsign	Phonetics	Location	Bands	Keeper
01/07/2010	GB5AFD	Armed Forces Day	Dinas Powys	TLH2	GW4XKE
	GB4HFH	Help For Heroes	Dinas Powys	TLH2	GW4XKE
	GB2WAD	Waddington Air Display	RAF Waddington, Lincs	LH2	M0OOO
	GB2AFD	Armed Forces Day	Bletchley Park	LHV27	M1CCF
	GB0CTC	Crook Town Carnival	Crook, Co. Durham	TLHV27	G7OCK
	GB2HSR	Hollowell Steam Rally	Northamptonshire	LH27	M0VNK
02/07/2010	GB4FLB	Front Line Branchline	Havenstreet, Isle of Wight	LH2	G0VZV
03/07/2010	GB4BLC	Bedworth Lions Club	Nuneaton	LH27	G8GMU
	GB5WRS	White Rock School	Piagnton, Devon	LH2	G3LHJ
04/07/2010	GB0IS	Theydon Bois	Theydon Bois, Essex	LHV2	G0TOC
07/07/2010	GB0RAF	Royal Air Force	HMYOI Deerbolt	LH2	G4HIY
09/07/2010	GB2RVS	Rettendon Village Show	Rettendon, nr Chelmsford	LHV27	G4ZPE
	GB1SKT	South Knighton Telegraph	Bickington, Devon	LHV27	M0XIG
10/07/2010	GB0HHC	Hull & Humber Clipper	Paull, nr Kingston-Upon-Hull	LH2	G4VHM
	GB2IYC	Island Yacht Club	Canvey Island, Essex	L2	G4UVJ
	GB0AWT	Aslockton and Whatton Trust	Aslockton, Notts	LH27	G0FOG
16/07/2010	GB0FWW	Fir Park Wings & Wheels	Market Rasen, Lincs	LHV2	M0OOO
17/07/2010	GB0WKS	West Kent Society	Tunbridge Wells, Kent	TLHV	G3KIP
18/07/2010	GB2CPS	Castle Point Show	Canvey Island, Essex	LH27	G7IIO
	GB6MMR	McMichael Mobile Rally	Sonning, Berkshire	2	M5ALG
19/07/2010	GB4WP	War & Peace	Beltring, Kent	LHV27	M1CCF
23/07/2010	GB2QV	Queen Victoria	Wirral	LH	M0BZZ
24/07/2010	GB5HHD	Huey Helicopter Day	Preston, Lancs	TLHV2	G3UCA
25/07/2010	GB0YD	Yorkshire Day	Pontefract, Yorks	LH2	G0BPK
	GB4SBS	2nd Bracknell Scots	Kings Langley, Herts	TLHV27	M0XDF
26/07/2010	GB2CS	Cheshire Scouts	Knutsford, Cheshire	LH27	G1GYJ
29/07/2010	GG100GG	100yrs Girl Guiding	Leeds, West Yorkshire	LHV27	M0ACL
30/07/2010	GG100EHG	East Hampshire Guides	Shedfield, Hants	LH2	G0FYX

30 & 31 OCTOBER - NORTH WALES RALLY - John Bright School, Llandudno. TS, RSGB Bookstall, CP. Details from Liz Cabban, GW0ETU on 01690 710257 or e-mail lizcabban@vodafoneemail.co.uk.

7 NOVEMBER - WEST LONDON RADIO & ELECTRONICS SHOW (Kempton Rally) - Kempton Park racecourse, Staines Road East, Sunbury on Thames, Middlesex TW16 5AQ. OT 10.00. TS, FM, DF, CP free, RSGB, LEC, TI S22 (V44). Paul, M0CJX, 0845 165 0351, info@radiofairs.co.uk [www.radiofairs.co.uk].

13 NOVEMBER - ROCHDALE & DISTRICT RS TRADITIONAL RADIO RALLY - St Vincent's Church Hall, Caldershaw Road, Rochdale OL12 7QL. OT 10.15/10.30am, £2.50 concessions for under 12 and seniors, B&B, C, Tables only £5 and they encourage all vendors to bring along all their radio related 'junk' with construction in mind. No computers (well, maybe a couple!). Details Dave, G0PUD, QTHR, 07710 243107, e-mail dave.shaw1@sky.com. [www.radars.me.uk].

21 NOVEMBER - 33rd CATS RADIO & ELECTRONICS BAZAAR - 1st Coulsdon Scout HQ, r/o Council Car Park, Lion Green Road, Coulsdon, Surrey. 10.00-13.00, £1, B&B, C, DIS, DF, CP free. Details Andy, G8JAC, e-mail secretary@catsradio.org.

21 NOVEMBER - PLYMOUTH RADIO CLUB RALLY - Elm Community Centre, Leypark Walk, Estover, Plymouth PL6 8UE. CP, TI, OT 10.00, £2, TS, B&B, C, WIN.

28 NOVEMBER - BISHOP AUCKLAND RADIO AMATEURS CLUB RALLY - Spennymoor Leisure Centre, Co Durham DL16 6DB. CP, TI S22 (V44), OT 10.15/10.30, £1.50 (U14 free). TS, B&B, C, LB, DF, FAM. Details Mark, G0GFG, 01388 745 353.

6 FEBRUARY 2011 - 26th CANVEY RADIO & ELECTRONICS RALLY - 'The Paddocks', Long Road, Canvey Island, Essex SS8 0JA [southern end of A130]. Free CP, OT 10.30, £2, C, DF, TS. Dave, G4UVJ, 01268 697978 (eves) [www.southessex-ars.co.uk].

19 MARCH 2011 - LAGAN VALLEY ARS RALLY - The Village Centre, 7 Ballynahinch Road, Hillsborough. OT 11.30, TS, CP, C. Contact Jim, GI0DVU, 02892 662270, e-mail jim.henry@ntlworld.com.

20 MARCH 2011 - 27th YEOVIL QRP CONVENTION - Digby Hall, Hound Street, Sherbourne, Dorset DT9 3AA (adjoining the central shopping car park). OT 9.30am, TI S22, CP, TS, LEC, B&B, C, DIS. Contact Derek, M0WOB, 01935 414452.

This list shows all rallies and events we are aware of as at 8 July 2010. If your rally or event is not listed, TELL US ABOUT IT! Send an e-mail to GB2RS@RSGB.org.uk and your event will appear here and on GB2RS. It's free! Guidelines for submissions: Please let us know your event details as early as possible. If you submit by e–mail (to GB2RS@RSGB.org.uk) then we suggest you set your e–mail program to request a 'read' receipt so you can be sure we've seen the details.

TI Talk-In; CP Car Park; £ Admission; OT Opening time - time for disabled visitors appears first, (eg 10.30/11am); TS Trade Stands; FM Flea Market; CBS Car Boot Sale; B&B Bring and Buy; A Auction; SIG Special Interest Groups; MT Morse tests; MA Foundation Morse Assessments; LB Licensed Bar; C Catering; DF Disabled Facilities; WIN prize draw, raffle; LEC Lectures/Seminars; FAM Family attractions; CS Camp Site.

RSGB MEMBERS' ADVERTISEMENTS

RSGB members wishing to place an advertisement may do so free of charge by e-mail, or by post provided the advertisement is accompanied by a payment of £5.00 to cover administration costs.

The following terms and conditions apply to all Members' Advertisements.

1) In order to qualify for free insertion, Members Ads must be submitted by e-mail to memads@rsgb.org.uk. Please ensure you include .uk on the end of the email address.
2) **Your advert must clearly show whether it is For Sale or Wanted and must include your name, callsign or membership number, telephone number and postal town, in that order.**
3) The Ad may not contain more than 40 words, excluding the information in (2), and may be edited for readability at our sole discretion. Longer ads may be accepted if there is a good reason, eg a shack clearance on behalf of a SK member; e-mail us and ask.
4) Not more than one ad per month will be accepted from any member. 'Recurring' ads will not be accepted, but members may re-submit the same advert each month if they wish.
5) E-mailed adverts may optionally include one photograph of the item(s) being offered. Images must be attached as a jpg file, at least 800 pixels wide and of good quality. By submitting any image you warrant that you own the copyright and that you permit the RSGB to use it in any way. We will endeavour to publish photographs with ads as space permits but cannot guarantee to publish any particular photograph.
6) Adverts will be published at the first available opportunity but no guarantee can be given as to when a particular ad will appear.
7) The RSGB believes that it is inappropriate for members trading in radio equipment in any way to place members' ads. We therefore regret we are unable to accept such ads, although we do welcome these in the 'Classified' advertising section of *RadCom*.
8) The RSGB accepts no responsibility for errors or omissions, or for the quality of goods for sale or exchange.
9) Members' Ads are accepted and published in good faith.
10) Members' Ads are accepted at the sole discretion of the Editor, whose decision is final.

WARNING

Members are advised to ensure that the equipment they intend to purchase is not subject to a current hire purchase agreement.

The 'purchase' of goods legally owned by a finance company could result in the 'purchaser' losing both the goods and the money paid.

Members' Ads also appear on the Members-Only website at www.rsgb.org/membersonly/membersads.

RADCOM MEMBERS' AD REQUEST FORM

Only use this form if you are unable to send your advert by e-mail. E-mailed adverts are free. A charge of £5 is made to cover administration costs for Members Ads submitted by post. Photocopies of this form are acceptable. Posted ads must not exceed 40 words. Please fill in all details, especially your name, callsign, phone number, town and your signature or your advert may not be accepted.

☐ I enclose a cheque for £5 payable to RSGB

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Payment to: RSGB, 3 Abbey Court, Priory Business Park, Bedford, MK44 3WH

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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

RE-ENTRANT HORN SPEAKERS with 15 ohm drivers - preferably Vitavox. Contact Walter G7DRO, 01934 843216.

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PLT OFCOM RESPONSE

David Evans, G0EVA

As a result of the recent response by Ofcom to the representation(s) by the RSGB, I must apologise for my serious misinterpretation of the issues and technicalities involved in Data Over the Mains installations contained in my previous missive published in *RadCom*.

It seems that since there is no intent to radiate RF into the ether then PLT equipment is not covered or regulated by any part of of the Wireless Telegraphy Act; and also that due to the nature of the signals generated within the system these are not covered by any 'spurious emissions' regulations for consumer electronics – the emissions are not by definition spurious, but intended (!!!!).

I would like to invite RSGB members, and other interested parties in the formation of an ELECTRONICS research group to look into the possibility of producing household intercom systems where the speech intelligence is carried round the premise on the house electrical wiring. The technology I propose to use for these installations would generate tuneable RF frequency signals to provide equipment with the possibility of multiple channel use along the same wiring. These signals would be inductively coupled into the house wiring (for safety and other reasons). The receiving apparatus would be designed to be capable of selecting one or more of the possible channels by similarly 'tuning-in' to the required channel.

There will be many technical and legal hurdles to overcome in getting this system accepted, I fear; but we have a precedent.

One technical difficulty which I can already foresee is the interference that will be caused to this system by nearby PLT devices (co-channel interference), which will also be injecting similar RF frequencies into the wiring. It may be possible to minimise the interference to our system by selecting a suitably high power level; unfortunately this may cause some interference in the other direction. However, the design of current PLT devices reduces the interfering signals (to us) within the amateur bands; this may enable our system to use these frequencies.

An added bonus from this will be the ready availability of suitable signal generation and reception equipment, many suitable models are already easily (legally) available from various outlets within this country and abroad. This only leaves the technical problems of designing a means of coupling these signals into house wiring, and deciding on the necessary power injection level to maintain communication.

As an addition there will be a bonus to our hobby and the electronics retail industry – since there will be no intent to radiate a signal beyond the house wiring the equipment and Wireless Telegraphy laws cannot be invoked. Should interference be accidentally caused to other equipment Ofcom have a precedent set by PLT device installations. Since the equipment will be for wired communications only, any attempt to use a radiating element brings it into the purview of the WT act and is naughty, otherwise as long as connection is strictly confined to mains wiring, the WT Acts will not be applicable and anyone will be able to buy equipment, install and use it.

Inappropriate technology remains inappropriate: you cannot fool nature.

Whilst G0EVA's proposal may be 'tongue-in-cheek' it makes the point well that, however viewed, high-speed data uses radio frequencies. The use of the mains network in the way envisaged by G0EVA (which the Society does not encourage) highlights the nonsense of the current PLA/PLT arguments. The Society continues to use every opportunity at Ofcom/government level to argue for sanity to prevail. Don Beattie, G3OZF, RSGB Board Member.

Graham, G3TCT

I am increasingly concerned by the continuing failure to prevent interference from PLT and annoyed by Ofcom's refusal to act, evidenced by their response of 13 April to RSGB's letter.

Ofcom admit that they have tested Comtrend PLT devices and requested a Declaration of Conformity as part of their investigation. They will therefore know that the devices do not comply with the relevant standard and that the DoC is invalid. Just what is the point of these standards and compliance certificates if they can be disregarded with impunity?

Ofcom continue to claim that "PLT is not a wireless communications technology", and that it "does not transmit using radio waves". This may be the legal position, but it defies the laws of physics and it's not true - PLT most certainly *does* transmit using radio waves.

Ofcom say they are supporting the drive towards an "appropriate harmonised standard for PLT equipment". But since we know that compliance with standards is not being enforced, how will this be "enormously helpful"? Indeed it is likely to be highly *unhelpful* in eliminating the interference problem, because it will legitimise PLT.

If Ofcom do not consider that criminal prosecution or suspension notices are appropriate (in relation to Comtrend PLT), what feature of a PLT device would result in them considering such actions appropriate? It sounds like the answer is "nothing".

Ofcom are taking the view that in relation to PLT, prosecution under the criminal law is not in the public interest. How about invoking the Consumer Protection Act or the Sale of Goods Act since PLT devices are non-conforming with the claimed standards? Or how about applying for an injunction to prohibit a public nuisance? There must be lots of legal avenues by which these devices could be permanently banned. Ofcom's continuing failure to protect the spectrum makes one wonder what conflicts of interest may be in play.

G3TCT's concerns reflect those being expressed by RSGB in a number of ways to Ofcom and others. The Society continues to challenge the view that devices that clearly fail to meet relevant standards and fail to meet the EMC Directive Essential Requirements can go unchallenged. This route will inevitably lead to the erosion and destruction of the valuable resource of the radio spectrum, and the Society is determined to stop it. Don Beattie, G3OZF, RSGB Board Member.

A THANK YOU TO G4NBR

Paul Marchant, 2E0DBI now M0WAF

I would like to thank John Hill, G4NBR for his dedication and support to myself and other amateurs with passing their exams. John dedicates a lot of his own time to teaching the 3 levels of courses and is a huge credit to the Spalding and District Radio Club where he is the chairman. I have just passed my Advanced exam in the hobby and it is purely down to the patience and skill on his behalf. Many thanks!

SPECTRUM DEFENCE FUND

Jonathan Kempster, M5AEO

What a great idea of Ian Brown's, for all licensed amateurs to send the equivalent of their £15 licence fee to the Spectrum Defence Fund. My cheque is in the post!

WHAT HAPPENED TO 'ROGER'?

Geoff Stainton, G1MQQ

Surely the purpose of the Q code is to provide a 'Lingua Franca' for stations whose mother tongues may be as diverse as Mandarin Chinese and Serbo Croat, who would thus not be au fait with the nuances of the English language. It is, of course, incumbent upon users of the code to employ it correctly.

One of my Bêtes Noire (NOT bête noires) is the use of QRZ when it is obvious that no one is calling them! The one that really gets me going though, and is my opinion the height of linguistic slovenliness is; "AB1XYZ calling and BY".

One of these days I'm going to respond with; "AB1XYZ, G1MQQ returning. BYE".

Andy Cowley, M1EBV

David Craggs and Tim Jebbett seem to forget that many amateurs in DX countries don't

speak English as a first (or even second or third) language. The use of an internationally standardised and simple set of abbreviations for common phrases greatly reduces their need to learn English to conduct simple 'phone contacts (I nearly wrote QSOs!).

I find that 'kewessell?' is not used to mean 'OVER' but expects a short confirmation from the other party, before continuing the over. 'kewessell' is used to mean 'You are correct' or 'I have all that information correctly' or 'I will do that'.

They are abbreviations and, yes, jargon, but I doubt that they are really neologisms. The fact is that we have two, equally valid, ways of saying the same thing and this should surely not cause a 'big-endian' vs 'little-endian' controversy. Personally I dislike 'Is that a roger?' much more than any use of Q-codes on 'phone.

Q-codes have been widely used in written material since the earliest days of amateur radio in this country, so they have never been confined to telegraphy. An unofficial code is still used in *RadCom* each month (QTHR in Members Ads).

A good command of English has never been a requirement for amateur radio. Most non English speaking countries always have conducted tests in their own language. It was only coincidentally required in the UK because of the written examination. Amateur radio is a truly international hobby for all and we really shouldn't denigrate other amateurs for their lack of style or skill in English, there should be room for everyone.

YAESU FTDX5000 REVIEW

Colin, G3SBI

If you are interested in receiver design some of the measurements made by Peter in his review are quite interesting including the fact that the high performance receiver is of down conversion architecture. A break with tradition for the Japanese. Peter's close-in measurements of IP3 on the 7MHz band have slain a particular dragon that probably affects most Japanese radios.

If you look at close in IP3 using the 15kHz and 6kHz wide filters both flatten out at a value of -8.5dBm. Based on work done by Martein Bakker, PA3AKE (Google on PA3AKE and select H mode mixer) the in-band IP3 of the filters themselves should be around 25dBm.This means that the linearity of the IF path to the ADC following the filters has poor linearity and seriously affects close-in performance of the radio. The only cure as far as the Japanese designers are concerned is to use narrower and narrower roofing filters whereas they should improve the linearity of the signal path to the ADC. This is of particular importance in up conversion radios. Also PA3AKE has shown conclusively that in-band IP3 for crystal filters degrades with narrower bandwidths. In an up conversion design it is therefore desirable to have a wide roofing filter providing the in-band linearity of that filter is not degraded by following circuitry to the ADC.

Peter has indicated he is intending to buy an FTDX5000 when they are available and there is no doubt in my mind it is a wise choice at the moment. However DDS local oscillators are capable of -150dBC/Hz phase noise at 2kHz offset at 100MHz by clocking the DDS at 1GHz (PA3AKE). Peter has shown that the spur issue even at only 65dB down is not in practice a serious problem. In the near future more radios will use DDS technology directly for the local oscillator.

LIMITATIONS OF FILTERING

Dave Skye, G3PLR

I read with interest the article on Filtering in April's Start Here column. The article was easy to understand and informative, but I picked up on just one point. In the section titled "Limitations of filtering", Jonathan talks about using a directional aerial to improve effective filtering by turning it towards the station in which you are interested. However, with most directional aerials the null is much sharper than the maximum, so it is usually more effective to turn the aerial to NULL out the UNWANTED station. This will give a higher ratio of wanted to unwanted signals. This is the same principle used in LF direction finding where the very sharp null gives the direction of hidden transmitter along the axis of the ferrite rod (in conjunction with a 'sense' aerial to determine which of the two possible directions gives the broad maximum).

RADIO APARTHEID?

M0MGH

No, I'm, not talking about South Africa with its riots and struggle by the Africans for their country, but it has some similarities! If there is one thing that we as amateurs should be totally against is oppression by one group towards another. Our commitment should always be to fairness and fair play. We should be open to new members and accept them for what their abilities allow them to do.

We are not a secret society; however, we do have 'rituals' of membership but no more than showing that we are capable of operating in an acceptable manner. We don't have wardens patrolling our radio clubs shooing off unwelcome guests. Well I say we shouldn't…

There is, however, a small, unpleasant minority who think they are somehow better than the rest. They have what some would call a snooty and superior demeanour. They exclude others by their knowledge and make a point of it too. This is not acceptable. Remember the radio spectrum was here long before we arrived and will still be around long after we've departed!

We must include all-comers and make them welcome. Not everyone can be a radio brain box. Some people cannot read but we make allowances for them and help them to pass the exams by providing readers for them etc. No one should be excluded because they have a disability or limitation. Just be thankful you can do what you do. To all that have been affected like this I offer an apology from the majority of amateurs.

Today, we as amateurs enjoy a very privileged spot indeed. We are allowed to operate radio over large parts of the spectrum. We can operate mobile or at sea and take it to other countries, eg CEPT regulations. We can even move our frequencies around in a band, which is something other professional radio stations cannot do normally. We are even allowed NoV (Notice of Variations) that extend our reach further.

All this is under threat, however, from the commercial telecommunications industry. They view our bands with envy. We occupy several "sweet spots" they would like to get their hands on. In some places we are primary users, a very privileged honour, but in others we are secondary.

Powerful lobbying goes on as we know and our frequencies are under attack. Today it is PLT/PLA devices that spew out their horrible electrical noises everywhere. What will tomorrow bring?

The point is we need to pull together and forget who can do 20 WPM Morse etc. Yes it was and is a very important mode. But so are FM, AM and SSB etc. What if I cannot move my hands? Am I to be excluded from the Morse master's chair? And who cares who is a G, M or 2E? Lets' just get on with radio and enjoy it!

LARYNGECTOMEE

Bob Razey, G0ADH (Secretary of the Royal Berkshire Hospital Laryngectomee Club)

I'm sure there are many others like myself who have great difficulty in remembering callsigns, I therefore expect, that despite being a member of the contest community for many years, my callsign probably means absolutely nothing to most. However, my voice seems to have become quite an advantage in identity.

Having become a 'laryngectomee' my voice has become very distinct.

Several have commented on my "poor audio" but have quite understood once I have explained the situation, after which, I am pleased to say that I have received only nice comments. Indeed, there have been some who have been rather surprised to find that someone who has had his voice box and vocal chords totally removed, still being able to speak at all. With the huge advances in the medical field of laryngectomy, by pressing a filter/button at the front of my neck, with the aid of a small replaceable internal valve, I am able to speak by vibrating the muscles of the throat with air sent through the valve.

Obviously, I do have a little more difficulty than most and I am very grateful for the patience shown to me, particularly during contests.

I did once hear say of another radio amateur laryngectomee, but never managed to make contact. So, I wonder if there are any other active larygectomee RSGB members. If so, it would nice to hear from them and hear of their experiences (e-mail r.razey@btinternet.com).

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- ✓ DTMF encoding and DTMF decoding
- ✓ 105 groups D.C.S/50 groups CTCSS
- ✓ DCS/CTCSS of RX and TX can be set respectively
- ✓ Reverse frequency function
- ✓ Busy channel lockout
- ✓ Distant alarm
- ✓ ANI (Caller ID)
- ✓ Multi scan mode (TO/CO/SE)
- ✓ Inspection, monitor, stun, kill and emergency alarm
- ✓ All calls, group calls and selective calls
- ✓ Calling ring and ring overtime auto answer
- ✓ Multi silent mode (QT/QTADT/QTXDT)
- ✓ Channel steps (5K/6.25K/10K/12.5K/25K)
- ✓ Wide/Narrow bandwidth selection (25KHz/12.5KHz)

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2m Handie
Wouxun KG-679E

- ✓ 128 memory channels
- ✓ 8 groups scrambler
- ✓ Channel name edit available
- ✓ Output power VHF 5W/1W UHF 4W/1W
- ✓ High/Low power can changeable by top key
- ✓ VOX (Level adjustable)
- ✓ DTMF encoding and DTMF decoding
- ✓ 105 groups D.C.S/50 groups CTCSS
- ✓ DCS/CTCSS of RX and TX can be set respectively
- ✓ Reverse frequency function
- ✓ Busy channel lockout
- ✓ Distant alarm
- ✓ NI (Caller ID)
- ✓ Multi scan mode (TO/CO/SE)
- ✓ Inspection, monitor, stun, kill and emergency alarm
- ✓ All calls, group calls and selective calls
- ✓ Calling ring and ring overtime auto answer
- ✓ Multi silent mode (QT/QTADT/QTXDT)
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