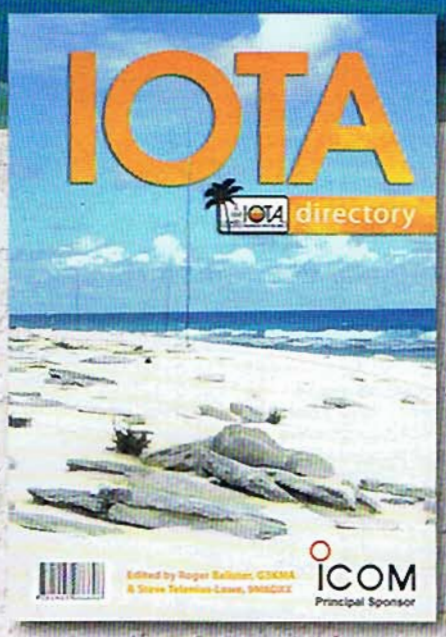
RadCom

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

MAY 2011
VOLUME 87
NUMBER 05
£4.75

The new IOTA Directory has landed



0511

2m Backpacker
Just one of the contests in Sport Radio

Front End
Homebrew receiver starts taking shape

Tropo Predictions
Online guide to the best conditions – ATV

LED as Photodiode
One LED for Tx & Rx – Optical Comms

BYLARA

The British Young Ladies Amateur Radio Association will be attending several rallies over the next couple of months. You will be able to meet representatives on:
7/8 May at Village at War, Tilford
28/30 May Trucks & Troops, Beaulieu
11/12 June War on the Line
(Watercress Line), Ropley
18/19 June Museums on the Air,
Nothe Fort, Weymouth
For more information on BYLARA, check out the website at www.boltonwireless.org.uk/bwc-activities/bylara.html.

1kW PA Module for 1.3 GHz

Kuhne electronic have launched a new power amplifier, the MKU PA 131000 CU, which is suited for large EME and contest operations. It uses state of the art LDMOS technology that allows the development of compact amplifier modules with high output power. Operating safety is given by a built-in sequencer that controls internal procedures or external components. An abnormal temperature protection guards the power amplifier against overheating. More information is available on their website www.db6nt.com.

Happy birthday

Allan Ogden, G5OD is a member of the Wey Valley Amateur Radio Group and recently celebrated his 95th birthday rag-chewing with friends on 20 metres – on CW, naturally! The RSGB would like to add their best wishes to those of Allan's fellow club members on another milestone birthday.

VHF/UHF antenna control centre

The CAT-273 is a multi-function antenna control centre for VHF and UHF antennas with separate inputs for 2m and 70cm. It has built in antenna tuners for each band that will match a range of wire and other antennas in the 20 to 200Ω impedance range. It also has a built in SWR and peak/average power meter with separate inputs for each band. The unit is capable of handling power levels of up to 250 watts. The CAT-273 sells for £179.95 and is available from Nevada (www.nevadaradio.co.uk).

Intermediate Success

The South Bristol Amateur Radio Club is very pleased that on 10 March Henryk, M6HTX and Andrew, M6TAF passed their Intermediate exams. Fellow club members are looking forward to working them with their new callsigns soon. www.sbarc.co.uk.

New antenna products

M0CVO Antennas are pleased to announce that four new products are available. These are the HW-40HP, a full size off centre fed dipole (40.5m) covering 80, 40, 20, 10 and 6m plus 60m, 15m and WARC when used with an ATU, and three mono band HF dipoles – the MD-10HP, MD15HP and MD20HP for the 10, 15 and 20m bands respectively. Each of these mono band dipoles comes complete with the M0CVO 1:1 balun at the feed point enabling direct connection to your coaxial feeder.

Full details available on their website at www.m0cvoantennas.co.uk.

Torbay Buildathon

The Torbay Amateur Radio Society will be hosting a Buildathon on Sunday 5 June in Newton Abbott, Devon. The project is a 'Manhattan-style' 40m Sudden receiver with VFO by G3RJV. The Bath Buildathon Crew will be providing tools and test equipment, assisting/mentoring/etc. Enquiries to Pam Halliwell via the Torbay website www.tars.org.uk/ or the RSGB Region 11 website www.rsgb-region-11.org.uk/team.php?team_id=89.

Camb Hams DXpedition

Following on from previous years' successful DXpeditions, the Camb-Hams will be returning to the Scottish islands, this year activating the Isle of Arran, IOTA reference EU-123, between 1 and 8 May. Based on the west coast of the island, they will be operating all bands from 160m to 70cm, including via satellites, as GS3PYE/P. Operations from elsewhere on the island more suited to 2m tropo contacts into the UK will also happen from Flossie, their amateur radio demonstration van, under the callsign GS6PYE/P – including operating in the 2m UK Activity Contest on Tuesday 3 May. More details are available at http://dx.camb-hams.com, on Twitter at http://twitter.com/g3pye and Facebook at www.facebook.com/ArranDX.

Yahoo 6m repeater constructors group

The idea behind the Yahoo 6m repeater constructors group is to pool resources together to aid the construction of 6m repeaters. These repeaters pose a unique set of challenges.

The group is by no means restricted in frequency, in fact it is open for debate for all repeaters using duplexers. It is hoped that this group can have a UK bias and be used in conjunction with the already established yahoo repeater-builders group. uk6mrepeatercons@yahoogroups.co.uk.

International Museums Weekends

The 2011 International Museums Weekend special event will once again be a double weekend and will take place on 18 and 19 June plus 25 and 26 June. Radio amateurs are encouraged to participate in this event by setting up stations in their local museums. Harry, M1BYT, who is organising the event, asks that all those intending to take part should register their museum via e-mail to harry.m1byt@tiscali.co.uk. Full details of the event can be found on the International Museums Weekend website at www.ukradioamateur.co.uk/imw.

NEWS IN BRIEF

• Keighley ARS have recently had a change of venue. The new venue is Parkside Social Club, Butt Lane, Haworth, Keighley BD22 8QJ. Members old and new will be most welcome. Please contact Shirley on 01535 652781 or e-mail secretary@keighleyradio.co.uk.

Young Amateur

Kilmarnock & Loudon ARC have had some young success recently in their exam programme. Arran has just passed his Foundation licence and is eager to try out his new callsign, MM6ARN.

IMD at Sandford Mill Museum

Chelmsford Amateur Radio Society will be celebrating International Marconi Day on 30 April from the 2MT Marconi Hut used for the first broadcasts in the early 1920s. Ofcom have granted the use of GB100MWT for this event and to celebrate a number of centenary events during 2011.

CARS will be operating three stations from Sandford Mill Museum. As well as HF CW and SSB they will also be calling CQ on each hour during the day using AM from a vintage Marconi 1154 transmitter and listening on a Marconi 1155 receiver. If the distant station cannot transmit using AM (preferred), CARS will switch the BFO on and receive a SSB signal. The preferred frequency will be 3.60-3.65MHz ±QRM. A QSL card will be issued on request.

Contact with any CARS station will be eligible for points towards the Cornish IMD Award (GB4IMD).

Foundation Weekend

MOOCT ARS will be holding a weekend Foundation course and exam on 11 & 12 June from 10am on the Saturday till 4pm on the Sunday. The Course and Exam Centre is very close to Chesterfield. The actual exam takes place at 5pm on Sunday with results being given after the exam. For further and fuller details please contact the Group MOOCT ARS on 01246 275 889. Details are also on the website www.m0oct.com.

National Trust

Last year members of the Appledore Radio Club ran a special event station GB2AC at Arlington Court in conjunction with the National Trust open day. The event was a great success and as a result they have decided to repeat the event this year on 10 September.

It has been suggested to other NT properties nationwide in an internal newsletter that they might also like to become involved with amateur radio and much interest has been shown.

Any clubs interested in running a station should contact the Visitor Services Manager at their local NT property with a view to running a special event station for the day. It would be a 'National Trust Property on the Air Day'.

DXpeditions

May is a busy time for a group of Merseyside/North Lancashire based amateurs. A small team of three amateurs (G0LZX, G0WRE and M0TNX) will first activate Lindisfarne Island (IOTA reference EU-120) on 14 May. The activation is to publicise the outstanding natural beauty of The Holy Island and allow amateurs worldwide to have the chance to claim this island for their IOTA awards, a special QSL card will be available. The team plan to be active on 40, 20 and 17m, with the possibility of 15m as well. Contacts using SSB, data and, if required, CW will be available. The call for this event will be GB0HI.

The following weekend sees Kev, M0TNX activating Hilbre Island (again, EU-120 but the other side of the UK). A single man operation – the kindness and trust of Wirral Council has given Kev a unique opportunity to stay overnight on 20 and 21 May on this uninhabited island. The callsign for this event will be GB2HI. This event will be SSB, but Kev is happy to provide a CW contact if asked. Bands will be 40, 20 and 17 only, again with a commemorative QSL card.

Charles, M0OXO, has kindly offered to be QSL manager for both callsigns and the QSL cards are being undertaken by Gennady at UX5UO print. A special thanks goes to Wirral Council's Country Park Rangers, Particularly Jo Hanik and Lynne Rawley for their help in setting up the Hilbre Activation.

Mills on the Air

Could any amateurs or clubs planning to take part in this year's Mills on the Air over the weekend 14 and 15 May please register their details on the Denby Dale ARS website www.g4cdd.net or get in touch with Gerald, G3SDY as soon as possible via g3sdy@sky.com.

Spirit of Speyside

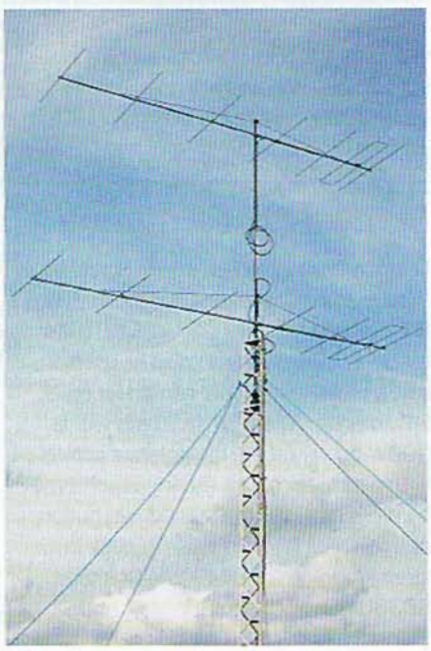
The Spirit of Speyside Whisky Festival is held each year during the first long weekend in May (28 April to 2 May 2011). It creates an opportunity for visitors to enjoy a visit to Speyside before the start of the main tourism season. Moray Firth Amateur Radio Society is celebrating this event by running three Special Event stations, one located at Strathisla distillery in Keith (callsign GB3SWF), another at the Craigellachie Distillery (callsign GB2SWF) and a third at Cragganmore Distillery (probably GB4SWF).

Each station will operate on the HF bands, principally 80m, 40m and 20m SSB, also on VHF when possible. A commemorative QSL card will be sent to all stations that contact the club during the weekend and the station with the most confirmed number of contacts will also win a bottle of malt whisky. There will be prizes of miniature bottles of malt whisky sent to the top listed stations in the countries of the United Kingdom (England, Wales, Scotland, & Northern Ireland).

Further details may be obtained by e-mail from Barry Horning, GM4TOE, gm4toe@btconnect.com.

Antenna Sponsorship

InnovAntennas have provided sponsorship in the form of antennas to Colchester Contest Group, G0VHF for 2011. A number of antennas have been supplied including an 11el 4m LFA Yagi, 2 x 7el LFA Yagis for 4m, 2 x 7el 6m LFA Yagis and 2 x 12el OWL Yagis. InnovAntennas also presented the SouthEssex ARS with a 9el 144MHz LFA at the Canvey Rally earlier this year. More information on InnovAntennas products can be found at www.innovantennas.com.



SOS Radio week presentation

On 10 March, members of The Meirion Amateur Radio Society visited Barmouth Lifeboat Station to present their cheque for £833.16, raised by the group during RNLI SOS fundraising week. Members of the society operated a sponsored radio station from the Barmouth Lifeboat House on the 29 January and from The Meirionydd Yacht Club on the 30th, making in excess of 600 contacts through the week. There were over 60 amateur radio groups and individuals taking part in SOS Radio Week this year, and The Lifeboat Amateur Radio Society hope that, altogether, over £5000 will be presented to lifeboat stations around the UK. For more information about Meirion ARS and The Lifeboat ARS, visit the MARS website at www.meirion-ars.co.uk.

Simon, MW0GSR, Liz, MW6LIZ, John, MW0VTK with Wendy Ponsford RNLI fundraising secretary and members of the Barmouth Lifeboat crew.

New Radio Club

The South Kesteven Amateur Radio Society (SKARS), affiliated to the RSGB, is a new club in Region 13. The first meeting was 9 February. They meet once a fortnight on a Wednesday evening at 7.30 until 9pm at the Beehive, Castlegate, Grantham, Lincolnshire. New members are always welcome and they hope to be able to start Foundation and Intermediate training soon. Enquiries to Nigel, M0CVO on 01476 402550.

Screwdriver Antenna

Diamond has launched an HF Screwdriver mobile antenna covering 3.5 to 30MHz. It's a compact type of screwdriver (better for UK vehicles) but can also be used on, say, a metal table in the garden for quick HF antenna. At 1.85m in length with a 200W power rating, the antenna comes with a remote control. Tuning is achieved by pressing either the up or down button and listening for the signals to peak in strength. Priced at £449, the Diamond SD330 is available from Waters and Stanton (www.wsplc.com).

East Suffolk Wireless Donation

The organisers of the annual East Suffolk Wireless Revival (the Ipswich Rally) recently donated some of their profits from previous years to a local charity, the St Elizabeth Hospice in Ipswich. The rally is a very social event, focussed on being an annual meeting place for local amateurs, jointly organised by the Felixstowe & District ARS, Ipswich RC and Martlesham RS. A steady growth in attendance together with moving to a great new venue a few years ago has allowed the organisers to make this donation. They hope for continued success when the next rally takes place on 12 June 2011 at the Orwell Crossing Lorry Park, near Ipswich: www.eswr.org.uk.

Peter, G8BLS (Chairman of the Felixstowe & District ARS) and Steve, M1ACB (ESWR Treasurer and RSGB Deputy Regional Manager for Suffolk) present the donation to Mary West from St Elizabeth Hospice.

Waters & Stanton PLC Award

On a recent tour to Icom UK's headquarters, Jeff Stanton (second from left) and Mark Francis (furthest right) of Waters & Stanton PLC were presented with a longstanding achievement award from Icom Inc. by Icom UK Chairman, Dave Stockley (left). Also in the presentation was John Turner (second from right) Icom UK's Amateur Radio Product Specialist.

Dave Stockley said, 'Waters & Stanton are our longest serving dealer and we go back quite a few decades now. The award from Icom Inc. is for the service and dedication that they have given our customers and the great hobby of amateur radio over the years.'

For more details about Waters and Stanton, visit their website www.wsplc.com.

Verulam ARC 50th Anniversary

Verulam Amateur Radio Club is 50 years old this year and plans a celebration on 11 June in St Albans. Leading up to the event, a promotion of amateur radio is being made to teachers and students from local schools. Planned displays include an attempt at Earth-Moon-Earth communication as well as HF voice and data, RAYNET, a display of equipment old and new, plus some possible surprise items. The use of the special event callsign GB5OVE has been approved.

The event will be opened jointly by the youngest and oldest members of Verulam Club at that date. Talks will include 'A photographic history of the Club' and one on 'WW2 Secret Radio Stations in and around St Albans'. Appropriately, a ham (hog) roast will be served!

The Club has special reason to celebrate. A few years ago there was talk of disbandment. It is now thriving again with over 60 members and an active programme of activities including training courses at all levels. Veralum Club's achievements were recognised by coming second in the Club of the Year 2009 competition. It has much to celebrate! The photograph was taken in 1982. Do you recognise any faces?

All current and past club members are invited. Those who have not already heard from the Club should contact Ralph, G1BSZ via g1bsz@aol.com or 01923 265572. Further details at www.radioclubs.net/verulam.

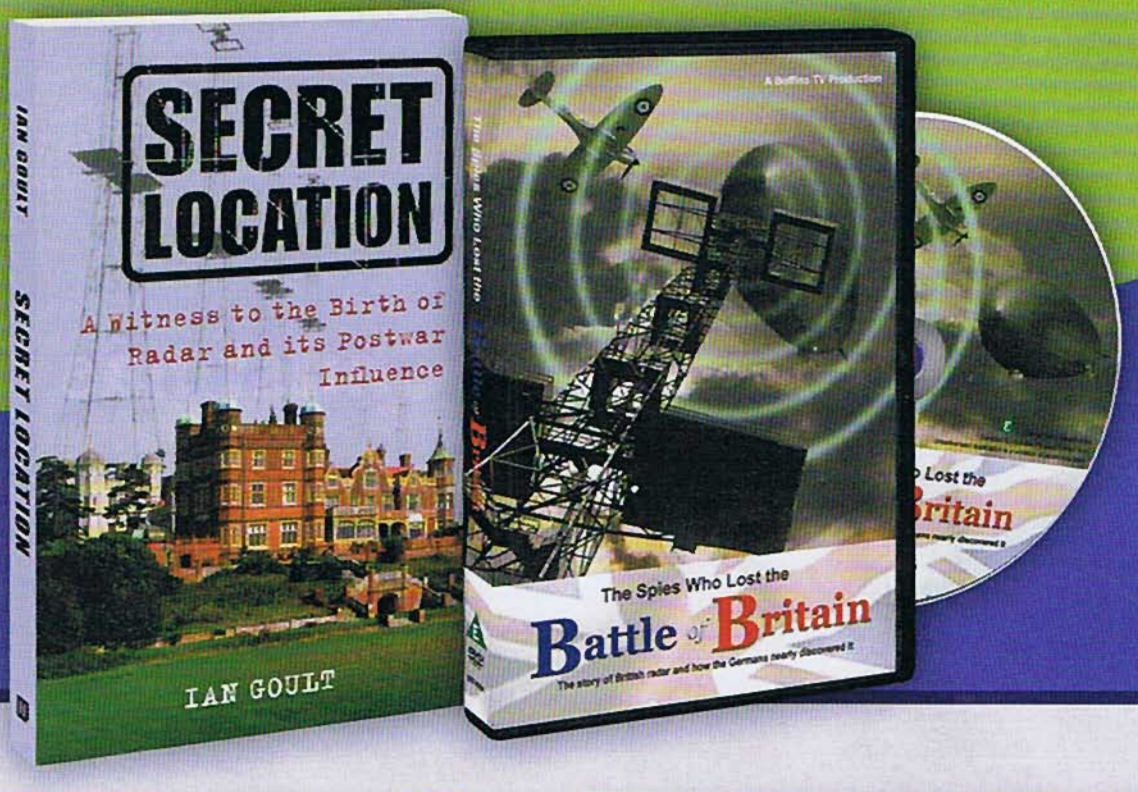
World Scout Jamboree

Radio Scouters Stuart Barber, G6CJR, Denis Noe, M0NDJ and Claire Copsey, G8ULQ are thrilled to have been selected to be part of the 40-strong international amateur radio team at this year's 22nd World Scout Jamboree, which is taking place near Kristianstad, southern Sweden from 27 July to 7 August.

The amateur radio station will be manned 24 hours using callsign SJ22S. Skeds can be arranged by e-mailing sj22s@worldscoutjamboree.se.

NEW

RSGB shop



Secret Location

from £7.64

A Witness to the Birth of Radar and its Postwar Influence

By Ian Goult

Few are aware of the incredible story that was the birth of Radar in the UK. Ian Goult was one of the few to witness the extraordinary achievements in Radar development at Bawdsey Manor, Orfordness, Swanage and Great Malven. Fewer still were part the Telecommunication Research Establishment (TRE) and the post war developments of Radar.

Secret Location is Ian Goult's historical account of how Radar got started and its contribution to winning the Battle of the Atlantic, the Battle of Britain – indeed influenced practically every facet of the Allied war effort. Ian was there as part of the team and he describes the story of the extraordinary work done by the boffins at the TRE. He also describes other work which included such key projects as TACAN (Tactical Air Navigation), 'autoland', GPWS (Ground Proximity Warning System) and Radar systems for the Blackburn Buccaneer and the Vulcan. Ian also tells of the formation of his own company and brushes with MI6 and Russians.

Ian Goult provides in *Secret Location* a highly readable history of the development of radar and the evolution of the technology in the 20th century.

Paperback, Size 124x199mm, 144 pages, ISBN 9780-7524-5776-5

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The Spies Who Lost the Battle of Britain DVD

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A groundbreaking new 60 minute documentary

This brand new DVD explains the story of how on the brink of WWII a top-secret invention joined Britain's frontline. *Chain Home* was the radar network that gave the RAF its vital early warning and enabled Air Chief Marshal Dowding and Air Vice Marshal Park to put their fighters exactly where they needed to be. In just four frantic years Watson Watt's brilliant team of boffins had designed and built *Chain Home,* the radar system that was to play such a decisive role in the victory of 1940.

The rapid construction of the huge *Chain Home* Radar towers had not escaped the attention of the Germans. On 3rd August 1939 the Graf Zeppelin crossed the North Sea on a daring spy mission. The Luftwaffe's top wireless experts scoured the airwaves from Essex to Scapa Flow looking for evidence of British Radar. From the moment the Graf appeared on British Radar screens the Fighter Command feared its greatest secret was lost. When war was declared just four weeks later the Radar stations braced themselves for a knockout blow - but it never came.

Why the Germans failed to destroy *Chain Home* before the Battle of Britain has been an enduring mystery. This DVD explains through reconstructions, exclusive interviews and expert analysis how the Zeppelin spies came to make the greatest intelligence blunder of the war.

DVD: Format 16:9, PAL Colour & B/W, 63 minutes, DVD Region 0

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Adventures in optical communication

Part 3 – Beacons and an LED transceiver

RECAP. So far we have made transmitters and receivers for AM, FM, CW and SSB. Now we'll look at some alignment aids – small and large – and a novel transceiver that uses the same LED to receive as well as transmit.

DESKTOP BEACON. It is useful to have a small beacon transmitter that can output a signal for bench testing. Mine is nothing more complicated than a pair of 555 timer ICs, as shown in **Figure 14**. The right hand 555 oscillates at about 25kHz and drives a red LED via a resistor. 1k gives a bright light for long distance testing up to 500m or so; 10k is quite dim and suitable for indoor use. This beacon tunes in as a carrier a little above 3.605MHz on the FT-817. The left hand 555 is optional; when in use (connected via the switch) it keys the 25kHz oscillator, making the signal more easily identified.

I still have not produced a soldered version of this, to date; it languishes on a plug-in breadboard. The (un)finished article is shown in **Photo 10**.

EXTREME BEACON. One of our longer distance contacts, at 65km, was nearly a failure because we could not locate each other for some considerable time. White light from powerful torches looks just like car headlamps; red lights look like car tail lamps. Then Peter, G8POG tried his strobe: identification is much easier with a regularly flashing lamp but, understandably, it was looking a little dim at 65km. Enter the extreme beacon, **Figure 15**. In principle, it's similar to the desktop beacon described above, but uses a power FET on the output to drive a 20W LED. Yes, you can get a 20W LED: it has 25 individual LED chips arranged in a 5 by 5 matrix on a substrate. It runs on about 12V at nearly 2A. The LED does require a substantial heatsink – reckon on dissipating about 15W as heat.

With this LED and its heatsink at the focus of a 100mm lens in the optic tube (**Photo 11**), it produces a 2° wide pattern of light flashing at either 2.5Hz (for visual identification) or 25kHz for receiver alignment. Do not look directly into the beam: the intensity is enough to cause eye damage, even at some considerable distance.

THE LED TRANSCEIVER. Tim Toast, who runs the Optical Links website, regularly scans the web for optical communication-related material. In October 2010 he provided a link to a paper, *LED used as APD*, written by a team at the University of Salerno, Italy. They had discovered that some GaP and GaAsP/GaP power LEDs, when reverse biased to large voltages, acted as photo sensitive diodes and as avalanche photo diodes. If you are not aware of the significance of this discovery, go and find the price of an avalanche photodiode!

After reading this paper, I set about to repeat their experiments for myself. I used the little beacon on the bench, several power supply units, a few R's and C's, a selection of red LEDs and an oscilloscope. I found that I could recover a signal from a particular high brightness 5mm LED without any reverse bias; as I increased the reverse bias to over 30V, the recovered signal was enhanced. So was I, enhanced enough to rapidly put together another receive head, with a relay to switch the LED from forward bias (so that I could use it as a transmit head), then to reverse bias it in an attempt to use it as a photodiode. When discussing this with my local group of opto-enthusiasts, it was Nick, G4KUX who said it would be 'cool' if you could use the same LED, forward biased for transmit and reverse biased on receive. Since the word cool had never been applied to me ever before, I thought it worth a try, just this once.

There is also one very obvious advantage of needing to aim only one set of optics: if you can hear the other station; you are ready to work the other station.

TESTING. I tried the hurriedly-constructed transceiver on transmit first and it was fine. I switched to receive, without yet connecting any reverse bias. To my great surprise and joy, I could already hear a strong signal, I had forgotten to turn off my beacon, which was still running some feet away – and activating the receive side of the transceiver with no bias at all. One of my mottoes is, "if it ain't broke, don't fix it", so I left well alone until I could give it a field test.

At around this time, Keith, G4MSF had joined the local opto group and had just completed the transverter, Rx and Tx heads. He wanted a test QSO. This we arranged over my favourite 6.5km path across the Tyne valley. I lined up my normal rig and Keith saw the signal immediately, receiving me and replying on light with strong signals both ways. This was fine for a first QSO. I then asked him to wait a moment while I switched rigs. He guessed what was going to happen next. I had my first transceiver ready; it only had the high brightness 5mm LED and its optical output was way down on that of the power LEDs I had been running. It also had no reverse bias for receive. Amazingly, Keith immediately reported that this rig was brighter than the much more powerful one and my signal was crashing out of his HF rig. He then replied on light and I received him at excellent signal strength. This was my first QSO using the same LED on both receive and transmit. (It later transpired the reason this rig was brighter was that my normal rig was not aimed correctly). I then went on to use some attenuators I had made out of cardboard, 4 inch discs to cover the lens with a 2 inch hole for 6dB attenuation, and a 1 inch hole for 12dB attenuation. These simulate the light level at double and quadruple the present distance. The result was that we carried on the QSO with the 1 inch hole in front of the 4 inch lens, so this is the signal strength we would have had at four times the distance, 26km. Signal strengths were still S9.

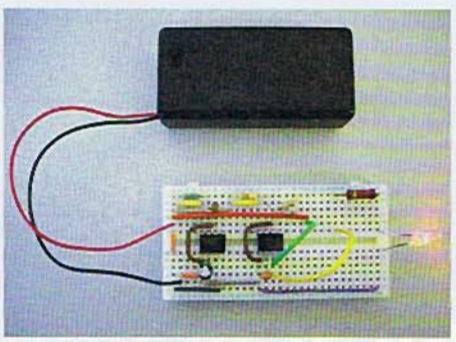


PHOTO 10: The desktop beacon, still on its prototyping board.

PHOTO 11: The extreme beacon LED mounted in one of our now-standard housings.

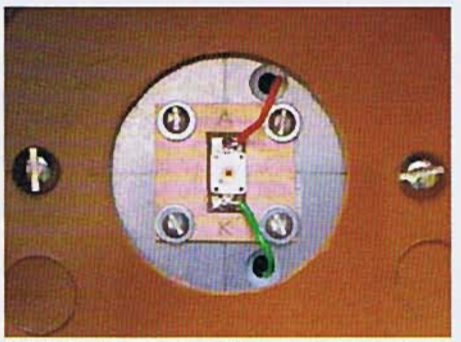


PHOTO 12: Transceiver LED mounted on the head assembly.

FIGURE 14: Circuit diagram of the desktop beacon.

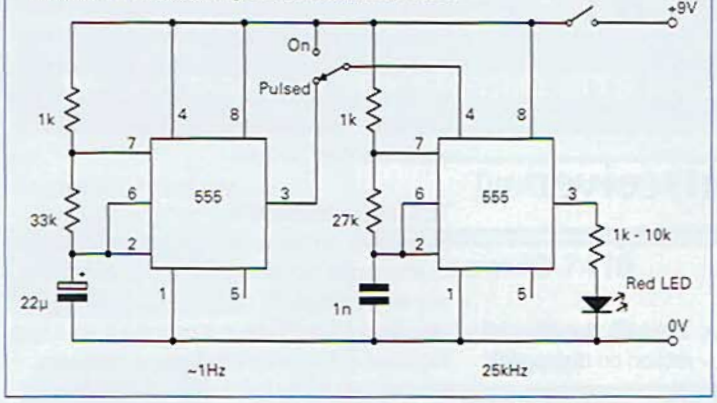
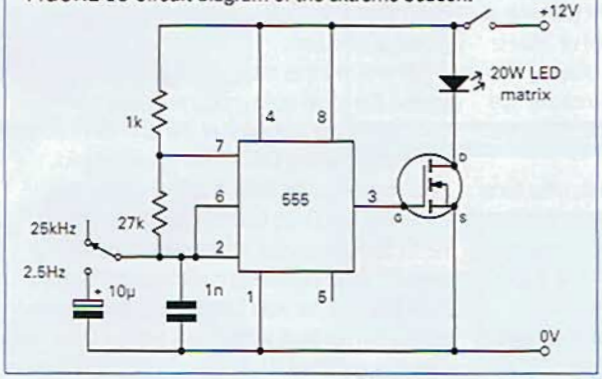


FIGURE 15 Circuit diagram of the extreme beacon.



WORLD FIRST? I later got round to investigating the reverse bias situation and achieved a further 12dB improvement in receive sensitivity by using 33V bias across the LED. Raising the bias further increased the output signal but also increased the noise. This first receiver that I had rushed together as a proof of concept was capable of some serious distance on receive! Incidentally, when I reported this in to Tim of Optical Links, he said that although he had heard of some lab bench trials, he thought I might be the first to receive a free space optical signal over a distance of several kilometres using an LED in this way.

LED TRANSCEIVER MK 2. The concept of the LED transceiver was proved, but the light level on transmit was way down on that from the power LEDs. So, I looked again at the Golden Dragon LED I was using in my separate transmitter. It is an InGaAlP device, a type not covered in the original research paper. Also, it could not operate in reverse bias due to the presence of a protection diode in reverse-parallel with the LED chip. There is even a warning in its data sheet that the LED is not intended for reverse bias operation. But I wanted to experiment! I noticed that both diodes were set in a silicone gel and the minute gold leads to both diodes were separately visible within the gel. Enter the concept of "microsurgery" on the LED...

Using a sharp knife I cut through the gold wire to the protection diode. Checking with my multimeter on the diode range on told me I had been successful: with the meter leads one way round the LED lit up and the meter indicated about 1.6V; the other way round was now open circuit, having previously indicated the 1.065V forward voltage drop of the protection diode. In short, when the LED woke up after the operation, it discovered it now had a 'split personality': one way round it was a LED, the other way round it was now a functioning photodiode! I have since performed several operations and I have not lost a patient yet. **Figure 16** shows the LED, diode and cut point.

This LED encouragingly developed a photovoltaic output of over 1.1V when strongly illuminated. Using my little beacon as a signal source, it gave an enhanced output voltage when reverse biased to 43V. This was then the centre of a redesigned front end which incorporated the same modified KA7OEI circuit as before, plus relay switching to use the LED on transmit as well, as shown in **Figure 17**. The LED series resistors were also included on the board design to make the complete transceiver head. This has been tested so far up to 46km distance in a QSO with Brian, G8KPD, where no difference was noted on either receive or transmit from the standard separate Tx and Rx, two-lens setup. Signals were still end-stopping at this distance.

The transceiver LED is mounted on a *thin* fibreglass PCB, this time in a design to minimise capacitance to ground on receive while retaining adequate heat conductivity on transmit. Use heatsink paste as before.

I think the exact value of reverse voltage will be an 'adjust on test' item, as one version of the transceiver required 48V to bring it to optimum performance. The bias current is extremely low (about 100nA) and is switched off by the relay when not in use. We used a combination of 12V keyfob batteries and/or button cells to achieve the best voltage for the particular transceiver. You can adjust the actual voltage by placing 1N4001 diodes in series to drop the voltage if required: it seems that you need to hit the optimum voltage to an accuracy of about half a volt. Do not use Zener diodes, as they would generate noise.

My batteries are contained within a piece of 15mm copper water pipe attached inside the box using Terry-clips, as can be seen in **Photo 13**. Others have used N cell holders, which are a good match for the keyfob batteries. Don't try to use an inverter or voltage multiplier to supply the bias voltage; noise would drown out the wanted opto signal.

The PTT line can be connected to the FT817 (which grounds a pin on transmit) as well as the transverter PTT input and it should operate as required.

THE FRESNEL LENS RIG. Also known as 'the big rig', this uses flat A4 page magnifiers made from acrylic sheet. They are available from stationery shops or, rather cheaper, from many pound shops. They are actually Fresnel lenses which are of quite good quality. They are not quite the same size as an A4 sheet of paper, being about 21cm by 28cm. Compared to the Blue Spot lenses that fit the plumbing pipes, they have over 8dB further gain when used on receive or transmit. This figure was arrived at by simple calculation of the increased area and confirmed using the FT-817 S-meter on receive and a light meter on transmit. The transmit beamwidth of the Fresnel lens system works out at about a fifth of a degree – which is sharp, but not impossible to aim. It is however too sharp to aim if you do not know exactly where the other station is, hence the extreme beacon (with its 2° spread) described earlier.

I started using these Fresnel lenses before I developed the LED transceiver, so my version has two lenses side by side (**Photo 14**). This makes it simpler to operate because the separate Rx and Tx, aligned side by side, automatically look at the same point in the distance. It is simply necessary to line up the receiver on at a distant (beacon) signal and you're ready to transmit back. With the advent of the transceiver, it is only necessary to use a single lens.

The Fresnel lenses I have tested have a focal length of 350mm, but it would be wise to test each lens individually by measuring the lens to image distance when producing a focused image of a distant streetlamp. The LED (or photodiode) is simply supported at this point. The ridged surface of the Fresnel

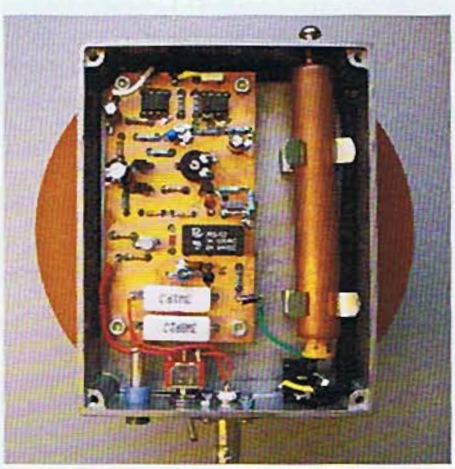


PHOTO 13: General arrangement of the transceiver. The copper tube contains the 43V bias batteries.

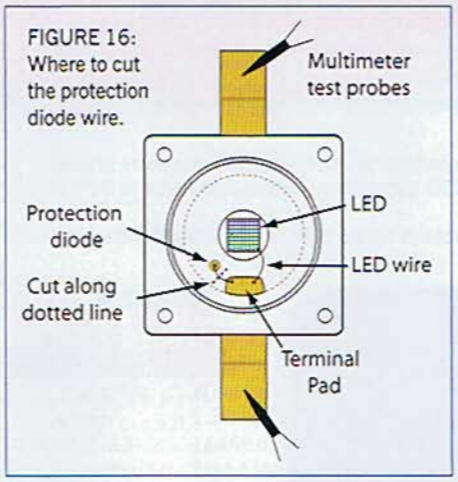


FIGURE 16: Where to cut the protection diode wire.

PHOTO 14: The 'big rig' with Fresnel lenses, suitable for a Tx and Rx or a transceiver and beacon (remove the lens on the beacon side).

PHOTO 15: Rear view of the 'big rig'.

lens must face towards the distant station. All these parts are mounted in a wooden box, shown in **Photo 15**.

I installed two fixed cabinet feet under the front of my black-painted lens box and one adjustable foot, on a screw thread, centrally at the rear. This gives adjustment in the vertical plane; for horizontal (azimuth) adjustment, I simply move the whole box around on a square of MDF clamped on to my folding workbench. This has proved adequate for contacts up to 66km distance to date. It is stable enough not to have needed further adjustment over a period of nearly one hour as we chatted away. I use a separate table to hold the rig, transverter and batteries so as not to disturb the optics once aligned.

So far, we have not found a distance which we cannot work using the big rig. At 65km, FM is fully quieting and the S-meter sits at the top of its scale. If you can see a little red dot in the distance, a good signal is almost certain once you are aligned. On a recent test at 65km, a mist formed between us and we temporarily lost sight of each other, but the gear kept on working! We are currently looking for longer optical paths over which to test the system.

SSB should ultimately win out over FM when signals get weaker, but we have not yet been able to confirm this, never having had a weak enough signal. This gear seems to be a good addition to those who climb up hills for contests etc, to add 623nm (the wavelength of the red light produced by the LED), to the selection of wavelengths available for communication.

STOP PRESS: MATTERS ARISING. As this is a 'live' project, there have been some developments since the article was first submitted. These are noted below in order of importance. *Essential note on 2N5457 FET front end bias.* This applies to both the receive head and transceiver head described here. Variations in the characteristics of the 2N5457, bias generator MPSA18 and its diodes can cause an incorrect FET drain voltage. It is vital for maximum sensitivity that the drain voltage sits at around half the power supply voltage. If the drain is higher than 6V, a quick fix is to connect a resistor from drain to 0V, which will greatly improve matters. Some constructors have used a 4.7k fixed resistor whilst others have used a 10k pot and adjusted it until the drain is at 6V. This has affected around half the circuits built so far.

Gain balance and noise figure (important for SSB operation). Several recent tests over long distances revealed an odd situation with receiver response. FM signals were end-stopping on the FT-817 S-meter, but when we switched to SSB, the S-meter would not indicate more than S9 with equally strong signals. This was traced to the receive head (and transceiver, the same circuit on receive) putting out so much signal that it was causing the transverter to limit. Of course this is fine on FM, but it would be nice to have an equal response to SSB. The cure is to reduce the gain in the head by removing the second opamp and connecting the output of the first opamp via a capacitor to the output socket.

In the transverter the Rx output attenuator was modified as follows: change C9 from 47pF to 1nF, remove R25 and swap R26 with R27. If the receiver S-meter is deflected simply by noise after this mod, some of us have fitted a 220Ω pot as a gain control at the point where the Rx signal from the head connects to the transverter board. The signal on the pot wiper is fed to the Rx in port on the board. Adjust the pot to the point where the S-meter shows no indication when the head is in total darkness. This mod slightly lowers the noise figure of the receiver and enables the S-meter to have full range on SSB signals.

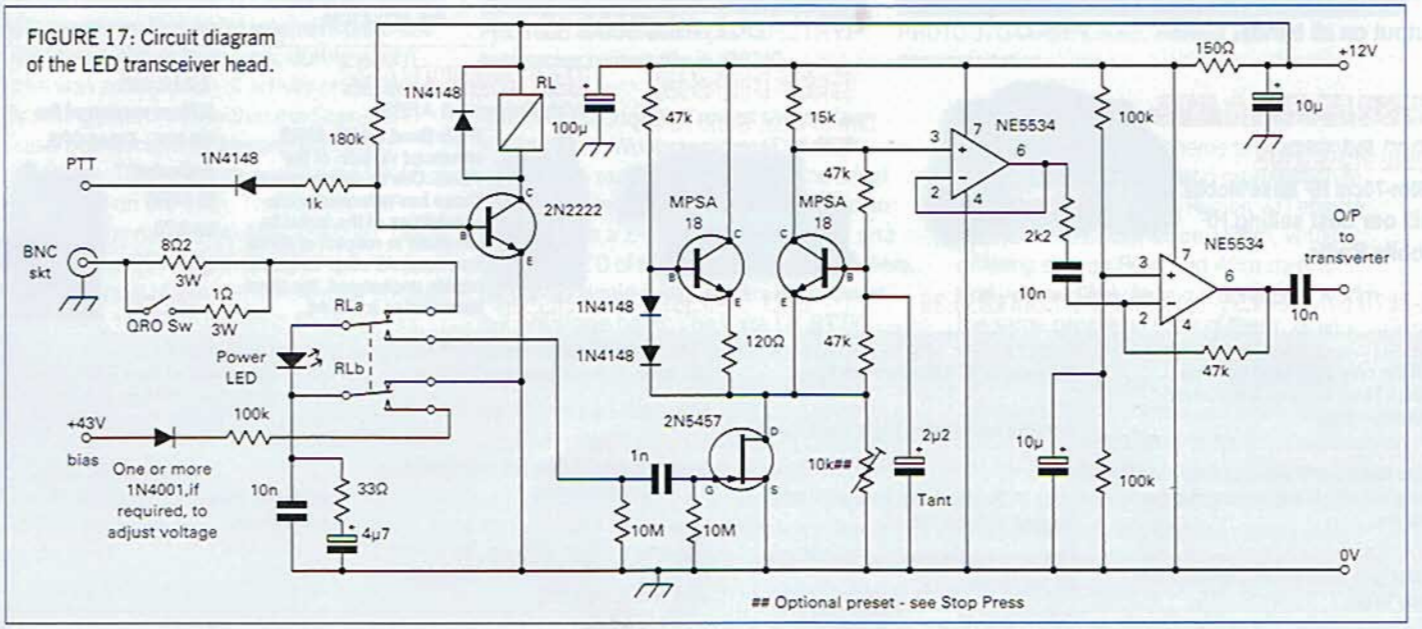


FIGURE 17: Circuit diagram of the LED transceiver head.

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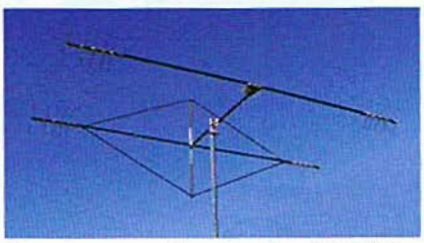

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- ✓ Busy Channel Lockout
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MFJ-259B	Antenna Analyser 1.8-170MHz	£259.95
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MFJ-260C	Dummy Load 300W SO-239	£44.95

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Homebrew

We start building the receiver section of the HF transceiver

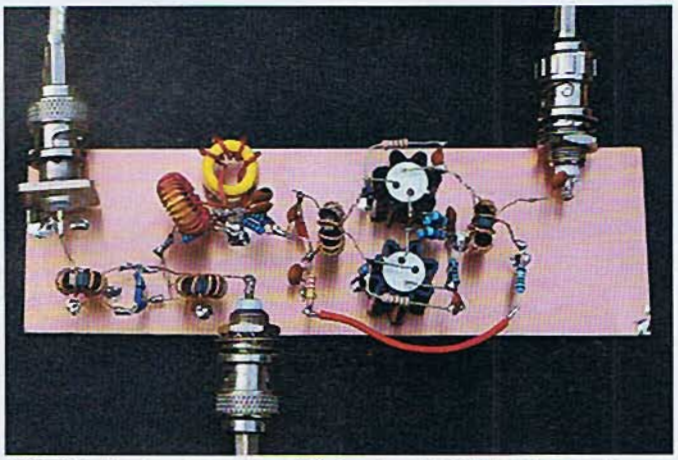

PHOTO 1: Front end consisting of diode mixer, 10.7MHz diplexer and post-mixer amplifier.

EXTREME SIGNALS. Before we start building the receive front end of the transceiver (**Photo 1**), perhaps we should examine how good the receiver front end needs to be? In late 2008, I did a survey of signals received by my HF doublet. This aerial is 40m long, which is approximately a half-wavelength on 80m. The feedpoint is 12m (40ft) above ground, the ends are a bit lower. The doublet is centre fed using 600Ω balanced feeder. This is a fairly typical amateur aerial. A bigger or higher aerial would probably add a few dB to received signal strength.

Over a period of one month, the strongest signals received during daylight hours were typically below -30dBm (7.1mV, or 1μW). Using the widely accepted convention of S9 = 50μV, 20log(7.1÷0.05) = 43dB above 50μV. So this -30dBm signal is fairly strong, at S9+43dB. At night, the stronger signals were usually below -20dBm (S9+53dB). The record for the strongest nighttime signal was -13dBm from an East European broadcast station. This is equal to 50mV, or a rock crushing S9+60dB.

The strongest signals are often found in the 41m broadcast band, which is just above the European 40m amateur band. **Figure 1** shows a snapshot of the RF spectrum from LF to 10MHz at 2030UTC on 21 March 2011. The strongest signal is at a level of -27dBm. Signals were a little stronger later in the evening, but even the biggest signals remained below -20dBm. It is worth noting that even the very strongest amateur signals are far below this level. The dominant signals are from short wave broadcast stations with transmitter power in the hundreds of kW and huge aerial arrays producing ERP measured in megawatts.

A perfect linear amplifier would produce no noise or distortion. The amplifier output signal would be an amplified but otherwise exact copy of the input signal. In the case of a single frequency sine wave input signal, the output signal would be a perfect sine wave and no harmonics would be produced. In the real world, even the best amplifiers are not perfectly linear. There is always some distortion that leads to the generation of harmonics and other spurious signals. Odd order (3rd, 5th, 7th...) inter-modulation distortion (IMD) products are particularly troublesome because they tend to produce in-band spurious signals at or near the frequency of wanted signals. The 40m band presents a worst-case scenario where there are many closely spaced and very strong broadcast stations close to the band edge. Third order IMD tends to increase as the cube of the input signal level. This means that for every 1dB increase of input power level, output 3rd order IMD will increase by 3dB. Increasing input power by 10 times (10dB) will increase 3rd order IMD by 1000 times (30dB)!

The strong signal handling capability of a receiver is defined by its input third order intercept point (IP3). This is a purely theoretical power level where 3rd order IMD products have increased to a point where they are at the same level as normal input signals. We can calculate IP3 by using a two-tone test signal from a pair of signal generators. The two-tone signal of known level is applied to the input of the device under test (usually an amplifier or mixer) and the output signal is observed using a spectrum analyser or some form of frequency selective power meter. Once the relative levels of the two test signals and the 3rd order IMD products ((2*f1)–f2, (2*f2-f1)) are known, the IP3 can be calculated as IP3 = Pin + (IMDR/2) where Pin is in dBm and IMDR is the difference in level between the test tones and 3rd order IMD products. For example, if the device under test is an RF amplifier with gain = 10dB, each test tone is at a level of 0dBm (1mW) and 3rd order IMD is measured at 40dB below either test tone, the input IP3 is 0 + 40/2 = +20dBm. The output intercept point is 10dB higher at +30dBm. This test should be performed at an input level well below the 1dB compression point of the device under test.

Before we can start on IMD measurements, we will need a suitable pair of test oscillators. The two-tone test oscillators described in the January 2009 Homebrew have long since disappeared under the junk pile. **Figure 2** shows the schematic of one of the two test oscillators. The MPSH10 transistor is configured as a common-collector Colpitts oscillator. The output from the oscillator is taken via the 10MHz crystal. A 2SC495 CB driver transistor amplifies the 10MHz signal to a level of +20dBm (100mW). You can use a VHF/UHF transistor like the 2N4427 or 2N5109 instead, but you will need to use a large clip-on heatsink. Power dissipation in this stage is around 1W. The output is via a 7th order LPF and a 4dB, 50Ω attenuator. The final output is +16dBm. The output level can be fine-tuned using the 220Ω pot attached to the crystal and an accurate power meter or oscilloscope.

CONSTRUCTION. The circuit is built dead-bug style on a strip of PCB laminate. The 2SC495 is mounted on the copper surface of the PCB using an insulated thermal mounting kit. A HEM3021 (Maplin N98AB) ferrite sleeve on the 13.8VDC supply wire to each oscillator module improves isolation between the two oscillators and reduces RF leakage via the DC supply wires. The output from the two oscillators is combined using a -6dB hybrid combiner (January 2009). The -6dB hybrid allows the two oscillator signals to be combined while maintaining a high level of isolation between the two oscillators. This reduces IMD caused by one oscillator modulating the other. The combiner consists of three 50Ω resistors

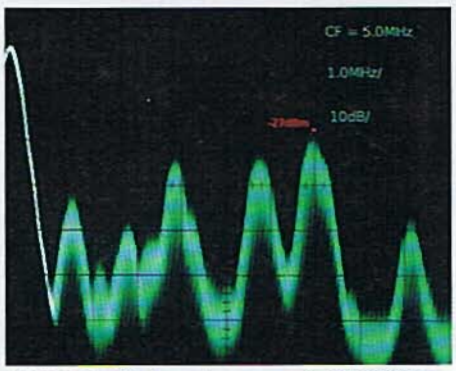

FIGURE 1: Off-air spectrum snapshot LF-10MHz.

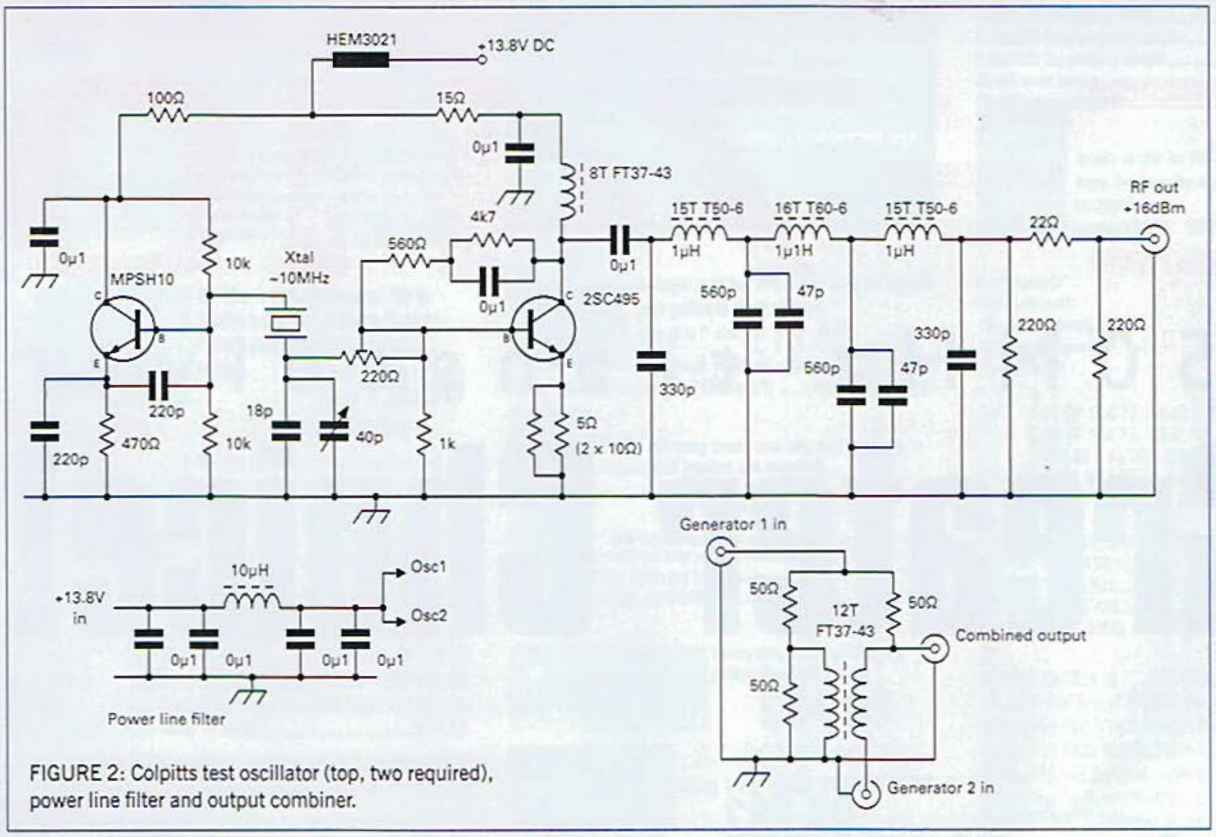

FIGURE 2: Colpitts test oscillator (top, two required), power line filter and output combiner.

and a 1:1 balun transformer. I used a parallel pair of 100Ω, 1% tolerance metal film resistors for each 50Ω resistor. The 1:1 choke balun is 12 turns, bifilar wound (twisted pair) of 0.375mm enamelled copper wire on a FT37-43 ferrite toroid. The two oscillators are mounted in a home made aluminium box. Each oscillator is mounted vertically on a copper ground plane. DC power input is via a simple RF filter mounted close to the entry point for the DC supply wires. The two-tone RF output is via a BNC socket mounted on the front panel.

The finished oscillator unit is shown in **Photo 2**.

OSCILLATOR TESTING. Each oscillator was terminated by a 50Ω load and the output voltage was measured using a digital oscilloscope. The 220Ω pot was adjusted for an output level of exactly 2V peak or 4Vpp. $Vp^2/2R = 2^2/100 = 0.04W$ or +16dBm.

The LPF values are chosen for a cutoff frequency of 11MHz. I used 10.00MHz and 10.24MHz crystals because they were readily available and a 240kHz tone spacing is compatible with the 20kHz resolution bandwidth of my spectrum analyser. The 6dB power loss in the power combiner reduces the output of each tone to 10mW (+10dBm) or 40mW PEP for both tones. The peak instantaneous voltage value is twice the peak voltage from either generator. This happens when both generators are in-phase. When both generators are out-of-phase the output voltage is zero. Bear this in mind when you are evaluating IMD levels. There is a 6dB difference between IMD values referenced to one tone and IMD values referenced to PEP. Low level tests of mixers and amplifiers usually specify IMD relative to either tone. High power testing of SSB transmitters and linear power amplifiers often specifies IMD relative to PEP.

Measuring the output from the combiner using a spectrum analyser confirms that the two tones are of equal amplitude and all IMD products are below the analyser noise floor at more than 70dB below either tone.

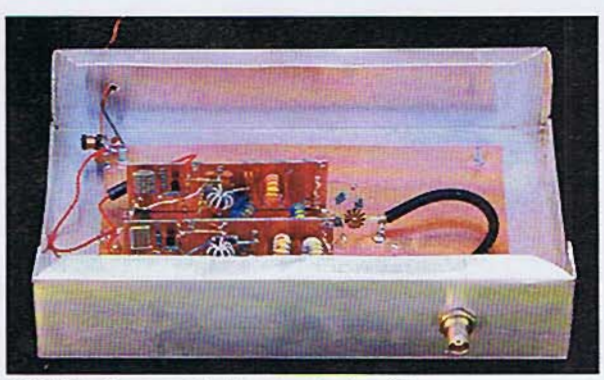

PHOTO 2: The completed two-tone test oscillator.

As a first practical test, the two-tone output was used to drive the input of the Class A power amplifier from the March Homebrew. The gain of this amplifier is 20dB. Measured output power is +30dBm (1W) for each tone, or 4W PEP. Rule-of-thumb calculations suggest that this amplifier will have an output 1dB compression point that is approximately the same as the DC input power, 13.8V x 3A = 40W (ish) or +46dBm. The output IP3 should be slightly more than 10dB above this value, +56dBm or better. Using a high power 40dB attenuator between the amplifier output and the analyser, the actual IMD products were measured at -58dB referenced to either tone. Input power is +10dBm for either tone, output power +30dBm each tone or 4W PEP. 10+(58÷2) = +39dBm input IP3 or +59dBm output IP3. Once again, the old rule-of-thumb proves quite accurate. These results confirm the very good reports on the signal quality from the new transmitter. At 8-10W PEP output, 3rd order IMD is still better than 50dB below PEP output. Distortion starts to rise rapidly at the 1dB compression point of approximately 20W.

RECEIVER. The first stage of the receiver is the RF BPF unit that has already been built and tested (February 2011). Hopefully, I haven't put the cart before the horse by building this unit first and then testing its IMD performance several months later. My research into non-linear behaviour of band pass filters led me to the excellent web page of Martein Bakker, PA3AKE [1]. This site is a treasure trove of detailed information about the H-mode mixer and general information about high dynamic range receiver design. Martein's measurements of 3rd and 4th order band pass filters using T50 type toroid cores shows that such filters will have an input IP3 of roughly +40dBm. This easily meets my requirements. It seems that I won't have to put my new and rather expensive BPF unit in the dustbin after all.

For my own experiments, I built a very simple, single resonator BPF as shown in **Figure 3**. The -3dB bandwidth (BW) is about 1MHz and insertion loss is a small fraction of 1dB. The I/O coupling capacitors are 47pF disc ceramic types. Air dielectric trimmers would probably be better, but these particular ceramic capacitors seem to have high Q and good linearity. C2 is an Arco type compression trimmer. I have used these in 100W VHF amplifiers for some of our previous projects.

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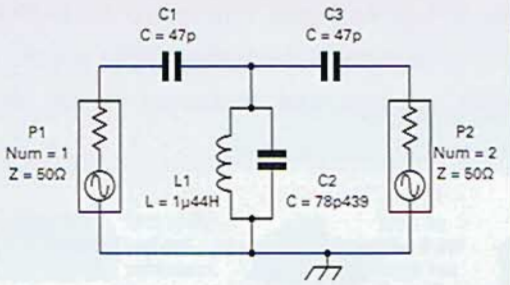

FIGURE 3: Single resonator BPF for test purposes.

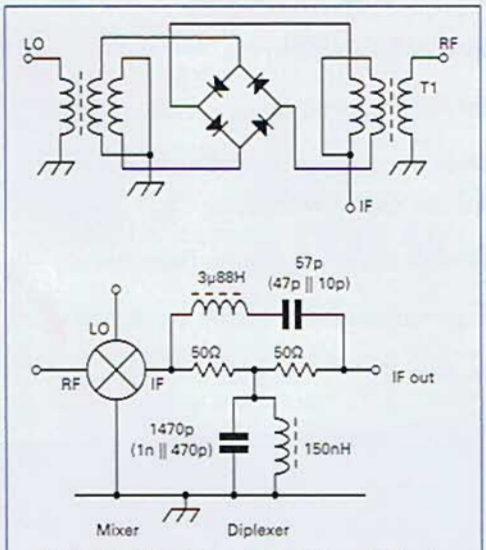

FIGURE 4: Mixer (above) and diplexer (below).

The inductor is 19T of 0.375mm (not critical) wire on a T50-6 powdered iron toroid. Placing this filter between the two-tone oscillator and the spectrum analyser shows that there is little or no sign of any IMD at +10dBm (each tone). IMD at 60-65dB down suggests an IP3 of more than +40dBm. Using the Class A PA to boost the two-tone signal to +30dBm (each tone) shows 3rd order IMD at 40dB down. If we assume that non-linear behaviour of the toroid core follows the usual rules for IMD3, this suggests IP3 may be as high as +50dBm. After a long period operating at this level, the toroid core was slightly warm. The capacitors were still cold. Replacing the toroid with a 1.4µH inductor made from 1mm copper wire wound on 20mm plastic pipe reduced IMD products to 53dB below either tone. This suggests that most non-linear effects are due to the toroid core and not the capacitors. It is likely that a narrow bandwidth filter with a higher loaded Q will show higher levels of IMD than my simple circuit. However, I am satisfied that my bandpass filters will easily outperform any of the amplifiers or mixers that I am likely to use in the front end of my new receiver.

State-of-the-art receivers using high level passive MOSFET mixers like the G3SBI H-mode mixer could potentially have an input IP3 of +40-50dBm. This would call for something more substantial than T50 cores in the BPF. Larger toroids like the T94 types used by PA3AKE or air core coils as described above would be suitable, but at a considerable cost in terms of size and weight.

MIXER. There are several obvious candidates for the first RF mixer. My old rig uses a dual-bridge mixer as described in [2]. This mixer can achieve an IP3 of above +30dBm if sufficient LO drive is available. The standard diode DBM and the triple balanced mixer as used in the transmitter stage are also well proven high level mixers. I am also tempted to build a passive switching mixer using MOSFETs or high speed bus switch ICs. So many choices!

I faced a similar dilemma when I built my last HF rig. The receiver was built in modular style so that I could evaluate several mixers before I settled on my final choice. I will follow the same path with this rig. The first front end will use a diode DBM with high local oscillator injection of up to +23dBm (200mW). The mixer will be followed by a diplexer with a Q of 5 and a push-pull transistor amplifier. The diplexer design was lifted from the January 2009 Homebrew project. The mixer and diplexer are shown in **Figure 4**. The mixer is based on a ring of four 1N5711 Schottky diodes, which were matched for forward voltage drop using the diode test function of my digital multimeter. The mixer transformers are each ten turns of trifilar wound 0.375mm enamelled copper wire. The three wires are twisted at 3 turns per cm. VE7BPO's website [3] has some good tips for transformer winding and diode matching.

The diplexer coils are 30 turns on a T50-6 toroid for the 3.88µH inductor and 5 turns on a T50-6 for the 150nH inductor. Because the diplexer component values are fixed, the component values are quite critical. The 150nH coil is bunched so that the five turns only occupy 50% of the toroid. If you don't have an accurate L/C meter, you might prefer to use variable inductors for the diplexer. As usual, the 50Ω resistors are a parallel combination of two 100Ω resistors.

I used the two-tone oscillator to test the diode mixer. The two-tone signal was applied to the RF port. The LO signal was provided by the DDS VFO (March 2010), a precision attenuator (April 2010) and a two stage amplifier (February 2011). This allows for LO drive level from microwatts up to +23dBm (200mW). With LO power in the 20-23dBm range and RF input of 0dBm (1mW) for each tone, third order IMD products were measured at 60dB below either tone. This indicates an input IP3 of +30dBm, which is an excellent result for such a simple and inexpensive mixer. Commercially made level-24 and level-27 mixer modules offer similar performance, but the price is 30-80 times the cost of my homebrew mixer.

I found that there was little or no difference in IMD output when the LO drive level was reduced from +23dBm to +20dBm. This suggests that there is little to be gained from increasing LO power beyond the +20dBm level. IMD increased slightly when LO drive was reduced to +17dBm and quite significantly as the LO power was reduced to the 5-10dBm range. Interestingly, LO power has very little influence on conversion loss until the LO

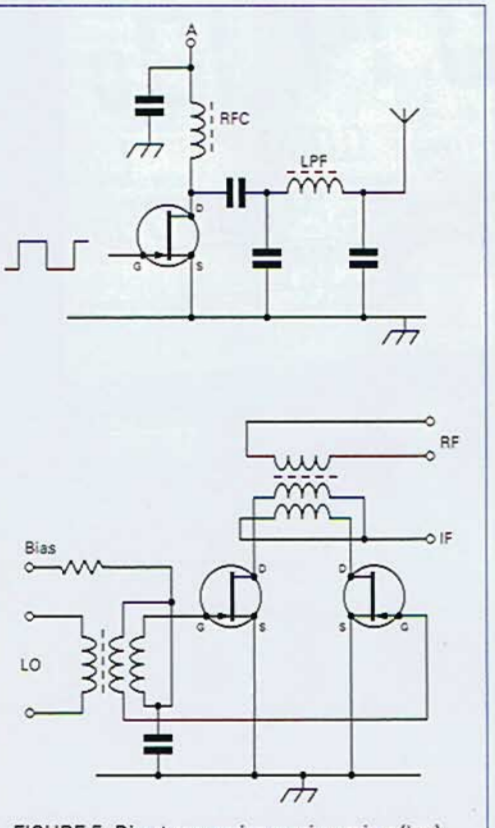

FIGURE 5: Direct conversion receiver mixer (top) and balanced version of same (bottom) – see text.

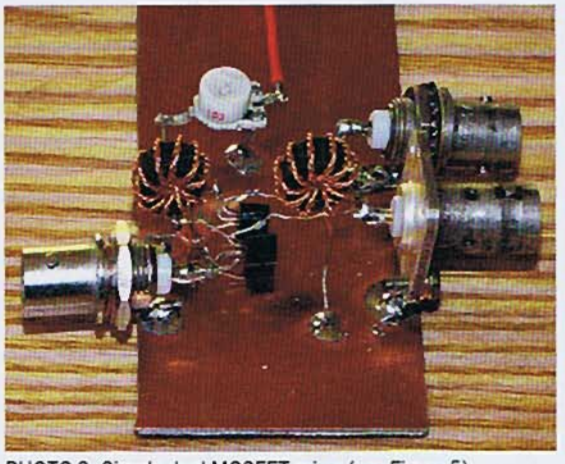
PHOTO 3: Simple dual MOSFET mixer (see Figure 5).

level is reduced to about 3dBm, which is only slightly more than the RF input level.

TESTING. I used the IF/AF strip from the LF band receiver (January 2010) as a test bed for the receive mixers. The BPF unit was placed between the aerial and diode mixer RF input port. This combination has no RF or IF gain before the crystal IF filter. Performance was surprisingly good on the LF/MF bands. Band noise was easily detectable on 160/80/40 and several American stations were heard using this configuration. As you would expect, this system tends to be a bit deaf on the higher bands.

OTHER MIXERS. While I was testing the diode mixer, I also evaluated a simple MOSFET mixer. This type of mixer was one of several I tested in the front end of my old HF rig during the early 1990s. The idea came from a Russian magazine article sent to me by my old friend Oleg, UU1DX. I couldn't understand most of the text, but I found the schematics very interesting. To my eye, the circuit at the top of **Figure 5** looks like the PA and LPF stages of a simple transmitter and could not be used for any other purpose. In fact, this is the front end of a direct-conversion SSB/CW receiver. The MOSFET is used as a fast switch that acts as a single-ended, unbalanced mixer/product detector. The audio output is at point 'A'. You can see how this circuit could serve as both the transmit PA and receive front end in a simple transceiver. I wanted to build a balanced version of this circuit so that the very strong LO signal would be isolated from the IF port. The result is shown at the bottom of Figure 5. I used two SMD MOSFETs stripped from a dead hard drive. The mixer performed very well on the LF bands, but not so well at HF, probably because of the limited switching speed and high gate capacitance of the MOSFETs.

The MOSFET mixer was tested using a 6Vpp sine wave at the MOSFET gates. Gate bias was initially set at 3VDC so that the LO drive swings from 0V to 6V. Tests with a dual trace oscilloscope confirm that the LO signal looks clean and symmetrical at the FET gates. I used a pair of 2N7000 switching MOSFETs in my test circuit. Both transformers are identical to the ones used in the diode mixer. Once again, a two-tone test signal of 0dBm each tone was used. IMD3 at the IF port was measured at 42dB below either tone. This suggests an IP3 of +21dBm, which is quite respectable, but not as good as I expected. There may be room for improvement if I use a square wave LO signal and perhaps some faster FETs or some high speed bus switches as used in recent versions of the H-mode mixer. I will return to this circuit in the near future. I would also like to try using four devices in both the ring and H-mode configurations. **Photo 3** shows my prototype MOSFET mixer.

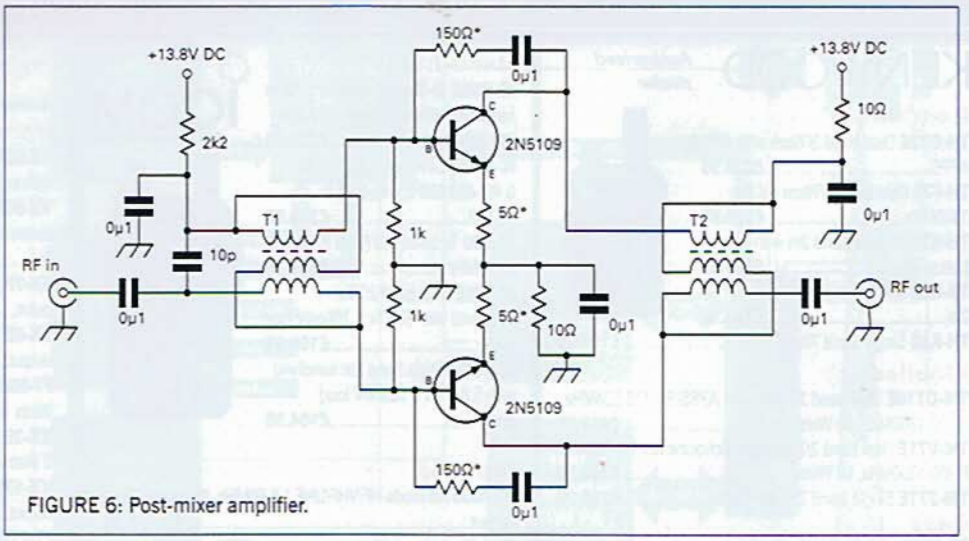

FIGURE 6: Post-mixer amplifier.

POST-MIXER AMPLIFIER. The next stage in the chain is a post-mixer IF amplifier. As the mixer has a conversion loss, the mixer output IP3 is about 6dB below the input IP3. The diplexer loss is only about 1dB, so the post-mixer amplifier should have an input IP3 that is greater than +23dBm – and preferably significantly higher. I decided to use a push-pull amplifier, which is similar to the broadband amplifiers used in some of our recent projects. Each side of the amplifier is designed for a gain of 10dB and I/O impedance of 25Ω. The input and output balun transformers are simple 1:1 transmission line types. The amplifier schematic is shown in **Figure 6**. I used a pair of 2N5109 transistors biased for a high standing current of 50-60mA each. This is a DC input power of +32dBm, which should give a (rule of thumb) output IP3 of about 42dBm and input IP3 of about 32dBm, although I haven't measured the amplifier IMD yet.

AMPLIFIER CONSTRUCTION. The amplifier was built on a strip of PCB laminate in the usual dead-bug style. Both transistors should be fitted with a large clip on heatsink. The smaller 10mm 44°C/W types are not big enough for this application. Finned 33°C/W or similar are recommended. T1 and T2 are both 10 turn trifilar wound (three twisted wires) on a FT37-43 toroid core. Pay close attention to the winding details in the schematic. The 5Ω resistors are made from two 10Ω resistors in parallel.

These 5Ω resistors and the 150Ω shunt feedback resistors set the amplifier gain at 10dB. If gain is a higher priority than output intercept point, you can increase the gain to about 15dB by using resistor values of 3.9Ω and 220Ω.

AMPLIFIER TESTING. Bench testing of the amplifier shows a gain of exactly 10dB, falling off to 9dB at 32MHz and 7dB at 60MHz. Input return loss is better than 16dB (SWR 1.4:1) from LF to 30MHz and better than 14dB (SWR 1.5:1) up to the low VHF region. This is ideal for the intended application as a post-mixer IF amplifier. I would have liked to see slightly better performance from 28MHz to 52MHz so that the same design could also be used as the RF amplifier.

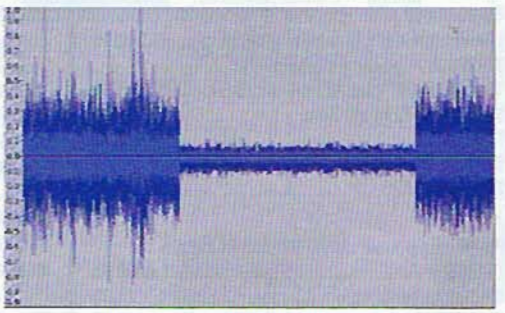
FIGURE 7: Receiver band noise test; the antenna was removed in the 'flat' portion (see text).

The receiver test rig was rearranged in the following order: BPF unit – mixer – diplexer – post-mixer amplifier – IF strip. Receiver sensitivity is now much improved on the HF bands. The very first signal heard was veteran homebrew expert Harold, W4ZCB on 15m. Recordings of this test can be found at [4] and [5].

No noise figure measurements were performed, but the receiver sensitivity is good enough to hear the band noise on all bands up to 10m. **Figure 7** shows the received noise on a quiet frequency on 15m. This is a six second recording. The receive aerial was disconnected for three seconds. Average band noise is more than 10dB above the receiver noise floor, peak noise spikes are about 20dB above the noise floor. Not bad for a rig with no RF amplifier.

Next month we build some IF amplifiers.

WEBSEARCH

[1] www.xs4all.nl/~martein/pa3ake/hmode/
[2] *Solid State Design for the Radio Amateur*, Hayward, DeMaw. ARRL.
[3] www.qrp.pops.net/xmfr.asp
[4] http://homepage.eircom.net/~ei9gq/W4ZCB-15M.mp3
[5] http://homepage.eircom.net/~ei9gq/N2IR.mp3

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Accessories

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(MTD-5 is a crossed dipole with 4 legs)

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SQBM500N 2/70cm, Gain 6.8/9.2dBd, RX 25-2000MHz, Length 250cm, N-Type £79.95
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SQBM1000P 6/2/70cm, Gain 3.0/6.2/8.4dBd, RX 25-2000MHz, Length 250cm, SO239 ..... £84.95
SQBM1000N 6/2/70cm, Gain 3.0/6.2/8.4dBd, RX 25-2000MHz, Length 250cm, N-Type £89.95
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MOONRAKER

MTD-300 2-30M Broadband wire dipole antenna £149.95

The MTD-300 broadband dipole antenna is designed to provide optimum performance over a wide frequency range and is very easy to assemble and use.

● Frequency 2-30MHz ● Radiator length: 25m (82ft) ● Type: Terminated Folded Dipole ● Radiation: directional ● Feedline: 50 Ohm coax (30m) ● Connector: SO239 ● SWR: <2.0:1 to <3.0:1 depending on factors ● No transmatch required ● Power: 150W (PEP) ● Spreaders: 46cm (18in) ● Weight 3.1kg.

HUSTLER

HF Verticals

Brilliant HF antennas that can be ground mounted if required which in todays limited space is a popular option. Also extra trap tuning is also available to get that perfect match if required.

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The Dual Beam Pro

A small and light five band antenna from Pro Antennas

PHOTO 1: The completed Dual Beam Pro.

INTRODUCTION. The Dual Beam Pro from Pro Antennas is Carl, G4GTW's latest creation, aimed at amateurs who want to get a five-band antenna in as small and light a package as possible. The antenna is effectively a non-resonant dipole with capacity hat end loading. It has been specifically designed to be non-resonant on any of the amateur bands, but uses a balun/impedance transformer at the feed point to lower the resultant SWR down to a more manageable level. More of that later.

At first glance you may wonder why Pro Antennas has taken this approach to the design, but on closer inspection it all becomes clear. Carl points out that with a conventional half-wave dipole you get significant nulls off the ends. This means that when fixed in any one direction you will find that signals being received 'off the ends' will be down considerably – perhaps by up to 3 or 4 S-points. Plus, to get five band operation (20m-10m) you normally need either traps, parallel-fed radiators or some other form of matching to get the SWR down to 1:1 on each of the bands. The result can be quite a heavy, complex antenna that still needs to be rotated to give 360° coverage.

With the Dual Beam Pro, its non-resonant nature and impedance transformer means that you can find a match more easily, the construction becomes much simpler and the antenna much lighter. Also, the capacity hat end loading makes the overall length shorter.

At higher radiation angles the Dual Beam Pro starts to become more omnidirectional when mounted at a height of, say, 10m. But at take-off angles less than 10° (such as needed for DX) you can see the nulls off the ends of the antenna quite clearly.

These can easily amount to 10-48dB (2-8 S-points) depending on the band and height above ground (as confirmed in Carl's tests with Mike, G3SED). This was also seen by me when I modelled the Dual Beam Pro in the MMANA-GAL antenna modelling software. Therefore, you should rotate the antenna to get the best results.

Now, the purists will already be pointing out that you may get losses in the balun, the non-resonant nature of the antenna may rob you of an S-point or two, and the resultant higher SWR on the feedline may result in losses. Indeed, this is what I thought, but the tests showed that these fears were largely unfounded. Pro Antennas uses a low-loss balun and the low-ish SWR on the (relatively short) feedline means that any losses are minimised.

The worst case scenario was less than 2dB loss on 10m (28MHz) using 20m of RG213 coax.

However, ultimately the proof of the pudding is in the eating and tests showed the antenna to be a good performer.

CONSTRUCTION. The Dual Beam Pro arrived in two boxes – one long tube containing the radiating elements and a smaller box with the balun and mounting hardware.

I built and tested the antenna at the QTH of Chris, G0DWV, where he has an extensive antenna farm and a trailer-mounted Versatower that was used for the Dual Beam Pro.

Using Chris' set up we were able to compare it with sloping/horizontal dipoles, a doublet and a G5RV all suspended at about 50ft – and even a Force 12 beam at 80ft. The Dual Beam Pro was mounted lower than the other antennas and about 100ft away to minimise interaction.

The antenna looks like a giant H on its back, with a 5m aluminium boom and two thinner aluminium end-capacity hats, each 2.5m long. It is very light, very easy to construct and is designed to be mounted on a lightweight mast, gable wall or chimney. The hardware includes stainless steel fittings and a galvanised mast head bracket. The centre support insulator is solid GRP rod that provides good structural strength together with very low moisture absorption characteristics.

It took less than one hour to assemble the antenna and you need little more than a couple of spanners – it is very easy to build and the instructions are clear.

Carl recommends that you feed the antenna with at least 20m of coax, which helps reduce the SWR that the rig and ATU will see. The result is that most internal ATUs will be able to match the antenna down to an SWR of 1:1.

In reality, with the antenna on a Versatower at about 25ft and fed with 100ft (30m) of brand new RG-213 coax I found that the resultant SWR was below 3:1 on most bands, rising to a maximum of 4.7:1 on 14.000MHz (see table).

My own rig's internal ATU will tune antennas with an SWR of up to about 10:1, but I know that other manufacturer's will only manage about 3:1, so you might have to use an external ATU if you have problems finding a match on some bands.

TESTING. On hooking the Dual Beam Pro up to Chris' station, testing could be started in earnest. The HF bands were humming with the solar flux at 155.

First impressions were that the antenna is quiet, noise-wise. This is probably as a result of it being horizontally polarised and balun-fed. In a noisy suburban

Pro Antennas Dual Beam Pro
(At 25ft above ground, at the end of 100ft RG213 coax)

7.100MHz	SWR 20.9:1
10.120MHz	SWR 10.6:1
14.000MHz	SWR 4.7:1
14.350MHz	SWR 4.3:1
18.070-18.168MHz	SWR 3:1
21.000-21.450MHz	SWR 2.8:1
24.930MHz	SWR 2.6:1
28.000MHz	SWR 2.6:1
29.700MHz	SWR 3.2:1

neighbourhood this could be a major boon.

The next impression was that this is no compromise antenna. It heard better than Chris's doublet and G5RV and was roughly equal to resonant half-wave dipoles (as you would expect). It was also electrically quieter than the G5RV, doublet and a half-wave sloper on 17m suspended with the top at 55ft.

On tests with the SV5TEN beacon on 28.180MHz we found that rotating the Dual Beam Pro so that it was end on rather than side on resulted in the signal strength dropping by about 2 to 3 S-points. This was about what my modelling predicted and shows that for best results the antenna should ideally be fitted on a rotator. Its lightweight construction, however, means that a smaller, less expensive, rotator should be fine.

A list of DX worked and heard doesn't really tell you about the antenna's performance, but in tests with VU2DSI in Mumbai, India on 10m (28MHz); VK4JUZ in Australia and W4UWC in Knoxville, Tennessee on 17m (18MHz); and BA3AO in China on 20m (14MHz) the Dual Beam Pro bettered all the aforementioned antennas in terms of the signal-to-noise ratio and overall signal strength. Only a Force 12 beam at 80ft performed better, usually beating the Dual Beam Pro by about three S-points (as you would expect).

Back-to-back tests with a station in Sweden on 17m SSB confirmed that it was either equal to or better than all the other wire antennas by about 1 S-point.

CONCLUSIONS. A further week of testing by Chris confirmed that is a very quiet, usable antenna that performs well on all bands 20-10m. I must admit we were both surprised as conventional wisdom would have it that the design should result in mismatched losses due to higher a SWR on the feedline and potential losses in the balun.

In reality, this wasn't borne out and perhaps proves that a rotatable, low-noise dipole-like antenna (even if non-resonant), can give better performance than a fixed wire antenna like a dipole, doublet, G5RV or noisy vertical. The antenna can also be used on 30m (10MHz) and 40m (7MHz) with reduced performance. It is down on a dipole on these bands due to its small size.

PHOTO 2: The balun and mounting hardware.

If you want an antenna that outperforms your compromise wire antenna or trap vertical on HF, but don't have the space or money for a tower and conventional beam, the Dual Beam Pro has a lot to offer.

I would suggest you mount it as high as you can, at least chimney height if possible, and use a rotator too for the best results. It isn't a directional beam (with gain) in the traditional sense, but then it doesn't pretend to be, weigh as much or cost as much.

What you do have is an electrically-quiet, simply-constructed antenna that can be used on 20m-10m with little fuss. You can rotate it to peak signals or null out the ones you don't want.

You will need a good internal or external ATU and it is best fed with quality coax like RG213 rather than the thinner RG58. Carl suggests Mini RG8 as a good compromise for cable lengths between 20 to 30m.

In conclusion, both Chris and I started the tests thinking that the antenna would be a compromise. In the end we were both very impressed - and when it comes to antenna testing that doesn't happen very often.

The Dual Beam Pro costs £219 and is available direct from the UK manufacturer

PHOTO 3: It took less than one hour to assemble the antenna.

PHOTO 4: A trailer-mounted Versatower was used for the Dual Beam Pro.

Start Here

What could go in a logbook?

Amateur Radio Station Log

Date	Time (UTC) Start	Time (UTC) Finish	Frequency (MHz)	Mode	Power (dBW)	Station called/worked	Report sent	Report received	QSL sent	QSL rcvd	Remarks
10/8/2003	0628	0632	144	J3E	20	PA0KVA	59	58	✓		JO33kc Ken
	0644	0648				DL5ELU	59	58	✓		Hermann JO41ED
	0649	0652				PE1NZS	57	59	✓		JO21IM
	0653	0656				GW4BOV	58	55			1081JP Philip
	0656	0659				DG2YMG	57	51			Michael JO31LN
	0709	0714				PA7ZEE	55	51	✓		Geert JO22KH
	59 14	0716				PE4ADT	59	59	✓		JO22JJ
	0713	0719				PE4ODY	59	57	✓		JO23JB
	10 50	1057				G4AWZ	59	59			Paul JO01
12/8/2003	0932	0935				F2IQ	59	57			IN98EB
	2100	2121	144 - 155	J3E	50	OK1UAK	227	26	✓		JO80NB
	2200	2300	144 - 166			IN0CPN	—	—			No copy not even a ping
13/8/2003	0418	0418	144			DB5XA	59	59			Tom JO43VJ

Extract from M5FUN's log, 2003.

WHY? Keeping a logbook hasn't been a requirement for amateurs for a few years now but there are several reasons why you might wish/need to start keeping one. This month we look at when you might need to keep an official logbook, what goes in it, what you might want to record in your own personal logbook and consider why you might use a computer logbook instead of a paper one.

THE OFFICIAL NEED. In clause 12 of our amateur licences, Ofcom can require us to keep a permanent log for investigative purposes. This would usually be required if you have been granted a special experimental permit or if an interference complaint was filed near you. Unfortunately, clause 12 doesn't give us much guidance as to what we should log. In general it is a good idea to record the following for every transmission (whether CQ or QSO etc): date and duration of transmission (in UTC), mode of transmission and frequency (accurate to a couple of kHz). It's also advisable to record the power you were running and possibly which direction your antenna was pointing, if appropriate. Furthermore, at the start of each period of operating you could also note your location (as specified in the licence, but more particularly if you're away from home), the equipment you are using and any transmission tests you have made – plus their results.

An accurate log can help eliminate you as a suspect in interference cases. It also allows Ofcom to assess the impact of amateurs on certain bands in the case of some experimental permits. Finally, you could also keep an official log for recording infringements of the amateur bands, whether by other amateurs or by third parties. Keeping a log of these incidents can help Ofcom to remove offending amateurs and even tackle interference issues on an international scale.

THE UNOFFICIAL NEED. Keeping a logbook is a great way to track your progress as an amateur. A logbook is a great *aide memoir* when discussing who you've contacted in the past and a well annotated one can provide a wealth of inspirational material for future amateurs. Furthermore, a logbook can give insight into conditions and activity levels that can help determine the relative health of the hobby or even lead to discoveries of new modes of propagation.

SO WHAT COULD BE USEFUL IN A LOGBOOK? For an unofficial logbook, it depends on your needs: you could choose to faithfully record every CQ and QSO or you could just record those of particular interest – or some compromise in between. The basic details of the call/contact should probably be recorded, such as an accurate date and time (make sure to note if you used a time reference other than UTC), frequency in use and station contacted. This is a useful starting point; if you receive a QSL card you can look back through your log and check the details to make sure you verify the correct QSO or SWL report.

Next, there are two additional types of data that you could record. The first is data received from the station that you're working. This could be information about your signal quality, their equipment and antennas to help you gauge how well your station is getting out or it could include remarks such as who the other station contacted and when they had good propagation. This can help you plan your future activity to snag that rare DX or determine if you really got the best of an opening.

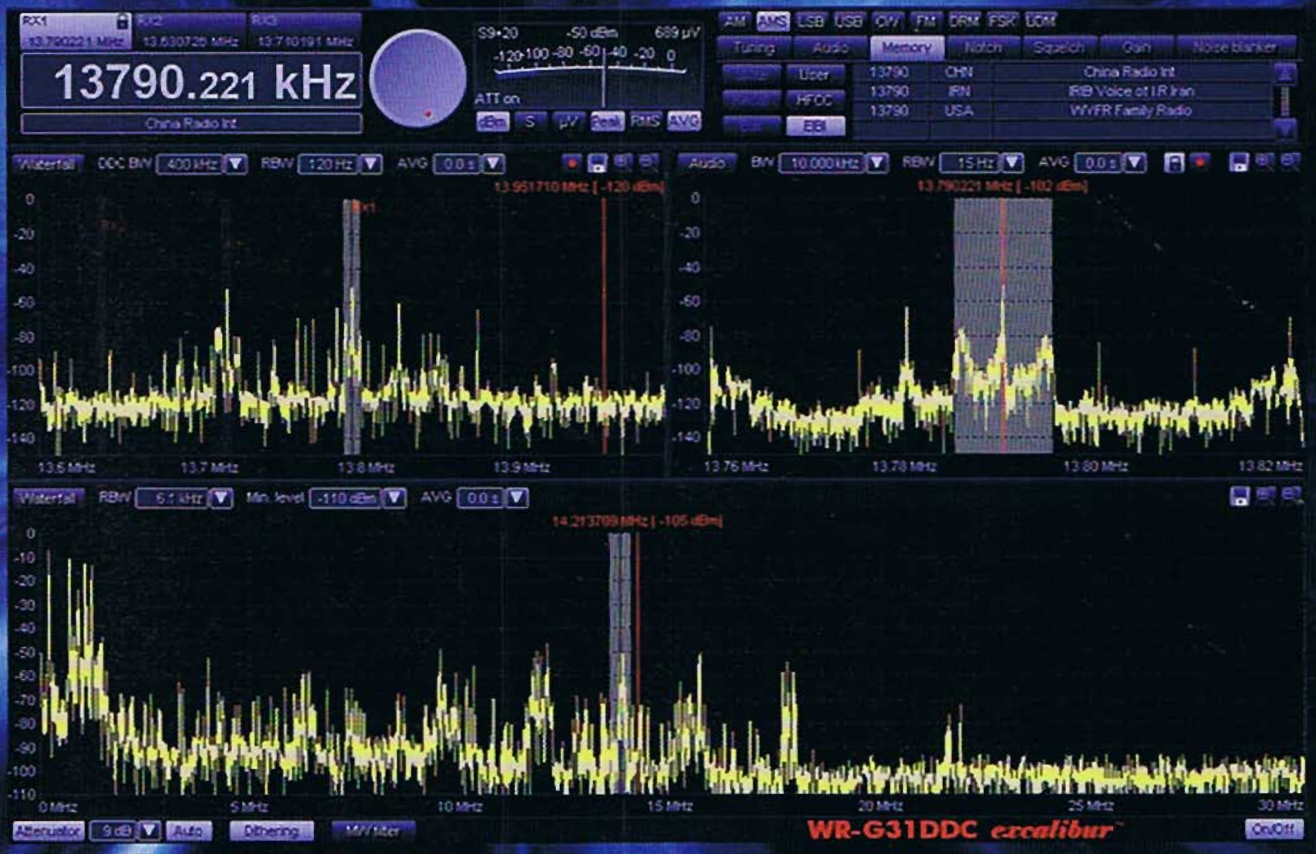
The second type of data you could record is particular to your own interests. For instance you might choose to record the beam heading for each auroral contact to try and visualise the progress of the aurora. Or you could perhaps download or cut out from the newspaper a copy of a large scale pressure map so that you can identify the weather conditions that lead to favourable tropo openings. Perhaps the most commonly recorded data of this type is the daily sunspot number. By noting this and perhaps a beam or general heading, you can get a picture of where contacts are available on what band and time of day for a particular level of sunspot activity. Since sunspot numbers can be reasonably estimated up to as much as 28 days in advance thanks to the rotation period of the sun, this can help you to plan a contest or chase an award where you need conditions to be favourable to a particular region.

COMPUTER LOGGING? While logging on paper is a great way to keep a personal record of a few contacts, by the time you've made a couple of hundred or so in a short space of time it can be tedious to write them all up. This is where the flexibility of computer logging can help as it's possible to either log in real time, type a few contacts up post event or even to import a log from say a specific contest logging program. There are many general purpose logging programs available either for free or for a small cost. Most of these programs are aimed at Windows machines although a few are becoming available for Macs.

When researching/choosing a general logging program it's best to consider what you predominantly want it to do. For instance if you enjoy chasing awards then you might look for a program that allows you to customise the awards you follow. But if you prefer the VHF and above bands you might look for a program that calculates beam headings and perhaps allows you to set sked reminders.

KEEPING IT SAFE. One final word about your logbook(s) – it's well worth investing in a secure storage container for old logbooks rather than just letting them gather dust in the attic or running the risk of flooding in the basement. If you use a computer you should get into the habit of backing up your log once a month or so to a form of removable medium such as an external hard drive or CD. If your program allows, you should also back up any user settings such as if you've customised the order of the entry fields. This can save many headaches in the event of computer issues...

The *EXCALIBUR* unsheathed.



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UBC-785XLT Uniden-Bearcat Base £209.00
USC-230 Uniden-Bearcat ScanCat 230 £99.00
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PSR-255 GRE Handheld Scanner £50.00
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IC-7400 HF, 6m & 2m transceiver £999.00
Kenwood TR-751E 2m Multi-mode £275.00
Yaesu FT-290MkII 2m Multi-mode £250.00
Kenwood TM-V7E 2m/70cm FM Mobile £249.95
Kenwood TM-D700E Dual Band Mobile £299.00
Yaesu FTV-901R 2m/70cm Transverter £275.00
Yaesu FT-817ND HF 6m VHF UHF 5W £419.00
Icom IC-910H 2m/70cms base 100w £999.00
Yaesu FT-897D Multiband Portable £649.00
ICOM IC-2200H 144?146 £189.00
Kenwood TM-741E - VHF/UHF £229.00
DR-635E Alinco 2m/70cm FM £239.00
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ANEM amplified module. .....£127.99.
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NEDSP-1061-KBD DSP module..£101.95.
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Design Notes

Wide band downconverters for SDRs

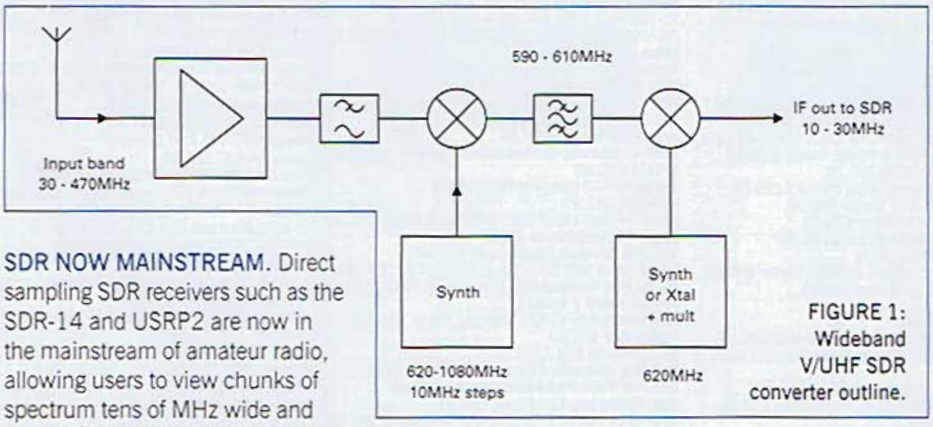

FIGURE 1: Wideband V/UHF SDR converter outline.

SDR NOW MAINSTREAM. Direct sampling SDR receivers such as the SDR-14 and USRP2 are now in the mainstream of amateur radio, allowing users to view chunks of spectrum tens of MHz wide and choose individual signals or bands for further attention with just the point-and-click of a mouse. But the limitations of technology mean such receivers usually have an upper frequency limit of only 30 - 50MHz – although this will increase gradually as A/D technology improves. Some advertise the ability to receive up to several hundred MHz, but they do this by under-sampling or aliasing, which is a far from ideal technique that carries all sorts of complications. In particular, the exact band of interest has to be selected by a filter that completely rejects other aliases. At these higher frequencies the mathematics of sampling mean gain and sensitivity fall off following a SIN(X)/X law. So for SDR coverage of VHF and up we have to fall back to the tried and tested downconverter.

One solution is direct down conversion and in the March 2009 Short Circuits [1] I described a not-quite-perfect-but-adequate breadboard converter put together as a quick solution to receiving the GB3RAL beacons on 60 and 70MHz. That had a fixed input range and was slightly prone to interference from broadcast stations in the 88-108MHz band. If we want to cover, say, the complete 30-470MHz range for access to the VHF/UHF spectrum of most interest, the problems of filtering out spurii and images are huge. We would need a massive bank of switchable bandpass filters, each with a bandwidth of our target SDR range, covering every chunk of the wanted input frequency.

A solution lies in double conversion, shown in outline in **Figure 1** with the frequency mapping in **Figure 2**. We first mix up to a high IF, well above the highest frequency of interest so our input filtering can be simplified. The bandwidth of this first IF determines the instantaneous output frequency band. For a 30MHz SDR, an IF bandwidth of 20-25MHz would be suitable for practical purpose. For the sake of discussion here and to keep to nice round numbers, we'll make our first IF centre frequency 600MHz, with a 20MHz BPF passing the range 590-610MHz. Practical designs may well suggest other first IFs and indeed there are some quite strong arguments for using a value around 900MHz – see later.

We need a synthesised local oscillator for this first conversion, but we are only interested in coarse frequency steps so the synthesiser can have a large step size, leading to a simple design with low close-in phase noise. A packaged VCO with one of the synthesiser chips described in March's Design Notes will do the job adequately.

Theoretically, all we need for the input filter is to be able to reject the image of the first conversion, ie all frequencies higher than the first LO. For the example given, this means everything above 620MHz. If we have a suitably large gap between our upper Rx limit and the IF, the resulting filter won't even need to have a sharp cutoff. The transition band for the example is 470MHz to about 590MHz, from top of our input range to the lower IF edge. However, to be able to cope with the extraordinarily strong signals that appear in some parts of the VHF band and not put too much demand on circuit linearity and gain control range, it is advisable to include a bank of simple L/C bandpass filters that can be switched in or even varicap tuned. We do need to be aware of just what signals will be present in our image band above the IF: TV transmitters and mobile phone base stations come to mind. They can be removed by good design but we have to look carefully at doing so and make sure the filter rejects them properly.

Next we have to convert our high first IF down to baseband. A fixed LO of 620MHz (from a second synthesiser or just a crystal oscillator/ multiplier) will convert the 590-610MHz IF passband to the wanted output range of 10–30MHz. The bandpass filter (with its 20MHz bandwidth) will have a transition band of several MHz before its amplitude response is acceptably down. The region 610-650MHz will have a non-optimum amplitude response that could give us problems. Figure 2 shows what can happen. If the amplitude has not fallen off sufficiently at 630MHz, input signals several tens of MHz away from the range we are interested will leak though and their image will fall into the passband of the second conversion. And if they just happen to be your local pager Tx, or a Band 2 transmitter, it could be nasty.

Another 25dB or more of rejection can be found using image cancelling quadrature conversion for the second mixer stage. At the output frequency this needs a quadrature hybrid giving 0/90° split over the relatively wide 10-30MHz

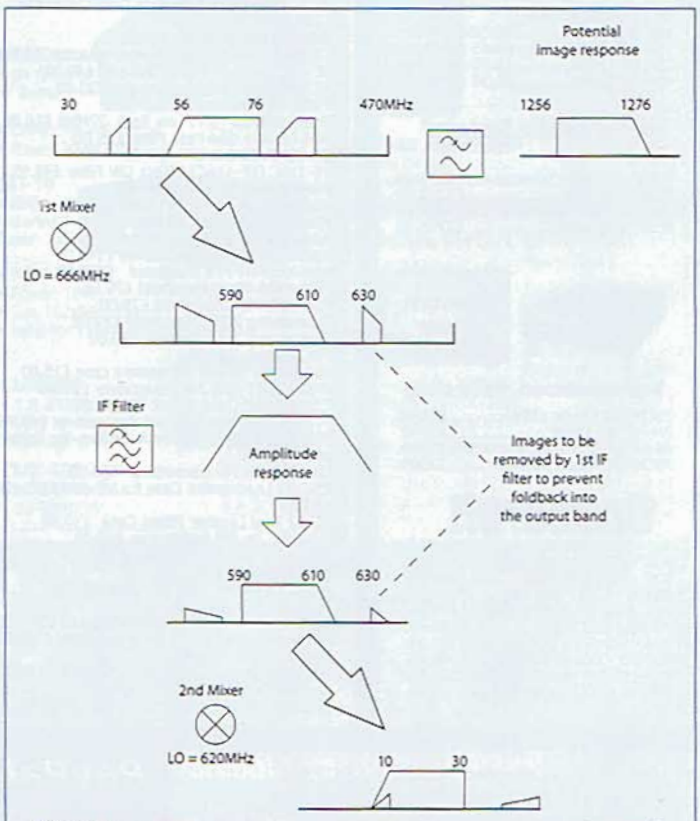

FIGURE 2: Frequency conversion plan showing potential spurious and image product locations.

WATERS & STANTON

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Online Catalogue
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ICOM

Longstanding Achievement Award for W&S!

On our recent visit to Icom UK's headquarters, Jeff Stanton (second from left) and Mark Francis (furthest right) were presented with a longstanding achievement award from Icom Inc. by Icom UK Chairman, Dave Stockley (first left). Also in the presentation was John Turner (second from right) Icom UK's Amateur Radio Product Specialist. Dave Stockley said, 'Waters & Stanton are our longest serving dealer and we go back quite a few decades now. The award from Icom Inc. is for the service and dedication that they have given our customers and the great hobby of Amateur Radio over the years.'

NEW IC-7410 HF - 6m Transceiver

Icom's Most Valued Dealer Gets First Delivery!!

Our association with Icom is second to none and so is our service.

- *100W HF-6m all modes.*
- *Receiver +3-dBm IP3 with 15kHz roofing filter*
- *36kHz DSP IF 32 bit razor ahrp filter*
- *Internal auto ATU included.*
- *USB interface for PC control and audio out*
- *Large LCD Screen with comprehensive display*
- *Integrates speech synthesizer*

Another winning design from Icom. Notice how some of the "expensive" features introduced a few years ago are migrating down to some of the more affordable radios. Well done Icom.

£1899.95 D

NEW IC-9100 HF to 23cms All-Rounder

HF/6m/2m	100W
70cm	75W
23cm (option)	10W

Satellite Mode Operation: Optional D-Star DV Mode.

The IC-9100 has received rave reviews and is THE radio for those who want everything in one box! Add the 23cms module and the D-Star board to expand your hobby even more. This radio is a real gem and comes with 2 year warranty.
UX-9100 23cms £449. UT-121 D-Star board £129.95. Roofing filters £52.95

£2999 D

IC-7600 HF Transceiver

The IC-7600 HF/50MHz transceiver is enhanced with some of the main features tried and tested on our flagship IC-7700/7800 models, highly regarded by Amateur operators world-wide. Add over 45 years of analogue RF circuit expertise and the result is the IC-7600, a new rig with outstanding performance and a multitude of innovative features including a newly employed double conversion superheterodyne system and dual DSP units and 3kHz IF (roofing) filter.

£3295.95 D

IC-7200 HF Transceiver

IC-7200 covers HF-6m in a distictive rugged design employing the latest digital features including extensive bandwidth and filte control. It's a great basic transceiver that allows you to enjoy the Icom quality at a very realistic price. Another Icom winner. Check out spec on pour web pages.

£839.95 D

IC-7700 HF Transceiver

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

£5999.95 D

IC-7000 HF Transceiver

In your home or on the move, this radio is ideal for any occasion. The IC-7000E pack so many features and so much power into such a small space. HF-6m 100W, 2m 50W and 70cms 35 Watts. You get dual processors, multiple AGC loops, Twin pass band tuning, Digital IF filtering and Dual notch filters. You also get an extraordinary large and crisp colour display.

£1189.95 D

IC-718 HF Transceiver

£595.95 D

Aimed as an entry-level product, the IC-718 continues all the traditions of high quality engineering that you would expect from Icom. Conveniently sized and easy to operate, the IC-718 utilises all the latest RF and digital technology and is designed to be one of the most practical rigs ever! The IC-718 offers an excellent overall specification coupled with ease of use.

ID-E880 VHF/UHF Mobile

The ID-E880 is designed to be easy to use and contain a new 'DV mode' feature which allows the operator to access D-Star repeaters in just two steps. The ID-E880 mobile is the successor to the ID-800H mobile. 50W dual bander with GPS capability, Airband receive etc.

£439.95 D

IC-E2820 VHF/UHF Mobile

The IC-E2820 dualband mobile includes popular features such as VHF/VHF, UHF/UHF simultaneous receive capability, wideband receive, independent tuning knobs and a separate controller. In addition to this new features include diversity receive capability, a full dot-matrix display & 50W output power in both VHF & UHF bands.

£489.95 D

IC-E80D Handheld

VHF/UHF dualband, D-Star transceiver. The IC-E80D is designed to be easy to use and contain a new 'DV mode' feature which allows the operator to access D-Star repeaters in just two steps on Icom site.

£319.95 D

IC-E90 Handheld

The IC-E90 multi-band handheld transceiver covers 50MHz, 144MHz & 430MHz bands and is equipped with a wideband receiver, which covers 0.495-999.990MHz in AM/FM/WFM modes.

£239.95 D

Other Radios

IC-910H	Dualband + Optional 23cm Satellite Trnscvr	£1295 D
IC-910HX	Dual Band + 23cm Satellite Transceiver	£1549 D
IC-2200H	2m FM mobile 65 Watts	£219.95 D
IC-R3	Scanner with TFT Colour Display	£399.95 C
IC-R6	Handheld scanner 0.1-1309.995MHz	£179.95 C
IC-R20	Scanning Wideband Receiver	£394.95 C
IC-R1500	Comms Rcvr 0.01-3299.999MHz	£499.95 C
IC-R2500	Dual Communications Receiver	£639.95 C
IC-R8500	Comms Receiver 100kHz - 2GHz	£1399.95 D

IC-T70E 2m/70cm Handheld NEW

The IC-T70E VHF/UHF dualband handheld transceiver is the successor to Icom's best selling IC-T7H. It has many impressive features including 700mW loud audio, long-lasting power, rugged construction, plenty of memory channels, all at a competitive price. In short, the IC-T70E offers practical dual band operation & ruggedness, updated for today's radio

IC-E92D D-Star Ready

The IC-E92D is a waterproof dual band transceiver. The IC-E92D is ideal for D-STAR enthusiasts, active amateurs who are fans of outdoor pursuits or organisations that are looking for a simple GPS position reporting system. If used with the optional HM-175GPS, the IC-E92D provides GPS position reporting functions in DV mode, fully compatible with the IC-E2820

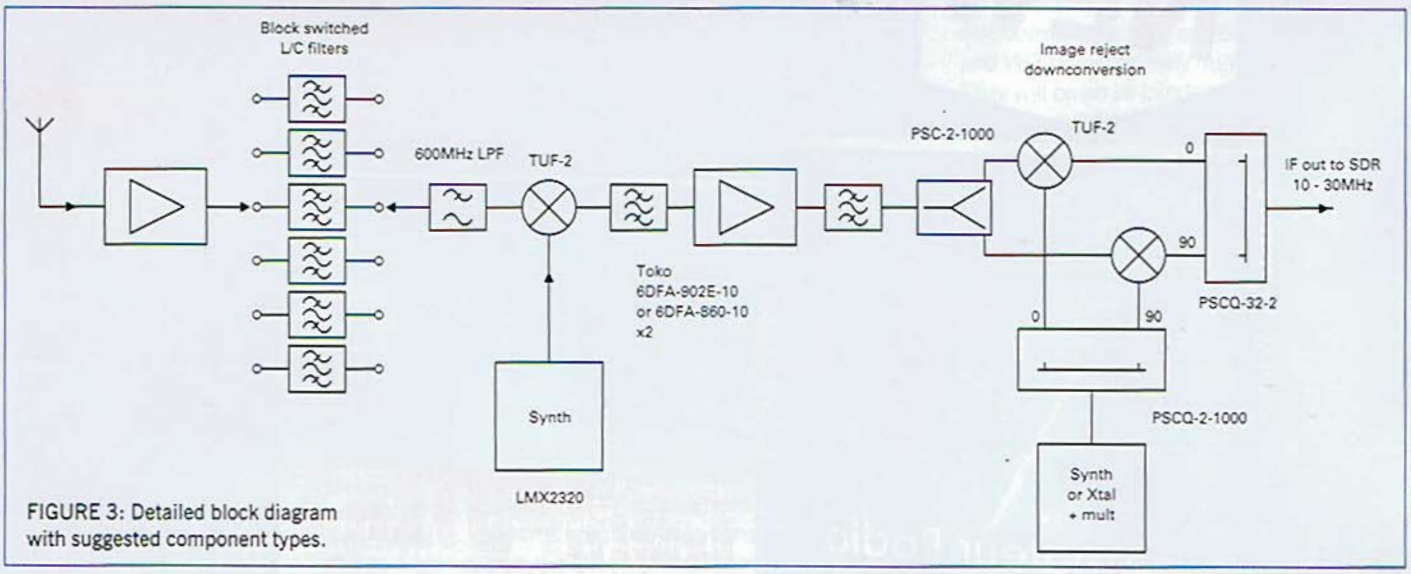


FIGURE 3: Detailed block diagram with suggested component types.

range. Wideband models do exist and one is even available off the shelf – the MiniCircuits PSCQ 2 32.

CHOICE OF IF AND FILTER. The first IF filter is probably the most critical component. Helical filters from Toko are available in a range of values in the band 365-1300MHz. See [2] for one source. But there is a possibly better solution. The ceramic dielectric filters [3] used in mobile phones are near-perfect for the job. The low band uses 890-930MHz for handset transmit and 935 to 950MHz base station Tx so every phone has to separate these bands. Toko do a range of suitable filters (see [2]) but scrap mobile phones may give suitable hardware. With their ready availability, cascading several such filters to improve the transition band is worth trying.

And that's about it. **Figure 3** shows a more complete block diagram showing all the ideas discussed and a few component types that should act as a starting point for a practical wideband V/UHF downconverter.

MORE ON TRANSVERTER LOCKING. Graham McLeod, G8PHA took me to task about terminology and some aspects of the frequency locking circuitry used for microwave transverters. He writes:

"I feel I ought to make some observations. A PLL without an integrator of some description (separate from the VCO which is itself a perfect integrator), settles to some undefinable phase determined by loop gain and many other factors, including temperature, in an exponential fashion similar to an RC filter after a step DC voltage is applied. This is often unsatisfactory and slow and the final settling point may be outside the capabilities of the circuit, or only so at certain temperatures etc. This can only be called a Frequency Locked Loop (FLL) as the phase is undefined and even wanders, yet it can produce a correct frequency, which *wanders a bit*, but the errors (noise) may be easily unnoticed, over a counter gate time. This is the kind of circuit that appears on page 25 of February 2011 *RadCom*.

"On the other hand, a circuit containing a proper integrator can yield the required tuning voltage for the VCO from the phase detector output which is a function of the input phase relationship. It settles to *that phase which sends the Integrator output neither up nor down from the correct value of tuning voltage*. This is a defined phase and is independent of many other variables, including N, Kv, Tamb, Kp, loop bandwidth etc. Such a circuit may thus make a proper claim to be a Phase Locked Loop as the phase is locked at this value.

"Conversion of your circuit (1st order PLL) to the better performing 2nd order design requires the deletion of any DC path where the 330K feedback resistor connects around the NE5532 opamp. It needs to be a large capacitor, in series with a resistor. It is also convenient to make it into a 3rd order PLL by further paralleling another smaller capacitor across that resistor. The subsequent CR filter (470Ω and 10nF) may then turn it into a 4th order, or be moved well up in frequency, to merely cut spurii. The Integrator capacitor cannot be an electrolytic type, because the leakage models as a parallel resistor, converting the circuit back to 1st order.

"The first order PLL is often found in amateur literature as it yields an apparently stable PLL without calculations. It often will not capture a locked condition without persuasion, is ill-defined and noise-prone. The true 2nd order PLL with a loop Integrator and dual D-type frequency-phase detector will lock whenever possible, if stable, ie whenever the correct VCO/VXO tuning voltage is within the range of the integrator output voltage. Capture and tracking range are now set by – and equal to – the VXO range, independent of gain, temperature or many other factors. There is no correlation between Kv, Kv as seen at the phase detector input and loop bandwidth, in a 2nd- (or higher-) order PLL. True, a divider will slow the loop down, but in fact the loop bandwidth is now settable via the RCs in the integrator (OPA). Because the Kv of a VXO is very low, spurii will also be low at a high loop bandwidth, which is now perfectly possible. Ideally, the loop bandwidth is chosen to match the noise contours of VXO and multiplied reference frequency, with speed only being a secondary consideration, if too slow for the desired use.

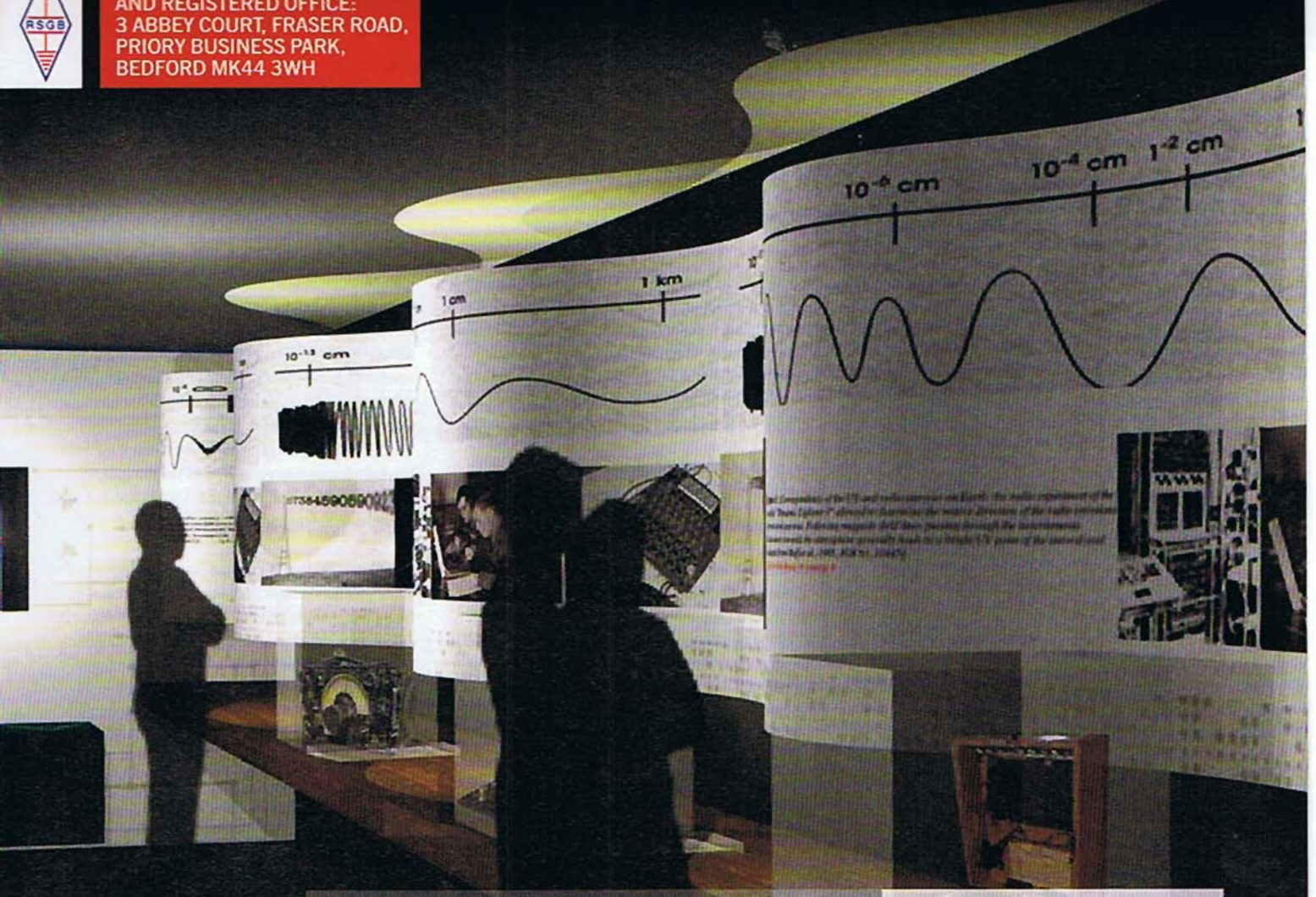
"As you can see from the above, a 2nd or higher order PLL is thus often preferred because it affords the designer better defined conditions, better performance and several more degrees of freedom. Yes, the output frequencies of your circuit do not permit a dual D Type phase detector, so a divider would be necessary, but this is not a constraint on loop bandwidth in this case. The analogue phase detector (SRA-1) you used will yield a loop that may well not lock without post switch-on encouragement, as its capture range is limited by – and less than – loop bandwidth, itself undefined and a function of gain (the 330k resistor). "

Well… Yes, Graham has a point. As a perfect example of PLL design it does fall short. So while there clearly appears to be scope for improvement, for the locking technique described the simple approach works perfectly adequately. In situations where the frequency source, the VCXO, is already good enough on its own in terms of phase noise for a standalone LO source, but suffers from drift (which is still phase noise, but I think we all know what we mean by separating the two expressions), then all we really need is a simple route to pull it onto frequency and to do so quickly from a low phase noise, stable reference. The circuitry described does do that and has never, in my experience, failed to lock up immediately on connecting the reference source, provided the VCXO is warmed up and within lock-in range to start with. This situation can be ensured through good VCXO design and, sometimes, a clip-on crystal heater.

WEBSEARCH

[1] RSGB Members can download the article from www.rsgb.org/membersonly/radcom/techfeatures/short_circuits_0309.pdf
[2] Helical Filters www.bec.co.uk/MainSite/ProductType.aspx?id=3
[3] Dielectric Filters www.bec.co.uk/PDF/6dfa_6dfb.pdf

AND REGISTERED OFFICE:
3 ABBEY COURT, FRASER ROAD,
PRIORY BUSINESS PARK,
BEDFORD MK44 3WH



YOUR RSGB
WORKING FOR YOU

Radio Society of Great Britain
Annual Report

1 JANUARY TO 31 DECEMBER 2010

CONCEPT DRAWING OF THE WALL OF RADIO AT
THE NATIONAL RADIO CENTRE, BLETCHLEY PARK

President's Review of the Year

Dave, G0OBW presenting Gaston Bertels, ON4WF with the Calcutta Key.

2010 has been a busy year for all the staff and volunteers of the RSGB. I would like to thank each and every one who has given their time and expertise so generously this past year. I would also like to thank everyone for the warm welcome I have received up and down the country whether at radio club meetings or rallies. In the space here I can only mention a few of the events but I hope they show you a flavour of the things your Society is involved in.

In March, the RSGB attended an Observance for Commonwealth Day in London. Commonwealth Day is the annual celebration of the Commonwealth of Nations. The centrepiece of the day is a multi-faith service at Westminster Abbey held with the Commonwealth Society, attended by Her Majesty The Queen and His Royal Highness The Prince Philip, Duke of Edinburgh – the RSGB patron. The theme for the day was Science, Technology and Society. We met Bharathi Prasad, VU2RBI, who together with her team provided communication services during the tsunami in the Indian Ocean. Bharathi and her team were on a DXpedition to the Andaman and Nicobar Islands when the tsunami struck and their focus changed from DXpedition to providing emergency communications to and from the main land as well as keeping the rest of the world informed.

April saw the RSGB heavily involved in an exhibition in the European Parliament showcasing amateur radio. Various European amateur radio societies were involved and the event was sponsored by the IARU Region 1 EUROCOM Working Group and MEP Birgit Sippel. It was during this event that I had the opportunity to present the Calcutta Key to Gaston Bertels, ON4WF, Chairman of ARISS for his work in fostering International Friendship through the ISS Schools programme.

In July, GR2HQ was the UK HQ station entry in the IARU HF Championships. It comprised 12 hand-picked super stations dotted around the UK. Icom UK kindly sponsored the QSL cards and trophies for GR2HQ. The UK team placed 4th amongst the 48 HQ stations, just a few points behind the 3rd placed station.

At last year's AGM, Chelmsford ARS won the National Club of the Year award. This scheme is now sponsored by Waters & Stanton and I'd like to thank them for supporting this award. Radio clubs are the life blood of the hobby and good clubs need to be encouraged. Chelmsford Amateur Radio Society is a club with over 120 active members and they play a very active role in amateur radio across a wide range of activities including social, operational and development/training aspects. It will be interesting to see which club wins this year.

The National Hamfest took place in September and it was good to see the number of RSGB Committees represented. I'd like to thank the many volunteers from both the RSGB and Lincoln Short Wave Club who worked tirelessly to make this event the success it was. It gave all radio amateurs the opportunity to discuss matters of importance, whether that was planning queries, spectrum matters, propagation or EMC, for example. I look forward to seeing many of you again this year.

Following close on the heels of the National Hamfest was the RSGB Convention, another high point in the amateur radio calendar that is going from strength to strength. Having outgrown yet another venue, in 2010 the Convention moved to Horwood House near Milton Keynes. Again I have to thank Icom and Martin Lynch and Sons for their sponsorship of this event. Both companies had equipment displays for visitors to examine. The lecture streams were excellent, as usual, with one of the highlights being Dr Lucie Green who spoke about Coronal Mass Ejections from the Sun. 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. With over 100 visitors listening in, she was able to explain things clearly and answer a multitude of questions from visitors too.

The relationship with Ofcom continued to improve throughout 2010, thanks in no small way to Rod Wilkinson who guided many of you through the various special event licences and NoV linking applications, etc. Rod retired from Ofcom towards the end of 2010 and we wish him well in his retirement. While his are big shoes to fill, the team taking over are doing a great job. Of course we, at the RSGB, will always be on hand to help where we can, not least with the Olympics coming up in 2012. We will bring you more news on that subject later in 2011.

Several significant meetings were held with Ofcom to progress discussion on the impact of Powerline Adaptors on HF radio spectrum. The Society has asked Ofcom to be more specific about what would constitute a sufficient body of evidence to take generic action on PLAs and also encouraged Ofcom, as UK spectrum regulator, to be more proactive in the discussions on protecting the radio spectrum. We encourage everyone who is suffering serious interference to short wave radio reception to follow the guidelines on the RSGB website.

The National Radio Centre at Bletchley Park was built to the revised time schedule and we are now in the final phase of the project – the fitting out. Again, the active support of volunteers have been invaluable in getting the project to this final stage and also in dealing with a potentially damaging flood in the building. The centre is due to open to the public in the first half of 2011 and we look forward to seeing many radio amateurs at Bletchley Park over the next year.

Also worthy of note was the agreement between RAEN and RSGB RAYNET to forge closer links and improved joint working. This should help improve the face UK radio amateurs present to User Services and our operational capability in emergency communications. I am pleased that the agreement has the active support of both the RSGB and the Radio Amateurs Emergency Network.

I would also like to thank those volunteers that advise at IARU and ITU meetings for their efforts ensuring that amateur radio is given full consideration when new legislation is being discussed. Without their stalwart efforts, amateur radio would be in danger of drowning under noise and other interference.

Throughout the year RSGB has also received much welcome support from many companies who believe that what we are doing is worthwhile. I am very grateful indeed for their support.

What of 2011? There are a number of key things to look out for during the coming year. The report on the amateur radio survey that took place in the last quarter of 2010 will form part of the base for the Society's next five to ten year Strategy Plan. And, of course, the opening of the National Radio Centre, Bletchley Park.

May I once again thank the many hundreds of volunteers who help the Society provide the services to our members and the wider amateur radio community. Their efforts along with the work of the staff at Abbey Court truly make it 'Team RSGB'.

Dave Wilson, M0OBW

1 January to 31 December 2010

1 January to 31 December 2010

Radio Society of Great Britain
Reports and Financial Statements
31 December 2010

Legal and administrative details
For the year ended 31 December 2010

Status: The organisation is a company limited by guarantee, incorporated on 21 July 1926.
Company number: 216431

Registered office and operational address:
3 Abbey Court, Fraser Road, Priory Business Park, Bedford MK44 3WH

President	D Wilson, M0OBW
Honorary officers	**Treasurer** R Dingle, G0OCB **Company Secretary** R Thorogood, G3KKT
Bankers	Natwest Plc, 181 Darkes Lane, Potters Bar, Hertfordshire EN6 1XT
Solicitors	Eversheds LLP, Kett House, Station Road, Cambridge CB1 2JY
Auditors	Sayer Vincent Chartered accountants and registered auditors, 8 Angel Gate, City Road, London EC1V 2SJ

The directors present their report and the audited financial statements for the year ended 31 December 2010.

PRINCIPAL ACTIVITIES. The principal activities of the Society are to provide services to members who are radio amateurs, short wave listeners or others with interests in radio communications. The Society represents the interests of UK licensed radio amateurs to the regulatory authority in the UK, Ofcom and via the International Amateur Radio Union (IARU) to other international bodies.

There have been a number of key areas of activity during 2010. In January 2010, The Board commenced a full strategic review of the Society that included a survey of the UK amateur radio community, affiliated Amateur Radio Clubs, Society Committees, HQ, Regional Teams and Honorary Officers. The survey was launched at the UK Hamfest in October 2010. The findings will be presented to the Board in May 2011. It is planned that the Management Committee and Board will jointly consider a future vision for the Society, mapping out the necessary strategy for the Board to approve at its July 2011 Board. This will become the foundation for a new five-year business plan that will be launched in January 2012.

The Board and Management Committee have participated in a review of the working relationship between the Board and the Management Committee to ensure good governance of the Society. This has resulted in a number of changes that together will improve the efficiency and effectiveness of the two bodies and its links with the membership.

The Society has continued to monitor the threat to the amateur spectrum allocations particularly from PLAs – low power, short range powerline networking devices that can cause severe interference to radio reception in their vicinity. The Society has lobbied Ofcom, the UK government and the EC on this matter and is active in relevant standards forums. Having sought legal advice in late 2009 the Board took the decision not to make any legal challenge at least until all discussions were exhausted. Fund raising for the Spectrum Defence Fund which was launched in December 2009 continues. Further details can be found in Note 17.

Amateur radio activity has centred on preparation for the World Radiocommunication Conference 2012 (WRC-12), input in to the IARU Region 1 General Conference in August 2011 and a continued focus on improving operating standards. The Society continues to be in discussions with Ofcom and LOCOG over the role that radio amateurs can play in the organisation of the London Olympics in 2012.

Although there has been a slight decline in numbers taking the Radio Communications Examination over the past year it is felt this is more due to the effects of the recession than a drop-off in interest. The Society continued to examine the possible benefits of Accreditation of the Amateur Radio Examinations.

The Society continues to maintain strong links with Ofcom and other government departments to ensure that amateur radio continues to be recognised as a scientific hobby that has a role to play in education and in shaping the future of the radio communications workforce in the UK. In January 2010 the Board agreed to secure professional advice and assistance to produce a fund raising strategy to enhance the work of the GB4FUN programme and the educational outreach programme to be based at Bletchley Park. GB4FUN has again been a very popular asset but due to funding and staffing issues it has carried out only a limited programme. GB4FUN will form part of the educational programme at the new National Radio Centre at Bletchley Park and will continue with school visits from Easter 2011.

In January 2010 work commenced on the building of the new National Radio Centre at Bletchley Park, Milton Keynes. The building was completed in September 2010. Work on the internal concept and design of the facility continued throughout the year and it is expected that the centre will open to the public mid 2011.

The Society's membership on the 31 December was 21,658 compared to 22,265 at the start of the reporting period.

FINANCIAL REPORT. The financial result for the year, after interest income, was a deficit of £41,603 compared to a deficit of £40,137 in the prior year.

The increase in subscription fees offset the decrease in membership numbers, although 52% of the membership, who took advantage of the discount for paying by direct debit, paid at the 2009 rate.

Book sales were disappointing with an overall reduction of £34,261. Members' offers were down against 2009 by £5,912. The margin remains at 47% (2009: 47%). However, the book list is constantly refreshed with new RSGB and third party publications and the outlook for 2011 is optimistic.

RadCom advertising sales improved slightly over 2009 by £765 because further advertising revenue was obtained from other sources slightly increasing overall advertising revenue.

Candidate numbers for the Radio Communications Examinations were down against 2009 for all three levels. The impact that this could have had on income was reduced due to the full benefit of the 2009 increase in fees so that overall the reduction in income against 2009 was £4,268.

At the end of the financial year the Society sold on eBay old, donated radio equipment and other items of interest, to raise funds for Bletchley Park. Sales were made of £9,302.

The Society is now obtaining all of the cost savings that are a direct result of the move from Lambda House. Salary savings in 2010 amounted to £45,000 of which £22,000 is due to a reduced headcount and the balance due to the cessation of re-location payments. A further £11,000 in postage savings, both for *RadCom* and general postage has been obtained due to changes in the Royal Mail discount structure.

The Spectrum Defence Fund was established in December 2009 to contribute towards the legal costs that would be incurred in the defence of the Amateur Radio Spectrum. In the first instance it was agreed that the money raised would be used to meet the costs of the legal challenge to Ofcom in relation to the Power Line Adaptor issues. The Board decided in February not to proceed with any further legal

challenge until it is clear that any potential challenge will be successful.

The Society incurred legal fees of £23,660.00 in mounting this initial challenge and at 31 December 2010 donations had been received for £23,516.07. This Fund is a Restricted Fund and will only be used for the purposes stated above.

The Society wishes to thank all of its members for their various donations over the course of the year to the Radio Communications Foundation and the Spectrum Defence Fund.

After the end of the financial year, during the audit process, issues were reported to the Board by our Auditors which related to items of personal expenditure having been incurred on a Company Credit Card but not repaid, and some other lesser matters. The Board has reviewed the debt incurred as a result, and resolved to make full provision for it in the 2010 results. This has resulted in an exceptional provision of some £41k against the Income and Expenditure account, resulting in the reported loss for the year. The Society is taking every measure to seek repayment of this debt.

After the results for the year the Society's capital reserves have decreased to £894,000. Of this balance, £609,000 is tied up in the fixed assets and is not freely available to spend. This leaves £285,000 which is readily available to support the future activities of the Society. The total reserves balance relates to the main activities of the Society as all funds received for the Spectrum Defence Fund were spent in the year. A small amount of general reserves was used for an overspend of £143 within the Spectrum Defence Fund.

RESPONSIBILITIES OF THE DIRECTORS.
The directors are responsible for preparing the directors' report and the financial statements in accordance with applicable law and regulations.

Company law requires the directors to prepare financial statements for each financial year. Under that law the directors have elected to prepare the financial statements in accordance with United Kingdom Generally Accepted Accounting Practice (United Kingdom Accounting Standards and applicable law). Under company law the directors must not approve the financial statements unless they are satisfied that they give a true and fair view of the state of affairs of the company and the profit or loss of the company for that period.

In preparing these financial statements, the directors are required to:

- select suitable accounting policies and then apply them consistently
- make judgements and accounting estimates that are reasonable and prudent
- state whether applicable UK Accounting Standards have been followed, subject to any material departures disclosed and explained in the financial statements
- prepare the financial statements on the going concern basis unless it is inappropriate to presume that the company will continue in business

The directors are responsible for keeping adequate accounting records that are sufficient to show and explain the company's transactions and disclose with reasonable accuracy at any time the financial position of the company and enable them to ensure that the financial statements comply with the Companies Act 2006. They are also responsible for safeguarding the assets of the company and hence for taking reasonable steps for the prevention and detection of fraud and other irregularities.

The directors are responsible for the maintenance and integrity of the corporate and financial information included on the company's website. Legislation in the United Kingdom governing the preparation and dissemination of the financial statements may differ from legislation in other jurisdictions.

Each of the directors confirm that to the best of his/her knowledge there is no information relevant to the audit of which the auditors are unaware. Each of the directors also confirm that they have taken all necessary steps to ensure that they themselves are aware of all relevant audit information and that this information has been communicated to the auditors.

The directors who served on the board during the year and up to the date of this report were as follows:
D F Beattie, G3BJ
R Bellerby, GM3ZYE (resigned August 2010)
P Brooks, G4NZQ
L Butterfields, G0CIB
J Gould, G3WKL
D Field, G3XTT
C Morrison, GI4FUE
I Phillips, G0RDI
B Reay, G8OSN
J Stevenson, G0EJQ
D Wilson, M0OBW

Every member of the Society undertakes to contribute to the assets if it should be wound up while he/she is a member or within one year after he/she ceases to be a member for payment of the liabilities of the Society contracted before he/she ceases to be a member. Every member also undertakes to contribute to the costs; charges and expenses of winding up the same, and for the adjustment of the rights of the contributories amongst themselves, such amount as may be required not exceeding one pound. The number of guarantees held at the balance sheet date was nil (2009: nil).

AUDITORS. Sayer Vincent was re-appointed as the company's auditors during the period and have expressed their willingness to continue in that capacity.

The directors' report has been prepared in accordance with the provisions applicable to companies subject to the small companies' regime.

Approved by the directors on 16 April 2011 and signed on their behalf by
Dave Wilson, M0OBW, President
Rupert Thorogood, G3KKT, Company Secretary

Independent auditors' report
To the members of Radio Society of Great Britain
We have audited the financial statements of Radio Society of Great Britain for the year ended 31 December 2010, which comprise the income and expenditure account, balance sheet and related notes. The financial reporting framework that has been applied in their preparation is applicable law and United Kingdom Accounting Standards (United Kingdom Generally Accepted Accounting Practice).

This report is made solely to the company's members as a body, in accordance with chapter 3 of part 16 of the Companies Act 2006. Our audit work has been undertaken so that we might state to the company's members those matters we are required to state to them in an auditors' report and for no other purpose. To the fullest extent permitted by law, we do not accept or assume responsibility to anyone other than the company and the company's members as a body, for our audit work, for this report, or for the opinions we have formed.

Respective responsibilities of directors and auditors. As explained more fully in the Directors' Responsibilities Statement set out in the report of the directors, the directors are responsible for the preparation of the financial statements and for being satisfied that they give a true and fair view. Our responsibility is to audit and express an opinion on the financial statements in accordance with applicable law and International Standards on Auditing (UK and Ireland). Those standards require us to comply with the Auditing Practices Board's (APB's) Ethical Standards for Auditors.

Scope of the audit of the financial statements. An audit involves obtaining evidence about the amounts and disclosures in the financial statements sufficient to give reasonable assurance that the financial statements are free from material misstatement, whether caused by fraud or error. This includes an assessment of: whether the accounting policies are appropriate to the company's circumstances and have been consistently applied and adequately disclosed; the reasonableness of significant accounting estimates made by the directors; and the overall presentation of the financial statements.

Opinion on the financial statements. In our opinion the financial statements:

- give a true and fair view of the company's state of affairs as at 31 December 2010 and of its results for the year then ended;
- have been properly prepared in accordance with United Kingdom Generally Accepted Accounting Practice; and
- have been prepared in accordance with the requirements of the Companies Act 2006.

Opinion on other matters prescribed by the Companies Act 2006. In our opinion the information given in the Directors' report for the financial year for which the financial statements are prepared is consistent with the financial statements.

Matters on which we are required to report by exception. We have nothing to report in respect of the following matters where the Companies Act 2006 requires us to report to you if, in our opinion:

- adequate accounting records have not been kept, or returns adequate for our audit have not been received from branches not visited by us; or
- the financial statements are not in agreement with the accounting records and returns; or
- certain disclosures of directors' remuneration specified by law are not made; or
- we have not received all the information and explanations we require for our audit.

Judith Miller, Senior Statutory Auditor for and on behalf of Sayer Vincent, Statutory Auditor
16 April 2011.

SAYER VINCENT
8 Angel Gate, City Road, London EC1V 2SJ

Income and expenditure account for the year ended 31 December 2010

	Note	2010 Total £'000	2009 Total £'000
Turnover	2	1,466	1,470
Cost of sales		(164)	(183)
Gross surplus		1,302	1,287
Sales and distribution expenses		(263)	(252)
Other operating expenses		(1,102)	(1,096)
Operating deficit		(63)	(61)
Profit on disposal of fixed assets		9	5
Interest receivable		12	16
Deficit on ordinary activities before taxation	4	(42)	(40)
Taxation	6	-	-
Retained loss for the financial year		(42)	(40)
Accumulated surplus at the start of the year		936	976
Accumulated surplus at the end of the year		894	936

All of the above results are derived from continuing activities. The movement in the income and expenditure account is shown in note 13.

Balance sheet as at 31 December 2010

	Note	£'000	2010 £'000	2009 £'000
Tangible fixed assets	7		598	440
Current assets				
Asset held for sale	7	11		
Stock	8	79		71
Debtors	9	129		154
Cash at bank and in hand		233		550
Short term deposits		419		310
		871		1,085
Creditors: amounts due within one year	10	559		578
Net current assets			312	507
Total assets less current liabilities			910	947
Creditors: amounts falling due after more than one year	11		16	11
Net assets			894	936
Capital and reserves				
Income and expenditure account			894	936
Total funds	13		894	936

The financial statements have been prepared in accordance with the provisions applicable to companies subject to the small companies' regime.
Approved by the directors on 16 April 2011 and signed on their behalf by
Dave Wilson, MOOBW, President
Rupert Thorogood, G3KKT, Company Secretary

Statement of total recognised gains and losses for the year ended 31 December 2010

	2010 £'000	2009 £'000
Deficit for the financial year	(42)	(40)
Total recognised gains and losses relating to the financial year	(42)	(40)

Notes to the financial statement for the year ended 31 December 2010

1. Accounting policies

(a) The financial statements have been prepared under the historical cost convention and in accordance with applicable accounting standards and the Companies Act 2006, modified to include the revaluation of land and buildings.

(b) Turnover represents the invoiced amounts of goods sold and services provided, net of Value Added Tax and trade discounts. Turnover comprises subscription income, book income, advertising income and exam income. Subscriptions income is recognised on a monthly basis over the duration of the subscription; book income is recognised on despatch of books; advertising income is recognised on publication date; and exam income is recognised on the date of the exam. Donations and voluntary income are recognised when received or receivable – whichever is earlier. All income arises in the UK.

(c) Depreciation is provided on all tangible assets at rates calculated to write each asset down to its estimated residual value evenly over its expected useful life (except freehold land which is not depreciated), as follows:

Leasehold buildings	2%
Computer equipment	20%-33%
Fixtures and fittings	10%
Furniture and equipment	20%-25%
GB4FUN	12%-20%
Motor Vehicles (not leased)	33%
Leased assets (motor vehicles)	over the period of the lease

Assets are capitalised where the purchase price exceeds £1,000.

(d) Where the carrying value of an asset will be recovered principally through a sale transaction rather than through continuing use, the asset is classified as held for sale and stated at the fair value less costs to sell, following the adoption of a policy of revaluation for this class of asset. No depreciation is charged in respect of current assets classified as held for sale.

(e) Stocks are stated at the lower of cost and net realisable value. In general, cost is determined on a first in first out basis and includes transport and handling costs. Net realisable value is the price at which stocks can be sold in the normal course of business after allowing for the costs of realisation. Provision is made where necessary for obsolete, slow moving and defective stocks.

(f) Any charge for taxation is based on the surplus for the year and takes into account taxation deferred because of timing differences between the treatment of certain items for taxation and accounting purposes. When this arises it appears in the income and expenditure account. Deferred tax is recognised, without discounting, in respect of all timing differences between the treatment of certain items for taxation and accounting purposes which have arisen but not reversed by the balance sheet date, except as otherwise required by FRS19.

(g) Leases acquired under finance leases are capitalised and the outstanding future lease obligations are shown in creditors.

(h) The Society contributes to group personal pension policies to provide benefits for employees on a defined contribution basis. The assets of the policies are held separately from those of the Society in independently administered funds. The amount charged to the income and expenditure account represents the contributions payable to the policies in respect of the accounting period.

(i) Under FRS 1 the company is exempt from the requirement to prepare a cashflow statement on the grounds of its size.

2. Turnover

	2010 £'000	2009 £'000
Subscription income	841	839
RadCom advertising income	162	162
Book sales	312	346
Other income (note 3)	151	123
	1,466	1,470

3. Other income

	2010 £'000	2009 £'000
Foundation licence	43	43
Intermediate licence	18	19
Full licence	11	14
Sundry advertising income	3	-
GB4FUN donation	-	10
Sale of Radio Equipment	9	-
Commercial Sponsorship	8	10
Sundry income	12	13
Rallies and exhibition fees	28	9
Spectrum Defence Fund	19	5
	151	123

4. Deficit on ordinary activities before taxation

This is stated after charging / (crediting):

	2010 £'000	2009 £'000
Depreciation on owned assets	32	31
Depreciation on leased assets	17	14
Interest receivable	(12)	(16)
Profit on disposal of other fixed assets	(9)	(5)
Directors' remuneration	-	-
Board reimbursed expenses	18	17
Regional & Committee reimbursed expenses	35	36
Auditors' remuneration:		
Audit	11	10
Non-audit services	-	-

Expenses totalling £18,000 (2009: £17,000) were reimbursed to 10 Board members (2009: 10) for travel and subsistence costs of attending meetings, and other sundry costs.

5. Staff costs and numbers

	2010 £'000	2009 £'000
Salaries and wages	428	465
Social security costs	42	47
Pension contributions	9	12
	479	524

1 employee earned more than £50,000 during the year (2009: 1).

The average weekly number of employees (full-time equivalent) during the year was as follows:

	2010 No.	2009 No.
Headquarters staff	16	17

6. Taxation

	2010 £	2009 £
UK corporation tax	-	-

RSGB has an agreement with HMRC over the calculation of schedule D Case I profits for corporation tax purposes. In recent years this has generated a loss, contributing to a deferred tax asset (see note 12). RSGB has generated a tax loss in the year, and consequently no corporation tax liability has arisen in the year.

7. Tangible fixed assets

	Leasehold land and buildings £'000	Computer equipment £'000	Fixtures and fittings £'000	Furniture and equipment £'000	Motor vehicles £'000	Bletchley Park £'000	GB4FUN	Toyota GB4FUN trailer	Totals £'000
Cost									
At the start of the year	339	304	53	163	46	22	37	8	972
Additions in year	-	5	-	-	26	187	-	-	218
Disposals in the year	-	-	-	-	(16)	-	-	-	(16)
Reclassification as an asset held for sale	-	-	-	-	-	(11)	-	-	(11)
At the end of the year	339	309	53	163	56	198	37	8	1,163
Depreciation									
At the start of the year	12	293	49	147	20	-	9	2	532
Charge for the year	7	8	1	7	17	-	7	2	49
Disposals in year	-	-	-	-	(16)	-	-	-	(16)
At the end of the year	19	301	50	154	21	-	16	4	565
Net book value									
At the end of the year	320	8	3	9	35	198	21	4	598
At the start of the year	327	11	4	16	26	22	28	6	440

Included in the total net book value of motor vehicles is £35,000 (2009: £26,000) in respect of assets held under finance leases.

Depreciation for the year was £17,000 (2009: £14,000).

The Society purchased 3 Abbey Court, Fraser Road, Priory Business Park, Bedford MK44 3WH on 17 March 2008 for £339,000.

The building has been acquired on a leasehold of 125 years. The land is on a peppercorn lease from Bedford Council for 125 years, and is not depreciated.

Work on the new National Amateur Radio Centre has commenced at Bletchley Park and is due for completion in mid 2011. Costs incurred to date, £208,874, are included in the balance sheet at 31 December 2010. Depreciation will be charged on the asset when it is fully completed and brought into use.

8. Stock

	2010 £'000	2009 £'000
Goods held for resale	79	71
	79	71

9. Debtors

	2010 £'000	As restated 2009 £'000
Trade debtors	47	40
Prepayments and accrued income	74	78
Other debtors	49	36
Provision for doubtful debts	(41)	-
	129	154

10. Creditors: amounts due within one year

	2010 £'000	2009 £'000
Trade creditors	100	84
Obligations under finance leases (note 11)	17	15
Taxation and social security	12	11
Other creditors	12	12
Subscriptions in advance	330	344
Accruals	88	112
	559	578

11. Obligations under finance lease

	2010 £'000	2009 £'000
Gross obligations under finance leases	36	28
Less: finance charges allocated to future periods	(3)	(2)
	33	26
Due within one year	17	15
Due within two to five years	16	11
	33	26

12. Unprovided deferred tax asset

	2010 £'000	As restated 2009 £'000
Difference between accumulated depreciation and capital allowances	2	10
Tax losses	(2,461)	(2,340)
Undiscounted, unprovided deferred tax asset	(2,459)	(2,330)

Deferred tax asset is not recognised because of the unlikelihood of utilising trading losses brought forward in the light of current trading conditions.

13. Reconciliation of movements in members' funds

	2010 £'000	2009 £'000
Members' funds at the start of the year	936	976
Surplus/(Deficit) for the period	(42)	(40)
Members' funds at the end of the year	894	936

14. Pension scheme

The company operates a defined contribution pension scheme. The pension cost charged for the period represents contributions payable by the company to the scheme and amounted to £9,204 (2009: £12,159). Outstanding contributions at the year end amounted to £767 (2009: £767). These are included in other creditors at the year end.

15. Related party disclosure

The Radio Communications Foundation is a registered charity, number 1100694. Peter Kirby and Marilyn Slade, two officers of the Society, are trustees of the charity.

Since its inception, the Society has provided the Foundation with management services at no cost. During the year the Society was not awarded a donation (2009: £10,000) towards the running costs of GB4FUN.

16. Designated funds

During 2008 Mrs Olive Taylor bequeathed to the Society the sum of £22,488. Her late husband was a radio amateur. The Board has decided to use these funds in acquiring the services of an experienced fund raiser. During 2010 costs of £14,491 (2009: £1,038) were incurred.

17. Spectrum Defence Fund

The Spectrum Defence Fund was established in December 2009 to contribute towards legal costs that would be incurred in the defence of the Amateur Radio Spectrum. In the first instance it was agreed that the money raised would be used to meet the costs of the legal challenge of Ofcom in relation to the Power Line Adaptor issues. The Board decided in February not to proceed with any further legal challenge until the situation changes such that any potential challenge will be successful.

The Society incurred legal fees of £23,660 in mounting this initial challenge and at 31 December 2010 donations had been received for £23,516.07.

The overspend of £143.93 was funded from general reserves.

18. Funds held on behalf of trusts

RSGB acts as custodian for the funds below and holds the amounts below within bank accounts for each fund. These funds are repayable to the individual trusts upon demand, and as such, are not recognised as assets held by RSGB. The movements on these funds are shown below.

	At 31 December 2009 £	Incoming resource £	Outgoing resources £	At 31 December 2010 £
The J Fraser Shepherd Prize Fund	1,265	13		1,278
DXpedition Fund	6,641	1,672	(758)	7,555
K M Bennett Legacy Fund	933	3		936
The Pilot Officer Norman Keith Adams Prize Fund	1,250	30		1,280
Dewit L Jones W4BAA IOTA Legacy Fund	7,208	17		7,225
The Legacy Fund	19,261	1,058		20,319
Total trust funds	36,558	2,793	(758)	38,593

These amounts are not included in the balance sheet of RSGB at the year end.

Committee reports for 2011

AMATEUR RADIO DEVELOPMENT COMMITTEE. 2010 was another busy and successful year for the ARDC with Train the Trainers sessions continuing to prove popular events. Now that there are two teams running sessions, one covering the South and another in the North, we are able run sessions more often. These sessions offer instructors the opportunity to learn the details of the progressive examination scheme from the members of the team who developed it, plus advice on teaching best practice from experienced instructors and professional educators. In addition, the Tutors Reflector continues to flourish and provides a valuable link for active instructors to share ideas and resources. Instructors wishing to join the reflector, or enquire about a Train the Trainers session, should contact G8OSN direct at g8osn@rsgb.org.uk.

During 2011, we plan to initiate a parallel scheme to encourage those wishing to write questions for the Radio Communication Examination Question Bank. These will be facilitated jointly by the ARDC and the RCF Examination Committee.

The International Amateur Radio Examination (IARE) continues to be offered twice per year and remains the only examination endorsed by the IARU for countries that lack the resources to support their own examination system.

As in previous years, the ARDC organised a 'one stop' Radio Communication Examination session at the RSGB Convention, allowing candidates to complete the assessments and examination(s) for one or more levels. In 2010, the demand was mainly for the Advanced examination.

The Morse Competency Programme, led by Phillip Brooks, G4NZQ and Roger Cooke, G3LDI continues to grow. Those who are proficient in Morse code, and are keen to assist in its promotion, are needed in the Regions to act as instructors and examiners. Those interested in being part of this programme should contact their Regional Manager.

I would like to thank all the members of the ARDC – and the various members of HQ staff who support the ARDC – for their hard work over the period.

Brian Reay, G8OSN

AMATEUR RADIO DIRECTION FINDING. The ARDF Committee is a group of committed volunteers who have been driving forward the development of this aspect of 'Sport Radio' in the UK.

ARDF continued to develop during the year and a programme of 14 separate days of ARDF competitions were promoted by the Committee. Events are the lifeblood of our sport and the Committee wishes to record its thanks and appreciation to all those who organised events in 2010. Outside of the Committee we are grateful to David Heale, G6HGE, Steve Stone, RS193217, Phil Ellis, MOGIE and the Oldham Club, Michael Dunbar, M6MDD and Vlad Boev, 2E0VLB for their contributions.

The British ARDF Championships were staged on a glorious weekend in late May and used Swinley Forest near Bracknell for two of the three days. The weekend commenced on a balmy Friday evening with a FoxOring competition but without the circles marked on the map. This unconventional format was an excellent low-key event to start the weekend of competition and it allowed us to greet our continental visitors in relaxed style.

The event moved to Swinley forest for the 144MHz Championship race. A challenging course from one side of the forest to the other saw many of the top competitors electing to visit their transmitters in a non-optimal order. John Marriott, RS205838 running in M60 took the RSGB 144MHz title. The next day was the turn of 3.5MHz and bearings were much more reliable as multi-path propagation played a much smaller part. Robert Vickers, G3ORI, an M60, was the RSGB Champion on this band. The RSGB Board member responsible for Sport Radio, Don Field, G3XTT came to present the trophies and certificates. He took the opportunity to meet some of the visitors from the Continent.

The highlight of the year was the RSGB participation in the ARDF World Championships that were held in Opatija, Croatia. A team of 11 competitors travelled out there, all at their own expense. We had a full team in both the M40 and M60 classes and were also represented in M21, M50 and W35.

John Marriott, RS205838 reminded us that he is the reigning RSGB Champion on 144MHz when he placed 6th in this race in the M60 class. This equalled the previous best place achieved by an RSGB competitor in a World Championship, namely David Williams running in the 144MHz race in Korea in 2008. The M40 and M60 teams came about half way down the team results in both the 144 and 3.5MHz competitions.

The achievements of the team were as follows: John Marriott, RS205838 6th in the M60 144MHz race; Bob Titterington, G3ORY 10th in the M60 3.5MHz race; Andrew Soltysik, G4KWQ 11th in the M40 144MHz race.

The M40 team were 9th/16 on 144MHz and 9th/19 on 3.5MHz. The M60 team were 7th/14 on 144MHz and 7th/14 on 3.5MHz

The RSGB FoxOring equipment was sent to Cornwall for a Saturday morning event for Gifted and Talented students and to Merseyside for a Scout event. It was also used at summer orienteering events to attract interest from orienteers.

The autumn is the time of year that the Committee is active in promoting ARDF at Shows and Conventions. We had a stand at the National Hamfest in October and the following weekend were represented at the RSGB Convention at Horwood House near Milton Keynes. These stands do attract a group of radio amateurs who have an interest in the more energetic pursuits of life and who are tempted to try out ARDF. Attendance at these events has proved to be very worthwhile in promoting ARDF to the wider amateur community.

Looking ahead to 2011, the Committee sees the continuing need to organise a full programme of events as widely spread geographically as possible. In particular, the Committee seeks to promote ARDF events in areas of the country where there is little or no provision at present.

The 18th IARU Region 1 Championships will be held in Romania in September and the hope is that the RSGB will again send a strong team.

Finally, I wish to acknowledge the enthusiasm and contributions of the Committee members in running events and promoting the sport. The Committee is also grateful for the unfailing support it has received from the RSGB Board member responsible for Sport Radio, Don Field, G3XTT and from *RadCom* editor Elaine Richards.

R G Titterington, G3ORY

AMATEUR RADIO OBSERVATION SECTION. Behind the scenes, work has gone on quietly to solve problems related to abuse and bad practices that will not, should not, be tolerated by most law abiding amateurs. It appears that a lot of folks putting in complaints expect instant reaction and therefore a solving of the problem in the same time frame. Unfortunately it takes time to collate the information, contact the Observers and get the details to certain other participants. Activities, run for and by amateurs, tend to be subject to other parties that don't always have the same sense of priority. Feedback often becomes a casualty somewhere along the line, hence little is heard unless the offending person is active again. It can take a long time to resolve some cases. We will also need to recognise that Ofcom itself is under resource pressures and has limited resources to devote to amateur service issues. We still have the deliberate jammers, whistlers, comment makers, who delight in upsetting nets etc. This is applied to DX operations as well. What these thoughtless operators will gain from such selfishness is beyond most normal operators' reasoning. So we are very much dependant on providing our own evidence and if possible the identification of the culprit, assessing the best approach and co-operating with the field engineers assigned to the case. It is often the case that there are no Observers in certain parts of UK, it sometimes becomes essential for the complaining person to be recruited into the Observer team find all the evidence to get Ofcom involved and then to help the engineer(s). This method has become standard practice if V/UHF frequencies are involved that are well away from other Observers. This self help can be extended to groups and often satisfactorily stops the problem. I believe that self help will develop into a skill that can help eliminate these nuisances. Training in correct operating procedure in the examination structure is an important part of reducing poor operating, but equally important is that these lessons are carried forward into actual on-air practice. Encouragement by other amateurs can help new licensees, and others, maintain good operating standards. AROS could not operate without the help of radio amateurs who are willing to give a little bit back to this fabulous hobby.

Tony Selmes, G4KLF

AWARDS MANAGER. The RSGB Awards Manager is responsible for all Society involvement in the issue and adjudication of both HF and VHF Award Programmes with the specific exclusion of the IOTA Programme that is run under quite separate rules and management structures. In addition to RSGB Awards the Awards Manager is responsible for IARU Worked all Continents Award adjudication and further acts as a check point for ARRL Worked all States and CQ Magazine Worked all Zones Awards, checking other National Society Awards and generally assisting RSGB members in queries and adjudication. The benefits are obvious when local certification can be done on behalf of RSGB members it avoids costly airmail shipment of valuable QSL cards to overseas destinations.

A major part of activity is directly involved in e-mail enquiries on award programmes. RSGB, IARU, CQ and ARRL enquiries form the majority. A typical week varies from 10-40 exchanges of information and individual claims can run from

a basic 6-QSL claim for WAC to several hundred cards for the RSGB 5-Band Commonwealth Award with endorsements, or a 6m squares claim or update. Most enquiries arrive now through e-mail and tailored responses have been 'boiler-plated' to save time and effort. A new PDF file is available for the IARU Region-1 Award showing all 95 Member States.

This year, card checking for applications was carried out at the National Hamfest, RSGB Convention and at the GMDX Convention in Stirling.

Award Programme. The RSGB sponsors awards covering a lifetime achievement and these take considerable skill and effort over a long period of time to accumulate the required confirmations. These awards are represented by the Commonwealth Series covering the basic 100 Commonwealth Call Areas through to the difficult 5-Band 500 Call Areas using 10-80m with special endorsements for WARC bands and 160m operation. The second award is based around ITU Zone Areas and requires confirmations from the 75 ITU Zones.

The most popular Society sponsored award is the IARU Region 1 Award for confirmation of contacts with Region 1 member countries. It has 3 levels of achievement and thus enables both new and more modest stations to complete the award. Region 1 covers Europe, Africa, Middle East and Russia. A copy of the Region 1 Award rules and certificate has been added to the website. To date almost 7000 Region 1 Awards have been issued to all parts of the world. Awards claimed this year, although principally European, have included USA, Canada, Japan and Malaysia.

A special Listener Award based around DXCC (DC Century Club) is available to all short wave listeners starting at 100 confirmed DXCC Entities. This award, like so many others, attracts a minority but extremely focussed group of listeners. Several have 325+ DXCC entities confirmed.

With the recent permitted activity on low frequencies, the Society's award covering the 136kHz band has proved popular with our European friends.

A number of WAS claims from RSGB members have been processed and, during the year, new software was introduced to allow local printing of both WAC and the 5-Band Award. This has again proved popular as claims can be turned around without the two trips across the Atlantic to ARRL HQ.

2010 has proved rewarding in that claims for Foundation Class Awards have increased over previous years. Several significant 2m & 6m Squares and Country claims have been processed. The ARRL has now put their VUCC Award within LOTW (Log Book of the World) for 6m and 2m enthusiasts.

The past year saw the integration of HF and VHF award processing. Generally, the VHF claims for 6m Squares and Country Certificates form 75% of the workload, the balance being 2m – again, these are from a small dedicated groups of individuals.

All new certificate awards on VHF and HF are listed in the *RSGB Yearbook*.

John Dunnington, G3LZQ

CONTEST COMMITTEE. The year has again been very busy, participation in RSGB contests increasing virtually across the board. The committee constantly monitors entrant numbers to ensure that adjudication time is justified; bearing in mind that international participation below 30MHz is generally higher than that above.

Organisationally, we are moving towards common VHF and HF trophy presentation dates. For historical reasons, VHF trophies were awarded in the Spring, with HF in the Autumn. A two-stage process will lead to joint presentations at the RSGB Convention in October this year.

The committee's involvement in Special Contest Calls ensures that individuals meet Ofcom's qualification requirements. We helped in persuading Ofcom to renew SCCs automatically at the end of 2010, rather than incurring time and bureaucracy in vetting, given that many SCCs had only been granted a few months before. We support expansion of the range of contests included in the SCC scheme, particularly to include more at VHF. The committee recognises that Short Contest Calls are a way of obtaining a desirable callsign for limited use, but regards the introduction of a suitable 'Vanity' (or self-assigned) callsign system for all Full licensees as a longer term goal.

An important development is our first Contest Review – a yearly summary of tabulation and commentary. This will be available on request later in 2011, replacing results previously published in *RadCom*, so releasing space for other material. We have also produced a promotional leaflet that augments our publicity efforts in the UK and overseas, recognising that we now compete with other national societies in encouraging contest participation.

Log submission through the committee's 'robot' system is now well accepted. Some contests require this form of entry, leading to very rapid adjudication. Further improvements include automatic UBN reports, allowing contesters to see operating and logging errors, so improving their performance. In addition to these software enhancements, we now offer a reminder e-mail service for RSGB contests and we constantly improve our website's presentation and content.

We have begun using Software Defined Radio to monitor some contests, so enabling infractions to be discovered and verified where necessary. There is particular concern about operation between 1800 and 1810kHz, legal in some parts of the world, but not Region 1. DXers and contesters sometimes stray there, perhaps with serious consequences for all users of the band.

The committee has modified a number of contests this year. Above 30MHz, some backpackers' events have been moved to coincide with other contests, to boost activity. In the popular weekly UK activity contests, the multiplier system has been changed to encourage more inter-UK working. Low power and DX sections have been added and the 23cm contest has been separated from the '13cm & up' contest as a result of increased participation.

A new development is the 'Super League', based on four existing Affiliated Society contests, leading to an overall club winner. The idea is to encourage club participation not just on HF or VHF, but both; it has been remarkably successful so far, showing a 40% increase in the 2m event.

The committee is conscious of a CW bias in HF contests and so has changed one CW event to SSB, adding an SSB section to another. In the HF Championship, which rewards success by RSGB members in a series of contests throughout the year, two RTTY contests have been added, as well as other non-RSGB events incorporating both SSB and CW.

The RSGB IOTA Contest (Society's international flagship) increases in popularity every year, despite poor sunspot numbers, under the stewardship of Don Field, G3XTT. The rules have not changed for ten years, so a wide-ranging consultation will be carried after this year's contest to formulate any changes for the next decade.

Ed Taylor, GW3SQX

EMC COMMITTEE. The EMC Committee develops and implements strategies in the area of electromagnetic compatibility to ensure that, as far as possible, the amateur bands are protected from harmful levels of interference from other electronic and electrical devices, and that radio amateurs are provided with appropriate advice and guidance to allow them to operate without adversely impacting other nearby equipment.

Bob Inderbitzen, NQ1R from the ARRL visited the National Hamfest, seen here with RSGB President.

The year has been dominated by the concerns about the threat to radio reception from Powerline Telecommunications (PLT) devices. The Board approved a strategy in early 2010 to focus the Society's efforts in this area and, during the year, many of the elements of that strategy have been implemented. These have included engaging more assertively with Ofcom, BIS and the European Commission, working with IARU to encourage a more proactive strategy from the amateur societies across Europe and providing better guidance to members about EMC matters. At the same time, the Society has had representatives in meetings of CENELEC and BSI working on the development of a new Standard to govern emissions from Powerline devices, and has continued to participate in meetings in other forums on this and other EMC matters. Copies of significant correspondence between the Society and Ofcom, BIS and the European Commission are on the RSGB EMC web pages.

Some Powerline devices are helpfully 'notched' in the amateur bands so that emissions are around the levels of the existing relevant standard (EN55022). However, outside the amateur bands the position is very different and PLT devices can cause widespread interference problems in their vicinity on other frequencies, causing significant and harmful interference to other radio services, including short wave broadcasting. In this, the 'Essential Requirements' of the EC EMC Directive are clearly not being met and the Society has argued consistently for proper control of devices that generate high levels of emissions in the radio spectrum. Regrettably in some quarters, the unique value of the radio spectrum is not given adequate weight, and it seems likely that the Society will need to continue its pressure for many years to come. The question of 'smart' metering also potentially represents a source of EMC problems, should communications with the meters be through PLT. The EMC Committee is monitoring developments and is seeking to argue for sanity here as well.

At the time of writing, it seems likely that the

RadCom

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The new *RSGB IOTA Directory* has landed!

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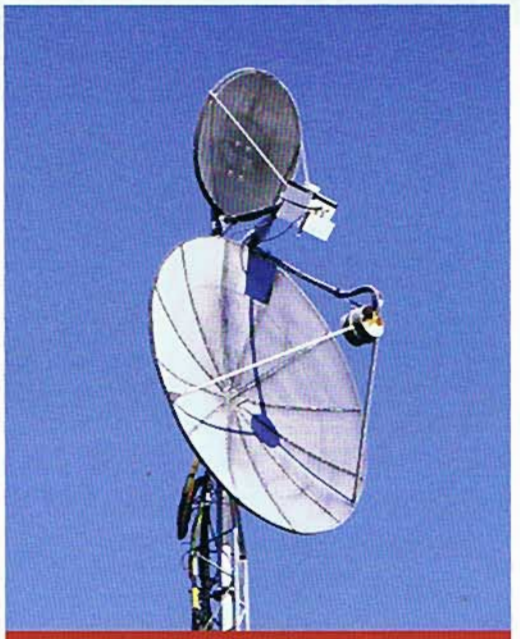
3B7C, St Brandon 2007

News and Reports

The Wall of Radio at the National Radio Centre - p8

Review

Technical Features



23, 13, 6, 3 and 1.2cm at OZ1FF – p67

Regulars

Scouts' first experience of ARDF – p78

GB4FUN was on display at the National Hamfest.

new draft standard on emissions from Powerline devices will be submitted to a vote of members of CENELEC during 2011, but it is not yet clear what the outcome will be, nor whether the EU will adopt the standard for publication in its Official Journal as a Harmonised Standard.

Early in 2010, the Society launched the Spectrum Defence Fund, seeking additional funding to help cover the very significant costs involved in representing the interests of radio spectrum users in relevant EMC forums and to take advice on the question of a legal challenge to some of the more perverse strategies being adopted by regulators. We are grateful to everyone who contributed, and encourage donations to continue. In the end, the Society was advised that a lot more work needed to be done in advance of any legal action and it is that work that the Society has been undertaking during the year in review.

The EU R&TTE Directive is also in the process of review and the Society is making inputs in appropriate forums.

The EMC web pages on the RSGB website have been completely revised, providing more user-focussed access, including a survey of members who are experiencing EMC problems and access (for RSGB members only), via a comprehensive index, of past copies of Dr David Lauder's excellent EMC column in *RadCom*.

The Society seeks to position itself as a source of balanced and authoritative technical input on EMC matters and to take responsibility for the proper safeguarding of the radio spectrum (not just the amateur spectrum) from intrusion by interfering devices. In this we work with other interested spectrum users to bring a common voice to bear in relevant forums. The Society seeks to have an unchallengeable understanding of relevant legislation and to have robust advocates for its strategies on EMC.

The RSGB EMC Committee comprises a group of EMC specialists who are, or have been, professionally involved in EMC matters. They work tirelessly to represent the Society's interests in the EMC arena. During the year, the RSGB has been represented by members of the EMC Committee at the EMC UK event, the RSGB National Hamfest at Lincoln as well as at countless Standards and other regulatory meetings.

We have welcomed David Lewis, G8JXA and Richard Yarnall, M0SNR to the Committee during 2010. I would like to take this opportunity of thanking all Committee members for their support during the year, particularly to John Pink, G8MM, who stood down as Chairman during the year after five years in the role. John continues to represent RSGB on the BSI and CENELEC Committees considering the Powerline telecommunications standard.

Looking forward, we can expect to see an increasingly challenging EMC environment for those seeking to operate amateur radio from urban and semi-urban locations, with the rapid proliferation of digital devices in many guises. Achievement of proper standards and regulatory mechanisms that strike the right balance between protection of the radio spectrum and permitting electronic devices to operate will be an ongoing challenge for the foreseeable future.

Don Beattie, G3BJ

EMERGING TECHNOLOGY CO-ORDINATION COMMITTEE. The main aims and objectives for the Committee are to develop and enhance the UK amateur radio repeater and data communications systems and promote the introduction and rollout of appropriate new technologies.

Main activities:

- To receive, scrutinise and advise on all proposals in respect of analogue and digital repeaters and data communications systems.
- To process finalised and agreed proposals onwards to Ofcom.
- To liaise with Ofcom and other bodies as required.
- To represent the ETCC at clubs, radio rallies and similar events.

A full list of office bearers and committee members and how to contact them can be found on our website, www.ukrepeater.net. The site is provided and maintained on a purely voluntary basis by Colin, GM8LBC who is also our Proposals Manager – thanks Colin!

My report this year is somewhat disappointing and reflects the extensive delays with frequency clearances by the Primary Users of our shared bands. It should be noted that we have at least two Primary Users who impact on clearances in just about every secondary band.

From around April, significant delays have been experienced with 70cm clearances ceasing to be processed despite many escalation requests. There was one notable exception when a local site change using an existing frequency was approved in a very short time indeed. We can understand that in these days of austerity and shortage of staff there may be more pressing priorities within the Primary Users (PU) than amateur radio but it appears that the amateur service is not alone in experiencing a lack of response. The situation was fully discussed at a recent RSGB/Ofcom meeting and is being followed up by Ofcom.

As in previous reports 23cm continues as an area of concern, where objections continue to virtually all proposals made. We are of the opinion that our use of these frequencies is not fully understood by the authorities who, perhaps understandably in safety of life services such as aeronautical radar, take a very cautious approach. We believe that some of the interference issues that concern the PU will be addressed by a new 23cm bandplan that the Microwave Manager is currently producing.

This revised plan should assist in identifying those areas of spectrum that are most likely to cause problems to PU systems thus steering users to choose frequencies which have a much greater chance of success.

I am afraid the situation is even worse for ATV proposals in the higher order bands (13 and 9cm), where there has not even been an acknowledgment of requests for clearance sent via Ofcom. This has been referred to the RSGB Board for further escalation.

A short time ago, Rod Wilkinson retired from his post n the Ofcom Licensing Centre. We wish him well in his retirement. We owe him a debt of gratitude for the excellent service he has given to the entire amateur community.

And now for some statistics; in the table are details of the repeater proposals and amendments that the committee processed to Ofcom throughout the period of this report. Please note that not all proposals may have resulted in NoVs.

	NEW	CHANGES
6m/10m	4	4
2m Analogue	1	2
2m Digital	0	1
70cm Analogue	1	2
70cm Digital	8	1
13/23cm	5	1

In our data communications area, activity continues to be quite high with 30 MB6 DV hotspots currently licensed and operational together with 82 MB7 Analogue Simplex Internet Gateways and approximately 200 Analogue Simplex Internet Gateways.

In conclusion I would once again wish to thank all members of committee for their hard work and dedication in providing a professional standard service to the amateur community.

John McCullagh, GI4BWM

GB2RS NEWS. In September 2011, the GB2RS News Service will celebrate its 56th birthday. Many members will not therefore remember its initial operation on 80m. Since 1955 we have come a long way and currently have some 104 newsreaders transmitting, between them, 84 separate news readings each Sunday on nine different amateur bands at HF, VHF/UHF and microwave (ATV). A breakdown of the readers by callsign prefix reveals 31 G4, 18 G3, 17 G0 and 12 M0 as the four leading groups, making around 80% of the total. The prefixes quoted include all UK regional variations. Of these the G4 were issued from 1971 to 1984, the G3 from 1946 to 1971, the G0 from 1985 to 1995 and the M0 from 1996 to 2000.

I leave members to draw whatever conclusions they wish to from the above analysis, but must emphasise that any callsign-holding member of the RSGB may be appointed as a news reader. This requires, of course, that his or her licence is appropriate for transmitting in voice mode on the band in question. Comprehensive information about the GB2RS News Service is given on the RSGB members' section of the Society website and this is also published in the RSGB YearBook. Both of these sources include the GB2RS Broadcast Schedule giving the times and details of the stations involved.

From time to time surveys are carried out at radio rallies in order to obtain feedback from listeners. In spite of the fact that the GB2RS script is also published on the internet, we are encouraged to find that the majority still prefer to take the news off the air. Furthermore, nearly 60% of on the air listeners claim to tune in every week. Others listen to the voice reading put out in MP3 format by Jeremy Boot, G4NJH on behalf of the RSGB. Jeremy tells us that his reading is heard all over the World and on the air relays are employed in Western Europe, the USA, Canada, Australia, New Zealand, Sri Lanka and in parts of India, the Middle East and Africa. Recently the BBC has had to announce cut backs in its short wave World Service broadcasts, but thanks to the dedication of our GB2RS news readers the RSGB has no such plans.

All the evidence is that the GB2RS News Service is in good health. Furthermore, most of our news readers conduct pre-news or after-news nets, when many radio amateurs call in with reception reports. These nets also serve as popular 'beacons' of activity for short wave listeners and those not equipped to transmit on the frequencies in question.

Gordon L Adams, G3LEQ

HF MANAGER. Possibly the main development during 2010 on the bands below 30MHz has been the success of the DX Code of Conduct. This is an initiative by a group of DXers, led in the UK by Bob

Whelan, G3PJT. The code aims to improve DXing operating standards. The Society has been keen to endorse and publicise this good work by giving it prominence at the RSGB Convention, an article in *RadCom* and by provision of a web link on the RSGB website.

During the past year, the RSGB's spectrum management priority at HF has been the next ITU World RadioCommunications Conference, WRC-12 (23 January to 17 February 2012). For HF this has meant monitoring potential threats from an agenda item on HF oceanographic radars and development of our own agenda item concerning an amateur band near 500kHz. Two years in advance of WRC-12, the focus has been on technical studies and general papers supporting the agenda items. As part of Ofcom's delegation, the HF Manager has submitted several papers to both ITU and CEPT preparatory working groups. The aim of this preparatory work is to gain a common position within CEPT countries on the agenda items prior to the conference. Currently, CEPT is getting close to a position proposed by the RSGB, which would be an allocation within 472 – 487kHz; our initial preference of 493 – 505kHz being strongly defended by the maritime community for a new messaging system. We are encouraged in our approach by the realisation within Ofcom that the UK priority for this agenda item be increased from 'low' to 'medium'.

On IARU matters most of the effort has been in preparation for the Region 1 General Conference in August 2011. Some policy ideas were discussed at the Region 1 Interim Meeting in February 2010, they have subsequently been re-worked for putting forward for this year's General Conference. An informal Region 1 HF Committee meeting was held at the Friedrichshafen Ham Radio event, where the main topics were WRC-12 preparation, deliberate QRM and the establishment of a Region 1 Working Group to adjudicate the 2010 IARU Contest and to review the rules. We were successful in getting John Warburton, G4IRN, onto the Working Group with support from Chris Tran, GM3WOJ and Clive Penna, GM3POI. Some progress was made on the deliberate QRM issue with the involvement of CDXC early in the year. Despite considerable lobbying of other national societies and DX clubs during Friedrichshafen, our enthusiasm for addressing the problem beyond educational material and moves such as the DX Code of Conduct does not seem to captivate the European culture. We may therefore have to hope that the Ethics and Operating Procedures for the Radio Amateur and the DX Code of Conduct are enough to bring about some real improvement in DXing operating standards.

Dealings with Ofcom have mostly concerned the extension of the period of access to channels near 5MHz. This was successful in that Ofcom and MoD were able to agree that a new NoV be issued that would run until 30 June 2015. Whilst the MoD for a greater part of the year were not responding to further discussions on the provisions of this new NoV, pressure was maintained on Ofcom to seek changes that would provide better harmonisation with amateur operation in other countries. However, at short notice in early December, Ofcom discussed these proposals before putting them to the MoD. We are awaiting MoD's response.

The renewal of individual's Short Contest Calls (SCC), due at the beginning of January 2011, would have caused significant administrative work without much gain; it was successfully put to Ofcom that SCCs, both those issues to clubs and individuals, could be automatically renewed with an expiry date of 2014.

The 5MHz Working Group has had a quiet year. The group conducts its business by e-mail and the main progress made this year was to agree improvements to the beacon chain and the 5MHz part of the Spectrum Forum website. The latter is still in progress; when complete it should help stimulate more experimentation and also the analysis of the 5MHz data derived from the RSGB Experiment. In terms of the beacon chain, the most significant improvement has been to build a replacement for the 5MHz GB3RAL beacon; this went into operation shortly before Christmas. The main change, which it is planned to extend to the other two beacons, is that the 40Hz pulse steam at the end of the transmission has been removed. The 5MHz database web interface has also received some new facilities that allow the user to select different configurations from the relational database and a scheme has been implemented to filter out records where the location data is suspect.
John Gould, G3WKL

INTRUDER WATCH. Although the Russian military remain enthusiastic users of our exclusive bands for their teleprinters and modems, they have been less in evidence this year. This is unlikely to be a new found respect for international regulations and probably more due to propagation conditions on the higher HF bands. The recently vacated frequency range of 7100-7200kHz has attracted a number of unwanted guests. The Voice Of The Islamic Republic Of Iran occupies 7200kHz and appears not to accept that this is not a frequency available to broadcast stations any more. Radio Kuwait used 7190kHz for a few days but responded to complaints on our behalf from the Ofcom Monitoring Station at Baldock and other official monitoring stations.

Broadcast stations from Ethiopia and Eritrea move around in this part of our band and usually end up deliberately jamming each other as part of the conflict in that part of Africa.

Malfunctioning broadcast transmitters were in evidence again this year. Radio France International on 7205kHz was splattering over much of the 7MHz band but eventually sorted itself out after numerous complaints and reminders from Baldock.

A complete contrast to this was the case of Family Radio in Florida on 21670kHz that was splattering below 21450kHz. Baldock confirmed the location and contacted the FCC in Washington. Within 30 minutes the transmitter was turned off!

A faulty NATO STANAG 4285 modem on 3585kHz that was causing interference over a wide frequency range was found to be located off the Dutch coast. Baldock made the phone call to the appropriate authorities and it went QRT very quickly. The same result was achieved when one of these modems turned up on 14225kHz and disappeared within minutes of a Baldock phone call.

Digital Radio Mondiale (DRM) is a digital broadcast mode that appears to develop faults quite often. Transmitter sites in Romania, Germany and Kenya have all caused very disruptive interference to the 7MHz band within the last year.

An unusual signal consisting of two pulses per second was heard permanently occupying 24945-25050kHz. It was eventually traced to Venice where it turned out to be a CODAR wave measuring device. It puts up to 100 watts into a full sized ground plane antenna that is located right on the edge of the sea. Baldock contacted the Italian authorities and reminded them that not only was their signal wiping out half of an exclusive amateur band but that it was also right on top of the 25MHz beacon frequency. It went fairly quickly and has not been heard since.
Chris Cummings, G4BOH

IOTA. Again, the IOTA Committee's main job during the year has been to service the IOTA community through its primary tool, the IOTA website. This provides not only detailed up to date information, open to everyone, on activity and on the IOTA Programme generally, but also, following registration, an online password-controlled application facility for securing score credits and awards.

An amateur radio exhibition was held in the European Parliament in Brussels.

Last year at this time we reported significant increases in take-up, whether it be people registered on the website (+16% on 2008), award applications processed (+10.8%), or credits confirmed by checkpoints (+20.4%). The prime reason given for this increase was the surge in applications in Brazil following the appointment of a local checkpoint. IOTA saw growth continue strongly in 2010, although, without the special 'Brazil boost', not at the same rate as in 2009. Comparable figures were +13.4%, +4.3%, and +7.9%, which in the circumstances was a very satisfactory outcome. The figures:

Period	Applications	Credits Given
Jan to Dec 2008	706	45899
Jan to Dec 2009	782	55278
Jan to Dec 2010	816	59652

Calendar year 2010 saw 134 new applications for the basic IOTA award and, overall, 571 certificates, 22 Plaques (750 Islands) and 10 Trophies (1000 Islands) issued. Comparable 2009 figures were 125 new applications and 576, 23 and 4 awards respectively.

While interest in IOTA continues to grow worldwide, with greatest penetration in the USA, Germany, Italy, Japan and Russia, where it has thrived, it has tended to stagnate in the UK. Given the programme's roots here, not to mention its 24/7 management, this is surprising and at the same time disheartening. The IOTA Committee is open to offers from IOTA chasers to become additional checkpoints in the UK regions. Undoubtedly the contribution checkpoints have made worldwide in processing applications, in handling enquiries and in representing IOTA has been a major factor in the programme's success and this we acknowledge with thanks.

Acknowledgement must also be made of the close cooperation given the Committee by staff at RSGB Admin Centre, particularly in the expeditious handling of the issue of certificates and prestige awards. At a more strategic level, we express our appreciation of Icom UK's sponsorship under an agreement that provides valued support to IOTA. Mention should also be made of the financial and promotional help that a number of organisations, notably the Island Radio Expedition Foundation (IREF), companies and individuals give to IOTA DXpeditions to enable them to take place. There is a strong case for more such support from the main DX funding bodies if the on-air activity generated by IOTA DXpeditions that so enriches the amateur bands is to continue unabated.

As regards future plans, the Committee already has an eye on the programme's 50th anniversary in 2014 and intends to commemorate this with

a major splash. An announcement will be made shortly to launch an initiative that will place IOTA in the forefront of on-air activity throughout 2012 and 2013, leading right into 2014. Again, we will be looking for volunteers to assist us in making this the success it deserves to be. With the welcome reappearance of sunspots and the marked improvement in band conditions this promises, the IOTA community can look forward with anticipation to two years of IOTA!
Roger Balister, G3KMA

MANAGEMENT COMMITTEE. The remit of the Management Committee is to assist the General Manager in the running of the business affairs of the Society. It advises the RSGB Board on business strategy, focusing particularly on the issues of finance and commercial performance, membership numbers and business development.

The membership of the committee is a mix of people with knowledge of amateur radio affairs and business experience. It includes Board and Regional Council representation. In order to reduce costs, some meetings were conducted by teleconference during 2010.

During 2010, the committee took advice on whether the RSGB should convert to a charity and what advantages might follow from that. However, it was concluded that there should be no change to the present structure with the charitable functions of the Society conducted through the RCF.

A review of the work of the MC and relationship with the Board was conducted late in 2010 and the MC welcomed the report and the guidance it contained for future operations.

At each meeting the MC receives reports on the financial and commercial performance of the Society. It is particularly concerned to ensure that the Society continues to develop services to members whilst maintaining a viable year to year financial position. It also advises the Board on investments and the management of other assets.

The construction of the new National Radio Centre is now well advanced at Bletchley Park, the MC views the centre as a great opportunity to showcase amateur radio to a wider public and to stimulate RSGB membership numbers. The MC is aware that it will be important to ensure that the investment in the centre does deliver benefits for the RSGB and for amateur radio generally in the UK.

The business aspects of the RSGB Convention are monitored by the committee and all concerned were pleased with the continued success and development of the event again in 2010. Similarly, it was satisfying to see that the National Hamfest at Lincoln continues as a business and social success.
Angus Annan, MM1CCR

MICROWAVE MANAGER. The past year proved to be a busy one with respect to activity, outreach and spectrum management. All four Microwave Roundtables were attended, as well as talks given at the RSGB Convention and AMSAT-UK Colloquium. The beginning of the year was also marked by two other significant events, the IARU-R1 interim meeting in Vienna in February and the sad passing of my predecessor Mike Dixon, G3PFR in March. The VHF/Microwave meeting at Vienna considered Society proposals on 23cm re-planning, 2.3GHz threats and MGM beacon standards (the latter also adopted as guidance for VHF/UHF). During 2010 inputs were also provided to Ofcom on exempt devices, 24GHz car radar and WRC-12.

Note has been taken of the success of the UK Microwave Group (UKμG) winning the bid to host the next International EME Conference. This premier event will be held at Churchill College, Cambridge during August 2012 and will be supported by the Society. The links between the UKμG taking over the administration of microwave squares and distance awards that are being re-launched by the UKμG during 2011. In addition the UKμG and the Society are introducing online log submission in 2011.

For the ATV community, microwave ATV repeaters continue to focus for activity in most areas, with several now having spectrum friendly DATV outputs. The latter are typically QPSK for easy reception by DVB-S receivers. Many ATV repeaters now have a streamer feed into the BATC server (www.batc.tv), which attracts large out-of-area audiences and is a key resource for promoting the hobby. Disappointingly, 2010 saw no license approvals for ATV repeater applications. Despite this, digital inputs and outputs on existing repeaters continue to grow producing excellent results. MPEG-2 encoders have been a costly item impeding further DATV adoption, although experiments on both 70cm and 23cm continue to impress. Groups are now developing low cost encoders, modulators and very linear FET PAs. The coming year should see these developments underpinning the move to DATV by more stations.

A close interest has also been taken in the Amsat-UK FUNcube satellite project and, in particular, its pioneering and popular FUNCube SDR dongle. Although intended for VHF reception in schools, the dongle can operate over 64-1700MHz. At around £130 it is the only low cost SDR available for spectrum above 1GHz, making 23cm far more accessible.

Support for Beacon applications, licensing and technology has also continued. During 2010 the Society introduced a beacon support policy and also unveiled a coordinated plan to revamp the 70cm beacon network at the 2010 Convention. Like many other beacon plans, this awaits resolution of ongoing Primary User issues which have proven to be a major impediment in the past year. It is expected that 23cm and the future of 3400MHz will see some welcome clarity in 2011; and these and other topics will be put forward to the IARU-R1 Conference in August.

The Microwave Manager is also part of the Society team dealing with 2012 Olympic matters. The past year has seen some detail emerge on spectrum requirements and assistance requests. The Society continues to work closely with Ofcom in this regard and 2011 will no doubt see further activity as venues and plans are finalised.
Murray Niman, G6JYB

PLANNING ADVISORY COMMITTEE. Planning Panel members continue to assist members with their planning applications, advise on enforcement notices and help with the preparation of planning appeals. 2010 has been a noticeably quieter year with the number of planning enquiries down on previous years. It was also noticed that we had had no request for planning appeal information in Scotland in recent years. However a Freedom of Information Act request to Scottish Councils showed that this was down to very few planning applications for amateur radio antennas and masts being refused planning permission in Scotland. Nice to know the need for amateur radio antennas is appreciated somewhere.

The Decentralisation and Localism Bill was announced on 13 December 2010 and some members have raised concerns over reports that planning decisions may be devolved to local people who may take a 'NIMBY' approach or have their own agenda regarding the alleged health issues associated with RF emissions. The Society has written to Eric Pickles MP, Minister for Department for Communities and Local Government raising concerns that the proposed 'localism' may have a detrimental impact on amateur radio planning applications if non planning professionals have a greater involvement in making planning decisions. We have also asked that if some minor amateur radio antennas such as wire dipoles could be considered as 'de minimis' and removed from the planning process completely.

As in previous years the Planning Advisory Committee was present at the National Hamfest at Newark and John Mattocks and I were kept busy over the two days of the event answering planning enquiries for both members and non members.

A presentation on 'Planning Permission for the Radio Amateur' was given at the RSGB Convention and it is hoped to give a similar presentation at the GMDX Group Convention in April 2011.
Len Paget, GM0ONX

PROPAGATION STUDIES COMMITTEE. If this year's report on PSC's activities bears a strong similarity to last year's (and the year before for that matter), that is no accident. Most of what we do is on a continuing basis. This is particularly true of the reporting, analysing and forecasting of solar and propagation events. Gwyn, G4FKH, again provided monthly propagation forecasts for *RadCom*, also running an updated version on the web for visually handicapped readers. Steve, G0KYA, contributed monthly podcasts for a different and far-flung audience for This Week in Amateur Radio. He also ran a monthly report and forecast on his web page. Neil, GOCAS and Martin, G3USF, charted the ever-so-slow-rise of cycle 24 every week for GB2RS. GOCAS also kept a watchful eye on solar developments through his Sunspots and Flares Forum web page. Speaking of web pages, links to the activities mentioned above are at the Committee's web page www.rsgb.org.uk/psc. During the year, G3USF retired from maintaining that page's guide to solar and propagation sources after fifteen years. Re-designed by Rob King at HQ, it migrated to the Society's website with G4FKH as editor. With the agreement of HQ, G0KYA published a downloadable collection of the articles on propagation he and Alan, G3NYK, contributed to *RadCom* over the past couple of years. It remains available (free!). Sam, G4DDK, wrote the *RadCom* GHz column, while G4FKH and G0KYA updated the propagation pages of the RSGB Yearbook and G4FKH undertook the revision of the propagation section of the RSGB Handook, in collaboration with other members. G3USF maintained the HF and 50MHz beacon lists and served as HF beacon coordinator for IARU Region 1.

The National Hamfest and the RSGB Convention were again major commitments. G0KYA organised and staffed PSC's stand at Newark on both days with help from other members. They again had a busy time fielding questions and issues raised by visitors. Steve also spoke on propagation to the Contest University at the Convention. Most members gave talks on propagation-related topics to local clubs and worked on personal projects. Thus, Barry, G8AGN, worked (with Gordon, G0EWN) on free-space LOS optical communication, establishing a UK record of 87km at the turn of the year. He notes how much less susceptible to scintillation LEDs were to the lasers used previously. He also worked on GRAVES radar reflections from the Moon. Marcus, G0IJZ, pressed ahead with work comparing

measurements of signals from the 5MHz beacon network with VOACAP simulations and presented an analysis of his results in a paper to the Nordic HF conference. He pays particular acknowledgment to those involved in the 5MHz beacon project, including the beacon keepers and monitoring stations, without whom this analysis would not have been possible. Graham, G3TCT, investigated Es propagation and produced a web page of 6-metre recordings using polarization diversity. He will also be working on auroral propagation. Bob, G3REP, has been looking at O- and X- propagation. If we add in G3NYK's long-running studies at LF, PSC can reasonably claim, in the classic phrase, to cover the whole range from DC to light. Rest assured; there is plenty to ensure PSC will have another busy year.
Martin Harrison, G3USF

SPECTRUM FORUM. The Forum has had a successful year with a wide range of topics discussed. I am also pleased to say that its membership has increased with the welcome return of UK Six Metre Group and the addition of the Vintage and Military Amateur Radio Society. The annual meeting was a particular success, recording the highest attendance by participating special interest groups.

Despite often opposing views, not surprising given the diversity of interests represented in the Forum, it is good to see the good mannered relationship that continues on the Forum's reflector, where the majority of the year's business is managed. This too prevailed at the annual meeting in November 2010, where a busy agenda was dispatched without over-running the planned meeting time. We agreed to approve the minutes by the reflector, rather that waiting until the 2011 meeting in November. This allowed the Minutes and the reports of the meeting to be published on the RSGB website in January 2011.

Whilst a number of members of the Forum provide insight into various ITU, CEPT, and various standards bodies the Spectrum portfolio holder represents the RSGB at Ofcom's International Spectrum Stakeholders Briefings and their International Frequency Planning Group. The former grouping is new and provides a broader picture of ITU Region 1 policy in that it includes briefings on European Parliament and European Commission spectrum related matters as well as an overview of CEPT and ITU issues.

The Society made a significant input to Ofcom's consultation on the World Radocommunication Conference 2012 (WRC-12) at the beginning of the year. Whilst much of the input/drafting was done by the spectrum managers and technical consultants the Forum proved its value in undertaking a final review of the draft as well as contributing to the Society's position on its spectrum 'wish list' for future WRCs. The RSGB's input was well received: two outcomes were pleasing, firstly Ofcom have been adopting our Microwave Manager's wording concerning the avoidance of 'spectrum monopolisation' by so called passive users above 275GHz, and secondly the decision by Ofcom to upgrade the priority for the 500kHz amateur band agenda item from 'low' to 'medium'.

The poor awareness of the spectrum management work, carried out by the Forum and the Spectrum Managers, within the UK amateur community was addressed by manning a stand at the National Hamfest. To make the stand attractive David Dix, G8LZE prepared a short video and we had three new brochures for people to take away. Although the interest was low, those who came to the stand seemed appreciative of the information that we were able to provide and were impressed by the breadth of the work undertaken on spectrum matters. The following week the Spectrum Forum had a small stand at the RSGB Convention where the brochures were again available along with a showing of the video.
John Gould, G3WKL

TECHNICAL FORUM. The work of the Technical Forum continues with a significant number of technical articles being peer reviewed for *RadCom* during the year. The technical articles covered a wide range of subjects that I hope members have enjoyed. The articles are about what radio amateurs have been doing in the hobby and I would actively encourage members of ALL levels to put pen to paper or fingers to the keyboard. It does not matter if you have been in the hobby a long while or have just joined, please feel free to send in your ideas. There's always someone to help turn the idea or project into a really good article and we look forward to hearing from you.

In addition, the Forum contributed with lectures at the Convention now held at Horwood House near Milton Keynes as well as practical 'hands on' demonstrations. The program for 2011 is being worked on at the moment and I can say without reservation that it will be well worth going to! An event not to be missed!

RSGBTech on Yahoo continues to thrive with well over six hundred people registered on the site with almost daily posting, questions and discussions on technical subjects. It is about radio amateurs sharing their expertise, knowledge and experience for the benefit of fellow radio amateurs and is certainly becoming a dynamic internet resource for the hobby. For further details refer to the RSGB YearBook but please feel free to drop in on the site. www.rsgb.org/rsgbtech/about.php.

Finally, I would like to thank the members of the Technical Forum and the *RadCom* staff for their contribution and sterling efforts during the year and I wish my successor all the very best for 2012.
Leslie Butterfields, G0CIB

VHF MANAGER. The national VHF and UHF band plans have recently been reviewed as part of the process for inclusion within the 2011 RSGB YearBook. It was noted that the 430MHz band plan needed some sympathetic rework but this would be put on hold until after the IARU Region 1 conference later in 2011

The RSGB Spectrum Forum website is a grouping of the RSGB HF, VHF and Microwave Managers, all RSGB spectrum related bodies and other special interest groups. During the year the VHF and UHF pages of the Spectrum Forum have been updated. The VHF/UHF pages can be found at www.rsgb.org/spectrumforum/vhfuhf.

Covering the 50, 70, 144 and 432MHz bands, each individual page has details of licence conditions, a detailed look at the band plan with explanatory notes, how to get started and what equipment you will need, propagation modes and how to keep up with the latest developments, activity period and contests.

The Special Research Permit (SRP) continued to work well during much of 2010 with applications for the 50MHz and 144MHz being processed very quickly. Requests for Special Research Permits within the 432MHz band have not been successful, all being rejected by the Primary User. It is recommended that SRP applications for use on the VHF/UHF bands are directed through

ML&S celebrated their 20th anniversary (l-r) Jenny & Martin Lynch & Dean (Yaesu UK).

the VHF Manager in the first instance. This is to ensure that the application meets required guidelines, especially in the area of field strength measurements.

A request for a +4dB increase in output power within the 70MHz band (to bring it in line with other HF/VHF/UHF bands at 26dBW) was submitted to Ofcom. However the Primary User has been unable to agree an increase in power due to their usage within that band. The request has recently been resubmitted with specific frequency and bandwidth limitations. Any possible power increase by individual stations will only be granted under the NoV process.

It is still of considerable concern that a number of VHF and UHF propagation beacon are being forced to permanently close down. Primarily this is due to funding issues associated with commercial broadcast sites. The situation is particularly poor on the 432MHz band where it is expected that only two UK beacons units will remain active. If there are any members out there willing to host a beacon (or two) then please contact me! A suitable QTH could be located on the extremity of the UK with a clear take off into main population areas.

Wideband data-signals have recently been reported as being heard within the 144MHz weak-signal sub-band. One unit was heard operating on 144.390MHz, located within the narrow-band section of the 144MHz band - just 10kHz below the beacon band. This area is used for weak-signal meteor scatter (with maximum bandwidth of 2.7kHz) and not 25kHz NBFM that the commercially available module produces. Other frequencies being used are 144.800MHz – used for APRS (with 12kHz max. bandwidth) and 145.175MHz which is a 2M repeater (RV62) input frequency. These frequencies appear to be based on North American 144MHz allocations. It would be helpful if users consult the appropriate band plan before implementing these systems.

International Matters. As a member of the IARU Region 1 VHF/UHF/Microwaves Committee I have represented the RSGB in International VHF/UHF liaison work. This has mainly been regarding band planning issues with particular emphasis on the possible expansion of the 70MHz band throughout IARU Region-1. To this end I have continued to assist other VHF Managers in developing proposals being presented to their national administrations.

The following papers (and others) are being written for the IARU Region 1 2011 conference.

50MHz: Refarming the narrowband section (circa 50.0 – 50.5MHz) based on suggestions by UKSMG and other feedback. This will require worldwide co-ordination.

144/430MHz: Recommendations for aeronautical mobile (balloon) frequencies.

European Contest Calendar: Based on a request for IARU Region-1 to provide a database of National Society VHF/UHF contests.
David Butler, G4ASR

Formal Minutes of the 83rd Annual General Meeting of the Radio Society of Great Britain

HELD ON 17 APRIL 2010 AT THE BEDFORD SWAN HOTEL, THE EMBANKMENT, BEDFORD MK40 1RW

RESOLUTION 1

To receive and, if approved, confirm the minutes of the 82nd Annual General Meeting
Proposed: Jim Stevenson, G0EJQ
Seconded: Mick Sanderson, M0IEO
The motion was carried by a show of hands.

RESOLUTION 2

To appoint the auditors Sayer Vincent and to authorise the Board to fix their remuneration.
Proposed: RSGB President, Dave Wilson, M0OBW
Seconded: Gwyn Williams, G4FKH
The motion was carried by a show of hands.

Radio Society of Great Britain

(A COMPANY LIMITED BY GUARANTEE, REGISTERED IN ENGLAND NO 216431)

Notice for AGM 2011

The calling notice for the AGM first appeared in the April 2011 edition of *RadCom*.

ANNUAL GENERAL MEETING

NOTICE IS HEREBY GIVEN that the 84th Annual General Meeting of the Radio Society of Great Britain will be held in the Menzies Mickleover Court, Etwall Road, Mickleover, Derby DE3 0XX on Saturday 14 May 2011, commencing at 12 noon for the transaction of the undermentioned business.

AGENDA

To receive and, if approved, confirm the minutes of the 83rd Annual General Meeting circulated to members with the April 2011 edition of *RadCom* (Resolution 1).

To receive and consider the accounts for the period 1 January to 31 December 2010, and the reports of the Board and the Auditors as shown in this edition of *RadCom*. To appoint the Auditors Sayer Vincent and to authorise the Board to fix their remuneration (Resolution 2).

NOTES

Doors will open from 11am until 11.45am for registration. Refreshments will be available. A Society bookstall will be open from 11am to 12 noon and again during lunch. The Society will make available for sale an audio tape recording of the proceedings. The use of video recording equipment will not be permitted at the meeting.

Members invited to attend and vote at the meeting may appoint a proxy to attend and, on a poll, vote on his or her behalf. The proxy need not be a member of the Society, but is not allowed to speak at the meeting other than join in the demand for a poll.

By order of the Board.
R R Thorogood, G3KKT
Honorary Company Secretary
13 March 2011

The Kenwood Trophy awarded to the Bath Buildathon Team for outstanding contribution to amateur radio training.

ON COMPLETION OF THE AGM

Presentation of Awards including the National Club of the Year trophy, sponsored by Waters and Stanton.
President's Address
A 2-course hot buffet lunch will be available at 1pm. Lunch tickets priced £8 will be available on the day.

OPEN FORUM

The Open Forum will commence at 2pm and conclude at 4pm or shortly after. The meeting will open with a short presentation by the RSGB President, Dave Wilson, M0OBW, followed by questions and answers.

TRAVEL AND TRANSPORT

The Menzies Mickleover Court Hotel is a 4 star hotel. Situated within the hotel is Waves Leisure Club that offers a large pool, sauna, jacuzzi and solarium. The hotel has two separate gym areas with cardiovascular and resistance equipment. The nearest airport is East Midlands Airport, just 17 miles from the Menzies Mickleover Court.

Derby Railway Station is around 5 miles from the hotel and Burton on Trent station around 8 miles. From Derby station you can either take a taxi to the hotel, around £8 each way, or follow the signs to the city centre to Albert Street bus stops. You need bus stop B1 or B3. From the B1, take the Villiager V1 and V2 buses to Mickleover Square followed by a short walk down Uttoxeter Road to the hotel. From the B3 take the Mickleover bus to Mickleover Square followed by a short walk down Uttoxeter Road to the hotel. From Burton upon Trent station take the Villager V1 and V2 buses that stop just outside the hotel. Visit www.walkit.com for directions.

By road, the nearest motorway junctions are 24 or 28 of the M1.

A special AGM rate has been negotiated of £69 for single or £74 for double occupancy (bed and breakfast) for the Saturday night.

JOIN US FOR DINNER

Why not make it a full day out and join us for dinner? On the evening of 14 May after the AGM there will a dinner in celebration of amateur radio. The dinner is being held at the Menzies Mickleover Court, Etwall Road, Mickleover, Derby DE3 0XX. Join the President, Dave Wilson, M0OBW and members of the Board for a splendid social evening in the true traditions of amateur radio. Only 60 tickets are available, priced £26. As well as individual bookings, clubs and parties may book tables for up to 10 guests. Tickets can be purchased via the RSGB online shop, www.rsgbshop.org, 01234 832700 or by post from RSGB, 3 Abbey Court, Priory Business Park, Fraser Road, Bedford MK44 3WH. Last date for tickets is Friday 6 May 2011. Dress code: lounge suit, blazer or smart casual. Demand is always high so purchase your tickets early and you won't be disappointed.

The National Club of the Year 2009 was won by Chelmsford Amateur Radio Society.

1 January to 31 December 2010

Radio Society of Great Britain

(A COMPANY LIMITED BY GUARANTEE, REGISTERED IN ENGLAND NO 216431)

PROXY FOR USE AT RSGB ANNUAL GENERAL MEETING.

I,* ..... CALL/RS.....

OF .....

A MEMBER OF THE ABOVE NAMED SOCIETY HEREBY APPOINT

.....CALL/RS .....

OF.....

OR FAILING HIM / HER .....CALL/RS .....

OF.....

as my proxy to vote for me on my behalf at the Annual General Meeting of the Society to be held on Saturday 14 May 2011 and at any adjournment thereof as indicated below.

IN THE EVENT OF NO PROXY BEING NAMED OR OF YOUR NOMINATED PROXIES FAILING TO ATTEND THE ANNUAL GENERAL MEETING, THE PROXY WILL AUTOMATICALLY REVERT TO THE CHAIR OF THE MEETING.
PLEASE INDICATE WITH AN 'X' HOW YOU WISH YOUR VOTE TO BE CAST; OTHERWISE THE PROXY WILL ABSTAIN OR VOTE AT HIS OR HER DISCRETION.

ANNUAL GENERAL MEETING	FOR	AGAINST
RESOLUTION 1 To receive and, if approved, confirm the minutes of the 83rd Annual General Meeting as circulated to all members with the April 2011 edition of *RadCom*.		
RESOLUTION 2 To appoint the auditors Sayer Vincent and to authorise the Board to fix their remuneration.		

SIGNATURE.....DATED 2011

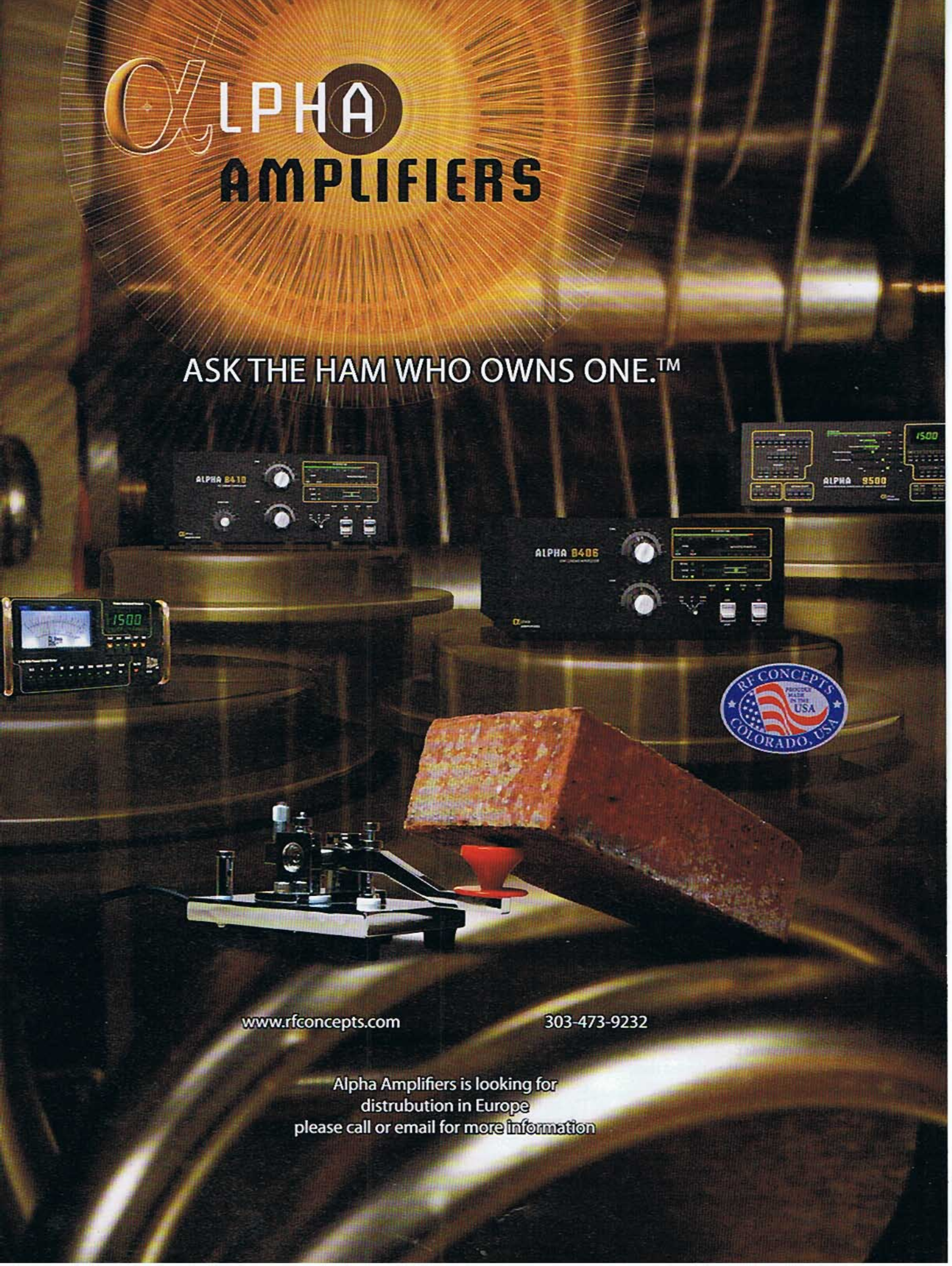
NOTES

Members may appoint any member OR non member as their proxy holder. However, the following are willing to act as proxies:
The President D V Wilson, M0OBW, 12 New Street, Elworth, Sandbach, Cheshire CW11 3JF.
The Honorary Company Secretary R Thorogood, G3KKT, Station House, Station Road, Castle Cary, Somerset BA77PB.
Acting General Manager, D F Beattie, G3BJ, RSGB, 3 Abbey Court, Priory Business Park, Fraser Road, Bedford MK44 3WH.

The proxy form must be signed by either the fully paid up corporate member or by his or her attorney duly authorised in writing.
Articles 24 to 27 inclusive refer to proxy votes and the calling of a poll.
In order to be valid this form MUST reach the Society's registered office in the envelope provided not later than 11.00am on Wednesday 11 May 2011.

along the dotted line

Back of AGM proxy form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HF

Looking back on last month

En-route to VK9C, G3RTE & G3SWH met up with other well known BERU operators VK6LW & VK6VZ. L-R, Jim, G3RTE; Phil, G3SWH; Kevin, VK6LW and Steve, VK6VZ.

IMPROVEMENTS CONTINUE. Last month I said that HF conditions were finally starting to improve and this has, for the most part, continued. The weekend of the ARRL SSB Contest was remarkable. A solar flux of 140 meant that UK stations were able to work plenty of West Coast stations on 10m. I didn't take part in the contest, but did some operating on 12m that was full of stations from all continents. Just a few days later, unfortunately, a storm on the sun put paid to the good conditions, but things have been looking up again since and they were very good again for the WPX SSB contest at the end of March, not so much on 10m, but certainly on 40, 20 and 15. Steve, GW4BKG, for example, was relating to me how easily he worked Steve, 9M8Z (ex-*RadCom* editor G4JVG) in the contest on 20m, despite running just 100 watts to a dipole. The good news is that the solar flux on 7 March was 153, a record for the new cycle (the last time it was this high was July 2004). I have to say, I was rather taken aback by a comment in one of the responses to the recent RSGB Survey (which I am helping to analyse). This was from a lapsed member who felt that the RSGB was deliberately withholding information about future propagation and asked why we were doing this! If only we had such insights, when even the world's experts have been unable to forecast the timetable for this new sunspot cycle. But maybe this is not just another false start and it is finally on a continued upward trend (although I suspect the peak, when it comes, will be somewhat lower than the last two).

It wasn't just the high bands, though. John, G3PQA reports one evening when 160m conditions to the Pacific were quite remarkable, with FK8CP the loudest John has ever heard him. T30RH was a new one in John's log – a first from G (GM3YTS, GM3POI and GM0GAV also worked the T30 on 160). John notes that Top Band paths have frequently been skewed from the great circle bearing, some 90° in the case of the T30. He ponders what the propagation mechanism might be.

There were some useful expeditions during March, too. 4A4A (Revilla Gigedo) was probably the best run effort there has ever been from that location and they proved to be workable on all bands. The Sable Island (CY0) guys finally made it to the island, making lots of people happy. S21YZ was on from Bangladesh and VU4PB from the Andamans, both workable from the UK on several bands. In the Russian DX Contest the usually rare Zone 23 was represented by JT5DX who was a huge signal on most bands (I got him first call on 80, for example) and UA0YAY. And those active in the Commonwealth Contest were rewarded with some nice contacts, especially with those UK amateurs who had made the effort to activate overseas spots (5X, J8, J6, VP2M, etc) for the occasion. The nice thing about this one, of course, is that they were only working Commonwealth amateurs, so the pile-ups were more modest.

Before continuing, by the way, I must apologise for a recent reference in this column to Czechoslovakia, which hasn't existed now for many years. The news item should, correctly, have referred to the Czech Republic, as one eagle-eye reader noted. I wonder what this month's 'deliberate mistake' will turn out to be?

DX NEWS. ZS8M by Pierre Tromp is now over. He says that although his dipole "worked extremely well", the antenna restrictions made it impossible to work everyone. Other limitations were "weak propagation conditions and restricted operating hours". In total he made 8,500 contacts. This includes quite a few UK contacts, as Pierre was kind enough to arrange some schedules specifically for the UK. Andy, G3SVD, who was involved in these and generally tried to mentor Pierre during his time on the island, reports that Pierre's log should be uploaded both to ClubLog and to LoTW in due course.

The Intrepid-DX Group will operate as T6PSE from Afghanistan for ten days during May, the exact dates and location being kept confidential for security reasons. The Intrepid-DX Group is the same group that mounted the April 2010 YI9PSE DXpedition from Iraqi Kurdistan. There will be ten operators, with plenty of hardware in terms of rigs, amplifiers and antennas. Check their website for a final announcement of dates nearer the time.

Japanese operators JA7HMZ, JA7AGO and JA7ZP are heading to Pohnpei (OC-010), Micronesia for activity as V63DX, V63GO and V63ZP respectively from 22 to 28 May. They will be on all bands and modes. QSL via their home calls.

Haru, JA1XGI, will sign T2XG from Tuvalu from 17 to 24 May. He will be on 40 through 10m CW, SSB and digital. QSL direct or bureau to JA1XGI.

Wim, OS1T (ON4CIT), will operate from St Barthelemy as FJ/OS1T from 14 to 22 May. He'll have an IC-7000 with Expert 1KA amplifier transmitting into either a G3TXQ Broadband Hexbeam (20-17-15-12-10) or verticals for 40 and 30. Activity is planned for 40 through 10 SSB and RTTY. QSL via OS1T either direct or via the bureau.

60m REPORT (from G4TRA). 60m night owls have been rewarded with strong signals coming in from Guantanamo Bay with both KG4AS and KG4WV active this month. Our US cousins certainly have opportunities to activate this interesting band from many different countries. For instance Tom, W9AEB reports: "We will definitely be on 60 as V25TP. The operation runs 14 to 28 June. We will check with the Antigua authorities to verify that we have privileges on that band. We will be using a full size G5RV for 40 and 80 and expect we can get a decent match on 60 with a tuner". John, W5JON who has been heard from many Caribbean locations, put a great signal into the UK from St Kitts as V47JA and, from Turks & Caicos, Jim, KB8TXZ/VP5 reported he'll be on Monday and Tuesday nights.

Here in Europe another European country to get 200kHz of VFO coverage, as against fixed channels (along with OZ and LA), is Croatia, 9A.

It has been reported by the Central Kiribati team that the T31A DXpedition is planning a 60m operation if things run as expected. Time permitting and, if antennas can be properly placed so as to not interfere with other bands or take away from significant QSO rates on other bands, they will "try" to activate 60m. Their sunset is 0548Z and sunrise at 1736Z. The TE8X Venado Island DXpedition (IOTA NA116) may be on 60m on two channels, 5.371.50 and 5.403.50 USB, check QRZ.com for info and watch out for signals from Fiji for the very first time too.

JT65 on HF. For some years now modestly-equipped HF operators have been enjoying the benefits of PSK31 as a mode that often gets through when signal strengths are low. In recent months, though, they have been trying JT65 (and its JT65A variant), which is even better at decoding signals at very low strengths. As VHF operators will know, JT65 was devised by Dr Joe Taylor, K1JT for weak signal working. It is often used for moonbounce (EME) contacts, integrating signals over a period of time to extract them from the background noise (a process that

QSL cards from the four 'new' PJ entities are now starting to arrive.

can take tens of minutes where signals are well below noise level). On HF things aren't usually so tough, but nevertheless JT65 appeared to offer a way to exploit marginal propagation opportunities and an increasing band of experimenters are doing exactly that. Unlike PSK31, JT65 doesn't pretend to be a 'conversational' mode, but is designed to allow the basic minimum of information to be exchanged for a valid two-way contact to take place. I mention it now because there was an excellent introductory article in the April 2011 issue of *QST* (p 45, 46). Most amateurs using JT65 on HF are using JT65-HF, a variant developed by John Large, W4CQZ specifically for those perhaps less computer-literate than the hardened VHF DX EME fraternity. The code can be freely downloaded and if you use other datamodes on HF or VHF you will already have the necessary hardware to make it work. Full setup information for JT65-HF is available for download from G4UCJ's excellent hfradio.org website and the code can be downloaded from the sourceforge.net site (see Websearch). Coincidentally, Graeme, G6CSY mentioned in his news to me this month that he had been playing with JT65A (in his case using the MultiPSK engine, rather than the W4CQZ software) and his best DX so far has been VK4BDJ on 20 using just 5W and a trap vertical.

CORRESPONDENCE AND TABLES.

Enthusiasm for the WARC bands table remains low, so we'll see how things develop over the next month or two. To put the totals in perspective, on the annual UK CW table, run by G3WGV, leading station Lionel, G5LP already has 109 on 30, 132 on 17 and 95 on 12, along with 207 DXCC overall. That's as of 27 March, so there are still 9 months to go, an impressive achievement.

Peter, G3HQT says, tongue in cheek, "My operating tip for finding the DX: Listen for a strong carrier; when it goes off, there is the DX!" Sadly, this is too often the case, hence the RSGB (and IARU) support for the DX Code of Conduct. Unfortunately, I suspect the offenders either don't read such material or don't care. Nevertheless, Peter managed contacts recently with BA4T, J5NAR/P, J79AN, DU7/PA0HIP, XU7AFU, 5T0JL and 7P8KDJ on 30 CW, VU2SWS on 30 RTTY, YB0AKM and VK9C/G6AY on 17 CW, V5/DJ4SO, VQ9ZZ on 17 RTTY and TJ9PF on 12 RTTY.

Dave, M0BVE sends in his first report of 2011. Using 100 watts to an R7000 vertical (CW only) he put the following into the log: LU4FLJ on 10, 5H3EE, 5X1NH, D4C, 5N7M, ZS6X, 6W/JA1PBV and 9J2BO on 15, 6W/JA1PBV and S9DX on 17, 9M6/V01AU on 20 and J79EA, 3B8/F6HMJ and 8P9UR on 30.

Simon, M0VKY, also using vertical antennas, caught up with S9DX, YV8AD, 4A4A, P43E, HR9/WQ7R and FY1FL on 15, KG4KL (Guantanamo Bay) and 4S7NE on 17, S21YZ, KH2/JS6RRR, HP1XX and S9DX on 20 and VK7AC, JA8ECS, PY2SEX, 8P3A, C6AM, V47GIW, HC1JQ, VP9HE and WL7O (Alaska) on 40.

Peter, G4XEX thought February and March might be an anti-climax after January's conditions but was pleasantly surprised. V51JF came back to a CQ for a new one, for example, as did BD7MTJ, which shows the power of a CQ call (on 20 PSK31 in this case). Other recent DX includes 8P6CW, 8P5A, CN8YAN, HI3TEJ, 9M8Z, 9K2K, YB1C and HK1X on 20, 6V7D, 3V8SS, A61R, 5A5D, 9K2HN, D4C, JA6GCE and ST2AR on 15 and OD5WPX, C4W, H2E and 5B50J on 10, all SSB, plus CO2MS on 20 PSK31. Peter runs an FT-857 and G5RV antenna. He comments that, coming back on to the bands in 2008 having not been active since 1992, he thought at first his antenna or rig weren't working properly but, of course, it was just the abysmal propagation. As he says, it is quite remarkable what a difference a few sunspots can make! Peter remarks that it is tough to tell where an Asiatic Russian station (he cites UA0LOF who was very loud) is located, but actually the number and first letter of the suffix in a Russian call gives you the Oblast (similar to region or county) which pinpoints the location pretty accurately. So, to take his example, a station xx0Lxx would be in Primorsky Oblast, right over on the eastern seaboard. There is an excellent feature on Wikipedia that not only allows you to check the location but clicking on the Oblast name then shows where it is on the map.

Don, HS0ZEE is always a very welcome correspondent. During 2010 he made almost 11,000 contacts with 226 DXCC entities, something he hadn't realised until he did some checking. The entity total came as something of a surprise to him as he reads this column regularly and had the impression that he had missed out on a lot of what had been around. He also picks up on recent comments about QSL cards and feels that, despite his relatively rare callsign, he is receiving fewer traditional QSL cards than previously, but finding more 'confirmations' on Logbook of the World.

As well as his JT65 contact (mentioned earlier) Graeme, G6CSY was active in the BARTG RTTY contest and, despite the relatively low solar flux that weekend, worked W1/2/3/4/5/8/9 (on 20 I believe) with his QRP. He also managed FP/W6HGF for a new DXCC and IOTA. 15 gave JH7RTQ and HZ1PS. Also surprising was working W4/W9 on 10m. As far as other datamodes are concerned Graeme reports hearing more "exotic mode" activity on 15, including BPSK125, QPSK63 and Feld-Hell. He says that, when he is in the shack (for example writing QSL cards), he leaves the rig on or near 14.076 USB and lets multiPSK listen to what's around. So far, as a result, he has 20 DXCC worked, all with the QRP. He says, "One point to stress is that the clock on your PC must be accurate. I recommend downloading Dimension 4 and setting it to sync with your local NTP server. You should also make use of the PSKReporter website. Make a few CQ calls/QSOs with JT65A and then see who spots you around the world. I just worked EA7DUD on 20 with the QRP, and then checking PSKReporter it shows my QSO was heard by ZL2VF, UN6QC and seven stations in Europe".

Finally, Ron, G4DXW sends in a WARC bands report (all SSB), mentioning, among others, TJ9PF, VK2AMM, CO8LY, 9K50UU, SV9/ON6WP, TI5/K4VAC, ZD7FT, UA0SJ and HS0ZIN on 17 plus A41KJ, OD5ET, SV9GPV, SV5 BYR, UA0SR, ZD7FT and TJ3FC on 12.

2011 TABLE

(starting 1/1/11, WARC bands and all-band)

Call	30m	17m	12m	ALL
G3HQT	121	65	15	
G4XEX	24	32	4	78
G4DXW	0	26	16	
G3SED	17	16	40	
M0VKY	0	15	1	164
G6CSY	5	4	1	9
M0BVE	0	0	0	75

WEBSEARCH

FJ/OS1T: http://on4cit.webs.com/fjos1texpedition2011.htm
G4UCJ: http://hfradio.org.uk
JT65-HF download: http://sourceforge.net/projects/jt65-hf
PSK Reporter: http://pskreporter.info/pskmap.html
Russian Oblasts: http://en.wikipedia.org/wiki/Amateur_radio_call_signs_of_Russia
T6PSE: www.intrepid-dx.com/t6pse/index.php
UK CW Table: ukcwtable.g3wgv.com

RADIO SOCIETY
OF GREAT BRITAIN

THE NATIONAL SOCIETY WHICH
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Founded in 1913 incorporated 1926.
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**Patron: HRH Prince Phillip,
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Membership is open to all those with an active interest in radio experimentation and communication as a hobby. Applications for membership should be made to the Subscriptions Department from which full details of Society services may also be obtained.

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Details of the Society's volunteer officers can be found in the RSGB Yearbook and on the RSGB website.

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Members Area: www.rsgb.org/membersonly
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The online *RadCom* can now be found at www.rsgb.org/radcom.

Special Temporary Callsigns for Royal wedding

RSGB has agreed with Ofcom arrangements for all UK radio amateurs to opt to use special callsigns for a period of eleven days beginning on the date of the marriage of HRH Prince William and Miss Catherine Middleton, 29 April 2011. Use of the special prefix – MR, 2R or GR according to your licence type – is conditional on allocation of a Notice of Variation (NoV) that can be quickly obtained via a simple process on the Society's website, where full details of the arrangements can also be found.

UK amateurs wishing to use the special prefix should visit www.rsgb.org.uk/weddingcall and follow the guidance there. The last date and time for application is 6pm on 26 April 2011. All NoVs will be provided by close of business on 28 April. No postal applications will be accepted and all NoVs will be sent by e-mail.

RSGB Board Announcement

Peter Kirby, RSGB General Manager, has left the Society's employment after the discovery of financial irregularities on his part.

For the time being, RSGB Director Don Beattie, G3BJ, will act as General Manager.

At this difficult time for the Society can I ask that everyone supports Don in his role. He may be contacted at on.beattie@rsgb.org.uk or 01234 832 701/07802 922 219.

Dave Wilson, M0OBW
RSGB President

Error

In the April *RadCom* (page 7) we noted that Reigate ARS has marked 51 years membership with the RSGB. This should have said that Reigate Amateur Transmitting Society had reached 51 years membership with the RSGB. Our apologies to the club.

A Positive Future

Members will no doubt have become aware of a change to the usual pattern of publication of the Society's annual accounts and the timing of this year's AGM. I owe you all some explanation of what has happened to cause this.

During the audit of our financial results by our external auditors an issue was picked up which was raised with our Honorary Treasurer, who immediately raised it with me. The issue concerned a debt which had built up over some four years. I commissioned a formal investigation which was carried out by the Honorary Treasurer in conjunction with our auditors. During that investigation it became clear that there were several matters of concern which made the continued employment of the General Manager untenable.

The General Manager has therefore left the Society's employment.

It also became clear that the Board could not sign off the annual accounts (as they are required to do) without considering very carefully the issue of the accrued debt. Acting on the basis of prudence, the Board therefore has made a provision in the 2010 accounts for that accrued debt, but you should be aware that we are taking all practical and legal steps to recover the sums involved.

For the time being Don Beattie, G3BJ, will stand in as Acting General Manager. Don will need the understanding and encouragement of all members in carrying out this role at what is a very difficult point in time. The Society I know will be grateful that at this time it can turn to someone so well qualified and dedicated. I hope I can count on everyone to support him. Staff at Abbey Court also need your understanding as this has obviously come as a great shock to them.

The Board is determined to conduct a root and branch review of our governance processes to ensure that something like this never happens again. Some of this is already complete but will continue until we are satisfied that we have a more rigorous and highly effective set of checks and balances in place.

Let's now put this matter behind us and move the Society forward. It's an exciting time for the Society with its unique provision at Bletchley Park due to open shortly and with further significant changes entering the pipeline. What has happened has happened and as a consequence appropriate actions have been and are being taken. Let's draw a line under it, learn from it and together let's all look forward to a positive future.

Dave Wilson, M0OBW
RSGB President

Nevada Radio

Ecoflex®

New Ecoflex Low Loss Cables & Connectors at Nevada!

New range of cables & connectors at Nevada! Flexible with PE-LLC dielectric and gas content of over 70% for very low loss and use up to 6 GHz

Ecoflex 15

Specification
- Diameter: 14.6mm
- Loss per 100m: 2.81dB @ 100MHz, 1.96 dB @ 50MHz

Price: £5.60 per metre, £504 per 100m drum

Ecoflex 15 Connectors
- PL259 connector (Part: 7350) £8.95
- N type connector (Part: 7395) £9.95

Ecoflex 10

Specification
- Diameter: 10.2mm
- Loss per 100m: 4.0dB @ 100MHz, 2.8 dB @ 50 MHz

Price: £2.65 per mtr, £238 per 100m drum

Ecoflex 10 Connectors
- PL259 connector (part: 7378) £5.95
- N type connector (part: 7367) £6.50
- BNC type connector (part: 7379) £6.50

Aircell

Aircell range is a highly flexible coaxial cable for use up to 6 GHz. The low losses in relation to the diameter and the small bend radius of the cable make it perfect for the Radio Amateur.

Aircell 5

Specification
- Diameter: 5.0mm
- Loss per 100m: 9.4dB @ 100MHz, 6.61dB @ 50MHz

Price: £1.35 per mtr, £121.50 per 100m drum

Aircell 5 Connectors
- PL259 connector (part: 7760) £2.25
- N type connector (part: 7700) £3.95
- BNC type connector (part: 7720) £3.25

Aircell 7

Specification
- Diameter: 7.3mm
- Loss per 100m: 6.28dB @ 100MHz, 4.52dB @ 50MHz

Price: £1.70 per mtr, £153 per 100m drum

Aircell 7 Connectors
- PL259 connector (part: 7390) £2.65
- N type connector (part: 7392) £5.25
- BNC type connector (part: 7371) £5.25

Aircom Plus

Operating up to 10 GHz, this semi Air spaced cable has a massive oxygen free copper inner conductor covered with a thin film of PE to prevent corrosion permanently

Aircom Plus

Specification
- Diameter: 10.3mm
- Loss per 100m: 3.8dB @ 100MHz, 2.6 dB @ 50MHz

Price: £2.95 per mtr, £265.50 per 100m drum

Aircom Plus Connectors
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- N type connector (part: 7367) £6.50
- BNC type connector (part: 7379) £6.50

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Kenwood Accessories

SP-23	Extension speaker	£68.95
HS-6	Lightweight headphones	£35.95
HS-5	Deluxe headphones	£52.95
MC-60A	Desk Microphone	£117.95
MC-43S	Hand Microphone	£19.95
MC-47	Hand Microphone	£39.95
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YAESU FT-DX5000MP

NEW

~~£5295.95~~ See Nevada Web for BEST PRICE

FT-DX5000	NEW Fully featured ... ~~£4399.95~~ See Web!	
FTM-350R	NEW VHF/UHF Mobile	£529.95
FT-450ATU	HF + 6m + Auto Tuner	£699.95
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FT-857D	HF/VHF/UHF Mobile	£649.95
FT-897D	HF/VHF/UHF transceiver	£749.95
FT-950	HF + 6m Base Transceiver	£1389.95
FT-1900	NEW 55 Watts 2m Mobile	£139.95
FT-2900	NEW 75 Watts 2m Mobile	£134.95
FT-7900	NEW VHF/UHF Mobile	£239.95
FT-8900	2m/70cms/6m/10m FM Mobile	£379.95
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VX-8DE	NEW 2m/70cms/6m Handheld	£399.95
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Yaesu FTDX-5000	Only one week old!	£4199
Yaesu FT-857	Transceiver	£499
Yaesu FRG-100	Communications receiver	£299
Yaesu MD-100	Microphone	£99

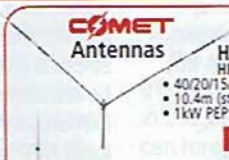
(ALL SUBJECT TO AVAILABILITY)

YAESU YH-77STA

Stereo Lightweight communications headphones

£49.95

COMET Antennas



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HF Rotary Dipole
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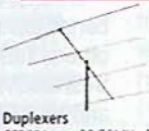

6 Metre Beams

CA-52HB4
4 El 50 MHz beam £119.00

CA-52HB2
2 El 50 MHz beam £79.95

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CF360A	28/50MHz SO239/PL259/PL259	39.95
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CF503C	50/144MHz SO239/SO239/SO239	44.95
CF530C	50/144MHz SO239/PL259/PL259	44.95
CF530A	50/430MHz PL259SO239/SO239	39.95
CF4160B	144/430MHz SO239/SO239/SO239	32.95
CF706	For Icom IC706	39.95

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CFX431A	144/430/1200 N/PL259/N/N	49.95
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CBL-1000	50 ohm 1kW ... 1.7 – 30 MHz	35.95
CBL-2500	50 ohm 2.5kW 1 – 56MHz	38.95

Low Pass Filters

CF30H	Cut off 32 MHz 2kW	69.95
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COMET Antenna Tuners

NEW

CAT-273
VHF/UHF Antenna Control Centre

£179.95

Incorporates:
- Two Antenna Tuners 2m & 70cms
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- Separate units for each band all in one unit
- Tune LW, G5RV & other antennas!

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- Covers HF + 6 metres
- Power 300W (SSB)

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- 3.5 to 50 MHz
- Power: 10W
- Size 162x58x12mm
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CMX-200
- 1.8-200MHz
- 3kW HF, 1kW VHF
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- 30/60/200W

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Icom IC-8500
HF communications receiver
- 100kHz to 2,000MHz coverage
- In stock !

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Winradio Excalibur
Top quality SDR receiver
- Covers 9 KHz to 50 MHz

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Portable Shortwave Receiver with SSB

Ideal for your holidays - great receiver!
- AM/FM/Long Wave
- Shortwave: 150kHz - 30MHz
- VHF Airband: 118 - 137MHz

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NEW

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Dual Band Transceiver
- 2m/70cms
- 128 Memory Channels
- Supplied c/w re-chargeable battery pack, drop in charger and power supply, rubber duck antenna, belt clip, carry strap, DC charge cable for the car

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NEW

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VHF 2 Metre 5W Handheld
- 199 memory channels
- Steps: 5, 10, 12.5, 20, 25, 30, 50kHz
- 50 CTCSS codes
- VOX time-lapse function,
- Channel scan
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- FM radio receiver function

£69.95

TYT-800 Accessories

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Daiwa Meters 801HP SWR Power Meter

Japanese high quality, huge twin needle display reading Average power, Peak power and SWR
- Freq: 1.8 - 200MHz
- Power: 20/200/2KW
- Connectors: SO239

£99.95

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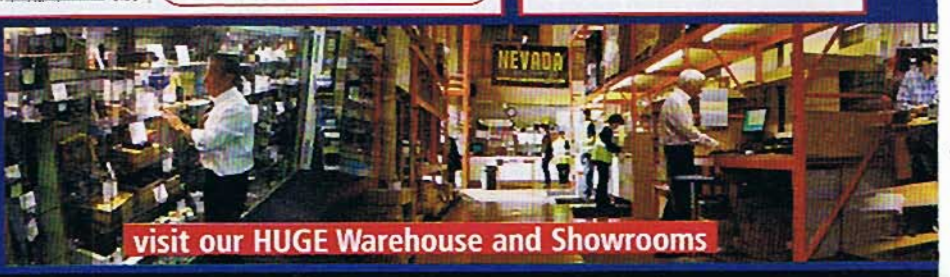
CN103LN	140-525MHz	£99.00
CN801S	900MHz-2.5GHz N types	£119.95
CN801V	140-520MHz (SO239)	£99.95



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MFJ 550	Morse Key	£16.95
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MFJ 945E	300W Tuner	£129.95
MFJ 948	300W Tuner w/balun	£159.95
MFJ 969	300W Tuner	£209.95
MFJ 971	200W Portable Tuner	£118.95
MFJ 993B	300W Tuner	£249.95
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Two Way

Comet CSW201G	1kW 600MHz (SO239)	£19.95
Daiwa CS-201G II	1kW 600MHz (N type)	£29.95
Zetagi V2	500W HF (SO239)	£14.95

Three Way

Zetagi V3 – 2Kw HF	(SO-239)	£26.95

NEVADA – Cable Specialists

Westflex 103	
1,000 metre Drum	£1357.50
100 metre drum	£139.95
75 metre length	£106.86
50 metre length	£71.24
Price Per metre	£1.50
RG-213U – Mil Spec	
100 metre drum	£109.95
75 metre length	£93.75
50 metre length	£62.50
Price per metre	£1.29
RG-213tm – Economy version	
100 metre drums	£99.00
RG-Mini 8 (Super XX)	
100 metre drum	£59.95
Price per metre	£0.79
RG58/CU – Mil spec	
100 metre drum	£39.95
Price per metre	£0.45
450 Ohm Twin Feeder	
1,000 metre drums	£678.50
100 metre drum	£69.95
Price per metre	£0.99
300 Ohm Twin feeder	
1,000 metre drums	£581.50
100 metre drum	£59.95
Price per metre	£0.85
Flexweave Antenna Wire	
100 metre drums	£49.95
Coated Flexweave Antenna Wire	
100 metre drums	£79.95

PRO Antennas

High quality British manufacture

"I am delighted to recommend these two NEW antennas from Pro Antenna. They provide high efficiency, multi band operation, for portable or home use".
Mike Devereux G3SED

Dual Beam Pro

Capacity loaded rotary Antenna
Covers: 20, 17, 15, 12, 11, 10m plus 30 & 40m (at reduced efficiency).

Constructed with aerospace alloys and using a novel non resonant design (which may require an ATU on some bands), the **Dual Beam Pro** provides excellent performance with bi-directional main lobes and an impressive 30dB+ end rejection. The bi-directional radiation pattern means it only needs to be rotated 180 degrees to give full world coverage. Putting the maximum radiation lobe where you need it, can give outstanding pile-up busting performance!

SPECIFICATION

- Turning radius: 2.5m
- Span of main element: 5.0m
- Span of end elements: 2.5m
- Weight (inc bracket & matching unit): 4.0kg
- Power: 400 watts PEP

£219.00 £9.95 P&P

I-Pro Home

Capacity loaded vertical Dipole
Covers: 20, 17, 15, 12, 11 10m plus 30 & 40m (at reduced efficiency).

Constructed with aerospace alloys for excellent corrosion resistance. With its capacitive end loading and a high efficiency matching network, it has a low profile for use at home or portable. Using a non-resonant design presents a broadband match, however some transceivers will require an internal or external ATU to provide full power output. Supplied with heavy duty base bracket and GRP base mount (requires a 5ft ground post for mounting).

SPECIFICATION

- Height: 5.0m
- Span of end elements: 2.5m
- Weight (inc matching Unit): 4.5kg
- Power: 400 watts PEP

£229.00 £9.95 P&P

4 Metre Equipment

Anytone AT-5189D

4 Metre FM Mobile
Supplied with DTMF microphone

- Covers 4 M Band
- Power: 0 - 25W adjustable
- 250 memories
- CTCSS/DCS/DTMF/2TONE
- Compander noise reduction

£148.95

Wouxun KG-699E

4 metre Handheld

- 4 metre Handheld
- 66-88MHz '4m FM Band'
- CTCSS/DCS tones
- 128 memories
- 8 groups scrambler
- Channel name edit
- Power 5W or 1W
- VOX (Level adjustable)
- Wide/Narrow bandwith

£89.95

4 Metre Antennas

Sirio CX-4
Base antenna £69.95

Sirio SY-68-3
3 Element yagi £79.95

AT5189A
Mobile mag. mount..£25.95

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PS 8250

25 Amp Switch Mode Supply

- Twin meters for current and Voltage
- Lightweight
- Fully protected

~~£99.95~~ **£79.95**

SPS-9600

60 Amp Switch Mode Supply

- Variable output voltage
- Fully protected

£199.95

PS-50

50 Amp (peak) Bench Supply

- Fully protected
- Voltage & Current metering

£199.95

PS-30M

30 Amp (peak) Linear Supply

- Variable Voltage
- Fully protected

£99.95

Other Palstar supplies

PS-04	4A 13.8V DC supply	£24.95
PS-06	6A 13.8V DC supply	£29.95
PS-15	15A 13.8V DC supply	£59.95
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ALINCO

Alinco DJ-G7E

Brand new model!

- Transmit: 2m/70cms/23cms
- Receives: 0.5-1299.95MHz
- 1,000 Memory Channels
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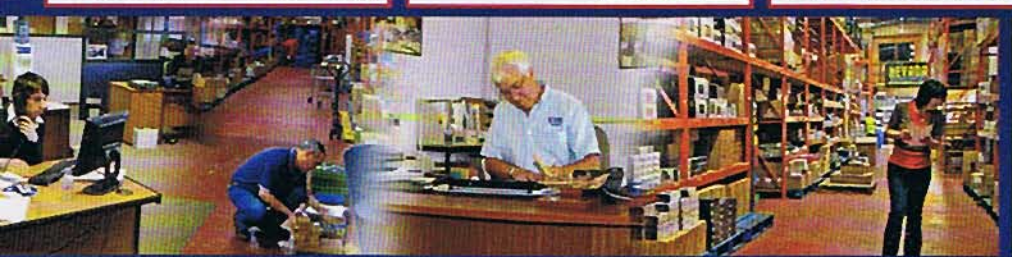

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VHF/UHF

First ever Europe to Southern Africa contacts on the 70MHz band

PHOTO 1: The HF and VHF antennas at the station of Leo Fiskas, SV2DCD.

PROPAGATION EVENTS. March was generally a poor month for making long distance contacts from the UK on the VHF and UHF bands. During the first two weeks of the period there was significant geomagnetic activity with 8 days of auroral (Au) and auroral-E (Au-Es) events being reported on the 50, 70 and 144MHz bands. As expected no Sporadic-E (Es) openings were reported. Similarly no reports were received of trans-equatorial propagation (TEP) contacts being made from the UK although stations in southern Europe did report that the 50MHz band was open every day throughout March with contacts being made into Africa and South America. Towards the end of the month some operators reported making the first ever TEP contacts on the 70MHz band with stations in South Africa. Activity in the UK on the 144MHz and 432MHz bands was predominantly via the troposphere with a few tropo openings being reported around the beginning of the month. Conditions over the Earth-Moon-Earth (EME) path seemed to be quite favourable during the period as was meteor scatter (MS) activity with VHF contacts being made on a daily basis with stations throughout Europe.

CQ AURORA! Last month I mentioned that auroral activity is possible when a coronal mass ejection (CME) from the sun hits the Earth's magnetic field. I briefly described that the interplanetary magnetic field (Bz) must be of a negative polarity to couple directly into the magnetosphere. To expand on that further I should mention that the solar wind interplanetary magnetic field is a three dimensional vector (Bt) with components of Bx, By and Bz. The important component to monitor when looking at an on-line magnetometer is the Bz. I often use the site run by Roger Blackwell, GM4PMK (www.marsport.org.uk/observatory) to check when auroral activity is likely. When Bz has a negative orientation or southward the coupling to the Earth's geomagnetic field is strongest. Southward interplanetary magnetic conditions can partially cancel the Earth's magnetic field at the point of contact and you can then follow a field line from the Earth directly into the solar wind. A South pointing Bz therefore opens a door through which energy from the Sun can reach Earth's ionosphere and cause auroral activity.

A total of eight Au openings were recently reported, the best of these occurring on 1, 10 and 11 March. As in previous months these were mainly of the 'Scottish' variety with contacts generally being made from Scotland into the nearer reaches of Europe. Some of the 50MHz contacts, mostly made on CW, included the stations of LA1QDA, LA3SHA, LA5JY, LA8AJA, LA8HGA (Norway), OY1OF/M, OY1R (Faroe Islands), PA2V, PA4VHF (Netherlands), SA5A, SM5EDX, SM5INC, SM7FJE (Sweden) and TF3ML (Iceland). It is good to report that a number of Scottish stations were active in these auroras. They included the 50MHz stations of GM3UAG (IO87), GM3XOQ (IO87), GM4DZX (IO88), GM4ILS (IO87), GM4YJB (IO88), GM8LFB (IO88), GM8OEG (IO86) and MM0AMW (IO75). The stations of GM4JYB, GM4VVX (IO78) and MM5DWW (IO89) were also active on the 70MHz band but apart from OZ3ZW (Denmark, JO54) and some inter-UK activity very little else was worked. Although it is at a much higher frequency the 144MHz band always seems to be better for making long-distance contacts even during the weaker events. On 1 March, for example, the station of Andrew Soltysik, G4KWQ (Staffordshire IO92) reported the CW stations of SM7GVF (Sweden, JO77) at 1177km and LY2WR (Lithuania, KO24) at 1744km. Other 144MHz stations worked on CW from the UK included DL1AIW, DK3OY, DL6NAA, DL6YBF, DL6YEH, DG9YIH, OZ2M, PA4EME, PI4TUE and SK6DK.

TRANS-EQUATORIAL PROPAGATION. Trans-equatorial propagation (TEP) is an unusual mode of radio propagation that was first noticed and studied by amateur radio operators in the 1940s. This type of propagation is supported by the F2-layer and enables frequencies of 100MHz and more to be reflected in a north-south direction when the normal maximum usable frequency is considerably below this frequency. There are a number of conditions required for TEP, one of the most important being that both stations should be symmetrical with respect to the geomagnetic equator, ie located at equal distances from the magnetic equator. TEP is greatest around the peak of the solar cycle (a year or two to go yet!) and best during the equinox periods, March-April and September-October. Although strengths can often be high, the signals may be subject to deep and rapid fading and very strong distortion, similar in sound to auroral propagation. Within Europe, the favoured locations are in the south of the continent, around the Mediterranean area.

Although no 50MHz TEP contacts were made from the UK, operators in southern Europe did report that the 50MHz band was open every day throughout March. Stations located in Portugal (CT), Spain (EA), Gibraltar (ZB), Balearic Islands (EA6), Italy (I), Sardinia (IS0), Sicily (IT9), Greece (SV) Malta (9H), Cyprus (5B) and Israel (4X) reported making CW and SSB contacts deep into Africa and South America. Some of the African QSOs included the stations of 5N7M (Nigeria), 6W2SC (Senegal), D2CQ (Angola), FR1DZ, FR5DN (Reunion Island), TJ3AY (Cameroon), TR8CA (Gabon), TZ6TR (Mali), V51PJ, V51YJ (Namibia), Z22JE (Zimbabwe), ZD7VC (Saint Helena), ZS6BTE and ZS6TQ (South Africa).

PHOTO 2: The station of Paul Smit, ZS6NK.

PHOTO 3: The station of Spiros Chimarios, SV8CS.

A slant path to South America was also available, mainly for those located in Portugal and Spain, with contacts being made with stations such as CE3SX, CE4WJK (Chile), CX4CR, CX7CO (Uruguay), LU4FW, LU5FF (Argentina), PP1CZ and PY1PL (Brazil).

FIRST EVER 70MHz TEP CONTACTS. Over the past 60 years the north-south TEP path to Africa has seen many QSOs being achieved on the 50MHz, 144MHz and even the 432MHz band. However, because the amateur radio service has only recently obtained an allocation within southern Africa, it has never been accomplished on the 70MHz band. On 28 March the conditions to South Africa were excellent with many 50MHz contacts being made by southern European stations. Doing this opening attempts were made by the 70MHz stations of Willem Badenhorst, ZS6WAB and Leo Fiskas, SV2DCD to make the first ever TEP contact on that band. Initially both stations used the ISCAT digi-mode but because of the Doppler-spread signals the software could not decode the transmissions. Quickly swapping over to SSB a two-way SSB contact was completed at 1754UTC with 52/53 signals. The modulation sounded very rough, just like auroral signals, but interestingly an earlier contact on the 50MHz band exhibited no roughness whatsoever. The 70MHz equipment used by SV2DCD consisted of a modified Yaesu FT-847 transceiver running 72W output into a 9-element DK7ZB Yagi (**Photo 1**).

Fifteen minutes later the 70MHz station of Paul Smit, ZS6NK made a CW contact with SV2DCD and at 1832UTC the station of Spiros Chimarios, SV8CS contacted ZS6WAB. Paul, ZS6NK reports that the CW signals from SV2DCD were "hissing" just like recordings he had heard of auroral contacts. He exchanged 519 reports although as an afterthought Paul suggests 51A would have been more correct. (Strictly speaking, the RST tone code 1 or 2 would be a possible alternative). Paul, like Leo, used a modified FT-847 transceiver and a 9-element LFA Yagi (**Photo 2**). Spiros, SV8CS mentioned that his QSO with ZS6WAB was made using the digital mode ISCAT (from the WSJT9 program by K1JT) and that signals were easily decoded. He is using a Kenwood TS-480 transceiver with a OZ2M designed 4m transverter plus a power module running 30W into a 6-element DK7ZB Yagi (**Photo 3**). The 4m station of ZS6WAB has been ready for a number of years, having previously completed an EME contact with GD0TEP in 2009. Willem runs high power with a GS35 triode amplifier into a pair of YU7EF long Yagis. Further 70MHz TEP contacts between ZS6WAB and SV2DCD were made on 29 and 30 March and you can see some of these contacts by going to www.youtube.com and searching for ZS6WAB.

Pieter Jacobs, V51PJ reports that Namibia has joined the world of countries where radio amateurs may operate on the 70MHz band. The license conditions are similar to the one for South Africa, 70.000-70.300MHz with a power level of 400W in the SSB/CW section between 70.000-70.200MHz. Pieter has already worked South Africa several times on both meteor scatter and tropo propagation. The 9000km path between the UK and southern Africa is particularly interesting as both ends lie at the extremity of the trans-equatorial zones. A contact over this TEP path is quite possible around sunspot maximum and should take place when conditions are particularly good on the 50MHz band. Openings on the 70MHz band between the UK and South Africa or Namibia may occur during the month of October in 2012 or 2013.

SPORADIC-E PROPAGATION. Although VHF propagation was generally poor during March it is amazing just how quickly conditions can significantly improve. Right now, as you are reading this, something extraordinary is brewing in the ionosphere. In normal circumstances a signal in the VHF range travels through the troposphere and unless an enhancement occurs that gives rise to a tropo 'lift' the signal will weaken and disappear at some point beyond the radio horizon. Large proportions of the signal will also pass completely through the troposphere and enter the ionosphere. The lower layer of the ionosphere is the D-region and this is virtually transparent to VHF signals. The next layer that the signal encounters is the E-region, located approximately 90-130km above the surface of the Earth. Under normal circumstances the level of ionisation is insufficient to reflect a VHF signal but on occasions some thin, dense layers of ionisation may be formed that are sufficient to reflect signals back down to earth. This intense and yet intermittent ionisation in the E-layer is termed Sporadic-E (Es) and this is what most VHF DXers get excited about. Openings on the 50MHz band are often observed during the last week of April and will gradually build up into daily events throughout May, June and July before petering out sometime in September. Openings on the 70MHz band often commence around the middle of May and if Es conditions seem particularly good you may expect a 144MHz event during the last week of that month. The peak month for openings on this band is June with slightly less events being reported during July.

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

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GHz Bands

Lots more activity on the higher frequencies

PHOTO 1: Five Bells contest group in the October contest. Left to right Paul, M0WAF working 1.3GHz, Keith, G4ODA, operates 2.3GHz new higher power masthead system for 2010, Paul, G1LSB, operates 432MHz (just used for the 8 hours of the Trophy contests to 'lift' contacts to 1.3 and 2.3GHz) whilst Howard, G0VTL operates KST to make skeds. Photo: Bob, G1ZJP/M1MHZ.

ACTIVITY. A surface duct over the North Sea allowed Simon, G3LQR (JO02) to hear the Dutch PI7ALK beacons on 2.3 and 10GHz and the PA0JCA beacon on 3.4GHz on 2 March. John, G4BAO (JO02) also reported hearing the PA0JCA beacon on 3.4GHz. I wondered if this might be just an early North Sea opening (they commonly appear after about mid-April), but reports of good propagation then started to appear from farther afield. Ronny, SM7FWC reported hearing GB3MHL and he is located 150km inland in Sweden. Hakan, SM7GEP (JO77) also heard GB3MHL at 559 around the same time.

Examination of the North Sea Ekofisk Radiosonde data for midday on the 2nd showed the presence of both a low level (surface duct) and a fairly deep elevated thermal inversion reaching from around 700m to 1.5km ASL.

Ralph, G4ALY (IO70) had been watching the GB3MHL beacon signal level and reported it steady at 539/549 whilst the GB3MHS 2.3 and 3.4GHz beacons were still very weak. GB3IOW (IO90) on 1296.900MHz was about 569.

Mike, G0MJW heard GB3MHS on 2.3GHz quite well at times but failed to work John, G3XDY on the band, due, he believes, to trees. He did manage to work OZ1FF (JO45) on both 1.3 and 2.3GHz. The contact on 2.3GHz was Mike's best DX on the band – so far.

John, G3XDY (JO02) reported conditions were up on 2 March, with contacts on 1.3GHz made in the early evening with GI6ATZ (IO74) and GD8EXI (IO74) with good signal reports. A couple of hours later the band opened to the north east, with SM7GEP (JO77) worked at over 1000km, although signals were quite weak. Russ, G4PBP (IO82) was 59 on 10GHz and they had an armchair copy chat for some time. John thought activity seemed rather sparse, overall.

John went on to report that the contest weekend of 5-6 March also gave good conditions. On the Saturday evening the band was open to OK but it was very selective. OL4K (JO70) was very loud on 1.3GHz; OK1IA was called but the QSO was not completed and OK1VAM/P (JO60) was worked with no problems. This was followed by contacts with DL9GK (JO50) and DH2SAV (JN48), both on CW, then LX/PE1ITR/P (JN39) and finally DH9NFM (JO50), at which point he moved to 432MHz for the RSGB contest.

During the UKMG Low Band Contest on 6 March conditions were above normal to the north. GM3UAG (IO87) was a good signal on 1.3GHz, and when they moved up the bands to work on 2.3GHz and 3.4GHz they were still able to work successfully. DF9IC (JN48) was worked on all three bands, as was DK1VC (JO31) and PI4GN (JO33). GM4CXM (IO75) was audible on tropo and GM4LBV was worked on 1.3GHz but by then conditions had dropped so a test on 2.3GHz failed. GM4JR (IO85) and GI6ATZ (IO74) also provided some good 1.3GHz DX.

Ray, GM4CXM (IO75) thought that some areas benefited from enhanced band conditions during the Sunday Low Band Contest, whereas for others it appeared 'flat'. He thought he was on the cusp for both. Whilst he found it relatively easy to work three Dutch stations on 1.3GHz, working stations in the south of England wasn't so easy. He commented that it was a different story for Robert, GM4GUF/P, operating on Tinto Hill, who mentioned hearing GB3IOW at 579 and was also able to generate a nice pile-up that was mostly inaudible to Ray.

Ray says that his personal highlights didn't actually come from long haul contacts but much closer to home. He is located on the side of a hill with a poor take off from north west through to north east, with rising ground immediately behind him and three ranges of hills undulating around the 1500 foot mark along the same direction. Those directions therefore always present a challenge so it made his day to contact Martin, GM8IEM (IO78) on 1.3GHz for the first time and Jim, GM3UAG (IO87) on 2.3GHz. The 1.3GHz contact with GM8IEM was thanks to a Seattle-bound 747 aircraft whereas the contact with GM3UAG was via tropo. Jim was much louder than usual on 1.3GHz so they obviously enjoyed enhancement in conditions that enabled the 2.3GHz path to work. He was also happy to give Martyn, G3UKV (IO82) a new square and country on 2.3GHz.

Jim, GM3UAG spotted GB3MHL on 1296.830MHz just after 0900 on 6 March and posted the spot on ON4KST chat. He was immediately 'meeped' by PA2M for a solid 559 CW contact on 1.3GHz. He then

FORTHCOMING MICROWAVE EVENTS 2011/2012

Martlesham Microwave Round Table meeting, 17 April 2011. Details: G3XDY, g3xdy@btinternet.com. Bookings: http://mmrt.homedns.org

Swedish EME Meeting, 13-15 May 2011, Orebro, Sweden. Details: Lars Pettersson, www.sm4ive.com

Microwave Update, Enfield, Connecticut, USA, 13-16 October 2011. Details: Bruce Wood, N2LIV, n2liv@arrl.net

15th International EME Conference, Cambridge, UK, 16-19 August 2012. Details: www.eme2012.com

PHOTO 2: Antenna system belonging to OZ1FF. The 1.5m dish is shown with multiband feeds for 1.3, 2.3 and 5.7GHz. The smaller 65cm dish carries feeds for 10GHz and 24GHz. Photo: Kjeld, OZ1FF.

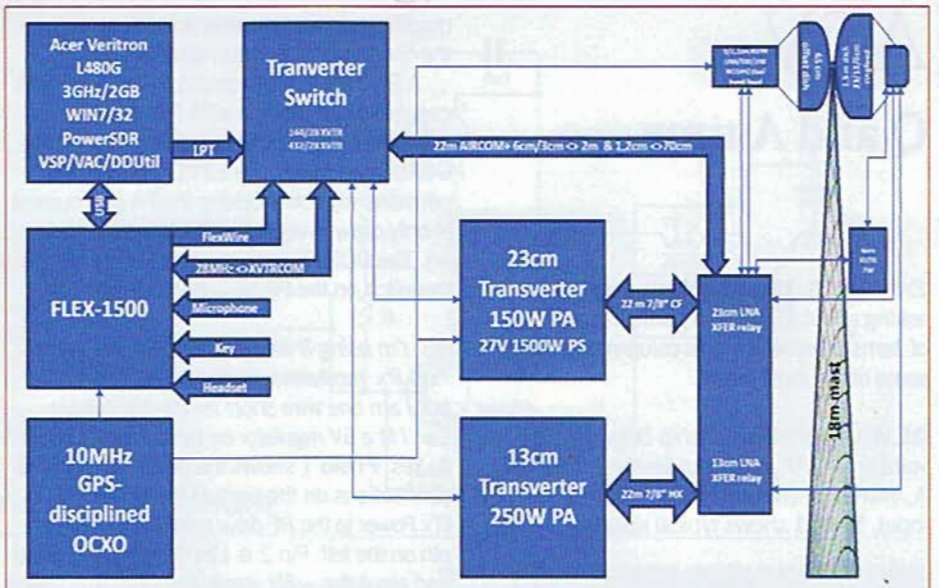

FIGURE 1: Block diagram of the microwave station of OZ1FF. Note the use of frequency locked 28MHz IF (Flex1500) transverters for 10GHz and 24GHz as well as 1.3GHz. Diagram from OZ1FF web page, with permission [3].

responded to a CQ call from G4EAT (JO01) for a 579 CW QSO followed by G4NBS at 57/9 on CW.

He copied G3XDY's SSB CQ for a 55 QSO on 1.3GHz, followed by a move to 2.3GHz for a 529 CW contact and then to 3.4GHz for a 529 CW QSO. For Jim this was a previously unheard of three-bander, at least for that part of the world where white noise is the norm!

Jim goes on to mention GM4GUF/P romping in from Tinto Hill on 1.3GHz and then, courtesy of ON4KST chat, PA0EHG and PA6NL were worked on SSB, also on 1.3GHz. 'Meeping' GM4CXM at about 1400 he exchanged 57/9 CW reports on 1.3GHz. Switching to 2.3GHz they then made a 529 QSO on CW. When you consider the 3000 foot high lump of Grampian granite that lies between Ray and Jim you will understand why they are so pleased.

GM3UAG's gear is a homebrew 2m diameter mesh dish with G3LTF 1.3/2.3GHz feed. Power is 45W on 1.3GHz, 30W on 2.3GHz and 15W to an 80cm offset dish on 3.4GHz.

David, M0GHZ (IO81) worked three French stations on 2.3GHz during the evening following the 6 March contest. These were F6FHP (IN94) at 59/55, F4CWN (JN03) at 53/51 and F6CIS (IN9) at 57/54; all on SSB. The distance to F4CWN was an excellent 905km. David uses 100W to a 48 element quad loop Yagi at 9m AGL.

MARCH UKAC AND NAC 1.3GHz CONTESTS. Conditions at the start of the March UKAC were slightly above normal, but gradually deteriorated towards the close at 2230UTC. I was able to work Gordon, GI6ATZ on SSB near the beginning of the contest, using troposcatter with maybe brief assistance from aircraft reflection. There was a great deal of multipath distortion on many of the signals and this was very pronounced on shorter paths with deep QSB at times. Across the east of the UK it was a clear evening with some mist returning after a glorious afternoon.

Reports from participants in Scotland suggest that this contest remains popular with at least 12 stations operational and most of whom were workable from the south of the UK, using mainly aircraft reflections. Ray, GM4CXM (IO75) worked 27 stations with Kjeld, OZ1FF (JO45) his best DX of the evening.

OZ1FF also sent a report on his participation in the 1.3GHz NAC contest that ran from 1800UTC to 2200UTC. His top ten contacts were all in excess of 500km with SP4MPB (KO03) his best DX at 827km. His tally for the evening was DL 6, GM 1, OZ 6, PA 3, SM 14, SP 1, G 1 and LA 1. Kjeld uses a Flex1500 SDR with Kuhne Electronic MKU13G2 transverter and 145W power amplifier

His antenna is a 1.5m dish at 18m AGL and 23m ASL. His antenna system is shown in **Photo 2** with a diagram of his microwave system shown in **Figure 1**.

BEACON NEWS. 10GHz beacon GB3SEE (IO91VG) returned to service on 27 February after an upgrade to use an RDDS (reverse direct digital synthesis) unit to enable it to be locked to GPS. It should be on 10368.850MHz although the first spot on Beaconspot [1] indicated it was on 10368.855MHz. GB3SEE now runs JT4G digital modulation on the even 30 second period. This enables automated beacon monitoring with (largely) unambiguous signal reports in dB in 2.5kHz. Congratulations to Denis, G0OLX and team on returning a very useful 10GHz beacon to service.

Another 10GHz beacon that has recently been updated to use an RDDS for locking is GB3MHX (JO02PB53) at Martlesham. The beacon returned to service on the 2 March. Some initial teething problems due to a faulty GPS antenna led to occasional out of lock conditions. This was quickly overcome by Jason, G7OCD, the beacon NOV holder.

GB3MHX uses a G3RUH GPS disciplined 10MHz oscillator [2] and the group would like to thank James for donating the unit to the beacon project.

A decision was made very early on NOT to include JT4G on GB3MHX. Whilst digital modulation can help in long term monitoring and in producing useful signal reports, there can be little doubt that a long period of plain carrier can provide a great deal of very useful propagation information. Digital modulation MAY be added a later date, but if so it will be for one or 2 cycles every 5 or maybe 10 minutes.

My thanks to everyone for their reports. I still need more of these and especially some photos of your location, antennas or station, please. My contact details are at the top of the page.

CHANGE OF URL. Please note, my old web page URL www.btinternet.com/~jewell will shortly disappear. Only www.G4DDK.com now carries up-to-date information. The new web page will be expanded as I have much more space than previously was the case. The old URL was in use for nearly 14 years.

WEBSEARCH

[1] Beaconspot web page www.beaconspot.eu
[2] G3RUH GPSDO: www.jrmiller.demon.co.uk/projects/ministd/frqstd.htm
[3] OZ1FF web page: www.oz1ff.dk

ATV

Q and A time

ENQUIRIES. I regularly receive questions asking about ATV and in particular aspects of items presented in this column. Here are some of the most recent.

Q1. *What is the relationship between bias voltage and RF power out for the 23cm PA?*
A. With a 12.5V supply and ~70mW RF input, **Table 1** shows typical results.

TABLE 1: Typical bias/RF output conditions for 23cm PA.

Bias	Standby current	Tx current	RF out into 50Ω
3.04V	~180mA	~200mA	<0.2W
3.60V	500mA	1.9A	2.85W
3.84V	1A	3.5A	8.9W
4.12V	1.8A	5.3A	18W

Q2. *Can I interface your 23cm power amplifier to a controller module and get sequential Rx/Tx switching?*
A. Yes, as long as the controller has the sequential switch facility as with the G6ALU version and with a simple modification of the circuit as shown in **Figure 1**. The modification fits between point 'A' and the 5V regulator in the original PA circuit.

A PNP switching transistor with a 500mA capability can provide a PA PTT function operated by the 'TX OK' output (pin 6) of the G6ALU controller. The 12V DC power line is permanently connected to the PA and current is only drawn when the PTT line switches on. The BC337 transistor can also be used to switch on the PA fan when transmitting.

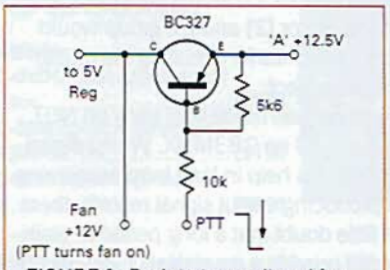

FIGURE 1: Push to transmit and fan control for the 23cm PA board.

Q3. *I'm using 8 way cables to interface my Tx & Rx modules with the G6ALU controller but I am one wire short for the 5V supply. Can I fit a 5V regulator on the controller board?*
A. Yes. **Photo 1** shows the power and control connections on the back of the board. Pin 1 (Tx Power to the RF drive module) is the first pin on the left. Pin 2 is 12V in, pin 3 is ground and pin 4 the +5V input. As only 10-20mA is drawn from the 5V supply it is a simple matter to add a small 7805 5V regulator as shown. The regulator input connection goes to pin 2, its centre (GND) to pin 3 and the 5V output is connected to pin 4.

Q4. *I am using a small video monitor with a Comtech receiver for /P but the monitor has no audio amp or speaker. What could you suggest for 12V with reasonable power consumption?*
A. There are several audio IC's available and one I have used with Comtech receivers is the LM386. This can produce up to 500mW with a 12V supply and 8Ω speaker. Search for the LM386 data sheet, which contains a circuit diagram for the amplifier. An eBay search for NJM386, LM386 should find you a ready built amplifier module with integral volume control for about £7. At that price it's hardly worth building one yourself.

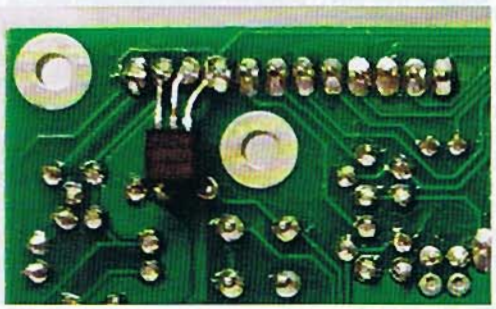
PHOTO 1: 5V regulator mod for G6ALU controller board.

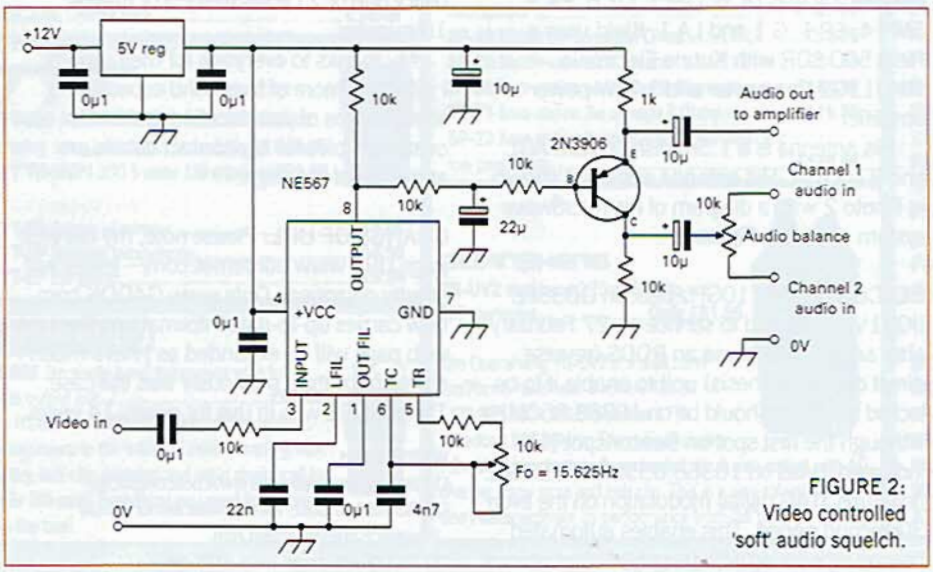

FIGURE 2: Video controlled 'soft' audio squelch.

Q5. *So I will need two amps, one for each of the audio output channels, or a switch? And is there a squelch circuit to kill the noise when no signal is present?*
A. A solution to all aspects of the question is shown in **Figure 2**, which is a video sync controlled audio squelch plus an additional volume/balance control 'pot'. Having both audio channels is particularly useful where an ATV repeater has the calling/talkback frequency (144.750MHz) on the second channel. The very simple sync detector section uses a NE567 PLL IC operating at the TV line sync frequency of 15.625kHz. When sync pulses are detected, pin 8 goes to 0V. This is used to switch a 2N3906 PNP transistor configured as an audio gate. So: no video sync, no audio noise. An RC filter between the NE567 and the 2N3906 integrates sync anomalies and also gives 'soft' switching.

Q6. *"I've heard about a 'Lift' and 'Tropo' making ATV signals stronger – How?"*
A. This is a big subject but basically changes in the atmosphere associated with weather can produce a reflecting surface or 'temperature inversion' layer, that can 'guide' VHF/SHF radio signals much further than the normally expected line of sight distance. This is often referred to as a 'lift' in conditions. One particular mechanism is known as 'tropo', short for tropospheric propagation. An extremely good web site to look at is produced by William Hepburn – www.dxinfocentre.com/tropo.html.

For the UK, select Northwestern Europe in the top left select box. The site gives day-to-day predictions of 'tropo' conditions in 10 colour grades superimposed on outline maps. At the bottom of the page you can select 'DX info centre' for more information.

Figure 3 shows a prediction for 2 March 2011. Several good strength ATV repeater signals were received on that day here in Hampshire from the north, east and west. The 23cm GB3GV in Leicestershire was consistently P5 (but in beacon mode only).

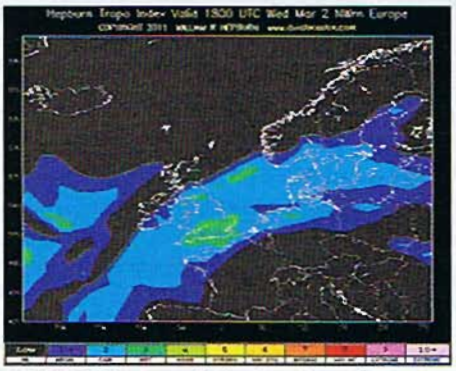
FIGURE 3: Tropo prediction (courtesy of William R Hepburn).

QSL Matters

DESPATCHES. This month we sent 10kg boxes to fellow IARU bureaus in Belgium, Czech Republic, Finland, Germany, Poland, Slovakia and Russia. Smaller packages of 5kg or less went to Argentina, Bermuda, Falklands, Faeroes, Kazakhstan, San Marino and Uzbekistan.

Please remember that we can only ship to other bureaux and not direct to everywhere, as some users seem to think.

CLUB STATIONS. We get lots of enquiries each month from Clubs asking us for advice. This has been a bumper month. Our first reply is always to ask if they have seen the latest Yearbook? All affiliated clubs receive a free copy of the RSGB Yearbook every year and that contains the answers. Have you checked your club copy?

It is disappointing that in recent months some clubs have told us that they don't want to collect cards any more. To us it's a real problem, particularly when stations are active and especially where they operate multiple special events and contests. It is a near impossible task to check and remember every unwanted card at the central bureau; for this we have to rely on our sub manager network. It's both costly to all members and disappointing for everyone not to have cards collected, simply for the cost of a stamp.

Spare a thought for the sender who remains unaware that he/she will not receive a reply. As a consequence some send two or even three cards, if they particularly want the reply. This is especially true of GB calls and those involving children and young people. Remember, cards can arrive anything up to 5 years after a callsign ceases to be used, so please think and plan for it.

The bureau continues to receive many cards for contacts using the special prefixes (see page 14 of your licence) such as GX, GH, MN etc. These are reserved exclusively for "Radio equipment that is solely used by a Club", a use dating back to the old greetings message days. Such prefixes must not be used by individuals and those on holiday etc. Cards for these calls are not considered Special Events and are always sent to the normal sub bureau, not the GB manager.

G4T manager, Steve, G4TRA (01453 842723) has many unclaimed cards with no envelopes for active callsigns. Steve asks that if you do not wish to receive QSL cards tell your contact 'I don't QSL, please don't send one'. Please be honest and don't say you will QSL when you won't. You can also make a www.qrz.com entry to that effect. Be proactive and tell your manager, by letter or e-mail to add your name to, his/her 'not wanted' list. Sadly, Steve has around 3,000 uncollected cards and envelopes with the wrong stamp value to dispose of, which will be going in the 5 year plus QSL clearout in June this year.

CONGRATULATIONS

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

70 years

Mr S W Saddington	G2FXQ

60 years

Cambridge & DARC	G2XV
Mr D A Wood	G3HKO
Mr L V Westmoreland	G3HKQ
Mr S P Hay	G3HYH

50 years

Mr J W Swift	G3CTP
Mr A M Pomfret	G3LZZ
Mr J R Vickers	G3ORI
Mr D Swainson	G3OXN
Mr C S Penna	GM3POI
Rev I S Partridge	G3PRR
Mr R V Southern	G3RST
Mr R L Turner	G3SMD
Mr W M Furness	G3SMM
Mr M J Nicholas	G3TOI

Last month, the 50 and 60 year headings were inadvertently swapped; our apologies to all concerned.

M0D to F. Roy Walsh, G4ZNK is stepping down as volunteer manager for the M0D to F QSL card series. The Society wishes to thank him for his service to his fellow amateurs and welcomes his replacement Jim Steel, M0ZAK. All cards and envelopes are being transferred to M0ZAK, who is QTHR. Details can also be found on the RSGB website or via the bureau.

Welcome

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

Mr G Porter, 2E0GOR
Mr A Sanders, 2E0LBX
Mr B Plackett, 2E0NLY
Mr G Kenyon, 2E0OFF
Mr R H Murphy, 2E0RHM
Mr A Smith, 2E0VKG
Mr D Williams, 2E0WHR
Mr KDA Elliot, 2I0KYE
S Dhungana, 9NWS1
Mr R J Rezaian, AB9UE
Mr G P Lewin, G0NEN
Mr WAF Davidson, G3NYY
Mr P Cooper, G6LIS
Mr P Woodward, G8CWM
Mr R Chadwick, G8FCT
Mr CTG Leaney, G8WFU
Mr RE Wilson, GI4SZY
Mr M D Benton, GM0TTV
Mr A M Bell, GM4MPY
Mr P W Armes, K5PWA
Mr J R Katz, K6ATZ
Mr N J Small, KA1YMX
Mr E R Creamer, KB2GZ
Mr R Rudi, LA6GSA
Mr PDC Crump, M0DNY
Mr A P Moffatt, M0FAT
Mr CDM Croughton, M0KSL
Mr G Grimshaw, M3VUQ
Mr P Bell, M3ZTG
Mr AWH Hall, M6ALY
Mr S Salisbury, M6AOF
Mr A Stabler, M6AWS
Mr N J Bown, M6BWN
Mr P Kerton, M6CTA
Mr I Dermondy, M6DER
Mr D Gillingham, M6DMG
Mr D R Kurn, M6DRK
Mr D Nock, M6GBB
Mr I A Appleby, M6GBH
Mr G Bragg, M6GMB
Mr PM Clark, M6HPY
Mr JGWE Hunt, M6JGW
Mr JL Drinkell, M6JLD
Mr M Bloore, M6JMB
Mr A Francis, M6LDV
Mr L Spriggs, M6LKS
Mr S Clarke, M6MDM
Mr N J Ravenscroft, M6NJR
Mr P Gonczarow, M6PGW
Mr R Parker, M6RBG
Mr R L Hancock, M6RFF
Mr M Barnes, M6RTY
Miss RH Williams, M6RUT
Mr D Sibley, M6SBZ
Mrs S Millard, M6SUS
Mr B Lye, M6TER
Dr AGW Norden, M6WKZ
Mr P Holmes, MI3EPN
Mr Stephen Morrow, MI3ULK
Mr S Morrison, MM6IVP
Mr K Mair, MM6KCM
Mr N H Morris, MM6NHM
Mr M T Buxton, MW0TTK
Mr J Owens, MW6JJO
Mr D Hewitt, N3BXY
Mr J S Bovitz, N6MI
Mr F Absolonne, ON5RF
Mr S Casey, RS204060
Mr R E Ridge, RS207000
Mr C Hunter, RS207376
Mr CW Calvey, RS207511
Mr S Bassett, RS207817
Mr D Bisbey, RS207823
Mr K Cole, RS207834
Mr ND Flynn, RS207836
Mr K N Holman, RS207863
Mr C Murphy, RS207910
Mr M N McLaren, RS207911
Mr J Moore-Morton, RS207951
Mr AP Wilkinson, RS207953
Mr A C Brown, RS207966
Mr K Sumner, RS207973
South Kesteven ARS, RS207984
Mr M A Hocking, RS208004
Mr S Persson, SA3AYB
Mr S Hard, SM6DPT
Mr S Evren, TA2ASE
Mr D Conn, VE3KL
Mr D Fletcher, W4DSF

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

Mr B A Read, 2E0AGQ
Mr D S Millard, 2E0MRD
Mr Paul Honey, 2E0VLT
Mr M W Davies, G0KAD
Mr D K Coulson, G0OAP
Mr T W Squibb, G0UAZ
Mr P Kinghorn, G1UDL
Mr T F Tomkins, G1VXY
Mr D Macken, G4DQA
Mr H J Long, G6LVB
Mr S Salmon, G7DIE
Mr S P Smith, G7OKT
Mr W D Oscroft, G8HHV
Mr C C Hague, G8WBB
Mr J Vinton, GM0EMQ
Mr A Pepper, K1YMI
Mr D Ireland, KD8KZS
Rustyradios ARCG, M0RRC
Mr T P Bishop, M3PTB
Miss S Millard, M6SSM
Mr T G Costford, MM0BHX
Mr K M Duggan, MM0RZZ
Mr J Cadick, N5JC
Mr P Rowe, RS196641
F Payne, RS200358
Mr J C Risso, ZB2HW

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or FT-450AT (+ ATU)..... £699.99
One customer claimed, "this is the best kept secret of the communications industry".

NEW FT-450D

This is the latest IF DSP marvel from Yaesu. HF + 6m (500/300 CW filters as standard). New design + ATU.
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With free MD-100A8X desk mic

FT-857D DSP

HF + 6m + 2m + 70cm.
OUR PRICE **£639.99**
OR FT-857 + MS-1228
£679.99

FT-897D
Includes DSP

OUR PRICE **£729.99**
OR FT-897 + MS-1228
£779.99

FT-950
HF + 6m IF DSP

OUR PRICE **£1179.99**
OR WITH NISSEI PS-300
£1299.99

FT-5000DX

FT-5000DX (200W HF + 6m)... £4299.99
FT-5000DX (above + monitor). £4749.99
FT-5000DX (above + filters) ... £5149.99

FT-2000D

FT-2000D (200W)..... £2549.99
FT-2000D + SP-2000..... £2699.99
1 x 2000D as new (1 month old)... £2349.99

FT-2000

FT-2000 (100W HF + 6m)..... £1975.99
FT-2000 + matching speaker.. £2125.99

FT-817 ND

HF + 6m + 2m + 70cms. Incl's battery/charger + antennas. Optional case £22. Extra spare battery £49.99
OUR PRICE **£495.00**
STAR BUY - FT-817ND + extra battery + case..... £559.99

MD-200

Broadcast quality dynamic mic. It sounds & looks superb. Fits 8-pin round & 8-pin modular radios. (Optional 6-pin modular adapter £19.99)
SALE PRICE **£239.99**
Yaesu MD-100A8X..... £129.99

MD-100 A8X

Superb quality microphone at an affordable price.
OUR PRICE **£129.99**

IC-7000

HF + 6m + 2m + 70cm. Superb IF DSP. Colour display.
£1169.99
or IC-7000 + MS-1228 £1219.00
IC-9100 new HF to 23cm... £phone

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HF + 6m + 2m + 70cm. Not only is this Kenwood's top machine with IF DSP, it also uses cutting-edge technology in a streamlined package.
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WITH FREE MS-1228

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Includes built-in extention speaker
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10m + 6m + 2m + 70cm. (up to 50W).
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2m/70cm Tcvr with APRS & dual Rx (50W O/P). Includes wideband Rx. Includes DTMF mic.
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Compact FM mobile. 4m/25W
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YAESU VX-8E

6m/2m/70cm. "APRS" with Rx:- 0.5-1GHz. Incl's battery & chgr.
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SGC MAC-200 New auto tuner 1.8-54MHz (200W) wire, vertical, dipole. You name it. (5 selectable outputs).
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SGC-237 HF+6m Tuner..... £309.99
SGC-230 (HF-200W) ATU..... £449.99
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MFJ-993B INTELLITUNER

Fully automatic (1.8-30MHz). 300W SSB. Easy to use ATU.
SALE PRICE **£239.99**

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SALE PRICE **£174.99**
● 1.8-30MHz 300W ATU ● Large cross needle meter ● 30/300W PEP power meter ● VSWR ● 3-way antenna selector ● Internal balun + dummy load.

MFJ-259B ANALYSER

1.8-170MHz
£259.99
Case 259B £29.99 Dip Coils 259/269£29.99 Case 269B £29.99

MFJ-269B ANALYSER

1.8-170MHz + 70cm
£339.99

MFJ-269 pro version..... £369.99
MFJ-260C 300W dummy load..... £49.99
MFJ-264 1.5kW dummy load..... £79.99
MFJ-969 Rollercoaster ATU (300W)..... £199.99
MFJ-962D 1.5kW (metered) antenna tuner..... our price £269.99
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(part of a Government order). All brand new in a crate and supplied with cover (close HT – 6 foot). Anodised green finish.

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(Can be hand operated or by compressor/foot pump)

10m MAST, ONLY **£1149.99**

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Amazing performance. Twin folded dipole. 2-30MHz – and it really works. No ATU required (25mts long). Supplied with 30 mtr PL-259 feeder – ready to go. If you want great transmission, look no where else. Japanees quality made product

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CW-80S	(80-10m) 20m long	£149.99 P&P £10.00
CW-40	(40-10m) 20m long	£119.99 P&P £10.00
G5-RV	(80-10m) + balum	£74.99

CUSHCRAFT BARGAINS

Delivery £15.00

MA5B	Mini beam 10, 12, 15, 17, 20m	WOW	£479.99
A4S	4 ele beam (10 - 20m)		£669.99
A3S	3 ele beam (10-20m)	WOW	£575.99
R-8E	Vertical (40 - 6m) "special"		SPECIAL £499.99

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"We've sold 100s all over Europe"

★ 1.8 - 60MHz HF vertical ★ 15 foot high ★ No ATU or ground radials required ★ (200W PEP).

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Baluns 1:1 or 4:1 or 6:1 ..... £39.99 each P&P £4
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2 way CX-201 'N' (0-1GHz) 'N' £29.99
4 way CX-401 (0-500MHz) SO239 ..... £79.95
4 way CX-401 'N' (0-500MHz) 'N' £89.95

WATSON COAX SWITCHES

(POST £4.00)

CX-SW4N DC-1.5GHz (5xN) £59.99
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CX-SW3N DC-1.5GHz (4 x N) £49.95
CX-SW3PL DC-800MHz (4 x SO-239) £41.95
CX-SW2N DC-3GHz (3 x N) £32.95
CX-SW2PL DC-1GHz (3 x SO-239) £26.95

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DC-1 Standard 6-pin/20A fits most HF ..... £22.00 P&P £3
DC-2 Standard 2-pin/15A fits most VHF/UHF ..... £10.00 P&P £3
DC-3 Fits Yaesu FT-7800/8800/8900, etc ..... £17.50 P&P £3

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MH-IC8 8 pin Yaesu mic (8-pin round) ..... £44.99 P&P £5
MH-4 4 pin fits older HF, etc. (4-pin round) ..... £39.99 P&P £5
MH-31A8J 8 pin modular ..... £39.99 P&P £5

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True military spec real UK coax

RG-58 Military spec x 100m.
£49.99 or 2 for £90.00
Coax stripping tool (for RG-58) £4.99

RG-213 Military spec x 100m (10mm dia).
£129.99/100m or 2 for £229.99

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Very heavy duty. Available:- SO-259 or 3/8 – specify **£44.99**

slot together.

£69.99 each. Del £10 THREE FOR £149.99 DEL £15.00

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A superb TDK 'snap fix' ferrite clamp for use in Radio/TV/ Mains/PC/Phone etc.

Simply close shut over cables and notice the difference! Will fit cables up to 13mm diameter. Ideal on power supply leads/mic leads/audio leads/phone leads.

2 for £13.99 or 5 for £32.99 (P&P £4.00)

MAST HEAD PULLEY

A simple to fit but very handy mast pulley with rope guides to avoid tangling.
(Fits up to 2" mast) **£13.49** + P&P £4.50

30m pack (4.4mm) nylon guy rope £15.00
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NEW EASY FIT WALL PULLEY

Pulley will hang freely and take most rope up to 6mm. (Wall bracket not supplied).

£13.49 + P&P £4.50

Wall bracket, screws not supplied. Simply screw to outside wall and hang pulley on WALL BRACKET £2.99 P&P £1.00

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132m (4.4mm) nylon guy (480Kg) £45.00

HANGING PULLEY

Heavy duty die-cast hanging pulley. Hook and go!

£24.99

BARGAIN WINCH

500kg brake winch. BARGAIN PRICE

£89.99 Del £10.00

(Now includes cable grip)
Winch wall bracket £22.99

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HF-2V (80/40m) £279.99
HF-5V (80/40/30/20/15/10m) £375.00
HF-9V (as HF-6V + 17/12 & 6m) £425.00

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220811	11ele 2m	£109.99
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220818	9ele 2m XD	£129.95
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PL-259 - PL-259	20m	£49.99
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MT-3302

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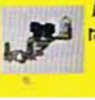
MT-6601



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12" T & K brackets (pair)	£18.99
18" T & K brackets (pair)	£22.99
24" T & K brackets (pair)	£26.99
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8-nut universal clamp (2" to 2")	£7.99
2" extra long U-bolt/clamp	£6.99
2" crossover plate with U-bolts	£14.99
15" long (2") sleeve joiner (1.5" also available)	£18.99
3-way guy ring	£5.99
4-way guy ring	£6.99
Heavy duty guy kit (wire clamp, etc.)	£49.99
Set of 3 heavy duty fixing spikes (~0.7m long)	£29.99
30m pack (4.4m) 480kg B/F nylon guy	£15.00
Roll of self-amalgamating tape 25mm x 10mtr	£8.99
Special offer:- Self-amalgamating 3 rolls	£20.00

All bracket measurements are from wall to end of bracket

Antennas

Loop antennas again

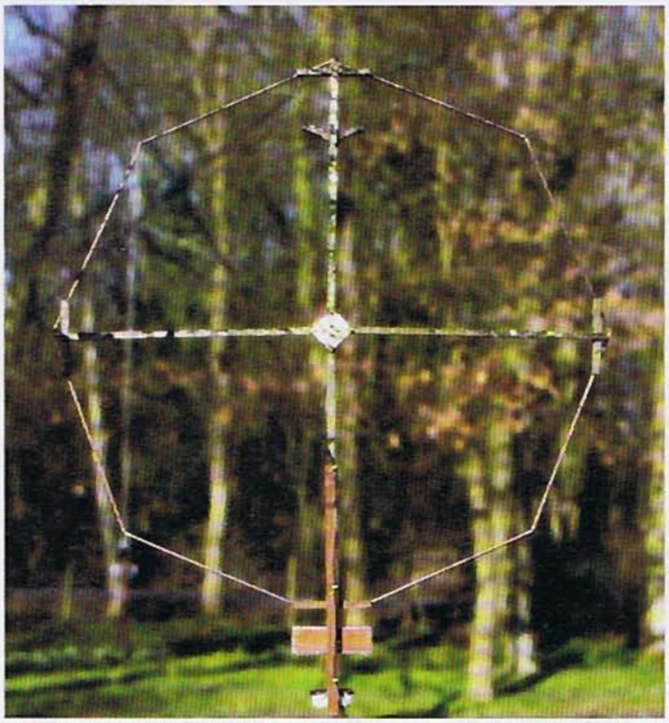

PHOTO 1: The G0UVR 11.70m diameter loop for 40 and 80m, almost perfectly camouflaged against the woody background.

BETTER THAN EXPECTED. Small transmitting loop antennas (sometimes referred to as magnetic loops) have been discussed in considerable detail, to such an extent that I felt reluctant to air this subject further. Additionally, some of this very detailed literature has been at the centre of controversy regarding the efficiency and effectiveness of these antennas. As a result I had avoided getting involved with them, that is until last year when I constructed one using a novel tuning capacitor design by G8JNJ and found that the antenna performed better than been I had been led to believe.

LOOP DESIGN PROGRAM. Ger Akse, G0UVR (PA0AXE), e-mailed me to say, "When we came to live at our present address in 1994, it became clear that I had to erect my aerials in a small wooded area, full with mature high trees. As the many branches and the canopies of these trees make it practically impossible to put up a dipole for the lower bands at a reasonable height, I decided with some reluctance to try a magnetic loop. Our move from using tank-gas to natural gas in 1996 had left me with a nice supply of 22mm diameter copper pipe.

"Before I decided to build a loop, I read whatever I could find about this type of antenna. I collected the formulae ruling the properties of magnetic loops and wrote a program in Turbo Pascal (under MS-DOS) to analyse the properties of magnetic loops".

The formulae used by the program are shown in **Figure 1**. **Figure 2** shows of the properties of the loop made by Harry Brash, GM3RVL, described in December 2010 Antennas. Assuming that the formulae are right and that the joints of the loop to the capacitor plates are loss-free, the efficiency figures should be reasonably reliable. Figure 2 shows that the efficiency on 30m drops to 36%, requiring tuning capacitor of 100pF. The bandwidth narrows to 8kHz.

GM3RVL suggested that his loop would cover 40m but on that band the efficiency drops to a mere 14%, the values for the tuning capacitor have to be increased to 203-216pF and the bandwidth narrows to 5kHz. I personally think that 30m is the lowest band that can used with his loop design."

G0UVR goes on to say: "In your article the importance of keeping the loss resistance as low as possible is stressed and rightfully so. However, getting the radiation resistance of the loop as high as possible is likely equally important. To do so the area of the loop needs to be increased. As bending a 3m length of 22mm diameter copper tubing into a circle was already described as hard work, increasing that length will make bending almost impossible. A circle, for a given circumference, has the greatest area (and thus the greatest radiation resistance) and can be constructed using 7/8in diameter hard-line coax.

"If that is not available there is the alternative of abandoning the circle and going instead for an octagonal or a square shape, using straight sections of 22mm tubing soldered together with angle joints. For an octagon seven angle joints of 45° are required; for a square we need only four right angle (90°) joints. From this point of view the square is to be preferred, however the octagon has a bigger area than the square. As I do not know how much RF losses the joints cause, it is impossible to say which shape would be better."

LOOP DESIGN FOR THE LOWER BANDS. G0UVR wanted a loop for 40 and 80m and chose the optimum size for 40m, being about 11.70m diameter. The loop is shown in **Photo 1**. This arrangement is upside down (compared with most loop designs) to allow access to the tuning capacitor for maintenance purposes.

The loop was constructed from six 1.50m and two 1.35m lengths of 22mm tube, arranged to leave enough space for the box containing the tuning capacitors. Two 500pF wide spaced capacitors in series (each good for 7.5kV) are used to tune the loop. The method of connecting the capacitors to the loop is best described by referring to **Photo 2**. Two flat pieces of tubing are bolted thoroughly on the stators of the two capacitors. They protrude through the Plexiglas top of the tuning box and their top-ends are again thoroughly bolted to the two bottom tubes of the loop.

The properties of this loop, calculated by the program, are shown in **Figure 3**. As the formula for loss-resistance does not take into account the losses in tube-joints, the losses in connecting the tube-ends to the capacitors and the losses in the capacitors, the efficiency figures may be slightly inflated.

COUPLING ARRANGEMENT. The coupling loop is a half Faraday loop, with the coax inner and braid at the apex connected. The loop is not made of standard coaxial cable such as RG213 and is described by G0UVR as follows:

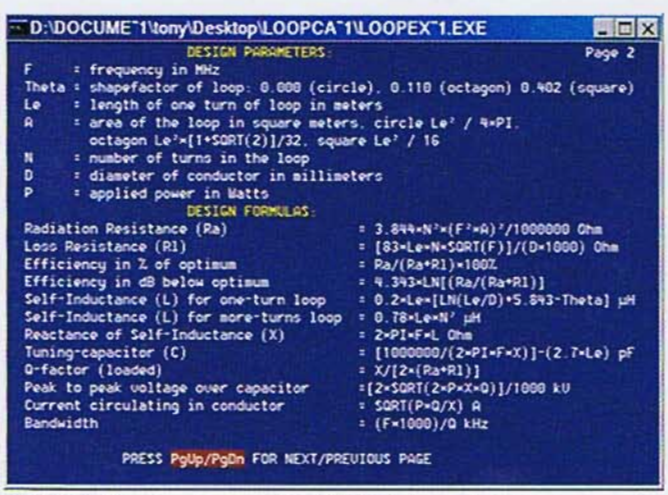

FIGURE 1: The formulae on which G0UVR's loop calculation program is based.

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PROPERTIES OF LOOP Page 3

BAND m	FREQ MHz	RADRES Ω Ohm	LOSS R Ω Ohm	EFFICIENCY %	EFFICIENCY dB	TUNE CAP.	Up kV	Ic A	Q-FACT	BNDW kHz
30	10.000	20	36	35.5	-4.5	102	12	30	1308	8
	10.150	21	36	36.7	-4.4	98	12	30	1293	8
20	14.000	76	42	64.1	-1.9	48	12	21	860	16
	14.350	84	43	66.1	-1.8	45	12	20	823	17
17	18.068	210	48	81.4	-0.9	25	10	14	508	36
	18.168	215	48	81.7	-0.9	25	10	14	501	36
15	21.000	383	52	88.1	-0.6	17	9	11	350	60
	21.450	417	52	88.8	-0.5	16	9	10	331	65
12	24.890	757	56	93.1	-0.3	10	8	8	222	112
	24.990	769	57	93.1	-0.3	9	8	8	220	114
10	28.000	1R	60	95.3	-0.2	6	7	6	160	175
	29.700	2R	62	96.1	-0.2	4	7	6	135	220

9DIAM : 0.95m
8AREA : 0.7m²
7THETA: 0.000
6
5923
4SELF-
6CAP: 8pF
1IND: 2.3µHµH
6040
8CIRCUMFERENCE:
8 STEP 0.1m

LOW-BAND	HIGH-BAND	SHAPE	CIRCUMF.	TURNS	COND-DIAM	POWER
30 m	10 m	CIRCLE	3.0 m	1	22 mm	100 W

FIELD:CURS. L/R STEP:PAGE U/D VALUES:CURS.U/D READY:PRESS ESC

FIGURE 2: Characteristics of the GM3RVL loop on the bands 10 to 30m.

D:\DOCUME~1\tony\Desktop\LOOPCA~1\LOOPEX~1.EXE

PROPERTIES OF LOOP Page 3

BAND m	FREQ MHz	RADRES Ω Ohm	LOSS R Ω Ohm	EFFICIENCY %	EFFICIENCY dB	TUNE CAP.	Up kV	Ic A	Q-FACT	BNDW kHz
80	3.500	68	83	45.3	-3.4	138	4	6	888	4
	3.800	95	86	52.5	-2.8	112	4	5	804	5
60	5.000	285	99	79.3	-1.3	51	4	4	499	10
	5.500	417	104	80.1	-1.0	37	4	3	405	14
40	7.000	1R	117	90.4	-0.4	11	3	2	221	32
	7.200	1R	118	91.2	-0.4	8	3	2	205	35

DIAM : 3.72m
AREA : 10.9m²
THETA: 0.000

SELF-
CAP: 32pF
IND: 12.2uH

CIRCUMFERENCE:
STEP 0.1m

LOW-BAND	HIGH-BAND	SHAPE	CIRCUMF.	TURNS	COND-DIAM	POWER
80 m	40 m	CIRCLE	11.7 m	1	22 mm	10 W

FIELD:CURS. L/R STEP:PAGE U/D VALUES:CURS.U/D READY:PRESS ESC

FIGURE 3: Characteristics of his G0UVR's enlarged loop (see Photo 1) on the 40, 60 and 80m bands.

"The inner conductor is made from 5 or 6mm diameter brass or copper tubing. This is then covered with heat-shrink. The outer conductor is made from the braid of coax, which is then for weatherproofing covered with vinyl tape. In January 1997 I read an article in *PW* written by Des Heath, G3ABS, under the title 'Postage Stamp Loops'. He claimed that a coupling loop made this way provided better coupling than could be achieved using standard coax. Whether that is true or not, I do not know, but I made my coupling loop (which is 2.40m long) that way. For aesthetic reasons I shaped it the same as the main loop (ie octagonal) and clamped it on two sides to the main loop using PVC pipe clamps.

"Although the term 'small' may not strictly be applicable for a loop of this size, it is still very small in terms of wavelength. The bottom of the loop sits about 1m above the ground as shown in Photo 1 and the plane of the loop is in the East-West direction.

"As shown in Photo 2, the capacitors are driven by a small 1.5-3V electric motor via a multi-ratio gearbox (available from Maplin), set for 1 to 2 rpm.

"The loop worked from scratch and its performance exceeded my expectations. The antenna puts out a good signal all over Europe and, with good luck, I managed a QSO on 80m with Canada (Prince Edward Islands) and even with New Zealand on 40m. It has been in use since 1997 and so far the tuning motor has only been replaced once."

PHOTO 2: Detail of the tuning capacitance mechanism.

COMPARISONS. I made a model of the GM3RVL loop using *EZNEC*. This program uses a totally different method of calculating antenna performance to the method so far described, so a comparison seemed to be in order.

The gain of the GM3RVL loop on the 10m and 30m bands using the G0UVR's program (Figure 2) is -0.2dB and -4.4dB respectively, while the tuning capacitors required are 6pF and 98pF respectively. The same antenna, analysed using *EZNEC* on the same bands, resulted in a gain of 0.5dBi and –2.01dBi respectively, while the tuning capacitors required are 8pF and 88pF respectively. The gain reference for the G0UVR program is dB down from a 100% efficient antenna, while the *EZNEC* reference is an isotropic source.

In addition I used the loop calculation program from 66pacific calculators [1], described in September 2010 Antennas, to model this same loop on 30m. It predicts a gain -4.6dB below 100%. It also makes comments regarding the loop length relative to frequency, in particular that the conductor length for a small transmitting loop antenna should be greater than 1/8 wavelength.

The efficiency of a loop antenna falls dramatically as the loop size is reduced (or the operating frequency of a given loop is reduced). For example, the efficiency of the GM3RVL loop drops to a mere 14% when tuned down to 40m using a 210pF tuning capacitor.

CONTROVERSY. There is nothing more likely to put one off an antenna type than the label 'controversial'. It implies unproven performance. As I mentioned at the beginning of this column, these transmitting loop antennas have been discussed in considerable detail by eminent antenna experts, often with differing views regarding the antenna's efficacy, hence the controversy. [2] [3] and [4] represent a small sample of this discussion. However, note the variation in antenna efficiencies over the frequency range 10 to 28MHz shown in Figure 2.

If you have a restricted QTH and conventional antennas are a problem then the loop antenna could well be the one for you. Provided that you make the loop the appropriate size for the frequency bands of interest, keep the losses low using appropriate construction practices and don't position it close to electromagnetic obstacles then you could be pleasantly surprised by its performance.

Finally I leave the last word to G0UVR. "Encouraged by the success of the 80/40m loop I decided to make another two magnetic loops to take with me on camping holidays on the continent. The larger of the two has the maximum size for 20m and works on 40m also when I parallel the two tuning capacitors with a fixed capacitor made of double-sided PCB. In the late nineties I tried this loop when on holiday near Florence. It appeared to work fine on 20 and 40 and I even managed to work Japan on these two bands on 20m with good reports, albeit on 40 with some difficulty. The smaller one that I made a few years later has the maximum size for 10m and thus works down to 17m but not fully tested as yet because of the poor propagation on these bands."

REFERENCES

[1] www.66pacific.com/calculators.

[2] *Loop Antennas* – Facts not Fiction, Tony Henk, G4XVF, *Radio Communication* September/October, 1991.

[3] *Electrically-small transmitting loops*, Dr Jack Belrose, VE2CV, *RadCom* June/July 2004.

[4] *New truths about small tuned loops in a real environment*, Professor Mike Underhill, G3LHZ, *RadCom* August/Sept 2004.

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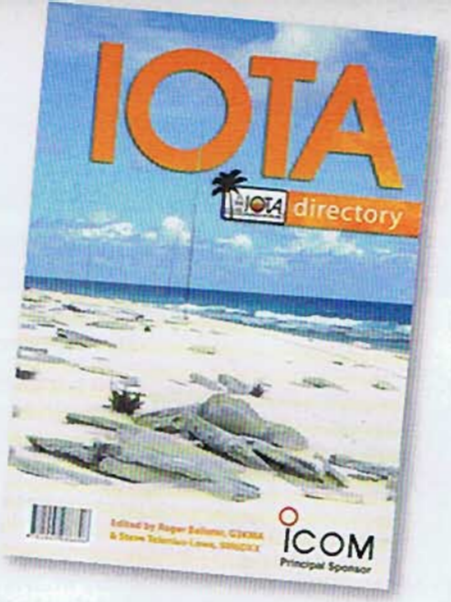
Book review

Islands and secrets



RSGB IOTA Directory

Edited by Roger Ballister, G3KMA and Steve Telenius-Lowe, 9M6DXX

The Islands On The Air programme, IOTA, is an amateur radio award programme that encourages contacts with island-based stations worldwide. Since its inception in the 1960s it has been going from strength to strength. The *RSGB IOTA Directory* is the ultimate guide to the programme and this newly revised edition contains a huge amount of invaluable information – including the 2012-13 Marathon activity spectacular in the run-up to the 50th anniversary in 2014.

There have recently been a number of changes to the IOTA programme Rules and it's great to see that the complete set are reproduced early-on in the Directory. Likewise, the island Groups have been revised and the Directory has the fully up-to-date, *definitive* listing of all twelve hundred.

I was particularly taken by the vivid reports on some recent IOTA DXpeditions, including T32 (Kiribati) and the arctic VY0X, by guest writers that were part of the DXpedition teams. There's also a write-up of the 2010 RSGB IOTA Contest by veteran Don Field, G3XTT, plus the complete Contest rules for 2011.

Near the front of the book is a useful set of frequently asked questions that cover most of the things that a beginner would want to know early on. I thought this was a very nice touch. You'll also find a list of the awards, which range from the 100 Island certificate through to the prestigious 1000 Islands Trophy, of which only 114 have ever been awarded worldwide. Incidentally, the callsigns of all 1000 Island Trophy holders, 750 Island Plaque of Excellence and the complete 2011 Honour Roll are also included early on in the book.

The nice thing about the *RSGB IOTA Directory* is that it doesn't assume prior knowledge. A beginner can pick up the book and, starting from scratch, learn everything they need to know to get on the programme. For the more advanced, or adventurous, there is good solid information about the sort of things you will need in order to mount your own DXpedition, whether it be to far-flung islands in the South Pacific or just on a family holiday to the Isle of Wight. If you're planning to go to one of the Most Wanted areas there are some additional formalities you need to follow to ensure your DXpedition is recognised; these are spelled out in the Directory – as are the relative handful of places that they're needed for.

There is even a section about environmental considerations for DXpeditioners, quite important given that some of the more remote islands are nature reserves or have delicate ecosystems.

This book is full of the factual information you'll want to make the best of IOTA, whether it's the Programme or Contest you're interested in, beginner or seasoned player. It contains a balanced mix of lead-you-by-the-hand and authoritative reference material and is quite a good read. Highly recommended.

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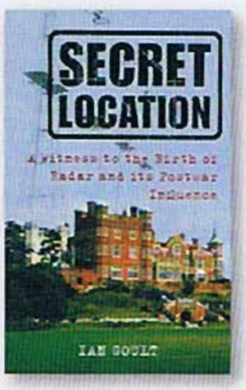
128 pages, 210 x 297mm approx
Published by RSGB
Non-members price £11.99
Members price £10.19

Secret Location

By Ian Goult



If you enjoyed the recent book on Orford Ness then you'll be interested to learn that this book gives a more complete view on the birth of radar and its postwar influence. Starting with a history of Bawdsey Manor (seen on the cover) and other locations connected with the early development of radar – including Orford Ness – we soon learn of the early pioneers or radio direction finding (only later re-named radar) and the technical advances that made it possible. But it is much more than that: this is a book in three parts. The second part concerns post-war developments such as TACAN (tactical air navigation), designing and improving radar-based automatic landing systems for civil airliners. As the tale unfolds, in part 3, the autobiographical nature of the book becomes more apparent. Ian Goult recounts his experiences on setting up and financing his own business, successfully making a go of it in the private sector. At the end is a great little appendix: Everyman's Guide to the Evolution of Radio and Electronics.

I enjoyed this book. It is a great mix of factual and anecdotal material and quite wide-ranging, although it remains centred around radio direction and/or distance finding in one form or another. Sixteen high quality pages of photographs and illustrations enliven the book and include some images that I suspect are quite rare, possibly even once secret.

If you are interested in radar – in either its early or more recent incarnations – then this is the book for you.

ISBN 978-0-7524-5776-5
144 pages, 197 x 124mm approx
Published by The History Press
Non-members price £8.99
Members price £7.64

RSGB Prefix Guide

from £7.64

9th Edition
By Fred Handscombe, G4BWP

The complete guide to prefix identification and information

If you are interested in DX, awards or simply operate the HF bands the *RSGB Prefix Guide* is the book for you. From the basic "what was that Call?" question through to research for an elusive award, this book provides what is needed. This edition is fully updated with a significant number of changes the prefix listings, so that it provides the latest and most comprehensive list of the world's amateur radio prefixes. The listings also provide a huge range of addition information covering references for continent, CQ Zone, DXCC, IOTA, ITU Zone, Latitude & Longitude and a whole lot more.

The *RSGB Prefix Guide* also includes lists of DXCC deleted entities, Russian & CIS entities etc. The popular DXCC checklist is here, along with very latest information on various award programs including IOTA, CQ WAZ, DXCC, WAS and others. There is also an index of countries and their callsign allocations divided by continent as are more detailed listings for the wide range of RSGB awards for HF and 50MHz.

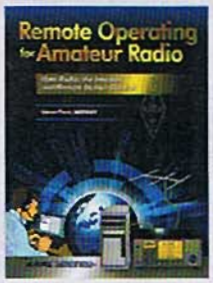
This popular "lay flat" wire binding makes the *RSGB Prefix Guide* easy to use and durable. If you are new to amateur radio or an experienced hand alike this book is an excellent tool and a must for every radio amateur.

Size 297x210mm (landscape), 80 pages, ISBN 9781-9050-8665-8

Non Members' Price £8.99 **RSGB Members' Price £7.64**

Remote Operating for Amateur Radio

from £16.99



By Steve Ford, WB8IMY

Many amateurs are now discovering the advantages remote operating when confronted with restricted antenna locations or interference issues. *Remote Operating for Amateur Radio* is the essential guide to establishing your own remote controlled station.

Remote Operating for Amateur Radio provides the basics of how the Internet works, how home networks operate and how to interconnect amateur radio hardware and software for remote internet control. This book also addresses the aspects of remote station control, networks and the transmitting & receiving challenges. Readers will find station diagrams, software advice and even tips for activities such as DXing and contesting. If you have restricted operations in your shack or even no shack at all, this book provides solid, practical advice on how to get back on the air remotely.

If you want a guide to getting on the air across the internet *Remote Operating for Amateur Radio* is the ideal solution.

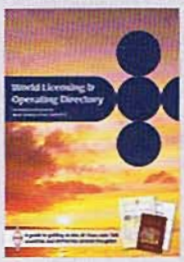
Size 206x273mm, 112 pages, ISBN 9780-8725-9092-2

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

for more amateur radio books visit
www.rsgbshop.org

World Licensing & Operating Directory

from £7.99



By Steve Telenius-Lowe, 9M6DXX

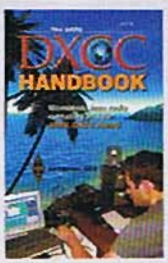
If you have ever thought of taking your radio on holiday or organising a DXpedition, the *World Licensing and Operating Directory* is the guide for you. Written by well known DXer Steve Telenius-Lowe, 9M6DXX who has visited 83 DXCC entities and operated from 37 of them, this book has been meticulously researched and has input from nearly 100 contributors. There is all the information you need to get on the air from over 200 countries and territories around the globe. This unique book will appeal equally to hardened contesters or DXers looking for a competitive station to rent and to those who simply want to complement their family holiday with some amateur radio operation from an unusual location.

Size 240x170mm, 160 pages
ISBN 9781-9050-8646-7

Non Members' Price £12.99
RSGB Members' Price £7.99

DXCC Handbook

from £12.74



By Jim Kearman, KR1S

The Thrill of Working DX!

DX in ham radio shorthand means distance, literally talking to people in distant lands. Many radio amateurs enjoy the lure of DXing, seeing how far away we can communicate with other operators. It's a way of determining how well our stations perform. DXing is a full-time goal for some hams and a just-for-fun challenge for others. This book covers all the basics of operating DX and adds to the mix the fascination of the ARRLs prestige award ARRL DX Century Club, or DXCC award. This book provide solid advice for setting up your station, real world antennas, modes to chose, propagation and how to deal with pile ups. Detailed are the DXCC rules, note on how to apply for the awards and even an introduction to Logbook of the World (LoTW). This book is a must for everyone interested in DXCC and DX awards.

Size 135x210mm, 176 pages
ISBN 9780-8725-9988-8

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

HF Amateur Radio

from £11.04

By Ian Poole, G3YWZ

The HF (or short wave) bands are one of the most interesting areas of amateur radio. Stations from all around the globe and many interesting contacts can be made. Operating on these frequencies require many skills if the most is to be made of the time that is available. *HF Amateur Radio* sets out all that your need to know about the radio spectrum from 1.8 to 30MHz. This book takes the reader through setting up an efficient amateur radio station, which equipment to choose, installation, and the best antenna for your location. It also has information on what frequencies to use, and the advantages of each type of transmission. *HF Amateur Radio* will benefit those new to amateur radio, anyone contemplating exploring the world below 30MHz, and just about any amateur or short-wave listener who feels he could get more out of his station.

Size 240x174 mm, 144 pages
ISBN 9781-9050-8629-0

Non Member's Price £12.99
RSGB Member's Price £11.04

ting & DX books

ON4UN's Low Band DXing

from £29.74

25 Years of Low Band Success!

By John Devoldere, ON4UN

John Devoldere's highly popular book *ON4UN's Low Band DXing* has now been thoroughly updated. You will find many new highlights including a revised discussion of receiving antennas and how to greatly enhance their operational bandwidth. There is a examination of phased arrays, with new concepts such as the hybrid-fed 4-square array and opposite-voltage feed system. This is a must-read for every serious antenna builder! There are dozens of new propagation maps based on DX Atlas, as well as an in-depth analysis of the influence of sunspot cycles on 160-meter ducting. Readers will also find a new discussion of cutting edge technology including Software Defined Radio and the revolutionary LP-500 Digital Station Monitor.

ON4UN's Low Band DXing also includes a wide range of topics including chapters on Propagation, DXing on the Low Bands, Receiving and Transmitting Equipment, and more. You will also find specific antenna chapters covering, Receiving Antennas, Dipoles, Vertical Antennas, Large Loop Antennas, Yagis and Quads. There are also chapters dedicated to Phased Arrays, Other Arrays, Low Band DXing from a Small Garden and From Low Band DXing to Contesting.

FREE CD

This book includes a CD-ROM with the entire book in a fully searchable PDF format as well as ON4UN's software (Windows XP only), antenna modelling files, photographs and more.

Size 210x274mm, 672 pages, ISBN 9780-8725-9856-0

Non Members' Price £34.99 **RSGB Members' Price £29.74**

Radio Orienteering - The ARDF Handbook

from £8.49

By Bob Titterington G3ORY, David Williams, M3WDD and David Deane, G3ZOI

Amateur Radio Direction Finding (ARDF) - also known as Radio Orienteering - is an outdoor pursuit which combines orienteering with the amateur radio skill of direction finding. Competitors use their skills to locate a number of hidden transmitters within a time limit. This book gives you everything you need to know to become involved in this fascinating sport.

Size 175x240mm 112 pages, ISBN 9781-9050- 8627-6

Non Member's Price £9.99 **RSGB Member's Price £8.49**

DXing on the Edge - The Thrill of 160 Meters

from £16.14

By Jeff Briggs, K1ZM

A fascinating chronicle of what it takes to navigate the 160 meter band. Includes useful operating tips and descriptions for many practical antennas needed to be successful on 160 meters. This book includes an audio CD with some truly exotic and exciting QSOs made from prominent DX stations. Many photos and historical information included, from the early 1930s through present day.

Non Members' Price £18.99 **RSGB Members' Price £16.14**

Amateur Radio Operating Manual

from £16.99

7th Edition

By Don Field, G3XTT & Steve Telenius-Lowe, 9M6DXX

Despite what many believe amateur radio is a fast-moving hobby and the last five or six years in particular have seen numerous changes. The *RSGB Amateur Radio Operating Manual* provides the best practical guide to the hobby as it is today.

Since the first edition of the *RSGB Amateur Radio Operating Manual*, it has provided practical information on many different forms of amateur radio operating. This latest edition covers subjects from the basics of setting up a station for maximum efficiency, DX Operating, Radio Sport's many guises, through to D-Star, Satellites and much more. Readers will find information detailing the numerous changes to the amateur bands as more countries have gained frequencies at, or around, 136 and 500kHz, as well as 5, 7.1 - 7.2 and 70MHz. The newer datamodes such Winmor are covered along with the developments in the WSJT suite of software and the whole datamode field. The use of computers in amateur radio is extensively covered, as are basic operating practices and there are even guides to making the most from the various bands available. You will also find subjects as varied as the RSGB IOTA programme, China's first amateur radio satellite, XW-1, Skimmer, ClubLog, on-line DXpedition log checking, and DXpedition operating.

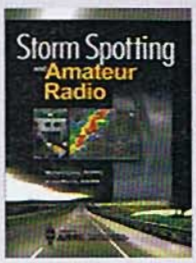
With more than 25 new contributors, this Seventh Edition of the *RSGB Amateur Radio Operating Manual* has lots of brand new material, as well significantly rewritten sections. No matter if you are new to the hobby, or an established amateur, everyone will find this book a mine of useful and practical information about all aspects of amateur radio operating.

Size 210x297mm, 240 pages, ISBN 9781-9050-8663-4

Non Members' Price £16.99 **RSGB Members' Price £14.44**

Storm Spotting for Radio Amateurs

from £16.99



By Michael Corey, W5MPC and Victor Morris, AH6WX

This book is aimed directly at those who 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.

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

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

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

Sport Radio

The delights of backpacking and should we increase RTTY and PSK data rates?

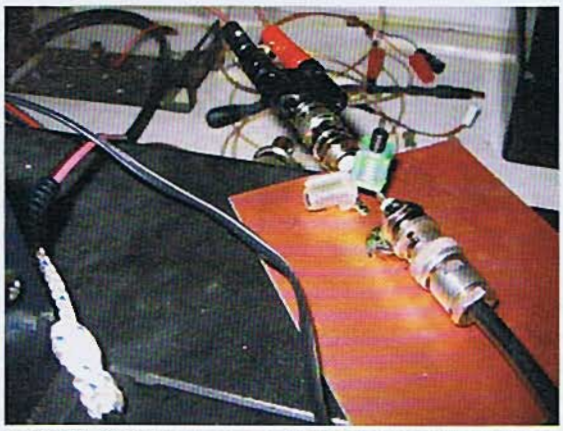


PHOTO 1: G3CWI's lashed-up matching network for an 80m doublet on 2m.

DATA CONTESTING. For as long as I can remember, amateur RTTY has been transmitted at 45.45 baud. But it doesn't have to be. Back in the days of the Telex network it was transmitted at 50 baud in the UK. In the US the Telex network ran at 45.45 baud and that is the rate that stuck on the amateur bands. For UK ops it used to mean adjusting the speed governor of your teleprinter, but with contesters now using computers, why do we still use such a slow data rate?

A couple of years ago BARTG announced that they were going to conduct an experiment by holding a 75 baud RTTY Sprint contest. Despite the increased number of corruptions and requests for repeats that were an inevitable consequence of increasing the data rate by 65%, 75 baud proved popular and this year's event saw increased participation. The question I'd like to put to interested parties is should the RSGB 80m Club Championships switch to 75-baud RTTY? Something that could perhaps be tried is switching two sessions of the 2012 series to 75 baud, to see how it works (I wouldn't suggest mixing 45.45 and 75 baud in a single session). If the idea were to be acceptable I would suggest one session early in the series, when inter-UK propagation is poor and another late in the series, when it is good. The Contest Committee could then make a decision, based on the wishes and experiences of participants. Your thoughts, please.

Now let's move on to PSK31, which wasn't designed for contesting and causes a number of us enormous frustration when we make QSOs with it in RSGB 80m Club Championships. At the risk of raising the hackles of some purists, PSK31 has a couple of cousins, PSK63 and PSK125. PSK63 offers double the throughput but occupies double the bandwidth of PSK31, while PSK125 doubles everything again. Should the Contest Committee conduct a similar experiment in 2012, switching to PSK63 or PSK125 for one session early in the series and another session late in the series? 80m propagation on a winter evening early in the season would be a real test of a higher rate PSK! Again, your thoughts, please.

HF ANTENNA ON VHF. Richard Newstead, G3CWI recently decided he needed an antenna suitable for participating in the Tuesday night 2m UK Activity Contests. He wanted reasonable performance, but at no cost. He also wanted no (outdoor) set-up time, plus it was only 45 minutes before the contest began! What he had at his disposal was an 80m doublet (length about 45m), a DG8SAQ virtual network analyser, a soldering iron and enthusiasm. Richard spent his time using the software employed with the VNWA to plot a Smith chart of the doublet and then calculate what components were required to make it look 50Ω resistive. This turned out to be two inductors, as shown in **Photo 1**. I'm not giving the values, because this is not a constructional feature and they are specific to his antenna. His efforts were rewarded with 36 QSOs across seven locator squares, the best of which was just under 300km. In the 144/432MHz contest a few days later he worked into IO70 square from his QTH in IO83WG, a distance of over 300km.

Whilst Richard's efforts demonstrate admirably the amateur spirit, not many of us have resources such as his at our disposal. If placed in a similar position I would personally have spent those minutes taping two 19-inch-long pieces of wire to a garden cane, attaching some coax to it (with a choke balun at the feedpoint) and then finding a way of holding it aloft. I'll make no apology for repeating myself now by pointing out to the less experienced that any antenna for VHF SSB/CW use (contesting or not) should to be used horizontally, because all the serious players use horizontally polarised beams and there's a huge polarisation loss between VHF antennas that are vertical and horizontal. The exception to this is when signals are being reflected by the ionosphere, for example during a Sporadic-E opening, because under those conditions the polarisation can be rotated and/or scattered.

LET'S GO BACKPACKING. If you're suitably equipped but not otherwise busy on Sunday 22 May, the first session of the new 2m Backpacker series of contests will be taking place. With lots of portable stations active and getting extremely hungry for contacts in the latter part of the May 144MHz Contest, there will be plenty of QSO potential for anyone who pops up on the band. Tim Raven, G4ARI decided he would do just that last year (in the third session, which coincided with VHF NFD) and is pictured in **Photo 2** walking to his site in North West Leicestershire. With 3 watts output from his Yaesu FT-817 into a 6-element Yagi (**Photo 3**), Tim ended up coming second out of sixteen in the 3 watt section. He described the weather that weekend as 'fantastic', but some others got wet and many complained that it was very windy. Propagation that day wasn't fantastic, but even so Tim's best DX was 407km.

In fact, there is no requirement to physically trudge to your chosen operating site, because if it has a convenient place to park a car, the rules permit you to operate from it. There are 3 watt and 10 watt sections, with operating from a vehicle allowed only in the latter. Antenna restrictions also differ between the sections, so please check the rules before you press the PTT.

THIS MONTH'S EVENTS. There's not a great deal to tell you about this month in the RSGB HF department, except for the continuing 80m Club Championships; SSB on the 2nd, datamodes on the 11th and CW on the 19th.

When it comes to RSGB VHF events it's a totally different story, because May is one of the most contest-packed months of the year. The action begins on the 3rd, with the 2m UKAC. On the following weekend there are three events, but with distinct overlaps. The biggie is the 432MHz-234GHz Trophy contest on 7-8th, which is the event in which the really serious UHF/microwavers get their kicks. If you're not

RSGB HF EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange
May 2	80m Club Championships	1900-2030	SSB	3.5	RS + SN
May 11	80m Club Championships	1900-2030	Data	3.5	RST + SN
May 19	80m Club Championships	1900-2030	CW	3.5	RST + SN

RSGB VHF EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange
May 3	144MHz UKAC	1900-2130	All	144	RS(T) + SN + Locator
May 7-8	432MHz-248GHz Trophy	1400-1400	All	432-248	RS(T) + SN + Locator
May 7	432MHz Trophy +	1400-2200	All	432	RS(T) + SN + Locator
May 7	10GHz Trophy	1400-2200	All	10G	RS(T) + SN + Locator
May 10	432MHz UKAC	1900-2130	All	432	RS(T) + SN + Locator
May 15	70MHz CW	0900-1200	CW	70	RST + SN + Locator + Postcode
May 17	1.3GHz UKAC	1900-2130	All	1.3	RS(T) + SN + Locator
May 21-22	144MHz May Contest +	1400-1400	All	144	RS(T) + SN + Locator + Postcode
May 22	1st 144MHz Backpackers	1100-1500	All	144	RS(T) + SN + Locator
May 24	50MHz UKAC	1900-2130	All	50	RS(T) + SN + Locator
May 24	SHF UKAC	1900-2100	All	2.3-10G	RS(T) + SN + Locator
May 29	70MHz Cumulative #3	1000-1200	All	70	RS(T) + SN + Locator
May 31	70MHz UKAC	1900-2130	All	70	RS(T) + SN + Locator

BEST OF THE REST EVENTS

Date	Event	Times (UTC)	Mode(s)	Band(s)	Exchange (info)
May 7-8	ARI International DX	2000-2000	CW, SSB, RTTY	1.8-28	RS(T) + SN (I's send Province code)
May 14-15	Volta DX RTTY	1200-1200	RTTY	3.5-28	RST + SN + CQ Zone (UK = 14)
May 15	WAB LF Phone	1000-1400	SSB	1.8-7	RS + SN + WAB area
May 28-29	CQWW WPX CW	0000-2359	CW	1.8-28	RST + SN

*HF Championship event +VHF Championship event

For all the latest RSGB contest information and results, visit www.rsgbcc.org

equipped for umpteen bands or don't want to spend 24 hours contesting, the 432MHz Trophy contest is a separate event that runs for the first eight hours of the 432MHz-234GHz Trophy may be of interest. The 10GHz Trophy contest takes place on the Sunday, coinciding with the last eight hours of the 432MHz-234GHz Trophy. If you have never been active in any of these events before, be assured that the QSO potential on 432MHz is considerable. 1.3GHz and 10GHz also see a fair amount of activity, but don't expect large numbers of QSOs on any band above 1GHz. On the 10th it's back to the UKACs, this time on 70cm. On Sunday 15th the 70MHz CW Contest could be interesting. This event was reinstated last year after a gap of four years, during which there was an explosion of activity on the band. Its timing puts it well within the Sporadic-E season, so it might be blessed with good conditions. Then it's back again to the UKACs, with 23cm on the 17th. The busiest VHF contest of the month, the May 144MHz, takes place on the 21st-22nd. Coinciding with the last three hours of this one (followed by an hour of its own), the First 144MHz Backpackers Contest is where the low power enthusiasts head for the hills. Our fourth trip to the UKACs is for 50MHz and SHF on the 24th. The end of the month is devoted to 70MHz, with the third session of the 70MHz Cumulatives on Sunday 29th, followed (because it's a 5-Tuesday month) by a 70MHz UKAC on the 31st.

Italian events dominate the non-RSGB scene in the first half of May. On 7-8th the ARI International DX Contest takes place for 24 hours. Work everyone (CW, SSB and RTTY), exchanging a report and serial number. Instead of a serial number, Italian stations give a 2-letter Province code – and there are 110 of them to collect as multipliers. Single-op single-mode entries are allowed, but not single band. The Volta DX RTTY Contest takes place for 24 hours over the weekend of 14-15th. In this one you can make a single-band entry. Work everyone. Multipliers are DXCC countries. Incidentally, neither of the Italian events have low power sections. On Sunday 15th the Worked All Britain LF Phone Contest takes place for four hours. Exchange a signal report, serial number and your WAB square (the first, second, third and sixth digits of your National Grid reference). You don't need to be a member of the scheme to partake, but you do need to understand propagation to do well, because the D-Region will ensure that you don't work far on 160m, while differing skip on 80m and 40m means that you are likely to find it difficult to work the same people on each of them. Finally, the CQWW WPX CW Contest takes place for the whole 48-hours of the weekend of 28-29th. This is a follow-on event from the SSB leg held at the end of March, so please see the March column for further info. Expect the CW segments of the bands to be packed and some pretty big serial numbers to be handed out by the end, especially if (fingers crossed) propagation on the upper HF bands is favourable.

PHOTO 2: G4ARI walking to his backpacker contest site in IO92IQ.

PHOTO 3: G4ARI/P's mast, antenna and accommodation.

G4FSU appointed as HF Manager

Following the decision by John, G3WKL to step down as HF Manager, the Board has approved the appointment of Ian Greenshields, G4FSU to this honorary position.

The HF Manager plays a pivotal role for all frequencies below 30MHz. Apart from a having a very successful career as an RF and microwave communications engineer, Ian is well versed in radio spectrum matters. This is on account of his role, since 2005, of Secretary to the IARU Region 1 HF Committee. Recently, the IARU has appointed him as a Technical Consultant that will require regular involvement in ITU, CEPT and related matters. Ian's other amateur radio interests include managing the speaker programme for the HF Convention between 2003 and 2009, HF DXing and contesting.

QSL Bureau Help

The RSGB QSL bureau often receives request for help in tracking down historic QSL cards. Recently, Wolf, OE1WHC contacted the bureau as he is assisting a German historian compiling a book about early radio pioneer John L Reinartz to be published shortly.

Reinartz was the eldest of seven children, born to a farming family in Rhine Province Germany, in 1894. As a boy his family moved to the USA and he became interested in radio around 1904. By 1921 he had developed the Reinartz tuner, receiving world wide publicity. Reinartz participated in the first USA-European two way contact in 1923 and first daytime trans-United States contact in 1925. He established the first daily radio communications for an Arctic expedition in 1925. During WWII he was a Navy Captain, which included a term as head of the radio and radar division of the Naval Research Labs. He was amongst the founder members of the ARRL and a long time employee of RCA. He held 28 patents, many of which were significant advancements in radio techniques and are still in use today.

If you have or know of any QSL cards for the following callsigns 1QP, 1XT, 1XAM, W3RB or K6BJ, please contact Wolf, OE1WHC by e-mail to wolf.harranth@ord.at.

Join us for dinner

Why not make the RSGB AGM a full day out and join us for dinner? After the AGM there will be a dinner in celebration of amateur radio at the Menzies Hotel. Join President Dave Wilson, M0OBW, members of the Board for an evening in the true traditions of amateur radio. Only 60 tickets are available and as well as individual bookings, clubs and parties may book tables up to 10 guests.

Tickets can be obtained from the RSGB online shop at www.rsgb.org/agm, by telephone on 01234 832700 (Option 1) or by post from RSGB HQ. Tickets will be available until Wednesday 4 May, and cost £26 per person.

Dress Code: Lounge suit, blazer or smart casual.

Menu

Garden vegetable soup with herbs and croutons

Roast loin of pork with sage and onion stuffing, apple sauce and roast gravy

Bailey's crème brûlée with shortbread biscuits Coffee and mints

Vegetarian option: Roast vegetable Wellington with leek and chive sauce

National Hamfest

The National Hamfest will take place at The Nottinghamshire and Newark Showground on 31 September and 1 October.

Traders, Clubs and Special Interest Group bookings are now being taken. Traders, please contact Chris Danby at chris@danby-online.co.uk. Clubs and Special Interest Groups please e-mail clubs@nationalhamfest.org.uk.

National Radio Centre, Bletchley Park

The RSGB National Radio Centre will showcase radiocommunications technology as a force powering the 21st century economy. It will present amateur radio as an exciting, stimulating, educational, multi-faceted hobby, which provides a sound technical grounding in radio communication for those within its ranks.

As these pictures show, the internal fit-out of the National Radio Centre is progressing well: Some further work remains to be completed on the interactive displays and this has been delayed for reasons outside our control. We have therefore agreed that the opening date will need to slip beyond the late April date originally envisaged.

As soon as the Society can confirm the opening date it will be prominently displayed on the RSGB web pages and in *RadCom*.

The Wall of Radio is one of the first things you see as you enter the new National Radio Centre. It charts the technological breakthroughs that radio has made possible.

Club of the Year Region 4 Winners

The Region 4 winner of the Club of the Year award was Pontefract & District Amateur Radio Society. Recently, Region 4 Manager, Harold Scrivens, G0UGE visited the club to present the Region 4 trophy, sponsored by LAM Communications.

The club will join the other regional winners in the final of the National Club of the Year award, sponsored by Waters & Stanton plc, and the result will be announced at the AGM.

ARDF

How my club organised an ARDF event

YOUR RSGB
ARDF: DEDICATED TO DF HUNTING

James and Ben, M6BGP from the 13th Doncaster (Tickhill) Scouts setting out to locate the 5 transmitters. They surprised everyone when they located them all inside the time allowed. A notable achievement for their first experience of ARDF. (photo courtesy M0PDU).

ARDF SEMINAR. Some time ago Keith, G0OXV and I attended an RSGB seminar on ARDF using the IARU rules. We came away with two ARDF receivers and the beginning of a plan. During the following months Oldham ARC organised a couple of events; we entered, scored badly, got tired, wet and confused but enjoyed ourselves immensely and decided to organise an informal event for our club, Southport & District ARC. This is our account of how we set about things and ended up with a most successful day of radio sport.

GETTING ORGANISED. Our club was happy to support us; we would be looking for involvement from the members and would need the club's public liability insurance. We identified our local orienteering club (Merseyside Orienteering Club, MEROC) with the intention of obtaining permission to share their arrangements and facilities; that would save us having to find a suitable location, obtaining access permission, producing maps, etc. We selected a likely date from their calendar of events and made contact.

An e-mail exchange with MEROC produced a positive reply, they were aware of ARDF, didn't know what was involved but they were happy to help us and agreed to us sharing their event. We were up and running.

The MEROC event we'd chosen was a schools league event to be held on the Hightown Dunes near Crosby. Car parking would be at the car park by the Coastguard Station where there are basic facilities and refreshments. MEROC expected about 150 competitors with start times from 10.30am to 12 noon. We hoped for about 15 (a number we duly exceeded). Staying within the time constraints of the MEROC event meant we could only run a single band event and this also kept it simple for our first attempt. 80m was selected because we knew we could borrow transmitters and receivers and get help if required.

As soon as we had agreed on the main details of the competition we posted information on the SADARC website, the RSGB ARDF website and sent it to anyone else we thought might be interested.

A phone call arranged a visit to Phil, MOGIE of the Oldham Club and he was very happy to lend us the transmitters that we needed for the event. We spent a valuable couple of hours with him looking at transmitter battery charging, setup, operation and installation of the antennas including a trip to the local park for a practical demo. By this time we had also spent an afternoon looking around our course and selecting sites for potential control points. With the knowledge gained about the transmitters and antennas we were a bit concerned that the transmitters wouldn't work well on our course. We had 26ft long antennas but a relatively bare landscape of sand dunes with low trees and bushes, very little above 20ft high. A review of our control points was required.

MEROC offered the use of their electronic timing equipment, as used in most orienteering competitions. We decided to use pin punches and manual timing. This meant we needed an accurate clock and to prepare recording sheets. Sample documents are available on the RSGB website.

A couple of days before the event, the locations of the Start, Finish and 5 control points were finalised. We wanted a course that would be interesting for the experienced competitors but would also encourage the beginners we were expecting. MEROC printed a supply of orienteering style maps for us with just our start and finish locations marked.

The day before the competition, we visited the area and installed and adjusted the antennas at each of the control points. This saved us a considerable amount of time the following morning.

ON THE DAY. The day arrived and the weather could not have been better in late January – bright and sunny but cold. We attracted a very wide range of entrants, most of whom were newcomers to the activity. One competitor had travelled down from Scotland, several had travelled from the Midlands and a party of Scouts travelled from Doncaster. We didn't quite run out of maps or loan receivers but it was a bit of a tight thing!

The day was a huge success and judging by the feedback we've received from those taking part we got things about right and we will be doing it again. In spite of our initial trepidation, when it came to it everyone was so helpful to us and, in particular, we would like to thank MEROC and Phil, MOGIE for their unfailing help and support.

There is definitely going to be another SADARC ARDF event. The next one will include both 80m and 2m competitions.

Event details, rules, results and lots of useful information can be obtained at www.rsgb.org/radiosport/ardf/index.php.

WEBSEARCH

MEROC: Merseyside Orienteering Club, www.meroc.co.uk/
SADARC: Southport & District Amateur Radio Club, www.sadarc.org.uk/

MAY/JUNE ARDF EVENTS

Sun 8 May	144/3.5MHz	Crompton Moor, Oldham

ARDF FESTIVAL – LUDLOW AREA. SPRING BANK HOLIDAY WEEKEND

Sat 28 May	144MHz	Brampton Bryan
Sun 29 May	3.5MHz	Mortimer Forest
Mon 30 May	FoxOring	Brockhampton
Sun 12 June	144/3.5MHz	Blackwood, Basingstoke

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100 Watts HF Transceiver – with new 0.1-2W QRP Feature!

Features

- Transmit: 1.8 - 30Mhz Amateur Bands (5MHz Band Transmit is optional with modification)
- TX: SSB, CW, AM, FM
- Power: up to 100 Watts SSB/CW/FM - 40 Watts AM
- QRP Mode: (0.1 to 2.0) Watt extra low power setting
- RX – 150-29.999Mhz (when optional 5MHz mod is enabled, RX extends to approx 35Khz-34.999MHz)
- Detachable front control panel
- Direct frequency entry via key pads
- Fight QRM with STANDARD features
  - IF shift, Narrow Filter, Noise Blanker
- Emphasis on CW operation
  - Built in electronic keyer, QSK operation, CW Narrow Filter
- World class transmit audio quality
- Enhanced Scan Modes
- Adjustable switched RF Attenuator
- 4 Stage RF pre-amplifier
- Dual VFO's - Split frequency operation
- 600 channel memories in 3 banks
- Connection for Auto tuner
- ALC for Linear amplifier
- CTCSS enabled for 10 Metre FM repeater access
- Large Cooling Fan with overheat power limiter
- SWR Protection built in
- Dimensions: 240 (w) x 94 (h) x 255 (d) mm
- Weight: 4.1 kg (approx)

A compact HF transceiver with all the facilities an experienced operator would expect as standard, Narrow filters, IF Shift, RF pre-amp, noise blanker and CW keyer with full break in. For the QRP enthusiast a special super low output power setting. With a detachable front panel, front-facing speaker and logically laid out controls, the DX-SR8 is engineered to endure heavy-duty cycles and harsh operating environments.

£599.00

Included accessories

- EMS-64 Dynamic microphone
- DC cable
- Microphone hanger EBC-7

Optional Accessories

- EDS-17 Front control remote kit (5m cable, front panel bracket, unit cover and hardware)

DX-R8E SDR capable Communications Receiver

The brand new DX-R8 from Alinco allows you to tune the world using SDR technology without breaking the budget. This full shortwave and LF coverage receiver has an IQ output which allows you to monitor AM/FM/SSB/CW signals either as a superheterodyne desktop radio or using your PC with free software (not supplied) as an SDR radio.

Enjoy DRM Hi-fi broadcasts without a converter. PC-decode of HFDL, FAX, NAVTEX, RTTY, PSK and more.

Optional Accessories

- 12V Power Supply..£14.95

£549.00

Features

- Frequency range: 150 kHz-34.999 kHz
- Modes: AM / FM / CW / USB / LSB
- Frequency stability : ± 1 p.p.m.
- Sensitivity:
  AM 0.15-1.8 MHz: 10 µV, 1.8-30 MHz: 2 µV
  FM 28-30 MHz: 0.25 µV
  SSB 0.15-1.8 MHz: 1 µV
  CW 1.8-30 MHz: 0.25 µV
- Selectivity:
  AM Narrow 2.4 kHz (-6 dB), 4.5 kHz (-60 dB)
  AM/FM 6 kHz (-6 dB), 18 kHz (-60 dB)
  SSB/CW 2.4 kHz (-6 dB), 4.5 kHz (-60 dB)
- IF-frequencies: 1st: 71.75 MHz, 2nd: 455 kHz
- Image rejection 70 dB
- Audio output: <2.0 W into 8 ohm 10% THD
- Memories: 600 channels in 3 banks
- Power requirements: 11.7 - 15.8V DC
- Current drain: 1A max
- Dimensions: 240 x 100 x 293 mm
- Weight: 4.1 kg (9 lbs)

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30 Amp switching power supply

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120W Weatherproof Automatic Antenna Tuner

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High Power 50 watts 145MHz (2m) FM/Data Mobile Transceiver
£179

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Tough, Rugged 145MHz (2m) 5 Watts Handheld

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DJ-195E
Direct Entry Keypad 145MHz (2m) 5 Watts Handheld

£129.95

DJ-V17E
Water Resistant 145MHz (2m) 5 Watts Handheld

£149

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Tri-Band 145/433/1296MHz (2m/70cms /23cms) Handheld Transceiver

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700 Channel AM/FM/WFM Wideband Handheld Scanner

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All Mode AM/FM/SSB Handheld Scanner with IQ Output

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RadCom

HF F-Layer Propagation Predictions for May 2011

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.....277	85.....5888	87.233458888	.4767777885.	..57777787..	.....7...	.....	.....
*** Asia								
Yakutsk	.....	.....	42.....3555	466655667775	...5666.....	.....	.....	.....
Tokyo	.....	.....	.....	.....	.....3..	.....	.....	.....
Singapore	.....12.	.....788.	.....564.	.....65..	.....465..	.....4...	.....	.....
Hyderabad	.....	455	3665	5653	.....345..	.....	.....	.....
Tel Aviv	92.....899	992.....8999	475....48888	..354466784.	...4...476..	.....	.....	.....
*** Oceania								
Wellington	.....	.....	.....	.....	.....	.....	.....	.....
Well (ZL) (LP)	.....	372.....84.	999.....998	889.....899	435.....76	.....6.	.....6.	.....
Perth	.....	.....565.	.....66.4	.....	.....	.....	.....	.....
Sydney	.....	.....47..	.....67..	.....33..	.....	.....	.....	.....
Melbourne (LP)	.....	3996.....	89993.....7	88985.....69	...7.....78	78	.....	.....
Honolulu	.....	.....	.....	...3.....	....4.....	.....	.....	.....
Honolulu (LP)	.....	.....	.....	.....5...	.....	.....	.....	.....
W. Samoa	.....	.....	.....	....3.....	...4555.....	.....	.....	.....
*** Africa								
Mauritius	2.....22	6.....5887	4.....8887	58773	.....675..	.....55...	.....	.....
Johanesburg	.....	443	35.....9987	.....5974.	.....	.....	.....	.....
Ibadan	1.....11	77.....566	774.....2777	.77.....7877	..763.4578..	...7....78..	.....88..	.....54..
Nairobi	4.....22	84.....788	64.....666	66.....5676	..4....5676.	.....4567..	.....75..	.....
Canary Isles	77.....377	887.....788	8875...26888	7686..568888	..7999999997	...88899998.	...4..5577..	.....55..
*** S. America								
Buenos Aires	.....	553.....3	888.....78	546.....387	664	.....55.	.....	.....
Rio de Janeiro	.....	662.....36	887.....689	65.....888	875	.....75.	.....6..	.....
Lima	.....	543.....3	8773.....68	5.45.....77	64	.....4.	.....	.....
Caracas	.....	44.....4	8884.....78	64774....588	...475545786	....5454676.	.....4..	.....
*** N. America								
Guatemala	.....	332.....	7774.....7	3..4.....36	.....4.	.....	.....	.....
New Orleans	.....	762.....	7763.....5	3.....46	.....	.....	.....	.....
Washington	32.....	775.....4	8775.....7	4...5....367	.....45.	.....	.....	.....
Quebec	61.....	773.....7	646.....57	....3..4456.	.....	.....	.....	.....
Anchorage	.....	.....	432.....3	..65..555465	.....5566.	.....	.....	.....
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 May, June and July are respectively (SIDC classical method – Waldmeier's standard) 33, 35 & 37 and (combined method) 60, 64 & 68. The provisional mean sunspot number for March 2011 was 56.2. The daily maximum / minimum numbers were 100 on 8 March and 17 on 21 March.

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 June *RadCom* is 3 May and for the July edition it's 31 May. For GB2RS, the deadline is 10am on the Tuesday for the week of broadcast.

1 SCOTLAND SOUTH & WESTERN ISLES

REGIONAL REP: LEN PAGET, GM0ONX, RM1@RSGB.ORG.UK

AYR ARG
Tom Ferguson, GM1OST, 01292 532 088
4 Visit by Dave Wilson, President of RSGB
8 Magnum Rally
10 Coylton School Radio Day
18 Video night

BORDERS ARS
Danny, 2M0CDO, 01890 882850
13 Operating in Antarctica by Ron, G3SVW/VP8LK

COCKENZIE & PORT SETON ARC
Bob, GM4UYZ, 01875 811 723
6 Normal club night
13 First 144MHz DF hunt

LIVINGSTON & DARS
Norman, 07740 946192, uk.groups.yahoo/group/ms0liv
3, 17, 30 Club evening
10 Operating evening
24 Morse code practice

LOTHIANS RS
Andy Sinclair, lrs_secretary@moosedata.com
25 DF hunt with Peter Dick, GM4DTH

WEST OF SCOTLAND (GLASGOW) ARS
Fred Coombes, 2M0BIN, 01415715512, www.wosars.org.uk
4, 11, 18, 25 Solder Group: homebrew projects & licence training
6, 13, 20, 27 Presentations, guest speakers, quiz & raffle

2 SCOTLAND NORTH & NORTHERN ISLES

REGIONAL REP: DENNY MORRISON, GM1BAN, RM2@RSGB.ORG.UK

ABERDEEN ARS
Lewis, GM4AJR, 01224 575 663, www.radioclubs.net/aars
5 Junk sale
12 Preparation for National Mills Weekend
14, 15 National Mills Weekend
19 Construction + on the air
26 Talk + field preparation

3 NORTH WEST

REGIONAL REP: KATH WILSON, M1CNY, RM3@RSGB.ORG.UK

BOLTON WIRELESS CLUB
boltonwireless@gmail.com
9 DVD: ZL8R DXpedition to the Kermadec Islands with Gerry, G1SWH
23 2m DF field event starting from the Britannia Hotel

CHESTER & DARS
Barbara Green, 07957 870770, www.chesterdars.org.uk
3 Daytime radio operations at Hanmer Arms Hotel
10 Committee meeting
17 Annual dinner
24 Radio operations at Waverton Institute

SOUTH MANCHESTER R&CC
Ron, G3SVW, 0161 969 3999
5 Audacity by Bill, G4NOL

STOCKPORT RS
Nigel Roscoe, 07973 312 699, info@g8srs.co.uk
3 PCBs talk, Pete Ridley, M1PTR

THORNTON CLEVELEYS ARS
www.tcars.org.uk
2, 30 Bank holiday - no meeting
9 Natter night / HF field day discussion
16 Test meters by Phil Rigby, G8LMF
23 Spy radio by John, G8RDP

4 NORTH EAST

REGIONAL REP: HAROLD SCRIVENS, G0UGE, RM4@RSGB.ORG.UK

DENBY DALE RC
Richard, M0RBG, 07976 220126, m0rbg@talktalk.net
4 RSGB QSL Bureau by Richard, G3UGF
14, 15 Mills on the Air weekend event - GB2TMI from Thwaite Mill
14 GX4CDD special event station for Golcar Lilly Day
18 Visit by Harold Scrivens, G0UGE, RSGB Region 4 Manager

EAST CLEVELAND ARC
Alistair, G4OLK, 01642 475 671, alistair.mackay@talk21.com
6, 13 OTA
13 Bring in something interesting
27 Radio components catalogues evening

GRIMSBY ARS
Cliff, G4YHP, 01472 328 830, g4yhp@gars.org.uk
2 RSGB 80m CC SSB
5 DF hunt, Cliff, G4YHP
11 RSGB 80m CC DATA
12 Construction night, Adrian, G1BRB
14, 15 GB4MPW Mills on the Air weekend event, Cliff, G4YHP
19 Natter night
19 RSGB 80m CC CW
26 Junk sale

HAMBLETON ARS (NORTHALLERTON)
Tony Wilson, G3MAE, 01609 881530
11 PSK31 by Ian, M3XND
25 Operating night

HORNSEA ARC
Gordon MacNaught, G3WOV, 01377 240573, gmacnaughtwov@yahoo.co.uk
2 80m CC SSB
4 Awards and DXing by G3LZQ
5 Visit to Bletchley Park
11 80m CC Data
18 Quiz night vs Scarborough ARS
19 80m CC CW
25 Clansman Radio by G8YQN

KEIGHLEY ARS
Shirley, M6SAK, 01535 652781, secretary@keighleyradio.co.uk
5 Club night
12 RAYNET training

RIPON & DARS
Rob Hall, M0RBY, 0787 608 5631, www.ripon.org.uk
5 An explanation of the solar forecast

SHEFFIELD ARC
Peter Day, G3PHO, sarc@g3pho.org.uk
2 Social evening & RSGB 80m CC
9 Grand spring junk sale
15 Castles on the Air day
16 Home construction competition
23 Windom and inverted L antennas talk by Peter, G3PHO

WAKEFIELD & DRS
Ken, 2E0SSQ, 07900 563117
5 Ticket-only barbecue
7, 14, 21, 28 Licence courses continue
12 DF antenna construction evening
19 Committee meeting and OTA
26 Talk by Geoff, G0PFH

5 WEST MIDLANDS

REGIONAL REP: VAUGHAN RAVENSCROFT, M0VRR, RM5@RSGB.ORG.UK

BROMSGROVE & DARC
Chris, M0BQE, 01905 776 869, M0BQE@hotmail.com
6 AGM
13 VHF night
20 Committee meeting
27 HF night

CHELTENHAM ARA
Derek Thom, G3NKS, 01242 241099, chairman@caranet.co.uk
19 Talk on outside broadcasting

COVENTRY ARS
John, G8SEQ, 07958 777363
6 RSGB QSL Bureau, Richard Constantine, G3UGF
13 1st round G4ZMC Portable Operating Trophy
20 Wine & cheese evening
27 Radio workshop

GLOUCESTER AR&ES
Anne, 2E1GKY, 01452 548478, daytime, www.g4aym.org.uk
2 Crickley Hill operating - bank holiday
9 HF operating
16 Mini DF hunt with a difference
23 VHF operating/workshop
30 Crickley Hill operating/get together - bank holiday

MIDLAND ARS
Norman, G8BHE, QTHR, 01214 229 787
4 Shack OTA & training classes
11 Committee meeting, training & Morse classes
15 National Vintage Communications Fair
18 Planning meeting for 80th year & training classes
25 Laptop computers & training classes

SALOP ARS
www.salop-ars.org.uk
5, 19 Natter night
12 Demo: Barrett 2040 HF Tactical Manpack xcvr, Dave, 2W0CPO
26 Fox hunt

SOUTH BIRMINGHAM RS
Don, 0121 458 1603, www.radioclubs.net/southbirmingham
2 No meeting - bank holiday
4 Lecture in the main hall
5, 12, 19, 26 Training classes with Dave Murphy, G8OWL
6, 13, 20, 27 Construction evening
9, 16 Field day planning & OTA
23 VHF field day site planning meeting and aerials
30 No meeting - bank holiday

STRATFORD UPON AVON DRS
G0CHO, 01608 664488, cousbey@theiet.org
9 Walking HF ARDF, G6MMD
23 AGM & surplus sale

TELFORD & DARS
Mike, G3JKX, 01952 299 677, mjstreetg3jkx@blueyonder.co.uk
4 Committee & HF/VHF OTA
11 Simple antennas and other ideas, G0UFE et al
18 Surplus equipment sale, G8UGL
25 2nd 2m DF hunt

6 NORTH WALES

REGIONAL REP: MARK HARPER, MW1MDH, RM6@RSGB.ORG.UK

CONWY VALLEY ARC
Wynne, GW6PMC, 01745 855 068
4 The history of radio from day one, David Roberts, GW8NZN

DRAGON ARC
Stewart Rolfe, GW0ETF, 07833 620733
2 Chat night/club matters
16 Humour in communications by Clive Collins, GW3WEQ

WREXHAM ARS
Patrick, 2W0HUU, 07947 701 927, www.wrexham-ars.co.uk
3 What have you got under your cap? by Patrick
17 Exciter/driver/amplifier by Clive Collins, GW3WEQ

7 SOUTH WALES

REGIONAL REP: JIMMY SNEDDON, MW0EQL, RM7@RSGB.ORG.UK

LLANELLI ARS
Craig, MW0MXT, 01269 840292, craig@mw0mxt.co.uk
2, 30 Closed - bank holiday
9 Club raffle
16 OTA
23 Junk sale & club raffle

8 NORTHERN IRELAND

REGIONAL REP: PETER LOWRIE, MI5JYK, RM8@RSGB.ORG.UK

BANGOR & DARC
Mike, GI4XSF, 028 4277 2383
12 Testing the performance of vertical and cobweb antennas

GREENISLAND ELECTRONICS AMATEUR RADIO SOCIETY
Peter Lowrie, MI5JYK, mi5jyk@rsgb.org.uk
9 OTA 2m

9 LONDON & THAMES VALLEY

REGIONAL REP: ALISON JOHNSTON, G8ROG, RM9@RSGB.ORG.UK

BROMLEY & DARS
Andy, G4WGZ, 01689 878089
17 The work of the Examination Committee

BURNHAM BEECHES RC
Dave, G4XDU, 01628 625 720
2 Club Contest 7 till 9pm
16 Colour - G1LIG

CHESHAM & DARS
Terry, G0VFW, 01442 831 491,
cdars.club@ntlworld.com
4 General meeting + CW training session
11 Members' forum - bring radio equipment
15 Special event station - Lacey Green Windmill
18 Icom HF transceiver design, Ian, G0RTF
25 Getting started on the air, computer interfacing & CW practice

COULSDON ATS
Steve Beal, G3WZK,
secretary@catsradio.org
9 Talk on motorcycle trip to Himalayas by M0NAT

CRAY VALLEY RS
Bob, M0MCV,
020 8265 7735 after 8pm
5 Demo & OTA, club radios, Guy, G0UKN; overview of Yahoo groups, Kevin, M0KSJ
19 Simple data comms pt 2, Richard, G8ITB

DORKING & DRS
Garth, G3NPC, 01737 359472,
www.ddrs.org.uk
24 Personal Challenge Evening, David, M0SXD

ECHELFORD ARS
John, G4GSC, 01784 451898,
jho_g4gsc@talktalk.net
12 3D TV in action - Mike Cox
26 Bring & buy, CW practice, natter night + forthcoming field day, Olof, G0CKV

EDGWARE & DRS
Mike, G4RNW, 020 8950 0658,
michael.stewart5@ntlworld.com
12 Sundials, Julian, G4ZOD
26 Constructors Cup competition
12 Police number-plate recognition system by Paul Palmer, Surrey Police

READING & DARC
Pete, G8FRC, 01189 695 697
26 Son et Lumiere by Dr Graeme Creasey

SHEFFORD & DARS
David, G8UOD, 01234 742 757,
www.sadars.co.uk
5 Closed for local elections
12 The FUNcube project & other sat news, Graham, G3VZV
19 Mobile 2m DF hunt
26 Clansman military radio by Don, G4LOO

SOUTHGATE ARC
David Sharp, M0XDS,
david.sharp1@tesco.net
11 Computer clinic, Keith, G8RPA

SURREY RADIO CONTACT CLUB
John, G3MCX, 020 8688 3322,
john.g3mcx@btinternet.com
9 Construction evening
23 Fix-it, advice, chinwag & move-it-on

SUTTON & CHEAM RS
John, G0BWV, 020 8644 9945,
info@scrs.org.uk
19 AGM

VERULAM ARC
Tony, 2E0WAP, 01727 853087
3 Committee Meeting 8.00pm
5 Social with GB3VH at White Horse, Sandridge
17 50th anniversary plans, homebrew bring & show, surplus kit swap, Aboyne Lodge

WEY VALLEY ARG
www.weyvalleyarg.org.uk
6 Bletchley Park, Ray Goff, G4FON
20 The Hernia Cup, interclub quiz

WIMBLEDON & DARS
Andrew Maish, G4ADM,
020 8335 3434
13 OTA & Foundation training
27 Valve Museum talk; audio amps demo by Allan Wyatt

10 SOUTH & SOUTH EAST

REGIONAL REP: GAVIN KEEGAN, G6DGK, RM10@RSGB.ORG.UK

BREDE STEAM ARS
Steve, 01424 720815,
M0NUC@aol.com
7, 10, 17, 24, 31 At the shack

HARWELL ARS
Malcolm, G8NRP,
01235 524844, info@g3pia.org.uk
10 Bletchley Park, Ray, G4FON
24 Shack activity night

HASTINGS E&RC
Gordon, 01424 431 909,
www.herc.uk.net
25 Construction evening

HORSHAM ARC
www.harc.org.uk
5 Software defined radio, Chris Smith, G4NUX
8 Sunday morning fox hunt
12 Social, The Royal Oak, Friday Street, Rusper

MID-SUSSEX ARS
Peter, G4AKG, 01444 239371
6, 20 Radio night & table top sale
13 Radio night
27 Talk on trams by Ian Gledhill

SOUTHDOWN ARS
John, G3DQY, 01424 424 319
4 Operating at Hailsham shack
9 Talk on time by Tony, G4ZQB, Chaseley
5 DF contest
12 Activity night
19 Activity night & prep for 144MHz contest
26 AGM

TROWBRIDGE & DARC
Ian, G0GRI,
01225 864 698, E/W
4 SWLing broadcast stations by Nick Dewhurst
18 Natter night

WORTHING & DARC
Phil, G4UDU, 01903 816684
1 Breakfast meeting in Goring cafe
4 DVD evening
7 GB2WM Worthing Museum on the air
11 Discussion evening
18 50 years of the Bluebell Railway, Chris, G4ZCS
25 Dayton Hamvention 2011 Report, Phil, G4UDU

11 SOUTH WEST & CHANNEL ISLANDS

REGIONAL REP: PAM HELLIWELL, G7SME, RM11@RSGB.ORG.UK

BLACKMOOR VALE ARS
Tony, G0GFL, 01258 860741,
www.radioclubs.net/bvars
3 VHF evening & prep for Mills weekend
7, 8 Mills weekend, Sturminster Newton Mill
10 Video: Bath Buildathon
17 HF evening

BRISTOL RSGB GROUP
Robin, G3TKF, 01225 420442
30 The GB3WX crossband repeater, Dave Boniface, G3ZXX

CORNISH RADIO AMATEUR CLUB
Steve, G7VOH, 01209 844939,
G7VOH@btinternet.com
3 Committee meeting
4 Main meeting at St Agnes Coast Watch Station

EXETER ARS
Nick, 01363 775756,
info@exeterars.co.uk
9 Club night
23 Club night & CW practice

MID SOMERSET ARC
Nick, M6NJB, 01749 346320,
nick.bennett@midsarc.org.uk
10 Microwave homebrewing, David Edwards, G8BFV

NORTH BRISTOL ARC
Dick, 01454 218362,
www.nbarc.org.uk
6 Shack Ergonomics - fitting it all in!
13 Operating evening
20 Committee meeting
27 Antenna inspection & repairs

SOUTH BRISTOL ARC
Andrew Jenner, G7KNA,
07838 695471
5 Committee meeting
12 Spring table top sale
19 VHF NFD training
26 OTA

TAUNTON & DARC
William, G3WNI, 01823 666 234,
g3wni@btinternet.com
4 The Thermionic Valve (pt 2), Mike Coles, M0CIE
18 Committee meeting

THORNBURY & SOUTH GLOUCESTERSHIRE ARC
Tony, G0WMB, 01454 417048,
tonytsgarc@btinternet.com
4 WAB, Stan, G0RYM
11, 25 OTAt
18 Video night

TORBAY ARS
Dave, G6FSP, g6fsp@tars.org.uk
6, 13, 20 Natter night
27 90/10 Auction night
28, 29 GB6GEO GEO Parks from caves in Torbay

WEST DEVON RC
Jules Cuddy, M1AGY, 01752 291588
10 Technical night. Radio repair and servicing
24 General natter night and open evening with tea and biccies

12 EAST & EAST ANGLIA

REGIONAL REP: NEIL WHITESIDE, G4HUN, RM12@RSGB.ORG.UK

BITTERN DX GROUP
Linda, G0AJJ, 01692 404154,
secretary@bittern-dxers.org.uk
12 Informal meeting, Pinewood Park
14, 15 Mills OTA weekend from Weybourne Mill, GB1WM
26 Monthly meeting at Pinewood Park

BRAINTREE & DARS
John, M5AJB, 01787 460 947
2 Equipment testing pt 2 & Mills weekend planning
16 AGM

CAMBRIDGE & DARC
Ron, G3KBR, 01223 501712
13 Soft Rock II Lite SDR, Mike, M0BLP
27 Kite and Pole photography, Clive, M5CHH

COALHOUSE FORT ARS
John Parker,
coalhouserad1o@yahoo.com
2, 29 Open day
30 Bank holiday open day

COLCHESTER RADIO AMATEURS
Kevan, 2E0WMG, 07766 543784,
kevan2e0wmg@live.co.uk
19 80m CC practical introduction

EAST KENT RS
Karl Davies, M1DFM, 01227 710120,
karl.davies@talk21.com
7, 8 Windmills on the Air special event weekend
9 WW2 spy & clandestine radios by Ian, G3ROO
23 Introduction to frequency selective surfaces by Paul, G0ILO

FELIXTOWE & DARS
Paul, G4YQC, pjw@btinternet.com
2, 30 Bank holiday, no meeting
8 National Mills Day, SES GB2WTM, Woodbridge Tide Mill
16 ESWR planning

HARWICH ARIG
Kevan, 2E0WMG, 07766 543784
kevan2e0wmg@live.co.uk
11 Talk on RSGB matters by RSGB Essex DRM, Mark Sanderson

HAVERING & DARC
John, M0UKD, 07890 222111,
john@m0ukd.com
4 HMS KING GEORGE V by Bart Kent
11, 25 Informal club evening
18 RX building blocks pt 2 by Ollie Tillett, G3TPJ

KING'S LYNN ARC
Ray, G3RSV,
ral-g3rsv@supanet.com,
www.klarc.org.uk
5, 12, 19, 26 Club night and 2m club net

NORFOLK ARC
Chris Danby, G0DWV,
01603 898678,
cmdanby@btinternet.com
2 RSGB CC SSB contest
4 DSP noise cancellation by Graham Somerville, M3ZGS from bhi
11 Informal, construction, shack, brightsparks, RSGB CC Data contest
18 Baldock Operations Room – what they do there, Ken Cheetham, G4RWD
19 RSGB CC CW contest
25 Norfolk Repeater Group AGM

SOUTH ESSEX ARS
Norman, M0FZW, 01268 692776,
secretary@southessex-ars.co.uk
11 My SOTA experiences, Dave, G4UVJ
14 Mills on the Air, Rayleigh Windmill, GB2RWM

WEST KENT ARS
Les, G6UBM,
westkentars@googlemail.com
9 Video of G3BNE's life in electronics & amateur radio

Continued on page 86

FREE MEMBERS' ADS
Charges are waived for Members' Ads submitted by e-mail to memads@rsgb.org.uk. One ad per member per month; other important terms & conditions apply (see grey box on March page 89 or e-mail memads@rsgb.org.uk for details).

FOR SALE

3 x MOTOROLA MT6000E UHF rpts, simplex, charger, £40 each. PFX UHF simplex, rpts, charger £20. Motorola HT-600 70cm, all rpts, simp, £20. Motorola GP360, £60. Motorola GM360 VHF, £60. All working with mic & power leads. Alan, G8SSL, 07976 664632 (Nottingham)

ALINCO DJ-175E 2m handheld. Bought new £149 April 2009. Little used, boxed, £79. MFJ-259B antenna analyser, bought new £243 March 2010, boxed, £139. John, M0IIE, 01652 632038 (N Lincs).

ALTRON 3 SECTION triangular mast with head, luffing winches, base and wall mounted, £150. Dennis, G3KZN, 01474 355736 (Gravesend).

CUSHCRAFT A3S Yagi 20/15/10m. Never assembled, for sale at £315 (half current retail price). Collect only from Telford, Shropshire. Bill, G8BKF, 01952 255355, bill_duckett@blueyonder.co.uk.

FT-211RH, needs updating channels. PWO also Diawa NS660P, faulty. Both free if you collect. John Garner, G3KEC, 01752 812904, taipan@talktalk.net (Torpoint, Cornwall).

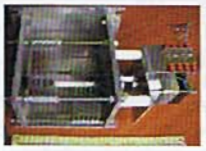
ICOM IC-756 PRO III as new, light use only, boxed, £1500. Icom IC-7000, as new, purchased last July, only used to set up audio with modified microphone, change in plans so for sale, £850. C J Lambert, G3TA, 01285 821571 (Cirencester).

INSTRUMENT / FLIGHT CASES. FSDXA is selling a large number of instrument (flight) cases. Proceeds will go to support the T32C DXpedition. For details go to the T32C online shop, www.t32c.com. Any questions to Neville, G3NUG, 01568 750560, g3nug@btinternet.com (cases are at Portsmouth).

KENWOOD PS-430 power supply, original packing and in good condition, £75. Buyer collects or pays carriage. John Croxford, G3OIC, 01564 826124, John@g3oic.co.uk (Birmingham).

KENWOOD TS-2000E, very little use, immaculate, almost new, boxed with manuals, fist mic, DC cable and unused rear DIN connectors. Owned since new. £1100. Buyer to collect please, or by arrangement. Hugh, M0ACF, 01480 394679, m0acf.philps@ntlworld.com (St Ives, Cambs).

MAGNETIC LOOP ANTENNA model AMA5. Diameter 1.75m. Loop comes in two halves. Freq range 80+40+30 metres. Power rating 200 watts. Cost new £299.95. Can be used outside but currently sited in loft. £85, buyer collects. Pete Windle, G8VG, 01428 725144 (Liphook, Hants).



MOTORISED ATU CAPACITOR. 250pF, 5kV motorised capacitor complete with reduction gear and 220V reversible motor. Ideal for remote tuning of loop antenna / motorised ATU etc £30 + P&P. Adrian, G4UVZ, 01823 421751, adrianwhatmore248@btinternet.com (Taunton).

ONE MOBILE lighting tower, now radio amateur, complete mobile set up with cage for rotator, Kabuto engine with new alternator 230V 7kVA, 30ft mast, £3800. Versatower heavy duty 60ft mobile tower, new cables, integral cage, ready to go, £3200. Trev, G2KF, 07974 892179 (North Cornwall).

SGC-230 SMARTUNER, 200W PEP, in good condition with homebrew PSU/control unit. £80, cash only, buyer collects. Better RF.com I-MATE tune/play pre-recorded message for Icom 7000 series transceivers, new, £40 + postage. Dave, G3MWV, 01263 512872 (Cromer, Norfolk).

SOTA BEAM, as new, 3/5 ele, 2m, 10.5dB, with all fittings, plus telescopic fibre pole, £50 ono. ZL Special, as new, 7-ele beam, 70cm, 11.5dB, £30 ono. 6m Trident 3-ele beam, £60 ono. ISOTERM PSK-31-RL for Yaesu mark 5, offers. F Sadler, M0CVS, 01629 823025 (Matlock, Derbyshire).

TS-940S, excellent condx, requires new clock battery, £500. TL-922, hardly used, slight fault, £450. SB-200 power supply, fault, £200. Diamond GZV4000 power supply with speaker, £80. Buyer collects. Duncan Menzies, GM3GNE, 0141 639 2173 (Glasgow).

VERSATOWER BP45 base plate version with 3 x 16ft sections. Has lower height, complete with heavy duty head unit, base bolts, Fulton 1500 autobrake winches and 16ft stainless steel extension mast, very good condition, 8 years old, £1000. Vic, G3PJK, 01772 813857 (Preston, Lancs).

YAESU FRG-7, 8-pole SSB filter, excellent, £75+P&P. XF-115C 500Hz CW filter, suit FT-817, new, £55 inc post. MFJ-189, 9T Walkabout antenna, £45 inc post. Collectors keys, Kent Twin Paddle, Vibroplex Original Bug, Marconi 365A (Rare), need cleaning, £80/lot plus carr. Bob, G3IXZ, 01568 797868, g3ixz@btinternet.com (Hereford).

YAESU FT-920 A/F. HF/6m, DSP, 100W, with FM board, AM filter, mic, manual, boxed, non smoker, mint condx, £525. J G Meddings, G4DGM, 01902 340211 (Wolverhampton).

13 EAST MIDLANDS

REGIONAL REP: JIM STEVENSON, G0EJQ, RM13@RSGB.ORG.UK

DERBY & DARS
Richard Buckby, radio@dadars.org.uk
3 Junk sale
10 Committee meeting
17 Video show
24 Cromford Canal illustrated talk by Patrick Morriss
31 OTA

EAGLE RG
Terry, G0SWS, 01507 478590
10 Hinterland - short film by Melisa Bliss

FRISKNEY AND EAST LINCOLNSHIRE COMMS CLUB
Chris, M0MFP, 01507 442240
3 Club quiz pt 2 by Ron, G7ZRT

HINCKLEY ARS
John, M0JAV, 07836 731544, m0jav@lowgables.co.uk
4 Social evening
11 Workshop
18 Club member mini talks
25 Field day preparations

LINCOLN SHORT-WAVE CLUB
Pam Rose, G4STO, 01427 788356, pamelagrose@tiscali.co.uk
2 GB2CWF East Kirkby OTA
4 G5FZ OTA + natter night
7, 14, 21, 28 Saturday morning in the shack
11 WABing by Dave, G4IAR
14, 15, 28, 30 GB2CWF East Kirkby OTA, Mills OTA at Ellis Mill
16 Committee meeting + G5FZ OTA to commemorate Guy Gibson and 617 SQD RAF taking off from RAF Scampton
18 Formal meeting + BBQ
21, 22 144MHz Post Codes Contest at the portable site
25 The RSGB QSL Bureau by Richard Constantine

LOUGHBOROUGH & DARC
Chris, G1ETZ, 01509 504 319
3 Open forum - Meters, type and use
10 2m & 70cm operating from the club
17 DF 2m - 2nd year of new rules
24 Software defined radio talk, John, M0JAV
31 Practical evening

NUNSFIELD HOUSE ARG
Ken Frankcom, G3OCA, 01332 720976
6 Windows 7 forum
13 Photo competition - plants
20 Bring your camera - Dave Barker
27 Future club programme, please bring ideas with you

SOUTH KESTEVEN AMATEUR RADIO SOCIETY
Nigel, M0CVO, 01476 402550
4 Informal evening
18 Talk on back garden aerials

WELLAND VALLEY ARS
Peter D Rivers, G4XEX, 01858 432105, g4xex@fsmail.net
16 Visit to the Kettering Club

NEW

RSGB shop

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Britain's Lost Cold War Strike Aircraft

By Tim McLelland

The TSR2 is probably the most controversial British aircraft designs of all time and an aircraft whose cancellation still generates comment over 40 years after its abandonment. Surrounded by rumour, speculation and talk of American efforts to shut the project in favour of the General Dynamics F-111, this project was certainly hampered by political indecisiveness, industrial mismanagement and confused defence planning. With hints of today's defence situation this book provides a detailed view of this magnificent aircraft.

Size 228x306mm, 128 pages, ISBN 9781-9065-3719-7

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By Norman Freeman

This is the story of a radio officer's first transatlantic voyage on a laxly run, down-at-heel cargo vessel in the early 60s. An amusing, entertaining and poignant memoir of what it was like to be on board and the world of shipping where cargos were loaded by hand and weeks passed in port whilst this took place. This book is a great read and recommended for those looking for story with a little radio but far more in the way of laughs.

Size 198x128mm, 240 pages, ISBN 9780-7110-3532-4

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The Electronic Imaging of Baird Television

By Dr. Douglas Brown

Written Dr. Douglas Brown a leading authority on TV *Images Across Space* provides a unique and fascinating insight into the pioneers of television and in particular to Scottish inventor John Logie Baird. From the initial concept of television though to the patent for 3D TV that far surpasses that offered to modern consumers, this book gives a fascinating insight into the man and his developments. Lavishly illustrated, *Images Across Space* not only provides the background to the development of TV but the story of the Baird Television Ltd. up to its demise and its continuation as Cinema Television Ltd.

There are many previously unpublished photographs that illustrate the level of sophistication practiced by the Baird Television Ltd. and revealing photographs of the Baird cathode-ray tube facility, laboratories in the Crystal Palace and Rotunda outbuilding, equipment installed at Alexandra Palace. The book reveals the implications of the devastating fire that spectacularly razed the Crystal Palace to the ground in 1936, taking with it the Baird facilities and an analysis of the television systems on trial for the BBC at Alexandra Palace. Readers will find this book a mine of fascinating material with even a comprehensive listing of the British patents of Baird and his associates at Baird/Cinema Television.

John Logie Baird is remembered as the inventor of the first working system of television but *Images Across Space* shows that there was much more to the story. A rare book of technical detail and an extraordinary story - thoroughly recommended reading.

Size 176x250mm, 192 pages, ISBN 9781-8742-8921-0

Non Members' Price £19.99 RSGB Members' Price £14.99

POST & PACKING FREE

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Tel: 01234 832 700 Fax: 01234 831 496

Radio Society of Great Britain

www.rsgbshop.org

WANTED

1 x MC1530P and 1 or 2 MC1590G. Vintage 1974 parts for a W7ZOI 2 band transceiver QRP project. John Petrie, GM3FDN, 01324 483647 (Grangemouth, Stirlingshire).

A GOOD CONDITION TCS transmitter and receiver. Swap for an HRO 5T. Two owners from WW2. Table top cabinet, dog house PSU (AC mains). Original wooden coil rack and all its 10 coils. Beautiful. The HRO is not for sale. Geoff, G3YVF, 01634 891017 (Chatham).

COLLINS A-LINE AND S-LINE equipment etc to complete or improve my own personal collection. A good home will be provided. Can arrange collection. Steve Westell, G3YFG, 07793 665000, g3yfg@btconnect.com (Clitheroe).

COLLINS R392/URR military radio. Any condition considered. Ken, M0KNT, 01483563863, kennethgray@btinternet.com (Guildford).

LABGEAR LG-300 transmitter and modulator unit, working or in need of repair. KW/Geloso amateur band receive converter IF 1.5MHz or other IF. Will the person who called me in September re Geloso Converter please call me again. Mike Giddings, G3XLB, 0208 776 7791 (Sydenham).

SPARK KEY WANTED please. Looking for a Marconi Morse key 'Marconi's Wireless Telegraph Co Ltd', or any interesting Morse key from the spark era or perhaps more recent wireless. John, G0RDO, 01626 206090, john@morsemad.com (Newton Abbot).

USED OUTBACKER HF mobile whip in decent condition or any similar antenna. Dave Lindsay, GM4HQF, 01224 646540, gm4hqf@btinternet.com (Aberdeen).

VALVES WANTED. 6V6, 6SL7GT, 6L6. Also a pair of 572Bs. Bruce, G3WCE, 01692 538794, g3wce@grimblepoos.co.uk [North Walsham].

WANTED for repair of Wayne Kerr frequency response analyser RA200: 10kV EHT PSU module. Peter Lewis, G3RQX, 01902 332515 (QTHR, Wolverhampton).

EXCHANGE

KENWOOD TS2000 100W transceiver for an HF communications receiver, preferably with DSP etc. Richard, M3HDL, 0774 226 3834 (Kirkby-in-Ashfield).

SPECIAL EVENT STATIONS FOR MAY 2011

These callsigns are valid for use from the date given, but the period of operation may vary from 1 - 28 days before or after the event date. Operating details are provided in an abbreviated form as follows: T = 160m; L = 80 or 40m; H = HF bands (30 - 10m); V = 6 and/or 4m; 2 = 2m; 7 = 70cm; S = satellite and P = packet. Details published here are kindly provided by Ofcom.

Date	Callsign	Phonetics	Location	Bands	Keeper
01/05/2011	GB5SM	Stock Windmill	Essex	TLHV27	M0XAP
02/05/2011	GB1AVR	Ackworth Vintage Rally	Ackworth	LH2	G0BPK
08/05/2011	GB1WM	Weybourne Mill	Weybourne	TLH27	G0GFQ
09/05/2011	GB2SS	Saltash Scouts	Bodmin	LHV27	M1BZK
13/05/2011	GB0HI	Holy Island	Holy Island	LH	M0TNX
	GB2WWM	Wymondham WindMill	Leicester	LHV27	G0IJM
	GB0AVF	Awbridge Village Fete	Awbridge	H27	G0RLA
14/05/2011	GB2WMS	Water Mill Shepshed	Shepshed	L27	G1ETZ
	GB0WMH	Windmill Hill	Hailsham	L2	M0RJO
	GB2LST	Lee Shutter Telegraph	Devon	LHV27	M0XIG
	GB2HI	Hilbre Island	Hilbre Island	LH	M0TNX
	GB0KLM	Killhope Lead Museum	Co.Durham	TLH2	G0OCB
	GB2TMI	Thwaite Mills Island	Leeds	TLVH27	G3SDY
	GB6MW	Meopham Windmill	Meopham	LHV2	M0KSJ
	GB0BM	Burcott Mill	Somerset	LH2	M0ALZ
	GB2BHM	Benholm Mill	Montrose Angus	TLHV2	GM4AJR
	GB0OHM	Old Herne Mill	Herne	LHV27	M1DFM
15/05/2011	GB0ETM	Eling Tide Mill	Hampshire	TLHV27	G4YVY
	GB1OJC	Jurassic Coast	Devon	TLHV27	M1OOO
24/05/2011	GB1LC	Laindon Cubs	Southend	LHV27	G1KOT
27/05/2011	GB2MAC	Marble Arch Caves	County Fermanagh	TLHV27	GI6PYP
	GB4FOP	Friends Of Pease	Pontefract	LH2	G0BPK
28/05/2011	GB1KLD	Kilda	St Kilda Island	TLHV27	M0NED
30/05/2011	GB4AFR	Armed Forces Remembered	Wiltshire, CHIPPENHAM	TLHV2	GW4XKE
	GB25AFS	Air Formation Signals	Wiltshire	TLHV2	GW4XKE

RALLIES & EVENTS

Members of the RSGB Regional Team will be present with a bookstall at the rallies this month marked with an RSGB diamond.

RSGB **1 MAY – DAMBUSTERS HAMFEST –** Thorpe Camp Visitor Centre, Coningsby, Lincs LN4 4PE. TI S22, GB3FR, £3, under 12 free (incl traders and their companions), free parking, Pitches free but size is limited if not pre-booked. RAF heritage centre on site. Overnight camping. C, OT 10.00, RSGB bookstall. tcrm@hotmail.co.uk [www.qsl.net/gb4tcm/dambusters.html].

RSGB **2 MAY (BANK HOLIDAY MONDAY) – DARTMOOR RADIO RALLY –** Tavistock College, Crowndale Rd, Tavistock, Devon PL19 8DD. OT 1015/1030, TS, B&B, TI S22 (V44), CP, DF, C, FAM. Peter, M1AYI, 01822 860277.

RSGB **8 MAY – MAGNUM RADIO RALLY –** Magnum Leisure Centre, Harbourside, Irvine, Ayrshire, KA12 8PP. Free CP, OT 10.30, £4. TS, B&B, SIG, WIN, C. Details Helen, MM0HLN, 0787 332 7597. [www.magnumrally.co.uk].

15 MAY – NATIONAL VINTAGE COMMUNICATIONS FAIR – Warwickshire Exhibition Centre, The Fosse, Fosse Way, Leamington Spa CV31 1XN. Free CP, OT 10.00, £6. TS, SIG, C. Details: info@nvcf.org.uk [www.nvcf.org.uk/index.htm].

RSGB **20-22 MAY – DAYTON HAMVENTION® –** Hara Arena, Dayton, Ohio, USA. 3 day pass $20/$25 on door. CP, TS, FM, SIG, DF, LEC, C, CBS, WIN [www.hamvention.org].

22 MAY – DUNSTABLE DOWNS RC NATIONAL AMATEUR RADIO CAR BOOT SALE – Stockwood Park, Luton LU1 5NR (M1 J10 then yellow DDRC signs). TI S22 (V44), CP £2, OT 9.00, C. [www.ddrcbootsale.org].

RSGB **22 MAY – 1st LEICESTER RS GRAND CLEARANCE AND BRING & BUY –** Leicester Radio Society HQ, Groby Road, Leicester. Approximately £2000 of donated radio equipment for disposal, OT 10am – 4pm, B&B, CBS (limited space, register in advance), TS, C. [http://g3lrs.co.uk].

22 MAY – MID ULSTER AMATEUR RADIO CLUB RALLY AND BOOT SALE – Drumgor Youth Centre, Drumgor Heights, Craigavon, BT65 4AP. OT 11am, CP, TI, B&B. [www.muarc.com].

5 JUNE – NEWHAVEN FORT AMATEUR RADIO GROUP RALLY AND FORT OPEN DAY – Newhaven Fort, East Sussex, near the southern end of the A26. CP, £2, OT 10.30, CBS, DF, FAM, CS, SIG, C. Sellers tables £7 each, set up 9am. Eddie, G0ECW on 01273 300772, eddie@zamboodle.demon.co.uk.

This list shows all rallies and events we are aware of as at 5 April 2011. If your rally or event is not listed, TELL US ABOUT IT! Send an e-mail to GB2RS@RSGB.org.uk and your event will appear here and on GB2RS. It's free! Guidelines for submissions: Please let us know your event details as early as possible. If you submit by e-mail (to GB2RS@RSGB.org.uk) then we suggest you set your e-mail program to request a 'read' receipt so you can be sure we've seen the details.

TI Talk-In; CP Car Park; £ Admission; OT Opening time - time for disabled visitors appears first, (eg 10.30/11am); TS Trade Stands; FM Flea Market; CBS Car Boot Sale; B&B Bring and Buy; A Auction; SIG Special Interest Groups; MT Morse tests; MA Foundation Morse Assessments; LB Licensed Bar; C Catering; DF Disabled Facilities; WIN prize draw, raffle; LEC Lectures/Seminars; FAM Family attractions; CS Camp Site.

SILENT KEYS

We regret to record the passing of the following members:

Mr A E Green, M0NRB	24/3/2011
Mr J R Mackie, GM0REY	15/2/2011
Mr R A Denton, G1HKD	17/3/2011
Mr T Iwama, JR1TRE	20/1/2011
Mr E E Gill, 2E1ASP	17/3/2011
Mr B Bush, G3IVM	22/7/2010
Mr D T Hayter, G3JHM	9/3/2011
Mr C Urquhart, GM3JUD	2/10/2010
Mr D H M Noble, GM3NCS	12/2010
Mr R T Laing, G3TXT	31/1/2011
Mr J K Thompson, GI3VQ	
Mr R J Trebilcock, GW3ZCF	4/3/2011
Mr W F Mills, G4AYW	19/3/2011
Mr B G Capper, G4DBC	22/2/2011
Mr R Bradley, G4KGD	30/3/2011
Mr R D Williams, G4LVQ	
Mr S J Cox, G4MXG	23/1/2011
Dr T A Appleby, 5B4AGP	2010
Mr P Johnstone, G6RAU	30/1/2011
Mr L Viberg, SM7KHF	
Mr A E Hogg, G7MWY	2011
Mr W J Williams, G8CLS	2/3/2011
Mr J N E Rogers, G8RJH	13/3/2011
Mr B W Wynn, G8TB	24/3/2011

5 JUNE – SPALDING & DARS ANNUAL RALLY

5 JUNE – 15TH RED ROSE QRP FESTIVAL

12 JUNE – 10th JUNCTION 28 QRP RALLY

12 JUNE – EAST SUFFOLK WIRELESS REVIVAL (Ipswich Radio Rally)

19 JUNE – NEWBURY RADIO RALLY AND BOOT SALE

24-26 JUNE – HAMTRONIC SHOW, FRIEDRICHSHAFEN

25 JUNE – AMATEUR RADIO JUMBLE

26 JUNE – WEST OF ENGLAND RADIO RALLY

2 JULY – BANGOR AND DISTRICT ARS RALLY

3 JULY – BARFORD NORFOLK RADIO RALLY

2 JULY – 2nd STOCKPORT RALLY (formerly EDDISH RALLY)

10 JULY – CORNISH RAC 48th MOBILE RALLY

17 JULY – MCMICHAEL RALLY AND BOOT SALE

17 JULY – QRP IN THE COUNTRY

30-31 JULY – AMSAT-UK SPACE COLLOQUIUM

31 JULY – HORNCASTLE SUMMER RALLY

31 JULY – COLCHESTER RALLY – CANCELLED

7 AUGUST – KING'S LYNN ARC RALLY & CAR BOOT

7 AUGUST – LORN RADIO AMATEUR RALLY

12 AUGUST – COCKENZIE & PORT SETON ARC 18th ANNUAL MINI-RALLY NIGHT

14 AUGUST – FLIGHT REFUELLING ARS HAMFEST

14 AUGUST – FRISKNEY & EAST LINCOLNSHIRE COMMUNICATIONS CLUB RALLY

21 AUGUST – RUGBY (PRINCETHORPE) ANNUAL RADIO RALLY

29 AUGUST (Bank Holiday Monday) – HUNTINGDONSHIRE ARS RALLY

4 SEPTEMBER – TELFORD HAMFEST

18 SEPTEMBER – 21st GREAT NORTHERN HAMFEST

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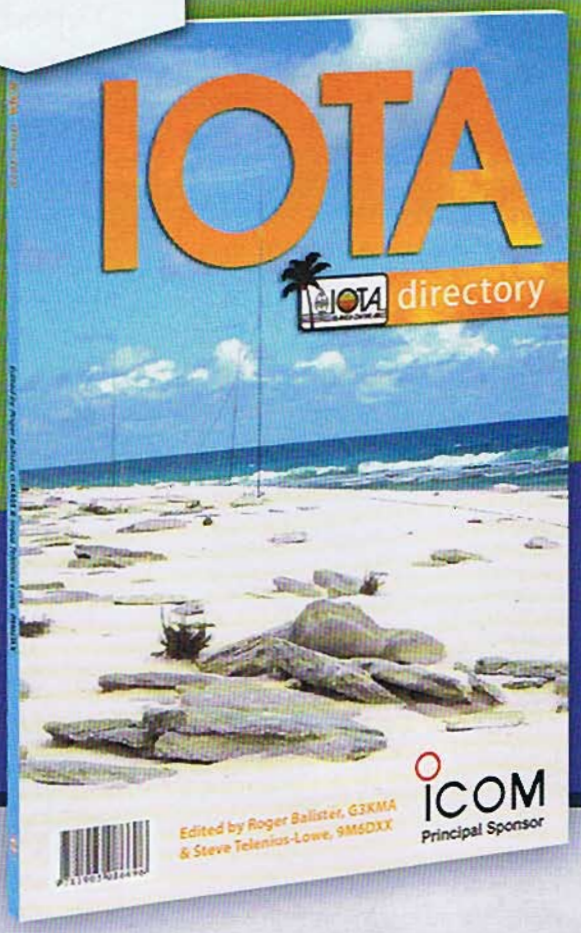

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Edited by Roger Balister, G3KMA & Steve Telenius-Lowe, 9M6DXX

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COLLATERAL DAMAGE

Clifford Major, AB2KV

I was interested in your article on sun bounce (*RadCom*, April issue, page 8). I think I may have caught one of the reflections on my long wire antenna. Since I was QRP, the antenna was almost empty so there was plenty of room left for the surge to come down the line and burn the coax. As a matter of fact, the coax was burned through at a point 23cm from the antenna. Likely the leading edge of the wave was unusually sharp. I was unable to repair it right away because it was a dark and stormy night. All my antennas are now coated with sun block SPF 50. It is unlikely there will be any more problems.

EMC ISSUES

Derek Beales, G3MWO

Regarding the letter on EMC in the latest *RadCom* by Roger Bunny. I have had trouble with interference radiation from a BT Home Hub Router. Investigation showed the problem to be not the Router itself but the power supply. This PSU is a poorly filtered switch mode unit and gives a signal of 20dB over S9 on 160m and not much better on 80m. Replacing this PSU with a conventional 15 volt 1 amp transformer/rectifier PSU totally cures the problem. This might be more difficult if it is the neighbour's equipment!

It is a total disgrace that BT should put such inadequately designed equipment on the market.

MAGIC AERIALS

Vic Ludlow, G3JLZ

Further to the letter from Alan, G8HCJ, in the March 2011 *RadCom*, soon after WWII, I well remember the chap who had a costermonger's barrow on the East Lane Market, Walworth on a Sunday. He had a domestic radio, complete with 2V accumulator and 120V battery, and a number of 'surplus' block capacitors that had a small length of wire soldered to each terminal.

While giving out the spiel, the chap would plug one wire from a capacitor into the radio, while holding the capacitor in his hand. The radio would 'burst into life'! The 'salesman' was, of course, effectively acting as the aerial.

I can't remember the asking price, but from my school boy's pocket money I couldn't have afforded one in any case.

MORSE CODE EXAMINED

Roy Walker G0TAK / 2E1RAF

Being a long time proponent of CW I very much enjoyed the article by David Bird, G6EJD in the January 2011 edition of *RadCom*. I do however think that, perhaps as a product of editorial constraints, there has been an over simplification of the technical explanation leading to a fundamental error in the route from alphabet to the binary tree for Morse and the Huffman encoding.

As I understand it, Morse first became interested in sending messages by coded electrical systems in 1932 when he was returning to the United States from Europe. From that time until 1837 he and his team developed from a purely numerical code system to an alphabetical system which Morse patented and demonstrated on 24th January 1838. That code was significantly different from the eventually developed 'American' Morse code (1844) that subsequently evolved into the variation known as European code and eventually adopted as the (International) Morse code introduced in 1851.

	1837 1837 code	1844 American code	1851 International code
A	...	.-	.-
B	.. ..	-...	-...
C	. ..	. ..	-.-.
D	... .	-..	-..
E	.	.	.
F	. ...	.-.	..-.
G	.. .	--.	--.
H	....	....	....
I	.-	..	..
J	.. .	--.	.---
K	-.-	-.-	-.-
L	-----*	-----*	.-..
M	-..	--	--
N	-.	-.	-.
O	..	. .	---
P	.....	.....	.--.
Q	..-.	..-.	--.-
R	. ...	. ..	.-.
S	.-.	...	...
T	--.	-	-
U	.--	..-	..-
V	-	...-	...-
W	..-	.--	.--
X	- -#	.-..	-..-
Y	.-	.. ..	-.--
Z	.-.	... .	--..

Note * In the1837 and 1844 code the letter 'L' is a long dash of 5 dashes length without spaces between the individual dashes. # X in the 1837 code was dash space dash with an exaggerated space.

It would appear therefore that the attribution of near 'Huffman' perfection to the initial 1937 version of the 'Code' and to a lesser extent to the 1844 'American' code both of which are attributed to the Morse 'team' is incorrect. Morse's 1837 code accords with the eventual international code only in the letters E, H and N. The international Morse code, which was developed in Europe after some disquiet with the 1844 version, differs from the 'American' code in 11 characters out of the 26.

Without seeking to detract too much from SFB's contribution to 'modern' communications, perhaps it is time to lay to rest the twin perceptions that he alone invented the 'Morse' code. And that he also 'got it right' first time.

WESTERN UNION SCAM

Keith, G3SZU

With reference to Dave, G0CER's letter in the March edition of *RadCom*, the scammer(s) are now targeting me – G3SZU. Fortunately, the VE7 station who was the subject of the intended scam, made contact with me before parting with any money. The way the scam works is as per Dave's letter and I would ask anyone thinking that they're buying items of equipment from me to make contact via my QRZ.COM e-mail address. I never use Western Union, who don't seem too interested in what's happening. Fortunately, the police are, but need the involvement of (intended) victims.

HAS BT SEEN THE LIGHT?

Bryan Cedar, G8BMQ

Members may be interested to learn of developments at BT with regard to the Comtrend PLT devices that they have been supplying for use with their BT Vision system.

I have just had a visit from Ofcom because of interference I was experiencing from two neighbours' installations. Ofcom located the offending equipment and reported to BT, who took immediate action and supplied Ruckus 5GHz wireless devices to the properties concerned. As yet one property has to install the new device, but I am sure that my problem with S9 interference across the broadcast bands will be resolved.

I was very impressed with the service from Ofcom and the follow up from BT – indeed, BT telephoned one neighbour to enquire if the problem has now been resolved. Ofcom confirm that they are able to deal with complaints of interference to the short wave broadcast bands and not just to amateur bands. I have been informed that BT would fit the Ruckus equipment where there have been interference complaints caused by the Comtrend PLT devices but would not fit them as a matter of course. I would be interested to hear any other reports regarding this development, by e-mail to bryan.cedar@virgin.net.

The Ruckus site can be found at www.ruckuswireless.com/products/mediaflex-home-products/mediaflex-2200.

INTERNET RADIO

Paul, EI5DI

We are all free to do what we like, subject to the usual constraints, but we are not free to do what we like and call it what we like. Licensed radio amateurs are not sprinkled

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with magic fairy dust that, somehow, makes every two-way conversation an amateur radio QSO, regardless of the medium.

When a 'QSO' depends on the continued availability of some communications utility then, no matter how we choose to describe it, it must be something other than an amateur radio QSO. This fact is independent of personal issues such as old-age, restrictive covenants, lack of finance, no room for antennas and a noisy QTH.

If we found CBers using the internet and claiming it was CB radio, we would laugh at them. We are radio amateurs, not internet amateurs. We should get off the internet, and get on the air.

THE CASE OF THE REMOTE DANGERS

Bruce, GW8AAG

In common with most modern handheld gadgets my TV remote controller was enclosed in a two-part plastic case. I needed to get inside to see why some of the keys 'stuck down' when pressed thus giving a continuous signal that confused the family, the TV tuner and the TV display.

The first problem was removing the security screw. It had a triangular recessed head for which I had no screwdriver. I discovered a 'Torx' bit marked T 6 was a press-fit that worked quite well. Next, several small screwdrivers were used to force back the internal 'hooks' holding the two case parts firmly together. After three hooks had been dislodged, finger tips could be inserted to prise the case apart. At this point I realised the dangers to which I had exposed myself. Extra care should have taken to protect my passive hand (the one holding the unit steady). A stab to the fingers, palm or wrist from a grubby germ-laden screwdriver would have been potentially a serious injury. By extension, it would appear foolhardy to undertake this type of work whilst seated: a stab to the thigh or abdomen could have been fatal. And taking Warfarin doesn't help either!

THE NEW UKAC MULTIPLIER

Ray James, GM4CXM

In April's GHz Bands, Sam, G4DDK states that stations located in the east, south and west of the UK are now disadvantaged in the UK Activity Contests. This follows the 2011 UKAC multiplier rule change from all EU locator squares to only UK squares. Sam's solution is for a 1 point/km scheme with no multiplier and incorrectly uses the NAC (Nordic Activity Contest) as an example.

NAC is scored at 1 point/km but in addition every unique EU square worked generates an additional 500 point bonus. Such a move would give a massive advantage to stations located in areas that can work locator squares deep into the continent and a similar result scoring 1 point/km for working all the continental activity conveniently out of range of much of the rest of the British Isle.

A review of the first 3 months of UKAC results under the new rules displays that stations in the east, south and west have actually done very well indeed.

What also stands out is how interest in the UKAC has taken off this year.

The new M5 multiplier has taken the monthly contests to a new dimension.

The abstention of numerous rule change objectors in the south east of England has been more than made up with increased participation from all other areas of the UK for 2.5 hours of operating fun each Tuesday evening.

What rule objectors like Sam need to appreciate is that we have just come through a 20 year decline in VHF/UHF and Microwave contesting and DXing. During this period we operated with contest rules that typically meant antennas were focused to the south east of England or the continent for the majority of the time. This is great if you lived in those areas with UK and continental activity beaming your way most of the time but it really decimated wider UK national interest.

That has now changed following the decision of the Contest Committee under its new chairman, GW3SQX. The UKAC has become much more interesting, challenging and competitive with antennas turning to all parts of the UK in order to obtain multipliers. This benefits the hobby, participants, clubs, homebrewers and equipment manufacturers. It is very difficult to have an absolutely level contest playing field and any perceived advantage in what after all is a UK event and not a pan-European IARU contest is fairest if it is located somewhere in the middle of the UK.

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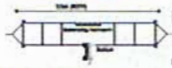

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A range of high quality RF sensing preamps using the latest GaAsFET devices for ultra low noise.

Inside Shack

KP-1-10M	10m preamp	£164.95 D
KP-1-6M	6m preamp	£164.95 D
KP-1-2M	2m preamp	£164.95 D
KP-1-440	70cm preamp	£164.95 D

Outside with Mast-Head Box

KP-2-10M	10m preamp	£214.95 D
KP-2-6M	6m preamp	£214.95 D
KP-2-2M	2m preamp	£216.95 D
KP-2-440	70cm preamp	£216.95 D

Vectronics
ATUs & Accessories

VC-300D ATU

1.8 - 30MHz up to 300W - coax, wire or balanced & Digital PEP bargraph

£219.95 D

VC-300DLP ATU

Exactly the same as the VC-300D but without the digital PEP meter.

£184.95 D

VC-300M ATU

A compact mobile or portable atu covering 1.8-30MHz. Handles up to 300W £132.95 D

Other Vectronics Tuners

HFT-1500	HF 2kW 6 Ant sw.	£459.95 D
VEC-621	2m 200W tuner	£91.95 C
VEC-624	70cms 200W tuner	£91.95 C

Vectronics Dummy Loads

DL-300M	150MHz 300W	£61.95 C
DL-300MN	150MHz 300W "N"	£64.95 C
DL-650M	650MHz 1.5kW	£84.95 C
DL-650MN	650MHz 1.5kW N	£89.95 C
DL-2500	150MHz 2.5kW	£219.95 C
DL-2500N	150MHz 2.5kW N	£229.95 C

Vectronics Kits

VEC-101K

Short Wave RX Kit that covers 3.5 - 22MHz and is great fun to build and operate. Step back in time and enjoy radio as it use to be. SSB AM CW.

£27.95 A

VEC-131K

A little tuneable AM VHF airband receiver. A great introduction into kit building

£29.95 A

VEC-821K

A highly selective CW audio filter that offers bandwidths of 80Hz, 110Hz & 180Hz bandwidths using 8-pole filter centered on 750Hz.

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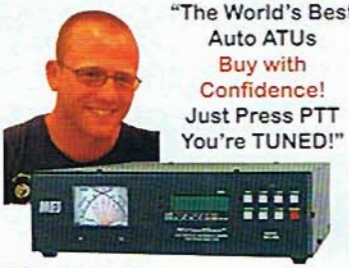

MFJ-998 *AUTO TUNER*

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

W&S £664.95 C

MFJ-929 *AUTO TUNER*

1.8-30MHz 200W, LCD readout, 20,000 memories, long wire & coax, radio interface.

A great Auto ATU that needs just a single coax feed and 12V DC. Press the PTT and you are tuned! W&S £214.95 C

MFJ-925	Compact auto tuner	£174.95 D
MFJ-927	200W remote auto atu	£254.95 D
MFJ-928	Basic auto atu	£203.95 D
MFJ-991B	Auto atu 150W	£214.95 D
MFJ-993B	Auto atu 300W	£254.95 D
MFJ-994B	Auto atu 600W	£349.95 D
MFJ-931	Artificial ground	£114.95 C
MFJ-932	Mini loop tuner	£143.95 C
MFJ-934	Artifical ground + ATU	£204.95 C
MFJ-935B	Portable loop system	£204.95 C
MFJ-945E	Mobile atu 300W	£134.95 C
MFJ-962D	1.5kW ATU	£299.95 D

MFJ-962D

MFJ-969	160m - 6m 300W	£219.95 D
MFJ-971	Portable atu	£122.95 C
MFJ-974B	Bal. ATU 3.5-30MHz	£194.95 D
MFJ-986	3kW differential tuner	£359.95 D

MFJ-986

MFJ Antenna Analyser

MFJ-269

The analyser that covers 1.8MHz - 440MHz and makes antenna design and installation so easy. Measure VSWR, impedance, reactance and even measure the length and losses in coax.

£369.95 C

MFJ-259B

If you don't need coverage up to UHF, this 1.8 - 170MHz will do the job. A great favourite of antenna reviewers, it makes antenna installation and design so easy.

£269.95 C

MFJ Vertical HF Antennas. Ideal for small gardens.

MFJ-1796 A 1.5kW40m - 2m self supporting vertical. Requires no radials. Height 3.65m £244.95

MFJ-1798 An 1.5kW 80m to 2m vertical that is self supporting and needs no radials. Height 6.7m £309.95

MFJ-1625	Window Ant + Tuner	£204.95 D
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MFJ-1798	80m-2m vertical	£309.95 D
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MFJ-1925	ATAS-100 controller	£74.95 C
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MFJ-417	Pocket morse tutor	£77.95 C
MFJ-442	Slim electronic keyer	£204.95 C
MFJ-461	Pocket morse reader	£101.95 C
MFJ-4726	6-way remote ant switch	£164.95 C
MFJ-490	Memory keyer + paddle	£249.95 C
MFJ-495	Memory keyer	£192.95 C

MFJ RF Current Meters

If you are using an end fed wire, the only true way to make sure it is matched correctly is to adjust for max current flowing through the wire with an RF Current Meter.

All cover 1.8 - 30MHz

MFJ-834	0.3, 1 & 3 Amps	£85.95 C
MFJ-834H	3, 10 & Amps	£92.95 C
MFJ-835	Bal line X-Needle 0.3-3A	£131.95 C
MFJ-836	Combined VSWR & Ampmeter using cross needles 0.3, 1 & 3A	£141.95 C
MFJ-836H	As above but 3, 10 & 30A	£152.95 C

MFJ Field Strength Meters

Great for measuring RF levels & tuning antennas, particularly mobile and portable.

MFJ-801

MFJ-801 is a compact handheld model that covers 100kHz - 500MHz. £32.95 A

MFJ-802 has a larger meter and employs a telescopic dipole to reduce affects of stray reflections £55.95 A

MFJ-618 *Received Audio Enhancer*

There can be two types of receiver audio problems. The first is QRM and hetrodynes, the second is the human form where certain frequencies need to be adjusted to compensate. This unit deals with both! Accepts audio from two receivers and output in mono or stereo.

£219.95 D

Ameritron
Linear Amps & Accessories

New Lower Prices!

AL-811XCE

600W of PEP power from a desk top linear that covers 1.8 - 30MHz. And offered at a great price.

£899.95 D

AL-811HXCE

800W of PEP power from a desk top linear that covers 1.8 - 30MHz. Check out the new low price

£999.95 D

AL-82XCE

This amp will easily deliver 1.5kW from less than 100W input. 1.8 - 30MHz. Uses 2 x 3-500z.

£2749.95 D

ADL-1500

1.5kW oil filled dummy load. Rated for 5 mins. continuous and works up to 400MHz.

£84.95 D

This item is also available without oil - you supply your own - @ £62.95

RCS-4X

A 4-way remote controlled coax switch. Rated up to 2.5kW at 30MHz. Weatherproof for outside use.

£174.95 D

RCS-8VLX

A 5-way remote controlled coax switch. Rated up to 2.5kW at 30MHz. Weatherproof for outside use. This model includes static protection.

£229.95 D

HyGain
HF & VHF/UHF Antennas

AV-14AVQ

10-15-20-40m Vertical Antenna 15.kW 18ft / 5.5m **(pictured right)** **Self-Supporting *Automatic Band Switching *Power: 1500W PEP * Gain: 3dBi nominal * VSWR: < 1.5:1 typical *Connector: SO-239 *Vertical angle: 16 degs *Horizontal angle: 360 degs* £199.95 D

AV-640	6-40m vertical	£429 D
DX-77A	10-40m vertical	£479 D

AV-6160 The new 160m to 6 m self supporting vertical. Designed for ground mounting, this is an ideal all-band antenna for those with small gardens. £429 D

TH-3MK4

10-15-20m Beam Antenna 1.5kW 14' boom 11 elements.

£529.95 D

Other HyGain Rotators in Stock!

AR-303X

Lightweight Rotator for small beam or TV aerial.

£99.95 D

The New Icom IC-7410

Principal sponsor for the RSGB Convention & T32C DXpedition

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- 100W HF+50MHz base station transceiver
- All mode (AM / FM / SSB / CW / RTTY)
- +30dBm IP3 class receive circuitry (HF)
- Standard 15kHz first IF filter, optional 6kHz/3kHz first IF filters (max. three filters total)
- 36kHz IF 32 bit DSP, the same class as used in the IC-7600
- 0.5ppm frequency stabilit
- Built-in Antenna Tuner
- USB interface for PC control and voice output
- "Band edge beep alarm" helps users avoid off-ban operation
- Large B/W LCD screen, ergonomically designed controls
- Integrated speech synthesizer

This new exciting addition to the Icom base station family has been introduced as a mid range high-performance transceiver specialising in HF and six meter operation. With its increased screen size over the IC 7400, RTTY receive built in, full USB connectivity (including modulation input audio output and CIV command) topped off with a +30 DBM third order intercept point, the new IC–7410 will be in very high demand from launch date.

HF & 6m All mode Base Station £1999.95

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