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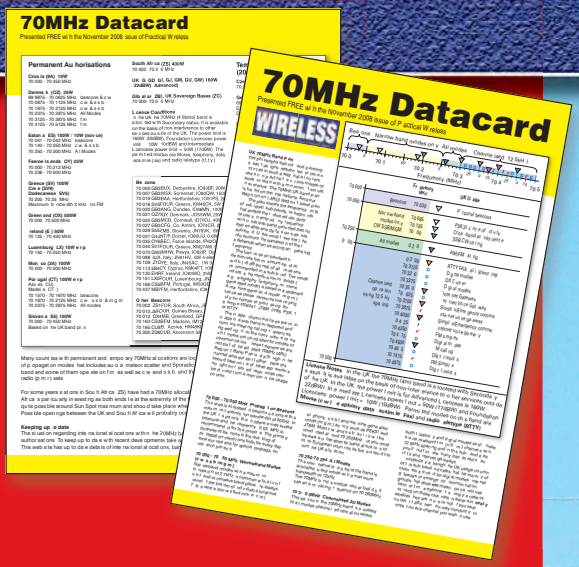

FREE INSIDE

70MHz Datacard

LDG Z-100

Automatic Antenna Tuner Reviewed

Doing it by Design

Up-dating the Itchen LCR Bridge

Surface Mount for Older Beginners

Part 2

QRP Contest Results

How did you do this year?

Emerging Technology

New series continues

Antenna Workshop

'A tale of two whips'

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NEW Icom IC-7700 HF Transceiver

• 1.8 - 54MHz up to 200W PEP • SSB CW FM AM

Icom have produced a realistically priced transceiver based on the IC-7800 technology. Dual DSP units form the heart of the design. The rx. front end has a preselector and boasts 40dBm i.p. that equals the IC-7800 at twice the price! The 7" colour LCD panel is truly amazing in clarity. The spectrum scope allows close signal and band monitoring. Includes built-in PSK31 and RTTY and FREE IC-7000kbd keyboard - no PC needed! Other features: IF notch, professional grade 6m rx, digital voice recorder, dual USB ports, auto atu etc.

£Phone!

Waters & Stanton First with VX-8

YAESU

Waters & Stanton were given a sneak preview of this new radio by Yaesu's top designer Mr Fujiki. We will have the first UK stocks and it should be ***available November.*** This will be the first truly portable APRS radio, and with Blue Tooth, could easily function as a mobile.

FT-450 NEW

YAESU

160m - 6m 100W
SSB CW AM FM
IF DSP
Voice Memories
23 x 8.4 x 22 cm

Also get voice recorder and announcer!

W&S £529 D

Deal: *Get FREE Extra DC Lead!* Exclusive to PW Readers - Request when ordering

FT-450AT with Built-In ATU **£599 C**

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YAESU

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160 - 6m

W&S £899 D

DSP filtering, incorporating features such as Variable Bandwidth, IF Shift, and Passband Contour tuning. Digital Noise Reduction and Digital Auto-Notch Filtering. On transmit you get a three-band graphic equaliser and the ability to change the transmit SSB pass-band. There are plenty of other features which you will get from the Internet. What you won't get elsewhere is our offer to PW readers!

Deal: *Get FREE Power-Max-25NF PSU worth £89 when you buy FT-950 from W&S. Offer to PW readers only at time of order.*

These Yaesu offers expire 31/10/08

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Log on to GB7SS repeater at Hockley

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FT-2000D 200W
£2399 D

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*USB, LSB, CW, AM, FM (WFM Receive)

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Yaesu's top radio series of transceivers for the ultimate experience!

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FT-DX9000Contest £3799 D
FT-DX9000MP £8299 D

FT-817ND

YAESU

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*USB, LSB, CW, AM, FM, WFM, Digital (AFSK), Packet (1200/9600 FM)

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W&S £349 D

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New 2m/70cm Mobile with Bluetooth option
*50W 2m 40W 70cms
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KENWOOD

*100W All-mode
*160m - 70cms
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W&S £1749 D

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+ Spare DC lead

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HF/VHF/UHF
All-Mode
Transceiver

W&S £799 D

Deal2: With TFT PAL TV Screen £999
Deal3: With TFT + Power-Mite PSU £1049

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HF - 70cms 100W transceiver plus SP-21 spkr and SM-20 mic **£1169 D**

IC-718 HF 100W transceiver **£439**

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HF/VHF/UHF
100W
Transceiver

Deal: IC-706 + New Power-Mite-NF FREE

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ICOM

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Auto ATU + DSP

W&S £449.95 D

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2m 55W FM mobile with rugged construction and with digital option.

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TM-271E

2m FM 60W Mobile Transceiver. MIL-SPEC DTMF Mic. Built-in CTCSS / DCS encoder / decoder.

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Dual band APRS 50W FM

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Programming Software For Your Radio

Programme Memories and all your radio's functions from your PC. Includes Windows software and serial lead with adaptor for your Radio.

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ADMS-2H for FT-8900 / ADMS-2I for FT-8800
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ALL **£39.95** with FREE PC Radio Data Lead.
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2m/70cm Handheld with Built-in DSTAR

* *144-146MHz / 430-440MHz*
* *FM FMN WFM AM (Rx) DV*
* *5W/2.5W/0.5W/0.1W*
* *1304 memories*
* *100 scan ranges*
* *Rx range 0.495kHz-999.9MHz*
* *CTCSS, DTCS, DTMF*

Includes antenna, and charger.

A fully fledged digital radio using D-Star as well as traditional dualband.

W&S £Phone C

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IC-E91 D-Star Ready

Latest dual-band handheld transceiver. receiver that covers 0.495 to 999MHz.

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IC-E90 6m/2m/70cm **£199.95 C**
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Kenwood VHF/UHF Handhelds

TH-F7E

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Up to 6W out with Li-ion battery and **"scanner" style coverage from 100kHz to 1300MHz** including SSB on receive!

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Black or Silver Available. Totally waterproof, Wide frequency coverage 500kHz-900MHz AM/FM.

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Power-Mite-NF

NOISE OFFSET POWER SUPPLY — NEW

22 Amps of continuous power output with variable voltage plus the new Noise Offset Function (NF). This allows you to move any noise spikes out of the ham band with the front panel tuning control.

W&S £59.95 C

Power-Max-45NF POWER SUPPLY — NEW

38 Amp (45A Peak) continuous switch mode PSU with Noise Offset Function (NF). *Output 4-16V DC Variable *Input 100-260V AC *Short Circuit & Over Voltage Protection

W&S £119.95 D

- **W-3A** Output 3A, 13.8V DC, supply 230V AC **£22.95 C**
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- **W-30AM** Output 30A, 0-15V DC, Dual meters **£119.95 D**
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Ideal for testing handhelds and lower powered transceivers. *Range DC-600Mhz *Power 15W (20W CW) *VSWR 1:1:1 *Connector PL-259 *50 Ohms Impedance *Size 34x72mm *Weight 76g

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Pre-tuned & Weather Sealed Fibre-glass encapsulation

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Practical Wireless November 2008

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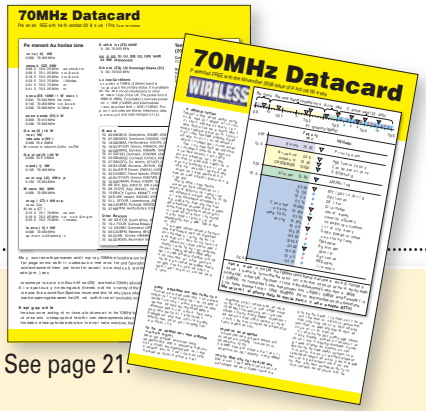

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FREE INSIDE
70MHz Datacard

Front cover: Our thanks go to Tex Swann G1TEX for the product shots and G4PRS for the QRP Contest Site photograph.
Design by Steve Hunt.

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Rob Mannion's

keylines

Modern electronics and the reluctance shown by the media to discuss technical subjects.

The September *PW* carried the first of two articles featuring surface mount technology (SMT) and surface mount devices (SMDs). The author, **Barry Horning GM4TOE** was honest, declaring himself as being "myopic" (short-sighted) and a member of the 'over 50s club'!

Barry was keen to encourage others to try their hands at building the SMT audio filter that features in the two articles. Barry's project must – surely – give many of our readers (and the Editor) the extra encouragement to try using those fiendishly small components!

I'm encouraged to experiment with SMT because of a recent – extremely embarrassing – disaster at home. Rather stupidly, I connected a 24V d.c. power supply instead of the correct 12V into a portable TV/DVD player. The 24V and 12V power supplies (both were switched-mode types) were physically the same and although I realised my mistake as I switched the TV on – I saw the raster on the liquid crystal display (l.c.d.) screen quickly dissolve into blackness!

The unit – a Nikkai model made for Maplin – was one I had purchased at their Poole branch several years ago, which proved to be very reliable until my stupid mistake! However, when I took the player apart to attempt a repair I knew – of course – what was likely to be found inside!

Despite being prepared for the extensive use of SMT within the Chinese-made TV/Player, I was quite frankly astounded at the neatness of the board and the use of large scale integration (LSI), together with a large number of individual SMDs used around the neat printed circuit board (p.c.b.).

Unfortunately for me, none of the SMCs had markings on them. However, it was fairly easy for me to trace the d.c. input via the p.c/b. tracks to the area where the regulator was mounted. It was then fairly easy to identify what seemed to be a three-pin regulator disguised in SMD form. But what regulator was it? Conceivably, it could have also been a simple series regulator using a transistor – although I couldn't be sure either way!

Hopefully, there be may a *PW* reader who has serviced Maplin-marketed or similar equipment who may be able to help. Perhaps there may even be a circuit available too?

Despite the problems from my momentarily stupid action, I realise that that the component identification difficulties could be overcome. Perhaps someone working in the electronics servicing industry could help? If so, I'm sure that we could feature (active components particularly) popular and useful SMD components in an article to help constructors identify them.

Bournemouth Air Festival

In late August, Bournemouth enjoyed an extremely successful Air Festival, thanks mainly to a local bus company **Wilts & Dorset**, (**More Bus**). Incidentally, Wilts & Dorset is the where former *PW* colleague **Donna Vincent G7TZB** works on publicity and promotion!

I had a grandstand cliff-top view of the festival – just a short buggy ride from my home. The highlight for me was a retired de Havilland *Sea Vixen* Royal Navy Fleet Air Arm, jet beautifully flown by a 70 year-old pilot (well done Sir!).

All the displays were backed up by a professional commentator via an efficient public address (p.a.) system. Despite this, I felt at times the announcer was having to 'ad lib' due to programme delays and was also introducing a degree of 'techno-phobia'. I suggest this because whenever any visitors assisting in the p.a. studio attempted to discuss basic technical details of the aircraft involved, the commentator quickly (and obviously) steered them off the subject.

Surely, a modicum of technology has to be mentioned where complex aircraft are involved?

In my opinion the commentator was reflecting the technophobia that's so evident everywhere in the media – where flight data recorders are often referred to as 'black boxes'. Unfortunately though, we live in a very technical world and unless more people – especially the young – take an interest in the technical world around them, we will lose even more of our engineering capabilities from this group of islands.

Rob Mannion G3XFD/EI5IW

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Technical Help
We regret that due to Editorial time scales, replies to technical queries cannot be given over the telephone. Any technical queries by E-mail are very unlikely to receive immediate attention either. So, if you require help with problems relating to topics covered by PW, then please write to the Editorial Offices, we will do our best to help and reply by mail.

Practical Wireless

readers' letters

The Star Letter will receive a voucher worth £20 to spend on items from our Book Store or other services offered by *Practical Wireless*.

Medresco Hearing Aid Circuit Help

Dear Rob and Tex,
I'm writing with regard to my "Wanted" advert (published in September issue) for the circuit of the old National Health Medresco hearing aid. It produced a response, but the person who was kind enough to help did not disclose their identity. Therefore, through your pages, I would like to pass on my thanks for their very helpful action.

Incidentally, I'm still looking for more details on the later OL35A (Mk. IIIA) model 73
Best wishes to you all at *PW*.
Godfrey Manning G4GLM
Edgware
Middlesex

Kenwood Does Listen!

Dear Rob,
I've just opened the latest (October) edition of *PW* and read your 'Star Letter' regarding 70MHz. I was then rather surprised to see your comment that you had written to "various Japanese manufacturers on the subject. The only one to reply was Alinco.....". This is because I know that you and I have had correspondence in the past about this subject and I can tell you that no request from *PW* for information, or for our comments on Amateur-related matters, goes unanswered!

I hope that you can find space to reassure your readers that this Japanese manufacturer takes its relationship with such a senior Amateur magazine as *PW* (and its esteemed Editor) very seriously and does not simply ignore inconvenient questions.

However, to answer the point about 70MHz again – the reason that we don't "get our act together" (as G6OHM puts it) and produce a rig covering 70MHz is exactly as you stated in your Ediorial reply. There is no world-wide market for the band. I must also say that there's absolutely no market for a single-band multi-mode transceiver (on any band) these days – yes we could build them but the resulting cost would mean nobody would actually buy them.

I would agree 100% that those Amateurs on the 70MHz band are extremely enthusiastic about its development. The problem is that there are simply not enough world-wide to justify the cost of engineering a radio to cover it at the moment. Basically 70MHz is too far below in frequency to 'stretch' a 144/430MHz

Star Letter

Standard Mobile Size?

Dear Rob,
Thumbing through my newly purchased October issue *PW*, as I glanced over the main advertisers' colourful pages of mouth-watering radio goodies (as you do!) I was struck by the apparent vast range of sizes of equipment intended for mounting in a vehicle. However, checking the manufacturers' websites confirmed my suspicions that there appears to be no standardised dimensions for mobile rigs.

Judging by QSOs I've had when mobile, I'm sure that many of us have a head scratching phase when we come to install our new rig in the car and look for that elusive shelf, flat piece of bulkhead or perfect depression (of course, it's often next to the heater outlet!). Not to mention wishing we had shares in the company who make Velcro! And of course, we have to ensure that the final chosen position meets with the approval of the XYL or OM (very important).

Pointing this out to my son **Tim G7LRJ** he came up (yes, it's his idea really!) with what I believe is a great solution. Could we persuade the manufacturers of amateur mobile equipment to make rigs which would slot into the standard sized openings in all car bulkheads that accommodate the usual broadcast radio/CD player?

It would, surely, not require a leap of technology to include the broadcast bands and even a CD player in an already highly sophisticated Amateur Radio transceiver. The system could utilise the existing car speaker system – perhaps even providing an adapter to screw an Amateur antenna into the existing broadcast fitting?

Apologies if this is not an original idea – if not it would be interesting to hear the pros and cons from others. With best wishes and thanks for a consistently outstanding publication.
Peter Fardell G0LQU
St. Albans
Hertfordshire

Editor's comment: *As I mentioned during our E-mail exchange Peter, I think that there will be some interesting feedback on this topic! For example, my own car – a Toyota Yaris Verso estate – has the radio and CD 'built-in' by the manufacturer. There are one or two nooks and crannies together with a large flat area behind the windscreen, together with some useful overhead lockers. The only difficulty has been running antenna and power cable to the radio mountings. Perhaps there may be an experienced car radio fitter amongst our readers? I'm sure anyone involved in this trade could help us with their experience.* ***Rob G3XFD****.*

rig down to it and too far above 50MHz to stretch today's h.f. and 6m rigs up to it, without major (= expensive) TX/RX engineering.

But, just as 50MHz grew to the point where it was possible for us to incorporate it into mainstream transceivers, 70MHz is also slowly gaining ground. As more countrys' licensing authorities permit Amateur operations on 70MHz, the snowball will continue to grow. We feed back any news of this progress to Japan and I hope that once it reaches a critical mass of activity – then 70MHz will join the other new bands that we have added to our rigs over the years. Best wishes to you and everyone on *PW*.

David Wilkins G5HY
Communications Division
Kenwood Electronics UK Ltd.
Kenwood House
Dwight Road
Watford
Hertfordshire WD18 9EB

Editor's sack cloth and ashes reply: *I feel that a public apology is deserved here David. I willingly offer one as, of course, I now remember our various conversations and E-mails on the 70MHz topic. On reflection, I should have made it very clear that we had discussed the topic face-to-face, by telephone and E-mail. Again on reflection, I should have made it abundantly clear that all my comments and queries had been passed on by you to Japan. However, even though I have been – deservedly – embarrassed by forgetting to acknowledge our active and regular correspondence, your quick reaction to my Editorial comments must, surely, underline the relationship we willingly share. Thank you for being there David and I'm sorry for my 'Senior' moment!* ***Rob G3XFD****.*

Old RAE Papers Available

Dear Rob,
Your readers might like to know that all the old RAE papers from 1946 to 1978 are now available at **http://www.g4dmp.co.uk/rae** These are the old written papers before the multiple choice format was introduced in May 1979.

I sat the RAE at Bradford in May 1954 and the Morse test the following December, commencing my compulsory 12 months on c.w. with maximum 25W d.c. input. It was a sort of "novice" licence of the day! Kindest regards.

David G4DMP/G3KEP
Kippax
Leeds
West Yorkshire

Editor's thanks: *A very good idea David and a very interesting service indeed. It was fascinating to see the papers I sat in May 1967. They gave a choice of valves or transistors in some questions then! Please join me on the Topical Talk pages for more comment.* ***Rob G3XFD****.*

The Unprotected Status of Amateur Radio

Dear Rob
I write with reference to the letter from **Charles Ivermee** in the October issue of *PW* and the growing interference to the h.f. Amateur bands that he and the QRMUK group have highlighted. Due to a change in personal circumstances I recently had to move to a terraced house in a large town and I've found that h.f. Amateur Radio operation is now impossible. This is because adjacent neighbours have plasma televisions and Freeview boxes that generate interference right across the radio spectrum.

Additionally, I also suspect the use of data power line adaptors to link various items of computer related equipment, switch-mode power supplies as well as other domestic appliances generating interference, are all operating to the determent to the use of my Amateur Radio station. I've tried everything I know to reduce the very high levels of interference – including switching off my domestic electrical supply and using batteries to power my equipment – to no avail. Noise levels exceed S7 from 2 to 30MHz. Since moving, the only period of noise free

Meeting In Tesco's Car Park!

Dear Rob,
It's surprising who you can meet in a Tesco's store isn't it? There I was heading for the weekly shop in Stow-in-the-Wold on Tuesday August 5th, when a familiar face drove by and parked near to our car. I think that you were quite amused when I came up and suggested that perhaps the Editor would sign my copy of *PW* that I happened to have in the car!

It was good to chat and even though the rain was very heavy indeed, you told me you were enjoying the trip to visit the Kidderminster club that evening and had stopped for a meal. I think that we both enjoyed our brief chat and thought it was quite a coincidence that I had seen news of your Kidderminster trip on the **Southgate ARC** website several days before and then had actually met you in the supermarket!

Our main topic was the superb new web-streaming ATV service from the **British Amateur TV Club** that was just coming-on line. Since our meeting it has proved to be as excellent as we both expected. Perhaps, as I suggested, we might see one of your club visits on **http://www.batc.tv/** one day? I hope so! Best wishes, it was great to meet you in Tesco's.

Ed Cooper
Maugesbury
Stow-in-the-Wold
Gloucestershire

Send your letters to:
Rob Mannion
PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: pwletters@pwpublishing.ltd.uk

Another Amateur Radio Outdoor Challenge?

Dear Rob
I was surfing the net and came across the Geograph site – **www.geograph.org.uk** This site enables anyone to enter their digital photographs against an Ordnance Survey Grid Reference, an example NX0299 is Ailsa Craig, in the Firth of Clyde, off the west coast of Scotland.

The idea came to me of the ultimate challenge for Radio Amateurs, to activate every grid square and to publish on this site a digital photograph as evidence! The photograph must contain conclusive proof of the location, perhaps a prominent landmark or a road sign or even a close-up of a GPS.

I'm not certain of the number of OS grid references but **I am** certain that whoever manages this challenge will have a lot more stamina than I have! The resulting photographs will also provide the general public with proof that Radio Amateurs do it everywhere and are – perhaps – a little bit crazy. 73s to the *PW* team and keep up the good work!
John Reynolds G0UWV
Upton
Norfolk

Editor's comment: *An interesting idea John! Please join me on the Topical Talk pages for further discussion.* ***Rob G3XFD.***

operation I have enjoyed was during a short power cut in the area – during which I used battery power!

We are all aware that Amateur Radio **is not a protected service** and therefore we cannot expect Ofcom to take much – if any – notice or action regarding this intrusion into the h.f. bands. Personally, I strongly suspect that a lot of domestic electrical equipment passed for use in Europe with the CE mark is either done fraudulently by manufactures and importers or (after the equipment has obtained approval) the build quality or filtering components are then reduced to save money.

What I find strange is that maritime communication frequencies are protected and like Amateur licences are free if obtained on-line via the Ofcom web site. I presently hold marine radio licences for my own vessel and three other vessels belonging to my sailing club.

In recent months, a local hotel with adjoining golf complex was using marine v.h.f. channel 37 (157.85MHz) to communicate between the hotel and golf clubhouse. This particular channel is set aside for the use of sailing clubs and marinas, therefore severely interfering with our communications. One call to Ofcom – after the offender was identified – the interference vanished.

It seems bizarre to me that while both Amateur and maritime radio licences are free, one service enjoys protection and the other doesn't! If Ofcom and Westminster aren't going to do anything about this, is there not a human rights issue which could be redressed in the European courts?
Colin Topping GM6HGW
Glenrothes
Fife
Scotland

Difficulties with QRMUK Website

Dear Rob,
After recent unsuccessful attempts to join and offer support to the new QRMUK group via their website – as mentioned in readers letters in *PW* October – I gave up after being rejected and I'm not alone with this problem either! Perhaps a more 'flat earth friendly' web page, free of PC jargon might help those of a pre-Internet generation who do not have a higher masters degree in computer sciences, and can still write letters – if we knew the – address where to send them would help?

On another, and perhaps related matter, over a year ago I communicated with the *Which?* organisation asking them if they included EMC in their electronic testing. I explained the problems experienced by many radio users, with poorly designed and ageing equipment from low energy light bulbs to switch-mode power supplies. However, it doesn't appear that my ideas have ever been considered or addressed and when I contacted *Which?* again recently on the QRM problem, still without any real feedback other than the standard E-mail reply.

So, I would like to urge all *PW* readers who are *Which?* members to help by telling the organisation about QRM generating equipment they have afflicted by and regularly badgering *Which?* until EMC. becomes part of their regular electrical testing to help in the long term to reduce the 'radio frequency fog' that's is engulfing us all and spoiling our wonderful hobby. Together we can make a difference! My 73 to everyone at *PW*.
Graham Bedwell G3XYX
Winnersh
Wokingham,
Berkshire

Editor's comment: *Several readers have contacted me regarding the QRMUK website problems, although they have eventually managed to get onto the site. I'm sure that as the organisation gets into its stride they are bound to make the system more 'user friendly'. However, Graham has come up with a first class idea regarding the* Which? *organisation. Perhaps readers who are members can get the message over to them regarding the ultra-important EMC aspects of electrical equipment that they evaluate.* ***Rob G3XFD.***

A great deal of correspondence intended for 'letters' now arrives via E-mail, and although there's no problem in general, many correspondents are forgetting to provide their postal address. I have to remind readers that although we will not publish a full postal address (unless we are asked to do so), we require it if the letter is to be considered. So, please include your full postal address and callsign with your E-Mail. All letters intended for publication must be clearly marked 'For Publication'. **Editor**

news & products

A comprehensive round-up of what's happening in our hobby.

Icom Nicad Batteries

On the 26th September 2008, a new EU directive came into force preventing the importation of Ni-Cd and other batteries into Europe.

Icom UK have issued a press release stating that, "Ni-Cd batteries will only be available until our UK stocks are exhausted. Alternative types of battery for current equipment has been available for some time, so there should be no problem in finding an substitute. For older equipment where Ni-Cd was the only type of battery available, replacements may not be available.

Care should be taken to ensure you have the appropriate charger for alternative battery technology that is used for your equipment. Please dispose of your Ni-Cds safely. Most municipal recycling centres have facilities for the disposal of batteries, and you may also be able to leave the defective batteries with your replacement supplier for disposal. Should you require any further advice please E-mail us at: **info@icomuk.co.uk**

Martin Lynch & Sons At The Leicester Show

When the *PW* Newsdesk contacted **Martin Lynch & Son** at their Chertsey, Surrey base for details of their news and products for the Leicester Show (all our advertisers were contacted for their show news) – Martin Lynch was enigmatic and promises that there will be some 'very special offers' and interesting things happening on their stand this year! He's certainly not letting the 'cat out of the bag yet'! So, readers – it's a case of 'wait and see' what Martin has to offer!

New SatNav Initiative for Kenwood UK & AvMap

Kenwood UK have announced preliminary information regarding a forthcoming co-operation between Kenwood UK and AvMap of Italy to promote their portable/mobile Satnav unit with built-in APRS functionality.

David Wilkins G5HY of Kenwood UK stated, "The AvMap Geosat 5 APRS is a special version of the standard unit with additional firmware to handle APRS data, so when connected to a Kenwood TM-D710E the Geosat 5 acts as both a GPS and a display. This means that the Geosat 5 not only sends its current GPS information to the TM-D710E, but also displays on its 5in colour screen all the APRS beacons/icons that the TM-D710E is receiving off-air (within the screen map coverage area).

"The APRS beacons become GPS way points, so can be displayed both stationary and moving, and in addition the Geosat 5 can even navigate the operator to them, just like any other GPS location point. Kenwood USA has had a joint promotion with AvMap for some time now, featuring both the TM-D710E and its predecessor TM-D700E – and we are now planning to work together in Europe and the UK. Readers may have already have seen AvMap at the Friedrichshafen show this summer, where they had their own display space on the Kenwood Germany stand."

Details of the Geosat 5 are to be found on AvMAp's website at **http://www.avmap.us/index.php?swt=0151&ipr=492**
Further details are avaiable from **David Wilkins G5HY, Kenwood (Communications) Kenwood House, Dwight Road, Watford, Hertfordshire WD18 9EB. Tel:(01923) 816444. Fax (01923) 212477**
E-mail address: **david.wilkins@kenwood-electronics.co.uk**

Editorial note: Kenwood UK are planning to offer a sample TM-D710E/Geosat 5 combination to *PW* for a review. Although we have already fully reviewed the D710E, I'm sure a second look at this interesting new combination will be of interest to *PW* readers, especially as **Richard Newton G0RSN** will be trying it out for us! **Rob Mannion G3XFD**.

Seagate Young Innovators of The Year 2008

Bangor & District Amateur Radio Society (B&DARS) mounted a demonstration of PSK31 at the **Seagate Young Innovators of the Year** event for schoolchildren, which took place in the Odyssey Centre Belfast, Northern Ireland on June 19th.

Two very low power stations were set up, capable of sending PSK31 signals over a short distance – two metres! The children seemed very impressed by this demonstration. It is to be hoped that this initiative by the Society will be the precursor of many further displays at such events. **Bill GI4AAM, Richard White GI4DOH** and **Merrill GI6JGB** demonstrated the system to the keen young innovators.

Further information from the B&DARS website at **www.bdars.com/index.htm**

The RAOTA Golden Jubilee 2008

The **Radio Amateur Old Timers' Association** is celebrating its Golden Jubilee in 2008 and the celebrations continue to the end of the year. The Special Event callsign **GB50OT** has been on the air from members' QTHs around the country and will continue to appear on the air through to the end of 2008. Its schedule is available at **www.raota.org**

A commemorative issue of RAOTA's *Old Timers' News* (*OTN*) magazine, entitled *The Changing Face of Amateur Radio* was published earlier this year. Copies will be available for those who join RAOTA later in 2008 – for example, at the Leicester Amateur Radio Show (LARS).

The LARS is always a big event in the RAOTA calendar and it's where RAOTA's largest rally stand appears and where members gather together for the AGM. This year RAOTA will also be holding a celebratory evening meal with several guest speakers lined up. The venue for both of these events is a hotel in Castle Donington (a couple of miles from the Show). Full details of both AGM and the evening meal are in *OTN 87* due out in late September or early October.

The Radio Amateur Old Timers' Association aims to keep alive the traditions and spirit of amateur radio. Membership is open to anyone interested in these aims. Full membership is open to anyone who has been in the hobby for 25 years or more (whether licensed or listener). Those not yet in the hobby for 25 years are welcome to join as Associate Members. Information about membership of RAOTA is available from: the web at **www.raota.org** or by post from **RAOTA, at 65 Montgomery Street, Hove, East Sussex BN3 5BE**. Press release issued by **Ian Brothwell G4EAN 9H3YI**, Secretary & Publicity Officer, Radio Amateur Old Timers' Association.

Send all your news to:
PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: newsdesk@pwpublishing.ltd.uk

Falkirk's Junk Sale

The **Falkirk & District Amateur Radio Society (F&DARS)** are holding a Junk Sale on Sunday November 23rd. The event will be taking place from 12pm to 5pm at the Lodge Zetland Masonic Hall, Bo'ness Road, Grangemouth, Scotland. Jaycee Electronics will be in attendance. The Society are planning to provide 'talk-in; on the **GB3FE** repeater (145.662.5 NFM, CTCSS 103.5 or 1750 tone burst). information. Further details from **David Stevenson MM0RAM**, Secretary F&DARS at **fdars@blueyonder.co.uk** or telephone mobile **07701049416**.

Meet The PW Publishing Team At The Leicester Show!

Everyone on the PW Publishing team is looking forward to meeting you at the Leicester Amateur Radio Show on **Friday 24th and Saturday 26th October!** Come and chat to the Editors of *PW* and *Radio User* – **Rob G3XFD** and **Roger Hall G4TNT** will be pleased to meet you!

Waters & Stanton PLC at the Leicester Show

Waters & Stanton PLC have announced that they will have their usual stand, W5, opposite the main entrance at the Leicester Amateur radio Show at Donington on Friday and Saturday October 24th – 25th and although **Bob Heil K9EID** can't make it this year, there are many other attractions on show!

Jeff Stanton, on behalf of W&S announced, "We will have many new products to show including the new Black Box Airband receiver priced at £79.95. This is a revolutionary new receiver which can be safely used on board aircraft. We'll also have the latest version of the RadarBox with 2009 software included, which is the top selling unit at the moment priced at £399.

Jeff continued by mentioning that,"Our very popular Multi Ranger antenna – which has been selling out through the summer – will be in stock and on sale at £29.95.

"We now offer a complete weather station range including top quality products from Peet Brothers in the USA and a range of five Watson weather stations to cover all price points. The Flex 5000 Software Defined Radio will also be on display now available with the RX-2 second receiver option. Also on the stand will be new products from Avair, Diamond, Heil, MFJ, Microset, SGC, Tigertronics and Watson and we're looking forward to meeting *PW* readers on our stand!

Further information from **Waters & Stanton PLC**, ***Spa House***, **22 Main Road**, **Hockley**, **Essex SS5 4QS**. Tel: (**01702**) **204965**, FAX (**01702**) **205843**. E-mail **sales@wsplc.com** website **www.wsplc.com**

GeoSat 5 Blue APRS from Martin Lynch & Son

Chertsey-based Martin Lynch & Son have been appointed as UK & Ireland distributor for the GeoSat 5 Blue APRS system.

The ML&S press release states that, "This new SatNav system is somewhat special as it has the facility to hook up to any Kenwood APRS transceiver. The Geosat 5 Blue comes with a Kenwood-ready cable and exclusive APRS bi-directional RS-232 APRS interface compatible with **all** current APRS ready Kenwood Radios, including the new TM-D710A/E.

"Geosat 5 Blue provides GPS location information for your transmitted APRS beacons, and it shows received APRS information on its map display. The unit can store up to 1000 APRS Contacts and display them on the map."

The unit is available ex-stock from ML&S at £359.95. For more details see: **http://www.hamradio.co.uk/acatalog/info_3538.html**
Martin Lynch & Sons, **Outline House**, **73 Guildford Street**, **Chertesy**, **Surrey KT16 9AS**.
Tel: **0845 2300 599**, or (**01932**) **567 333**,
E-mail **sales@hamradio.co.uk**
website **www.hamradio.co.uk**

Radio Amateurs Rally For Siren Calls!

The Essex Raynet Group assisted Essex County Council during the annual test of the flood warning sirens in Essex. The siren testing was carried out on September 6th. In a time when other councils are rejecting the sirens in preference of using SMS text alerts from the Environment Agency, Essex continues to maintain the former air raid sirens in operational order. Two v.h.f. simplex nets were utilised to communicate from County Hall in Chelmsford with the outlying stations. In all, 25 of the coastal locations from Harwich in the north to Canvey Island in the south were manned by members of Essex Raynet. Within five minutes of the test completing all stations had reported back their operability, with only one siren failure. Further details from **Neil Smith**, **Essex Raynet Secretary**, E-mail **info@essexraynet.co.uk**

For further information regarding Essex Raynet visit their website at **www.essexraynet.co.uk**

Dutch & Irish Expertise Triumphs!

Rob Mannion G3XFD/EI5IW tells the story of a remarkable Dutch and Irish partnership that has led to some exceedingly beautiful stained glass that's being exported to the world.

Rob writes: The story begins in late summer when I received an E-mail from ex-patriate Dutchman **Jos Liefkens**, who has lived in Ireland since 1990 and runs Little Oak Glass in County Kerry in South Western Ireland, with his Irish partner **Daireen McMullin**. Jos is a keen short wave listener, is a member of the **Irish Radio Transmitters Society** (IRTS) – the national society representing Radio Experimenters, the official term for Radio Amateurs in the Irish Republic.

Jos had originally contacted me as he had made a special stained glass callsign plaque that's to be presented to a *PW* author, on behalf of Jos later in October. We then had a lengthy exchange of E-mails where I was explaining my personal interests in County Kerry. This – of course – also included my particular fascination and admiration of the original Listowel & Ballybunion Lartique monorail, that ceased operations due to sabotage during the 'Troubles' after Irish independence from the UK. The line, either referred to as the 'Lartique' or 'the railway running on top of a fence' by local people, was both loved and loathed by its passengers. They often had to get out of the pannier coaches to ease the load for the underpowered locomotives on steeper inclines! Despite this the monorail carried many hundreds of thousands of tons of sand from Ballybunion to Listowel!

Then, all went quiet between Jos and myself for a while until the amazingly beautiful plaque, shown here, arrived un-announced from Kerry! It's seen to best effect – naturally as it's stained glass! – when illuminated from behind and I'm indebted to my *PW* friend and photographer **Tex Swann G1TEX** , who spent some time producing the photograph for publication. Suitably illuminated the plaque shows the work that Jos put into the plaque to represent G3XFD and EI5IW, my membership of the IRTS and RSGB and my love of both Islands, together with the wonderfully anachronistic Lartique monorail and its truly unique locomotives.

Jos explained about the standard callsign stained glass plaques: "In answer to your question, we quote callsign plagues as being between 120 and 350 Euro (plus postage of approximately 10 Euro). However, with your plague Rob I'm afraid I have to admit I went way over-board! We wouldn't like to give people a fright with the price! You see, it was never the intention for your plague to be that elaborate but I became intrigued by this strange train in Listowel. A bit of a challenge! After juggling with designs I settled for this angle of display of the train. This is because, as you can see, the big light on the loco's front is hiding the second chimney, which for non train lovers is a very confusing feature and could be seen as plain weird! The angle, in realistic stuff, is one of the very few tools designers have for manipulation. So, to make the image more attractive to all people a kind of compromise was struck.

But after having decided it needed to stay black and white, flowers coloured with enamels were used to introduce "friendliness". This meant a third firing in the kiln. Finally to make it stand out against all possible backgrounds a border was added as well. With the above process Rob your plague falls in the lower range of the category coat of arms and crests. Coat of arms and crests are quoted being between 400 and 700 Euro per square foot depending on design.

Anyway, the stained glass callsigns were originally intended to be simple and straightforward. In a way I regret not having stuck to a few set designs from which people can choose from.

I never expected people to have such variety of ideas and enquiries about callsigns! On the other hand it's fascinating for Daireen and I talking to and working with Amateurs like yourself!"

Rob G3XFD: Thanks Jos! Incidentally, the Little Oak website **www.littleoakglass.ie/contact.html** (designed and set-up by Daireen's son **Michael O'Callaghan**) is an excellent 'shop window' for your products!

Further details from **Jos Liefkens & Daireen McMullin, Little Oak Glass**. Tel: **00-353- (0)87 2974748**. E-mail: **info@littleoakglass.ie** or write to **The Spa, Ballygarron, Tralee, County Kerry, Ireland**.

Note: Readers who are interested in the replica Listowel & Ballybunion Monorail in Listowel, are recommended to visit the website **http://homepage.eircom.net/~lartiguemonorail/** or to write via E-mail **fmcnerney@eircom.net**

Cray Valley Go HF & VHF On Field Day!

The **Cray Valley Radio Society** decided to combine both h.f. and v.h.f. at this year's HF SSB Field Day, having two stations allowed those club members who were not serious h.f. contesters to 'have-a-go' at the different style of contesting on 144MHz.

The idea was a success – differing interests and styles were seen in operation. It is an idea for clubs that are not dedicated contest groups to try out – it gets all members involved, whatever their background, whatever their licence class or confidence!

Getting thrown in at the 'deep end' on a h.f. contest can be very daunting for new licensees, that's not to say that a contest at 144MHz is a walk over! There are skills to be mastered at both ends of the spectrum. Having both stations running at the same time allowed members to see which type of contest activity suited them as individuals.

Cray Valley is lucky to have the expertise of **Dave Lawley G4BUO** to hand as a keen h.f. contester both with the microphone and on the key! Dave is not only a keen contester but his enthusiasm is contagious. Working; or should it be studying; alongside him is a marvellous way of learning the techniques required. **Colin Wooff G3SPJ** seems to calm the atmosphere on two metres, a serious 6 metre enthusiast and he manages to pour oil on the whole proceeding! Colin makes any newcomer feel completely at ease – all you need is the armchair! Next year – a bigger social tent and a bigger teapot!

Contact **Richard Perzyna G8ITB/KC9KFY**, Secretary (& Field Day Tea-boy/Cook/Generator Hand/General Labourer!) at the Cray Valley Radio Society by E-mail via **secretary@cvrs.org** Website **http://www.cvrs.org/ Meetings held at The Progress Hall, Admiral Seymour Road, Eltham, London SE9 1SL**. (Near the Eltham Well Hall Roundabout).

Harold (Harry) James G3MCN

David Hicks G6IFA, President Chester & District Radio Society, writes his appreciation of one of the great 'characters' of Amateur Radio in the North West of England.

Harry was born on the May 23rd 1928 in Wavertree, Liverpool and shortly after his family moved to Dovecot where he attended Junior School and later at Highfield School in the well-known Knotty Ash. Harry wasn't an Academic, but he did have a wonderful knowledge of Geography, particularly Countries and places. When he left School he went to work at the famous Meccano factory in Binns Road Liverpool, where his brother David had worked.

Harry was then called up to do National Service in December 1945, often saying that Hitler had given in knowing that he was to join the RAF! He was posted to various bases in Lincolnshire, and also to Cardington in Bedforshire and was discharged from the RAF in July 1948, staying longer than his allotted two years because of a broken leg, sustained when he was playing football.

Harry then joined Plessey, known as 'The Automatic' in those days, he was a wireman working on telephone exchange switch-gear and spent several years in Holland installing new telephone equipment for the company. During his time at Plessey he was a union convener, helping his fellow workers.

In 1966 Harry, with a partner, started **Stephens-James Ltd**, an Amateur Radio Emporium, his colleagues at Plessey knew he was starting a business and coincidentally there was a secondhand car lot opposite the factory called (would you believe!) 'Harry James Motors'! The Radio business was initially in Liverpool, and later moved to a shop in Leigh and he worked there until his retirement in 1993.

The year 1980 saw Harold move to his dream home in Delamere. He bought it for its position, on a hill, and the view. When he first visited he stood on the front door step, with the Estate Agent, looked at the view and said "I'll have it!"

Harry had many interests, especially in birds. At home he kept various birds in a large aviary and the Cockatiels he had last, are now in the Childrens' Zoo in Walton Gardens. He also kept tropical fish, collected stamps and had an interest in Music. He was also a great reader and gained much joy from the written word. Harry was also a football fan supporting Liverpool, having a season ticket from the 1950s up until the late 1990s.

However, Harry's greatest interest was Amateur Radio, being licensed as G3MCN, 'Germany Three Mexico Canada Norway' as he called himself during the 1950s. He became known worldwide as a prolific DXer and amassed a collection of upwards of 50,000 QSL cards, and hundreds of special awards. He was secretary of the **Liverpool Radio Society** for over 20 years and was made an honorary member. The **Chester & District Radio Society** also bestowed Honorary Membership for his services to the society.

Harry travelled the World as a result of friendships made with fellow Amateurs and made at least two world tours, visiting Australia, New Zealand, the USA and the Cook Islands in the Pacific. He was very interested in the exploits of the crew of the *Bounty* which visited the Cook Islands, and collected many books on the 'Mutiny on the *Bounty'* story. On one visit to Aitutaki in the Cook Islands, visiting his friend from Liverpool (who had married a local Princess), Harry spent Easter with the Prime Minister of New Zealand and others on a small desert island!

Harry only needed an excuse to go travelling and one visit was to another Liverpudlian friend in Oklahoma, whose daughter was getting married and wanted a proper English wedding cake! Harry had the cake made, packed it in specially constructed wooden boxes and carried it as cabin baggage all the way to Oklahoma City.

He also travelled with friends to the Mediterranean, mainly to Malta and Croatia and also went on DXpeditions to Orkney, the Faroe Islands, Shetland and the Western Isles. Harry died from natural causes on September 8th 2008 and was cremated at Walton Lea Crematorium on September 18th. The funeral was attended by a very large number of friends and family.

Photo courtest of **Ian Harrison G4JPX**.

New Deputy RSGB Regional Manager for Herefordshire & Worcestershire

Trevor Bailey M0KMB informed the *PW* Newsdesk that,"As of September 10th, there's a new Deputy Regional Manager for the **Radio Society of Great Britain** (RSGB) in Region 5's **Hereford & Worcester** district. **Pete Badham G0WXJ** was appointed by the Region 5 Manager Trevor Bailey M0KMB, after the post had been vacant for some time, due mostly to ill health and job changes for the original DRMs for this district.

Pete is also very well known as the Chairman of the thriving **Worcester Radio Amateurs Association** and is a very keen and dedicated Amateur. Together with the other members of the WRAA, he has built the club to a respectable membership of over 45 in just two years and he aims to put the same effort into his role as the RSGB's Deputy Regional Manager for the two counties. Pete is especially interested in hearing from any clubs in the district who would like to make contact and re-establish a line of communication back to RSGB Headquarters.

So, if you live in Herefordshire or Worcestershire and you would like to find out more about Amateur Radio, the RSGB or have any questions at all, you can find Pete's contact details on the RSGB Region 5 website at **www.rsgb-region-5.org.uk** in the 'meet the team section'.

Editorial comment: Having worked with **Peter G0WXJ** while operating GB75PW from the WRAA club headquarters, I realise that the RSGB has a new, dynamic force supporting Amateur Radio in Herefordshire and Worcestershire. Good luck Peter – the Regional Manager's teamwork is essential for our hobby! **Rob Mannion G3XFD**.

rallies

Radio rallies are held throughout the UK. They're hard work to organise so visit one soon and support your clubs and organisations.

Send all your rally info to

PW Publishing Ltd.,
Arrowsmith Court,
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Dorset BH18 8PW
E-mail: newsdesk@pwpublishing.ltd.uk

October 10th - 12th
RSGB HF Convention
www.rsgb.org
The RSGB HF Convention will be held at Wyboston Lakes Conference Centre, Great North Road, Wyboston, Bedfordshire MK44 3AL.

October 11th
Chesterfield Rally
Martin. Tel: (01246) 217499
E-mail: martin.briddon@ne-derbyshire.gov.uk
http://GB3EE.com
The GB3EE Repeater Group Chesterfield Rally will be held at Hasland Village Hall, Eastwood Park, Hasland S41 0AY (M1 j29/30). Doors open 10am - 4pm and there will be trade stands and a Bring & Buy.

October 12th
Great Lumley AR & ES Rally
David Barclay. Tel: 0191 3888113
E-mail: m0bpm@btinternet.com
Great Lumley Amateur Radio and Electronics Society Annual Rally will be held at the Great Lumley

Community Centre, Great Lumley, Front Street, Chester-le-Street, Co. Durham DH3 4JD. Doors open at 10.30am. There will be trade stands and a Bring & Buy.

October 19th
Blackwood & DARS Rally
Dave. Tel: (01495) 228516
E-mail: ddlewhbk@btinternet.com
www.gw6gw.co.uk
The Blackwood & DARS Rally will be held at Coleg Gwent, Risca Road, Crosskeys NP11 7ZA. Admission is £2 and doors open at 10am for disabled visitors and 10.30am for others. There will be trade stands, a Bring & Buy and special interest groups as well as plenty of parking.

Galashiels & DARS Radio & Computer Rally
Jim. Tel: (01896) 850245
E-mail: ngm7lun@qsl.net
The Galashiels & DARS Radio & Computer Rally will be held in Volunteer Hall, St John's Street, Galashiels TD1 3JX. Doors open at 11am and entry is £2. There will be trade stands and a Bring & Buy.

October 24th & 25th
Leicester Amateur Radio Show
Geoff Dover. Tel: (01455) 823344
www.lars.org.uk
The Leicester Amateur Radio Show will be held at Donington Park, Castle Donington, Derbys DE74 2RP. Doors open 9.30am to 5.30pm on Friday and 9.30am to 4.30 pm Saturday.

November 1st
14th RADARS Annual Traditional Radio Rally
Dave. Tel: 07710243017
E-mail: dave.shaw@zen.co.uk
The Rochdale and District Amateur Radio Society (RADARS) will hold their rally at St Vincent's Church Hall, Caldershaw Road, Rochdale OL12 7QL starting at 10.30am. Entrance will be £2.00 (concessions for U 12s and seniors), which includes a donation to The Floyd Neuro-Rehabilitation Unit. There will be trade stands and flea market together with a large Bring & Buy stall. Refreshments will be available including the famous bacon butties.

November 2nd
Great Northern Hamfest
Ernie Bailey. Tel: 01226 716339 between 6 and 8pm
The Great Northern Hamfest will be held in the Metrodome Leisure Complex, Queens Road, Barnsley S71 1AN. Doors open at 11am and there will be trade stands, special interest groups and a Bring & Buy plus tables allocated to radio amateurs to sell their own equipment at a nominal charge

of £12. The venue is on one level with excellent disabled facilities.

November 30th
Bishop Auckland RAC Rally
Mark. Tel: (01388) 745353
The Bishop Auckland Radio Amateurs Club Rally will be held in the Spennymoor Leisure Centre, Co Durham DL16 6DB. Doors open at 10am for disabled visitors and 10.30 for others. Entry is £1.50 with accompanied U14s free. There will be trade stands and a Bring & Buy.

January 18th, 2009
Red Rose Winter Rally
Steve. Tel: (01942) 888900
www.wmrc.org.uk The West Manchester Radio Club is holding its Red Rose Winter Rally, at Lowton Civic Centre, WA3 2AH, just off the A580 East Lancs Road. This venue is all on one level with disabled facilities and free parking. There is a low cost Bring & Buy, RSGB bookstall, the usual trade stands, component and special interest groups, licensed bar, homebrew catering and large social area in which to mingle with fellow amateurs. Doors open at 10am.

January 25 2009
Horncastle Winter Rally
Tony Nightingale G3ZPU Tel: (01507) 527835
E-mail G3zpu@yahoo.co.uk
The Horncastle Winter Rally is to be held in the Horncastle Youth Centre LN9 6DZ (Note: Google Maps details are wrong), With free parking, it's all on one level and ideal for wheelchair users. Entry will cost only £1 for visitors, with table available at £5 per table, Doors to be open at 10am

February 22nd 2009
Radio Active 2009
Simon G8ATB Tel: 01270 841506
E-mail: info@radioactiveshow.co.uk
Mid-Cheshire Amateur Radio Society (MIDCARS) are hosting, the Radioactive 2009 rally on10:30 Sunday 22nd February 2009 at the The Civic Hall, Nantwich, Cheshire CW5 5DG. There will be Talk In, Car Parking,Trade Stands, Bring & Buy,Licenced Bar, Catering.

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

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Another great feature is the large, touch controlled extra bright illuminated LCD panel. Being wireless means that you can take the panel anywhere around your house, garden or shed and be able to see all the weather parameters on a screen that is not tethered by cable. Locating your sensors is easy too as it is not governed by where the wiring should go. If you want to move them, you do not have to worry about re-wiring, IT'S W RELESS!

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New Product!

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The wait is over! This fantastic new HF & 6M base station has finally arrived and is available from stock and on demo in our Chertsey showroom.

Same size as Icom's flagship IC-7800, the IC-7700 has 200 Watts output on HF & Six, Two independent DSP units (same as 7800) a +40dBm* 3rd order intercept point and ultra wide dynamic range, again like its big brother.

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GB7ML D-Star repeater now active

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See web for full details, PDFs etc.

Icom IC-7000
If you want a small IC-756Pro111 in your shack (or car) then the IC-7000 comes very close. Superb display & HF-70cm operation.
ML&S: CALL

Icom IC-706MkIIG Mobile / Base
HF+6M+2M + 70cms Mobile/Base.
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Icom IC-7400
Fantastic HF+6M+2M 100W All Mode Base Transceiver.
VERY SPECIAL PRICE - Please call
SPECIAL PACKAGE DEAL AVAILABLE - PLEASE CALL!
SM-20 Desk Mic, SP-21 Speaker, MP-250A PSU

Icom IC-756Pro mkII

Deposit then £175
36 x £56.84p/m

Rig Only: £1749

Package deal
IC-756ProIII
SM20 Microphone
SP-23 New Base Speaker with filters
RRP: £2768 ML&S: £1969

Icom IC-7800mkII

RRP: £6400 Call for ML&S package deal

Deposit then £00
60 x £160p/m

Defer payment for 6 months - Interest FREE!*
The Icom Flagship **Base Transceiver** just keeps getting better & better. Now fitted with 3 Roofing Filters for even more receiver performance.
On permanent display next to the FTdx9000.

Icom IC-910X

The best 2/70 & 23cm dedicated all mode base. 23cm included.

RRP: £1675 ML&S: £1239
Basic Version (without 23cm) also available: £1089

Deposit then £109
36 x £35.39p/m

Icom IC-E92ED

Latest waterproof VHF/UHF dual band with D-STAR Operation included!

The IC-92ED has waterproof protection and is equivalent to IPX7 (1m depth of underwater for 30 minutes). The aluminium die cast chassis and gasket-sealed housing provide performance you can count on in harsh outdoor environments; when hiking, mountain biking, touring and for alpine activities. **ML&S: £CALL**

Icom IC-E90 Triple Band Handie

Multi-band handheld transceiver
ML&S: £199.95
Or available with 4m and extra antenna for Only £239 95

Icom IC-703 IDEAL FOR M3 USERS

10W Portable/Base HF Transceiver with built-in ATU.
RRP: £703 ML&S: £449.95
or Deposit £50, 36 x £14.44p/m

Icom IC-718 HF Transceiver

Basic ready to go 100W HF Transceiver supplied with Microphone & DC Lead. **ML&S: £439.95**

Icom IC-E208

2/70 mobile 50/55W Transceiver with host of additional features. Remote head leads included.
RRP: £365 ML&S: £219

New! Nifty Handie Stand

Get double duty out of your HT, add an external microphone and use it as a Base Station.
The HT Stand holds your radio upright and steady at a comfortable viewing angle. Stops a remotely connected antenna or external microphone from "dragging" your HT around on the desk. **Only £28.95**

The new LynchLine is open for business

The web's best place for private buyers and sellers of radio gear – and it's totally FREE!
Click on: www.LynchLine.co.uk

LDG Tuners & Accessories

NEW! AT-2000Pro

Building on the success of the AT-1000, LDG Electronics has refined and expanded its flagship 1kw tuner. Only £399.95

1kw 160m-6m (1.8-54MHz) High speed Auto ATU, tuning range 6-1000Ohms, i.e. 10:1 SWR

LDG AT-7000 Specifically designed for the IC-7000! The AT-7000 is the ideal tuner for your shiny new IC-7000. First, it matches up to 10:1 SWR (3:1 on 6 meters), so just about anything you can feed with coax is good to go. And, it has 2,000 (not a typo; that's 2,000!) memories. £139.94
LDG Z-100 100W Auto ATU 160M-6M ..... Only £119.95
AT-200Pro 1kw 160m-6m (1.8-54MHz) High speed Auto ATU, tuning range 6-1000Ohms £399.95
AT-897 Bolt-on Alternative Auto Tuner for the FT-897.Wider tuning range and cheaper too! ..... Only £179.95
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FT Meter - External meter Add-on analogue meter for the FT-857 and FT-897. Just plug & go! Enables you to read signal strength. Discriminator, power output, s.w.r., ALC etc. £39.95

MyDEL CG-3000

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

CG-3000 shown with optional remote switch.

NEW! Remote control for the CG-3000 and CG-5000. £32.95

ML&S Only £229.95

As reviewed by Steve White in Radcom
"A real bargain when compared to its obvious USA competitor" "Well built & performs impressively"
Steve White, Radcom November.

MyDEL CG-5000 NEW MkII Version!

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

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

ML&S Only £479.95

MyDEL Power Supplies

The neatest smartest looking desk top power supplies that money can buy. Ideal for powering any main rig or accessory requiring 13.8 Volts at up to 120 Amps.

2 Year Warranty!

The MyDEL MP-9626 is known as "The Brick"! The MyDEL MP-9626 is a 120A 13.8V DC power supply has been designed for professional applications which require quality high current for equipments. The output voltage has Over Voltage Protection at about 17V to ensure very high protection against power supply failure, thus offering full protection to the powered equipment.
Price: £299.94

MyDEL MP-250A. Only £89.99
25 Amps maximum, 22Amps constant, ideal for most modern HF Transceivers

MyDEL MP-8230. £69.95
The latest version of our popular MP-4128. 13.8V DC, 25Amps, rear posts for neat installation of cables & Cigar outlet.

MyDEL MP-925. £99.95
Linear 25-30A 13.8VDC PSU, using a large transformer, twin meters to monitor Volts & Amps. Been on the market for over 20 years in various different brand names and model numbers.

MyDEL MP-9600. £149.94
The UK's best selling 60 AMP switch mode PSU. Massive rear facing binding posts with additional low current front facing sockets. Digital Volts & Amps reading in big clear numbers. Housed in a strong metal case, huge near-silent speed sensitive fan to enable cooling. Over Volts protected. Minimal RF & fan noise generation.

MyDEL MP-6A. £29.95
Another model to the MyDEL PSU range, 13.8V DC, 6 Amps with front facing binding posts. Ideal for FT-817, handies etc.

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MFJ-902H £89.95
MFJ-993B Autotuner £189.95
MFJ-974HB Balanced Line Antenna Tuner £159.95
MFJ-971 Potrable ATU £79.95
MFJ-834 RF Current Meter £59.95
MFJ-16010 Mini Random Wire 100W ATU £44.95
MFJ-259B/L £199.95

Don't forget ML&S stock one of the largest displays of MFJ in the country!

Ltd., CG, Comet, Diamond, Hustler, Icom, Kenwood, Kinetic, LDG, MFJ, Optibeam, Palstar, Super Antenna, Sommerkamp, Watson, Wonder Wand, Yaesu, and many more!

The LDG Z-100 Automatic Antenna Tuner

Product: LDG Z-100 automatic antenna tuner

Company: Made in the USA by LDG (Martin Lynch & Sons Suppliers).

Pros: the Z-100 proved very reliable, simple to use, it's small, lightweight, absolutely ideal for portable operations, is excellent value for money and I've ordered mine!

Cons: No built in s.w.r. meter

Price: £119.95 plus p&p £10 (next day UK Mainland).

Supplier
My thanks for the loan of the review unit go to
Martin Lynch & Sons, Outline House,
73 Guildford Street, Chertsey,
Surrey KT16 9AS.
Tel: 0845-2300 599, FAX (01932) 567222
E-mail sales@hamradio.co.uk
Website www.hamradio.co.uk

I've had quite a bit of experience with the American-made LDG automatic antenna tuning units (a.a.t.u.s) thanks to the very efficient kit version assembled by *PW* friend and colleague **Tex Swann G1TEX**. Tex's older version proved very reliable – and I was very impressed – during the time we aired GB75PW from the **Poole Radio Society's** clubroom in Creekmoor, not far from the *PW* offices.

Recently, I worked a *PW* reader on 18MHz who mentioned the LDG Z-100 and then I worked another station who was using the a.a.t.u. Then I discovered that my friend **Dave Mason G3ZPR**, President of the PRS, owned an LDG Z-100 and was very pleased with it – especially when the budget price was taken into account – I knew I would be in for an interesting time trying it out.

Mighty Midget

Martin Lynch keeps the LDG Z-100 in stock and kept his word by getting one to me the very next day. However, when the a.a.t.u. arrived I was rather surprised at just how small it was! I quickly called it the 'Midget' but soon

Fig. 1: The neat (and very small) LDG Z-100 h.f. and 50MHz automatic antenna tuner.

Rob Mannion G3XFD heard about the Z-100 from friends and he soon found out why it's so popular!

found myself referring to it as the 'Mighty Midget' and wondering just why I hadn't tried one out for myself before now!

The 'Z-100 , **Fig. 1** and **2**, measures only 127 x 127 x 38mm (5 x 5 x 1.5in) and can literally sit in my hand! It's an incredibly simple concept and there's only one push-button (it's a dual-action control selecting **Tune** and **Bypass**) switch and two light emitting diodes (l.e.d.s) – one green for indicating standing wave ratio (s.w.r.) and one red l.e.d. (to indicate that the unit is operating) on the front panel.

On the rear apron there are two good quality PL259 sockets for the antenna and transceiver connections along with a butterfly type wing nut for earthing (grounding). There's also a coaxial type power supply socket (lead supplied) and a standard 3.5mm stereo type jack socket for use with a compatible transceiver, such as the Icom IC-706 (not tried in this review).

The Z-100 uses a microprocessor-controlled switched L-match tuning network. There are 200 tuning memories, providing an almost instant return to previously tuned frequencies. It will work with antenna with impedances of 6 to 800Ω and the manufacturers claim a 1.5:1 v.s.w.r. on h.f. with 3:1 on 50MHz) and there's continuous coverage from 1.8 to 54MHz.

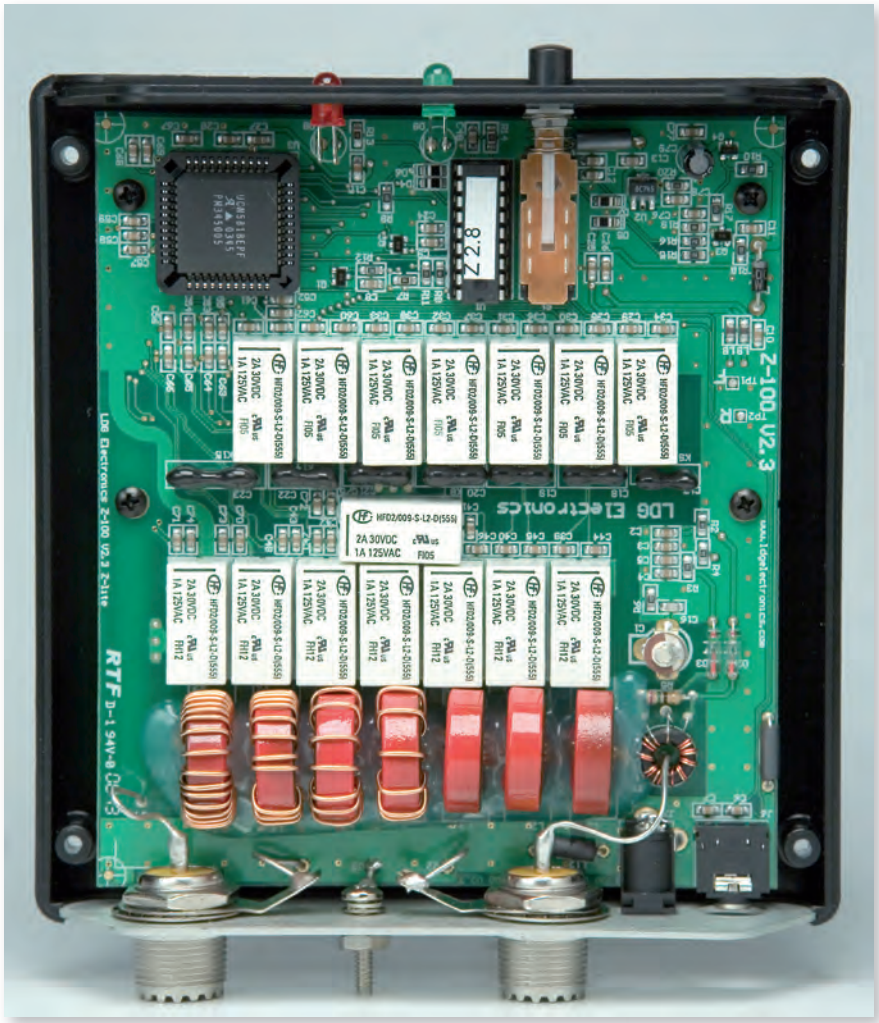


Fig. 2: Inside the LDG Z-100 – a very neat and compact design.

The Z-100's mechanically latching relays hold the tuned setting indefinitely, even when power is removed. The manufacturers claim that any coaxially fed antenna can be fed, although they recommend an optional balance-to-unbalance (balun) transformer with long wire antennas (more of this later).

The LDG design uses banks of fixed capacitors and inductors, switched in and out of circuit by the relays – under the control of the microprocessor – the rapid clicking sound (often referred to as 'Woodpecker tapping') is heard during the tuning process but this isn't obtrusive on this unit. A built-in sensor provides feedback to the microprocessor, which then searches the inductor and capacitor banks seeking the lowest possible s.w.r. on virtually any coaxial cable fed unbalanced antennas (more on this later). **Note:** All the double-pole double-throw latching relays are of a suitable size to handle a maximum of 125W continuously.

The tuning time is estimated to be within one to six seconds, with three seconds being a reported average. **Note:** 0.1 second is claimed when 'memory' tuning is involved! (more on this later). The direct current (d.c.) supply requirements are a modest 7 to 18V at 300mA during tune-up, after which the a.a.t.u. goes into a 'deep sleep' mode, using almost zero current.

Inside the Z-100 it's very smart looking indeed. The most obvious components are the miniature latching relays that provide the switching for tuning. However, LDG utilise surface mount technology (SMT) as much as possible in the a.a.t.u. and surface mount devices (SMDs) are used to great effect. The professional finish inside is superb – with a very neat printed circuit board (p.c.b.) giving the impression that the 'Z-100 will give many years reliable service.

However, when I first connected the supplied power lead to a suitable supply (I used a small 12V jelly-acid battery) nothing happened and the unit seemed dead. I then checked the coaxial power lead and found the centre pin (positive) connection was open circuit. After the problem was solved I made arrangements to use another lead, after requesting Martin Lynch to arrange for a replacement. Incidentally, I think the faulty lead can hardly be blamed on LDG as it was sealed in a bag and most likely came 'ready tested' from the manufacturers. The LDG unit itself was beyond reproach!

Preparing For Operation

With the Z-100 ready to use I prepared to get on to the air to operate and check it out and – as it was my first test – I used an in-line meter to monitor the s.w.r. However, I soon found that it wasn't needed. I also tested my antenna system (using the in-line s.w.r. meter) by pressing the push-button for less than one second.

The Z-100 can be used with any transmitter having a coaxial cable output on the high frequency (h.f.) bands and 50MHz (6m). The minimum input is below 1W (I used a

Fig. 3: As well as coaxial input and output sockets and an earthing (butterfly type) nut, there's a small coaxial power socket along with a 3.5mm jack socket (to take a stereo connected jack plug) for suitable transmitter with a 'Tune' line capability.

500mW c.w. transmitter for one test with no problems) and the maximum recommended power input is 125W on h.f. and 50W on 50MHz.

My first tests involved tuning up on my (3.5MHz based) inverted-V dipole antenna. The next surprise came when a reasonable s.w.r. was achieved on 1.8MHz 'Top Band' within nine seconds! This turned out to be the longest tuning time.

On The Air

Getting on air and tuning the antenna for the first time, I had to provide a little constant level r.f. and usually used low power amplitude modulation (a.m.) while pressing the push-button for longer than three seconds. Using my inverted-V antenna the Z-100 proved remarkably quick to attain s.w.r.s of better than 1.5:1 on all bands – with extremely rapid tuning on the 'old' bands (3.5 to 28MHz). The longest 'first tune' took place on the WARC bands (10, 18 and 24MHz) where it took at least four seconds to tune-up (remarkable!) and illuminate the green **SWR** l.e.d. I then tried the Z-100 on 50MHz, using my mast mounted whip antenna and I got better than 1.5:1 within three seconds.

Next, I tried a long wire antenna – with the end connected to the centre of the PL259 socket on the a.a.t.u., in conjunction with a good earth system. The 'long wire' (dog-legged) is 36m (120ft) long and is used for crystal set and simple receiver training projects with my Grandson **Freddie**. Even though LDG recommend the use of baluns for long wire operation, it was easy to tune up the system on all bands from 3.5 to 28MHz and I had half a dozen c.w. and s.s.b. QSOs. **Note:** During QSOs on 3.5MHz I noticed radio frequency (r.f.) present in the shack was affecting my power supply (affecting voltage stabilisation) but this was soon solved by extra clip-on ferrite cores. (the Z-100 itself was unaffected).

After a few hours on the air I soon found that the 'tuning memory' was working well. This was obvious whenever I got back to previously used frequencies when the green l.e.d. seemed to illuminate immediately! When tuning to new frequencies it usually matched the antenna very quickly, if it didn't, I followed LDG's advice by slightly retuning up or down in frequency and retuning – but that was rarely necessary.

Using my inverted V dipole to work around the UK on 3.5MHz I had just finished an enjoyable short QSO with **Roy Nelson G3ZLF** in Chesterfield, Derbyshire in far-from-perfect conditions when I was called by **Guy Roberts G0UKK** in South London, who I had met in July at the **Cray Valley Radio Society** in Eltham. The QSO suffered from very deep QSB at times – with signals varying between 59 down to 44 but after helping me catch up with the club's news, Roy told me he was actually using an LDG-5 a.a.t.u. and was very pleased with it indeed!

During two weeks of concentrated operation using the Z-100 it proved very reliable, simple to use and I found myself relying on it rather than my roller-coater based manual a.t.u. As it's so small, lightweight, absolutely ideal for portable operations – and excellent value for money (always appreciated by Radio Amateurs!) I'll be buying one very soon. Well done LDG, yet another winner! ●

This Month's Free Gift

Introduction to the PW VHF & UHF Datacards

by **David Butler G4ASR**

Over the coming months you'll be receiving a series of very useful and informative desk-top sized Datacards – and contained within this issue of *PW* is the very first – for the 70MHz band.

The plan is to provide you with these free cards every-other-month. So, in January you can look forward to the 50MHz band version. In March I will be looking at the 144MHz band and in the May issue it will be the turn of the 430MHz band. The Microwave bands don't get left out and these are planned to be featured in stand-alone articles within *PW* and later on there will be separate articles on the v.h.f. and u.h.f. repeater systems.

Handy Size

The Datacards are to be handy-sized and each will provide copious amounts of information to help you on the v.h.f. and u.h.f. bands. So, no matter where you are you can always have at your fingertips details of how to use each v.h.f. band more effectively!

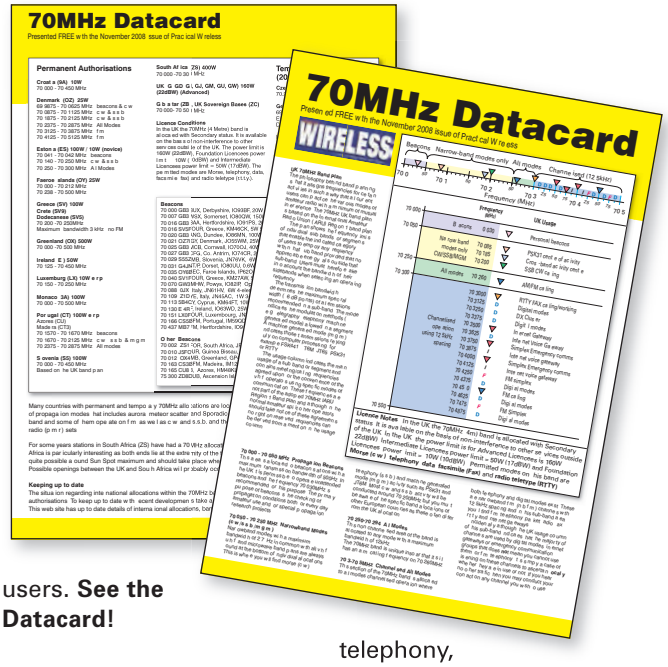
There are so many different aspects of the hobby that can be utilised on the v.h.f. bands. We can use the v.h.f. bands for both local and international contacts with a variety of modes, including Morse (c.w.), amplitude modulation (a.m.), frequency modulation (f.m.) and single sideband (s.s.b.). Digital communications such as Radio Teletype (RTTY), Slow Scan Television (SSTV), FSK441, JT6M, JT65A or PSK31 are also popular.

If you get hooked on working long distances (DX) you'll then discover propagation modes such as Tropospheric ducting (Tropo), Sporadic-E (Sp-E), Aurora (Au), Meteor Scatter (m.s.) and Trans-Equatorial Propagation (t.e.p.). We can also work through Amateur satellites, or even bounce our v.h.f. signals off the Moon to make world-wide contacts!

We can operate from home, in the car or go back-packing from the hill tops – there's a tremendous diversity of interests that can be carried out via the v.h.f. and u.h.f. bands! But we may ask the question, "Exactly where all these modes and activities are carried out?" The answer is – **It's All In The Datacard!**

If you're operating a club station or Special Event Station on an unfamiliar v.h.f. band, or perhaps you're helping out in a v.h.f. or u.h.f. contest but don't perhaps understand the band plans? Each v.h.f. band is different and in some cases the frequency allocations and uses in other countries aren't the same as those in the UK. **Find the answer in the Datacard!**

Equally important as knowing where to operate, is having details of where **not** to operate so that you don't cause interference to other band users. **See the Datacard!**



What do the Datacards contain?

Each card carries details for different v.h.f. or u.h.f. bands and will include **Licence Conditions** and will contain a preamble that gives details of the licence conditions appertaining to each particular band, including modes and power limits.

The Band Plan

Many transmission modes and techniques are currently used in the Amateur Service. The idea behind band planning is that it assigns frequencies for certain activities in such a way that all current users can use the various modes with a minimum of mutual interference.

Each Datacard will contain our national band plan and in some instances – the 70MHz band for example – band plans from other countries. The enclosed 70MHz Datacard, for example, describes the **All Mode** section of the band by giving details of channelised operation and information on f.m. telephony, packet radio, FAX, RTT and internet gateways.

Not all countries within Europe and beyond have the same frequency allocations as the UK and this is particularly true of the 70MHz band. And, although the situation is still somewhat fluid, the Datacard gathers together recent information in one easy-to-read place.

Beacons & other information

Every Datacard will provide an up to date list of UK beacon stations and other international beacons. The cards will also detail propagation characteristics, general usage and where to find further information regarding recent developments. The 70MHz Datacard is the first in the series. Keep it in a safe place and then add to them over the coming months. Soon you'll have an in-depth operational knowledge of the v.h.f. and u.h.f. bands. Enjoy! **David G4ASR**.

The 70MHz Datacard is the first one of the series. Keep it in a safe place and then add to them over the coming months. Soon you'll have an in-depth operational knowledge of the v.h.f. and u.h.f. bands.

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* Boom:142cm Longest Element 150cm
* Gain 11-13 dB

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* Frequency:50-1300MHz TX & RX
* Boom:200cm Longest Element 300cm
* Gain 10-12 dB

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MR 777 2 Metre 70 cm 2.8 & 4.8 dBd Gain (5/8 & 2x5/8 wave) (Length 60") (3/8 fitting).....£17.95

MRQ525 2m/70cm, 1/4 wave & 5/8, Gain 2m 0.5dB/3.2dB 70cm Length 17" PL259 fitting commercial quality.....£19.95

MRQ500 2m/70cm, 1/2 wave & 2x5/8, Gain 2m 3.2dB/5.8db 70cm Length 38" PL259 fitting commercial quality.....£24.95

MRQ750 2m/70cm, 6/8 wave & 3x5/8, Gain 2m 5.5dB/8.0dB 70cm Length 60" PL259 fitting commercial quality.....£34.95

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All co inears D-Star compatible

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(2m 2.0dBd) (70cm 4.5dBd) (RX:25-2000 MHz)
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Tony Nailer's

doing it by design

This month Tony Nailer G4CFY directs his designer's eye at the PW Itchen LCR Bridge to present an up-dated project.

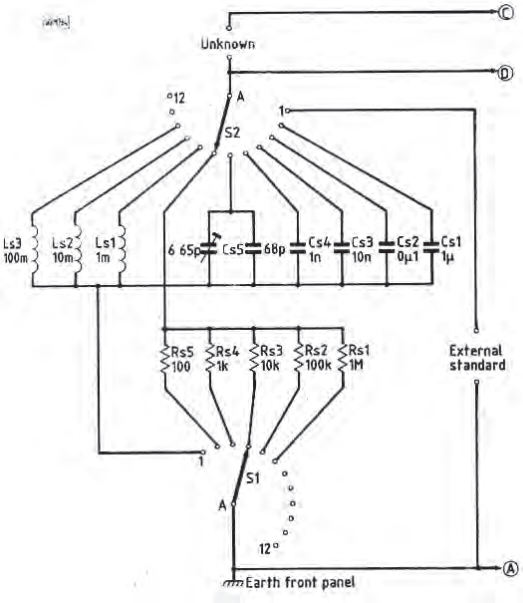


Fig. 2: The original range switching, which Tony G4CFY thought could be simplified.

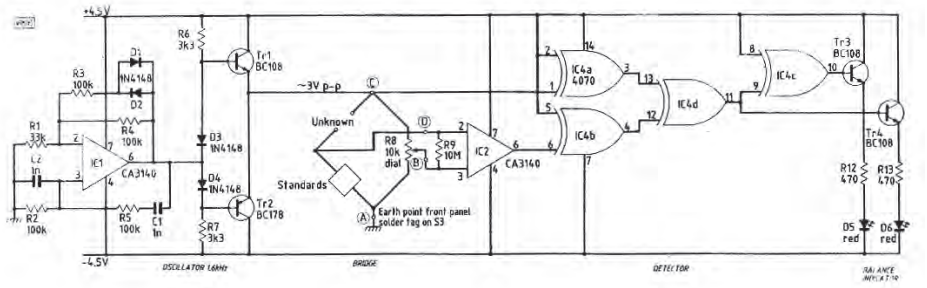
In the previous article in this series, I completed the design of the Off-air Frequency Standard, which has been incredibly popular! So, continuing the test equipment theme I'm taking a new look at the very popular and well established *PW* Itchen LCR Bridge, by **John Thornton Lawrence GW3JGA**, which featured in the April 1987 *PW*.

In my workshop I have two inductance, capacitance and resistance (LCR) bridges, each of which weigh about 14kg. This makes me a bit reluctant to use them, unless I have no other choice! The *PW* Itchen project pages were extracted from the magazine many years ago and added to my test equipment file. I've often looked at the circuit, **Fig. 1**, and been tempted to build it.

The Itchen Described

The construction of the Itchen was unusual, with the controls on the front of the box but with the printed circuit board (p.c.b.) mounted in slots near the rear of the box and with wires –100 to 140mm long wires, connecting front to back. Clearly, the ability to measure small values of inductance would be limited by connecting leads with as much as 500nH self-inductance. The main (p.c.b.) measured 173 x 85mm.

The Itchen had five ranges of resistance, three ranges of inductance and six ranges of capacitance, plus an external standard. This required a total of 15 switch positions and was achieved



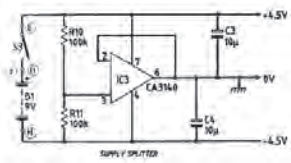


Fig. 1: The original circuit from the April 1987 issue of PW.

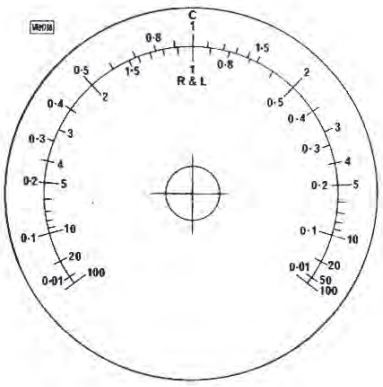


Fig. 3: John GW3JGA used a computer program to create the scale.

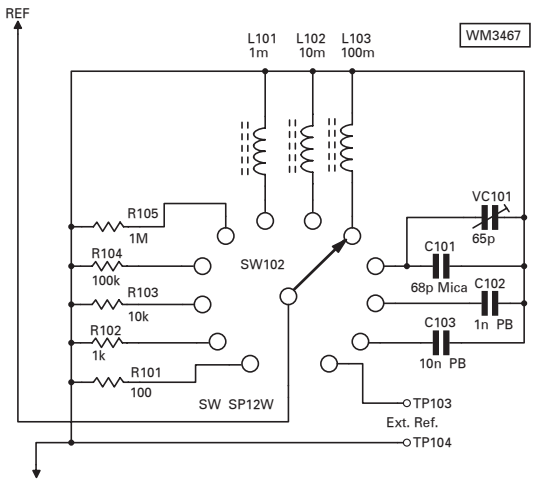
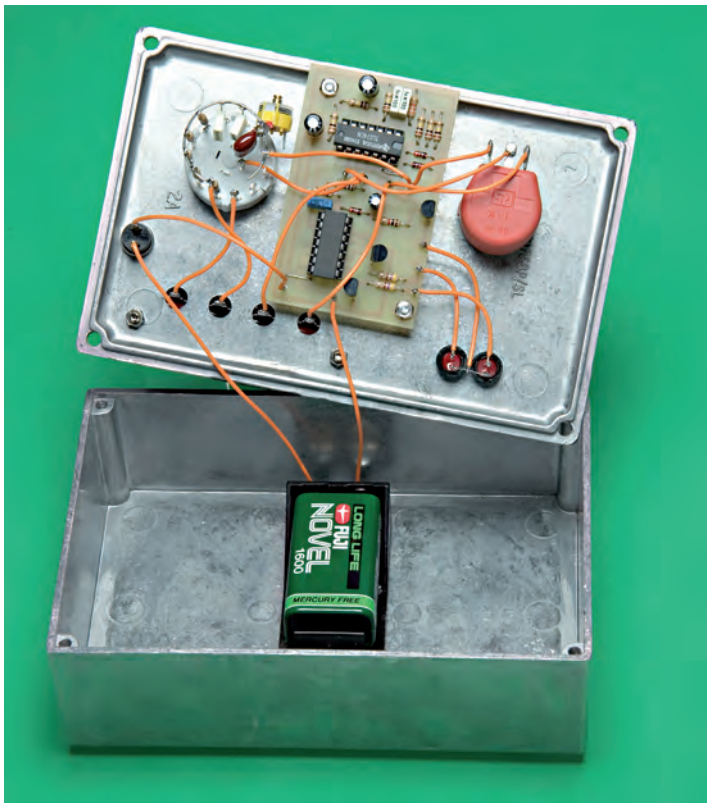


Fig. 4: Circuit of Tony G4CFY's simplified range switching.

using two switches. The switch wiring is shown in **Fig. 2**.

The heart of the unit is a bridge network with four sides. The component under test is one side, the reference another side and the potentiometer forms the other two sides. Balance is achieved when the ratio of resistance each side of the potentiometer wiper is equal to the ratio of the component under test to the reference component.

The circuit utilised three CA3140 field effect transistor (f.e.t.) input op amps, and a 4070 quad exclusive-or gate. The first CA3140 was configured to create an artificial mid-rail. The second as a Wien Bridge Oscillator using back-to back diode clipping varying the feedback path to maintain a critical gain factor. The output of the Wien Bridge Oscillator is fed to complementary transistors operator as a buffer amplifier.



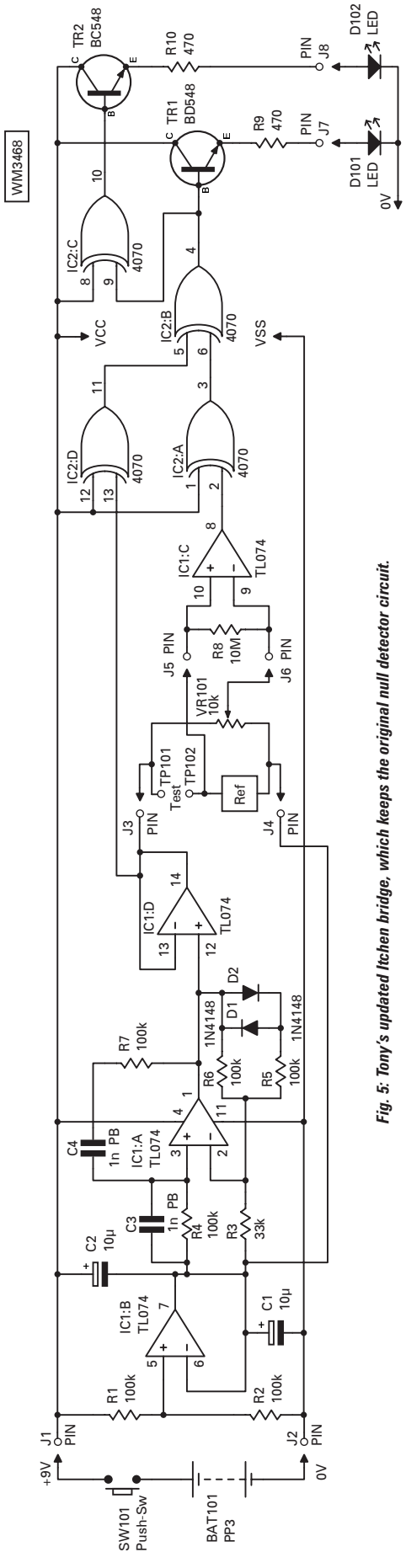


Fig. 5: Tony's updated Itchen bridge, which keeps the original null detector circuit.

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Broadstone,
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E-mail: tony@pwpublishing.ltd.uk

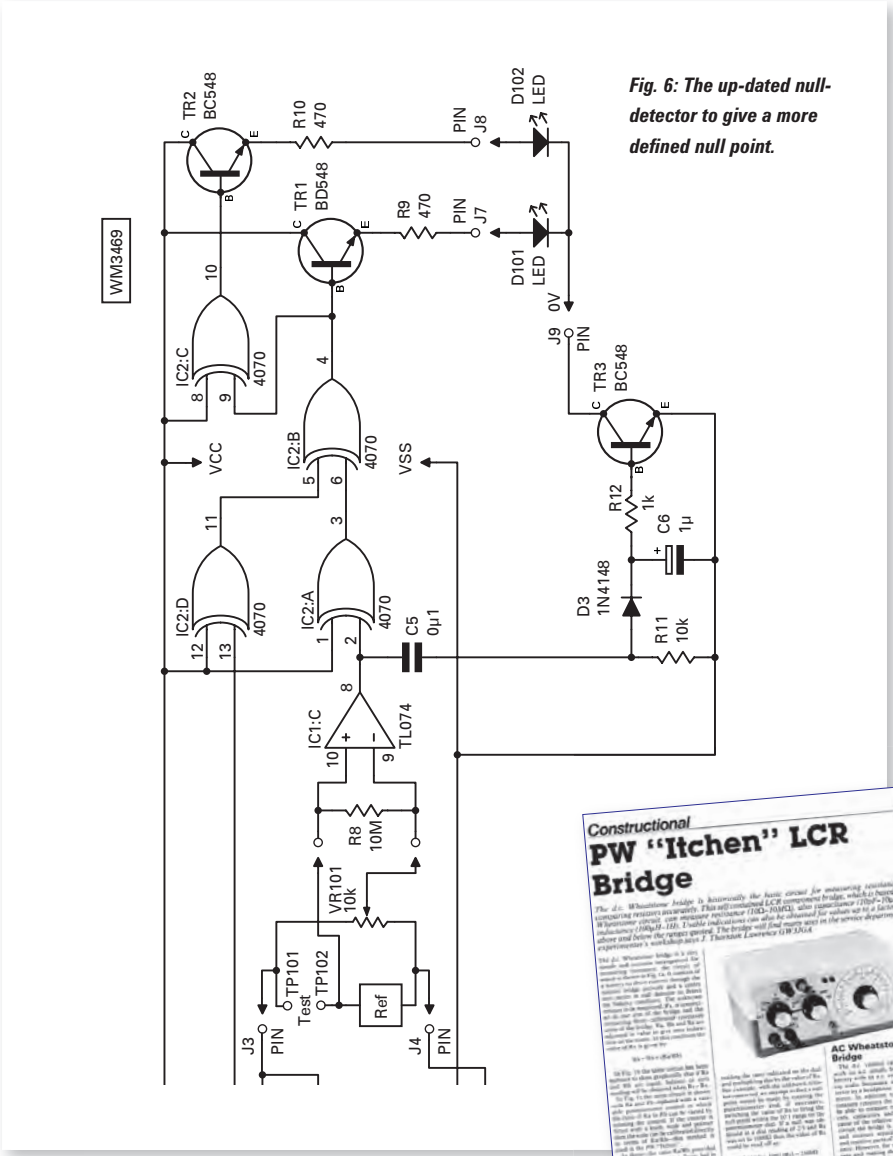
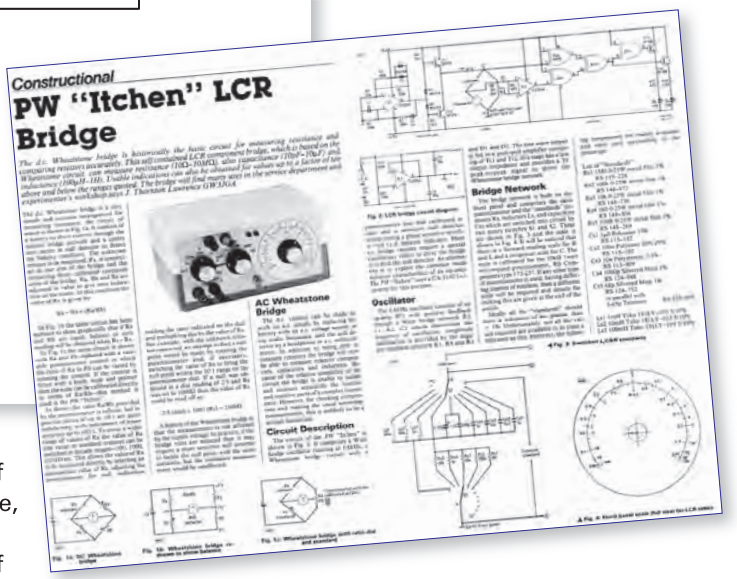


Fig. 6: The up-dated null-detector to give a more defined null point.

and produced a p.c.b. bread-board prototype, measuring just 60 x 43mm. The plan being to mount this on the front panel between the balance potentiometer and the range switch, thereby keeping lead lengths to a minimum.

Initially, I didn't assemble the reference components on a switch but just soldered components and the potentiometer to the bridge pins J3-J6. The circuit did actually work first time and I was able to evaluate the null indication. However, I found this disappointing and really should describe it as ill-defined.


Constructional
PW "Itchen" LCR Bridge
Bridge Network
AC Wheatstone Bridge
Oscillator
Circuit Description

The third CA3140 was used as a differential amplifier and null detector. This null detector has the interesting property that its output square wave changes phase by 180° between unbalance one side and unbalance the other. The original drive signal together with the signal from the null detector feed an arrangement of exclusive-or gates to drive two light emitting diodes (l.e.d.s). The really clever bit of the design is the use of a particular wirewound potentiometer, for which the original designer created a scale (calculated using a computer program) and this is shown in **Fig. 3**.

My Needs

Whenever I have needed to measure component values, my requirements have meant that I could measure they have included the full range of resistance, 0 to 1MΩ, inductance values usually below 10mH, and capacitance up to 1000pF. By choosing five ranges of resistance, three ranges of inductance and three ranges of capacitance plus an external reference, only 12 switch positions are required. This can be accommodated on a single pole 12-way switch, considerably simplifying the design and construction. The simplified switching is shown in **Fig. 4**.

The two transistors, two resistors and two diodes comprising the buffer amplifier can be replaced simply by another op amp. This then allows the use of a single integrated circuit (i.c.) quad f.e.t. input op amp, such as the TL074. A new circuit was drawn up and is shown in **Fig. 5**.

Breadboard Model

Being fairly confident that the circuit would work first time, I laid out

When I swept the potentiometer across its range, first one l.e.d was at full brightness when the other was off, then it dropped to what appeared to be about 80% brightness and then gradually turned off as the sweep progressed. The other l.e.d did the reverse, so that it increased in brightness until it was what appeared 80% bright, then went to full brightness. The null point was where both l.e.d.s were at about 80% brightness.

What was observed was largely due to the reaction of my optic nerves. This is because the eye does not quickly react to changes of light level and what appeared as about 80% brightness was actually due to a 1:1

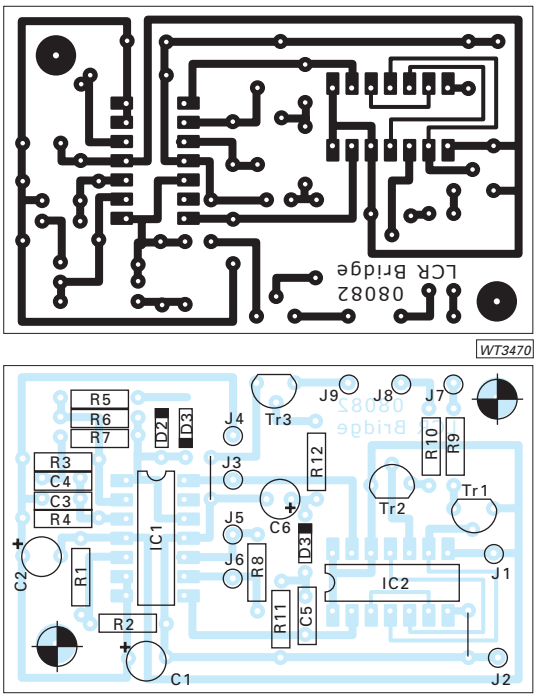
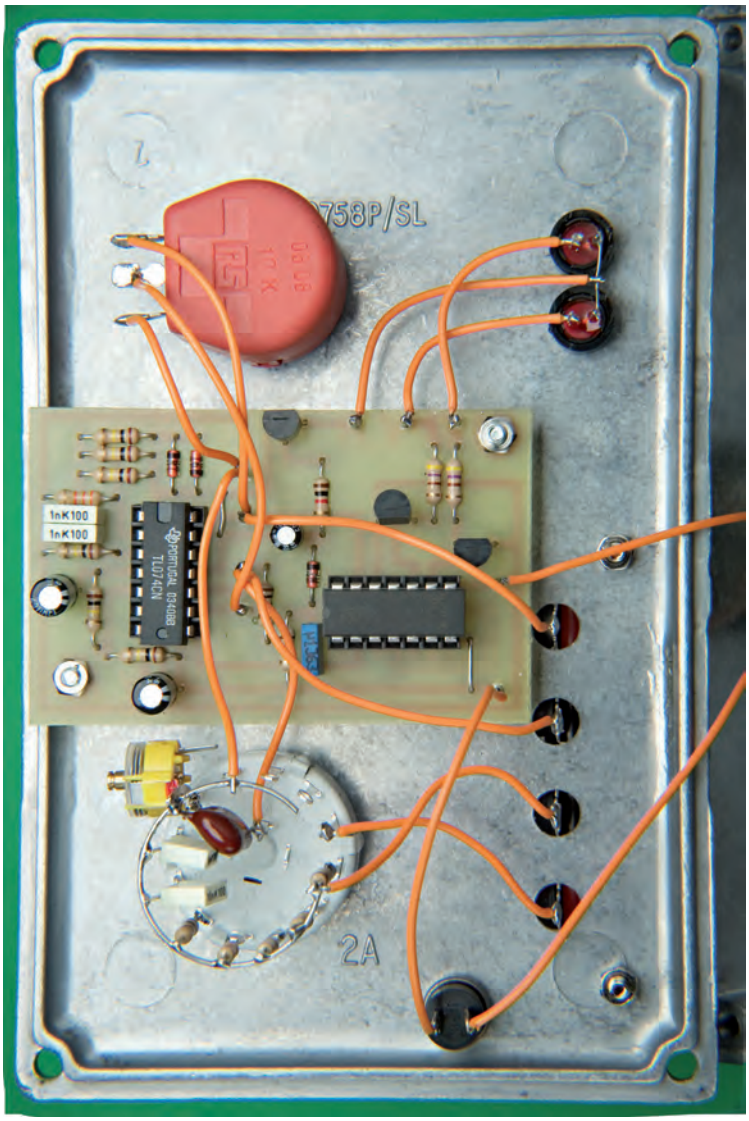


Fig. 7: The track and overlay diagram of Tony's final circuit of Fig. 6.



ratio signal driving the l.e.d.s. Had my eyes responded without afterglow I would have seen half brightness. Clearly a more defined null was required!

It was my intention to write up what had been achieved and leave any post-design on the null indication to a later article. Unfortunately, this wouldn't have warranted a full article, so I continued with the work to improve the null indication.

Null Detector

Observation of the output of the null-detector, IC1c, using an oscilloscope revealed that it was a 5V p-p square-wave signal, with limits 1.5V above the negative rail, to 2.5V below the positive rail. At the null point the square wave collapsed and the output sat at the lower limit.

I then added an l.e.d. in series with a 1kΩ resistor between the output of IC1c and the negative rail, which gave full brightness each side of a well-defined null where it was off.

Thoughts then made me question why the op amp sat at the low limit, which was probably due to a small d.c. offset between J3 and J4 caused by IC1a and IC1d. This is due to the small difference in input currents between inverting and non-inverting inputs of the op amps, resulting in a few millivolts differential between them. However, instrumentation engineers are very aware of this problem and pay good money for op amps with miniscule input offsets. They then further use pins available on single and dual unit op amps, provided specifically to allow a potentiometer to set the offset to zero. I didn't want to add that complexity!

Just as an experiment I tried four TL074 i.c.s in my breadboard. Two gave the null position with the output at the high limit and two gave it with the low limit. Therefore, I needed a circuit, which would ignore the final d.c. level but respond to the square wave.

A lash-up was added to the breadboard unit with a 100nF capacitor connected to the output of IC1c connected to a 10kΩ resistor to the negative rail. Then from the junction of these two components I added a 1N4148 diode, with its cathode end connected to a 1μF capacitor to ground.

I then measured the output

across the 1μF capacitor and found it to be a d.c. level of several volts while the square wave existed, with nothing at the null. Feeding this via a 1kΩ resistor to the base of a transistor, allowed another l.e.d to be driven from its collector. So, with that l.e.d positioned between the other two, there was then a clear left and right and **sharp** null indication.

I then removed the additional l.e.d. and reconnected the other two l.e.d.s to the null switching transistor. Now the result was just what I wanted, with each side building up to a peak of brightness as it approached the null balance then both off at a very well defined null point.

Modified Circuit Diagram

I then modified the circuit diagram to include the improved null indication circuitry and this part is shown in **Fig. 6**. Next, I modified the p.c.b. layout and produced new artwork produced as shown in **Fig. 7**.

Then I exposed two p.c.b.s, developed, etched, drilled, then cropped them, before populating one board which then worked just like the previous lash-up. Various tests were undertaken using a 1kΩ resistor as reference, and with 100Ω, 1kΩ, and 10kΩ as test subjects.

The series of tests proved the sharp null indication was the same at scale positions x 0.1, x 1.0, and at x 10. So, electronically speaking the work was complete but I had to put some consideration to the mechanical assembly.

Mechanical Design

The first item to consider was the terminals for test and external reference. A search through various catalogues revealed a 4-way terminal strip, normally used for loudspeaker connections on cheap hi-fi units. It measured 65 x 15mm with two outer red tabs and two inner black tabs. Alternative individual push-to-connect terminal posts were available but considerably more expensive.

Next, I laid out the board, potentiometer and switch, together with a copy of the dial from the original article, making allowance for the 4-way terminal strip. I reasoned that a minimum panel size of 135 x 90mm would accommodate everything and a box depth of 30mm or greater would be required.

I had hoped that I could find a suitable ABS box, like the one used for the Off-Air Frequency Standard but unfortunately there was nothing of the right sort of size. The closest sized box on offer was diecast box 145 x 95 x 45mm, available unpainted from RS order code 343 9906. A painted version was also available on order code 528 7230. These would be nice substantial boxes and the black painted one would give the product a nice finish, but are quite expensive.

There were also a couple of plastic boxes (available from Maplin) with both being much more reasonably priced but a little large for the job. These are of a grey PX type box 150 x 90 x 52.5mm, part number YU54J and a black MB5 type box 150 x 100 x 60mm, part number YN40T.

Panel Label

The panel label will determine if the finished product looks professional or amateur, so it's of great importance. However, to have a nice reverse printed panel label would require production in the hundreds and might cost as much as £2 per label. This would be a risky investment as there's no way of knowing how popular this product will be!

Kits & Bits

The p.c.b. costs £5 including p&p. The p.c.b. and parts, wire-wound potentiometer and 12-way rotary switch £26, including p&p. The l.e.d.s and holders, battery holder, push switch, 4-way terminal strip, nuts and screws, £8 inc. p&p. Complete kit with drilled black plastic box with printed and covered label £37 inc. p&p. Complete kit with drilled black painted die-cast box and label £44 inc. p&p. Please make cheques available to **A. J. & J. R. Nailer**, and send orders to **Spectrum Communications, 12 Weatherbury Way, Dorchester, Dorset DT1 2EF**. Telephone and FAX: **01305 262250**

As an introductory method, I intend to use my laser printer to print on A5-sized self-adhesive parcel labels and then cover them with self-adhesive clear plastic (the same as used to protect books). The covered label can then be trimmed to size before carefully aligning it with the top of the box.

There's still some experimenting for me to do before producing the label – and there's insufficient time before submission of this article to finalise the inductance ranges. However, I'm hoping, that by paying attention to lead lengths to test sockets and reference components, that it might be possible to have an inductance range of 100μH. That would make this instrument really useful!

Final Version

The final boxed version will be published either in the next article in this series, in the January 2009 *PW*, or alternatively might form a small concluding article in the December 2008 *PW*.

The p.c.b. and component kits, plus choice of boxes, will be available as soon as the inductance range is confirmed. Cheerio until next time!

●

Correspondence With G4CFY

If you wish to correspond regarding this article or previous articles, please subscribe to the list **pw-g4cfy-on@pwpublishing.ltd.uk** by sending a blank E-mail with the word SUBSCRIBE in the subject box. When you receive confirmation from the server you can send an E-mail to **pw-g4cfy@pwpublishing.ltd.uk** and your comments will be answered by myself or the *PW* team.

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Roy Walker's

antenna workshop

Roy Walker GOTAK experiments with two h.f. whip antennas from different manufacturers.

Getting the best out of two whip antennas!

Editorial note: *The author has requested that for the purposes of the article that the PW style (metric measurements first followed by the imperial equivalent) shouldn't be followed and to avoid conversion confusion, only imperial measurements should be used. To assist, I've checked with readers in Scandinavia, Holland, Germany and Greece who confirm that tape measure are readily available with metric and imperial notation on different sides. So, there shouldn't be too many problems getting the correct measurements!* ***Rob Mannion G3XFD.***

I've been known in the past to make rash statements such as, "All Amateur Radio antennas are a compromise", and, "The best antenna is a couple of wires cut to the frequency in use". However, I stand by both statements, although after reading what follows in this article you may doubt the veracity of the statements!.

Always having been interested in portable and mobile working on the high frequency (h.f.) bands, I recently purchased a Moonraker SPX-100 'Plug N Go' to compliment my Yaesu FT-817 portable set up, **Fig. 1**.

As can be seen from the photograph what you get, for a modest amount of your money, is a small base loaded vertical antenna, the bottom end of which is an 11inch ('in' from now on) long loading coil with six tapping points accessed by a wander lead.

Above the loading coil sits a telescopic whip which extends to 50in. The base of the assembly, very usefully, offers you the option of BNC or PL259 terminations and comes with a right-angle PL259 adaptor. An additional feature is that the base of the coil will screw directly into a standard magnetic mount with a 3/8in thread. Altogether it's a neat, transportable package.

Tuning Tapping

Tuning is achieved by selecting a tapping point for the band in use and then fine tuning for the lowest standing wave ratio (s.w.r.) measuremets by adjusting the length of the whip section. However, any antenna of this type and size has got to be a massive compromise! That's not to say that it won't work – undoubtedly small antenna systems do work – but we just have to learn how to get the best from them!

For many years I have used an MFJ-1621, a 54in whip antenna that sits on top of a switched inductor/capacitor circuit and I've had some excellent results from it.

Coincidentally, my friend **Mike Collins M1IKE** (How is that for a vanity callsign?) purchased a similar antenna at about the same time. Mike's antenna is the **Sandpiper ATX-MKII**. But, when we checked the two side-by-side they are identical! It's not so much a case of re-badging as re-packaging, as neither of the items bears any distinguishing mark, as they came from different suppliers.

The only difference arises in the operating instructions for the two antennas. Incidentally, I can't imagine how that came about. The base line tuning measurement for the whip section is quoted differently in each case. Indeed, it was only by putting the two sets of instructions side-by-side that we realised that the Moonraker antenna instructions uses measurements of the distance between the top of the whip and the joint between whip and coil, while the Sandpiper instructions uses measurements from the top of the whip to the top of the plastic section at the base of the whip!

The plastic section is 1¾ inches long; hence some of the discrepancy is explained. I personally favour the Moonraker approach, as I think it's sensible to measure from the top of the coil, rather than an arbitrary point along the whip. That's not the whole story however, because at one point along the tuning recommendations, on the 14MHz (20m) band, a different tapping point and a different whip length is cited, **Fig. 2** and **Table 1**.

Fig. 1: Roy's testing set-up.

Supremely Important!

When using an antenna of this type it's supremely important that you get the absolute best performance from it as is possible = the lowest s.w.r. It is therefore important that you check the equipment in your particular operating configuration, do not simply rely on the maker's recommendations as being the best settings.

Clearly some investigation was required. As the antennas are identical (save for possible manufacturing tolerances) I decided to conduct tests on the Moonraker version. In any event Mike was not keen to let me borrow his, as he uses it. Although he did let me have a look at the tuning sheet, **Fig. 3**!

The initial test equipment set-up was to be my MFJ-259B with the antenna mounted directly on to the analyser – sat on the bench in the shack **Fig. 4**. I anticipated from the outset that other test conditions could produce different results but the approach adopted was intended to provide only a 'baseline' for field operations.

The Sandpiper instruction sheet states that the lengths of the telescopic section are calculated for the lowest frequency in the band and with a ground plane to be part of the system. Rather than cut a ground plane for each band I connected the MFJ-259B to my shack ground plane system which is in effect a long wire. The calculation for a groundplane for each frequency is said on the instruction sheet to be 180 ÷ frequency = Length in feet. This is significantly less than a ¼λ.

	SPX-100		ATX MkII	
Band	**Tap**	**Whip**	**Tap**	**Whip**
80m	nil	48in	Nil	48in
40m	2	48in	2	47in
30m	2	18in	2	15in
20m	3	48in	2	39in
17m	3	30in	3	47in
15m	4	48in	4	21in
12m	4	37in	4	48in
10m	5	48in	5	39in

Table 1: The two tuning suggestions compared.

Band	Tap	Whip	Freq	SWR	Comment
80m	Nil	48in	3.359MHz		!!
	Nil	46in	3.5MHz	1.7:1	
40m	2	47in	7MHz	1:1	Spot on
	2	47in	7.030MHz	1.2:1	Fine
30m	2	15in	10.209MHz	4.2:1	
	2	15.5in	10.100MHz	4.4:1	
	2	15in	10.150MHz	4.4:1	
20m	2	48in	14MHz	1.3:1	Cannot improve
	2	48in	14.060MHz	1.2:1	
17m	3	30in	18.068MHz	22:1	
	3	22.75in	18.068MHz	1.5:1	
15m	4	48in	21MHz	2.9:1	
	4	43in	21MHz	1.5:1	
12m	4	37in	24.500MHz	3.2:1	Cannot improve
10m	5	37in	28.000MHz	4.3:1	Cannot improve

Table 2: The results of Roy's tests on his own whip antenna.

Using Moonraker's tap and whip length recommendation I first of all determined and recorded the frequency and the s.w.r. at that setting. In almost all cases I found that, in my set up, there was a significant s.w.r. at the makers recommended guide setting.

Wherever possible I calculated the 'correct' setting of the whip length to give the lowest s.w.r. at the bottom end of the band in question. This is accomplished, as recommended, by adjusting the length of the whip section. It's a fiddly business, but well worth doing. You must however remember that you must take the reading whilst fully clear of the antenna so as not to affect the readings. A personal preference is

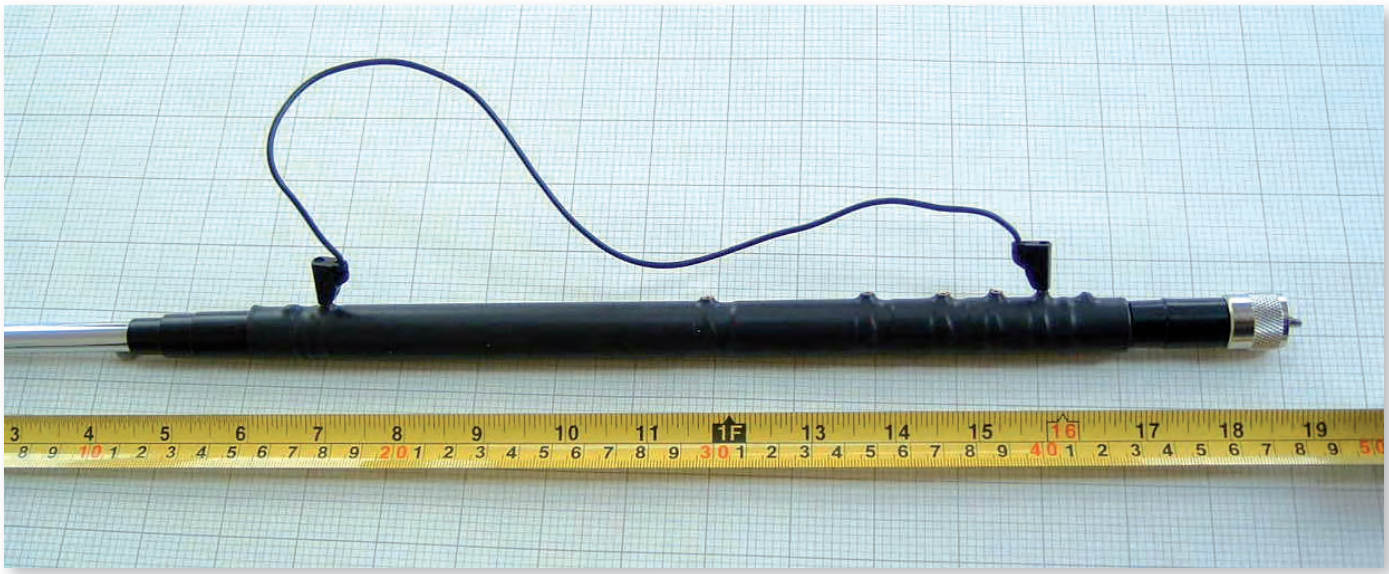

Fig. 2: Although seeming to be identical, the tuning instruction vary between the two whips.

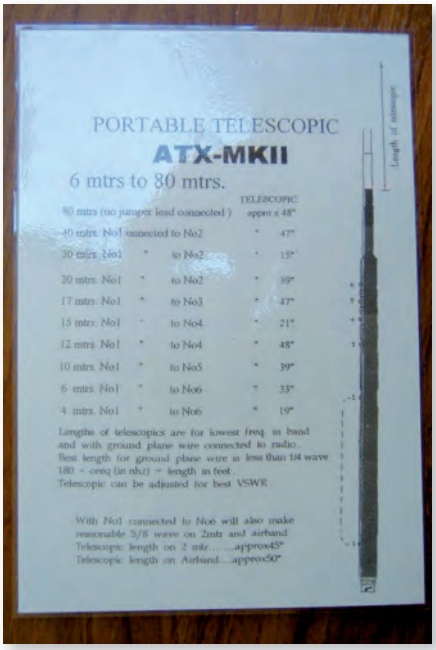

Fig. 3: The tuning sheet for Mike M1IKE's version of the whip antenna.

to use the maximum length from the base of the antenna whip as possible. A thick radiator always produces a wider bandspread than a thin one.

The initial results are shown in **Table 2**. When I had done the measurements I went back, at a later date, and did them all again; just to be sure that I had not made any errors. There were significant discrepancies!

Although I was in almost every case able to achieve a decent s.w.r. reading, the measurements were in most cases different from the first set of figures. What had I done wrong?

Well, not wrong exactly but certainly different. I still have not found out, despite repeated attempts. I had fallen into a trap of which I was reminded when I discussed the symptoms with **Tex G1TEX** of *PW* fame.

Small antennas of this nature are very susceptible to changes in their immediate local environment. This seems to be even more so when they are used in conjunction with a counterpoise. This symptom is one which all mobile or portable operators will be used to dealing with, although we may not all appreciate what we are doing.

I have for years used a set of Hustler mobile antennas individually 'tuned' for a spot on the band that I prefer. The set has either been assembled on a four spiked base plate, with or without added counterpoises, or mounted on a substantial mag-mount on the car. They have, almost without exception, worked very well – although with the benefit of a tuning unit of some description.

Fig. 4: Set up for testing with the MFJ-259B.

Using The ATU

The difference between the Moonraker and Sandpiper offerings and the Hustlers is that with the American system I make the best compromise of a set of pre-tuned antennas using my atenna tuning unit (a.t.u.). In the present set up I had been trying to use what's obviously an environmentally sensitive small antenna in an unfriendly and possibly changing environment.

Without an a.t.u. to 'mask' the results I was getting a no-win situation. The problem had arisen not from any fault in the equipment but because of a basic flaw in the testing procedure – it would not have been a problem had the weather in 'sunny Cumbria' not been so foul over the few weeks I was testing and preparing to write this article. Testing would have been done 'In the clear', in the garden otherwise!

My testing does however emphasize that for best results with an aerial of this type you must constantly be aware of its limitations, and work to reduce their impact on your operating.

So, for next season's mobile and portable operation the set up at G0TAK/2E1RAF will be: An FT-817, charged battery and an external battery supply or car power lead. (Please, if you use the same set-up, to be sure that the external power supply sources are properly protected by appropriate fuses).

In practice, I'll use the SPX-100 mounted on a ground spike or mag-mount, with at least one quarter wave ground wire for each band in use, attached to the rear of the set or to a connection on the ground spike. I'll also have an in-line s.w.r. meter to maintain a constant check on the action of the antenna. (This is probably best mounted close to the base of the antenna).

A Morse key or microphone will be taken, along with a hefty piece of 2 x 2in timber and tape measure.

In your own set-up the equipment should be set up in the position of your choice. I mount the antenna, lay out the radials, set the wander lead on the coil and measure the length of the whip section to slightly more than the maker's recommendations. I then measure the s.w.r., and with the 2 x 2in timber, lightly tap the top of the whip whilst watching the s.w.r. meter to attain the minimum reading.

Having got the best reading, I then step back from the antenna position and check I still have the best reading. If I've 'over tuned' I carefully re-adjust and do it again. This procedure might take me a little time but – if you adopt the same procedure – it will certainly be worth it in the long run as you'll get the 'stunning' results that others report!

To use a (Paraphrased) word of advice from the MFJ instruction leaflet that comes with the MFJ-1621 portable antenna system. "This System will work but it will never replace a real antenna."

●

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It was a great 144MHz day out this year!

The Practical Wireless 144MHz QRP Contest 2008 Results

Editorial comment: On behalf of everyone who took part in the 2008 QRP Contest (it was actually the 25th event as the 2001 Contest was cancelled due to Foot & Mouth Disease restrictions) I'd like to thank Colin G6MXL for all the hard work involved. The contest may only be a one day event but now that I see the Adjudicator more often (as we both belong to the **Poole Radio Society**) I can now fully understand just what a serious year-through committment it really is! Thanks Colin, and let's hope for better radio conditions next year. The weather was just right – we just need DX conditions next time! **Rob G3XFD**.

The leading Scotish Station wins the Tennamast Trophy this year Norrie Brown of Tennamast presents it to the MM0GMZ/P team.

The entrants in The 25th *Practical Wireless* 144MHz QRP contest on Sunday June 8th were blessed with some really good weather, making a total of 4185 valid contacts with stations in 54 different locator squares. There were 92 entries plus two check logs – well up on recent years and 81 of the entries were from portable stations.

Radio conditions were reasonable, although there were no reports of any Sporadic-E (Sp-E) which has favoured the contest on a few occasions in the past. Nevertheless, some good distances were worked, to the surprise of many first-time entrants. **Mark G8AWO/P** reported hearing 9A4V in Croatia on a meteor scatter (MS) burst, but was unable to complete a QSO.

The 2008 Winners

The winners, winning team and leading Welsh station are the **North Wales Wafflers GW0CCR/P**, operating from near Llangollen in North Wales **IO82IW**.

In second place is **Dave Hewitt GW8ZRE/P**, operating from Cyrn-y-Brian **IO83JA**, just a few kilometres north from the winners. Dave wins the runner up shield again this year and is the leading single operator station. Incidentally, Dave has put an excellent guided tour of his station on to **www.youtube.com** – you can find it by searching for GW8ZRE/P.

The leading fixed station is **Colin Noon 2E1SBF**, operating from **J002ST** in Norfolk. The leading English station is the team of **The Salisbury and District Grand International Transmitting Society** (SADGITS) **G4RLF/P**, operating from **IO80WX**.

The leading Scottish station is the **Mid Lanark Amateur Radio Society MM0GMZ/P**, operating from **IO74VT**. The leading station from EI/GI is **Paul Norris EI3ENB/P**, who operated from IO62MM and provided a very welcome multiplier for many stations.

The leading overseas station is **The Contest Club Alkmaar PA1VW/P**, in the Netherlands who operated from **JO22HO**.

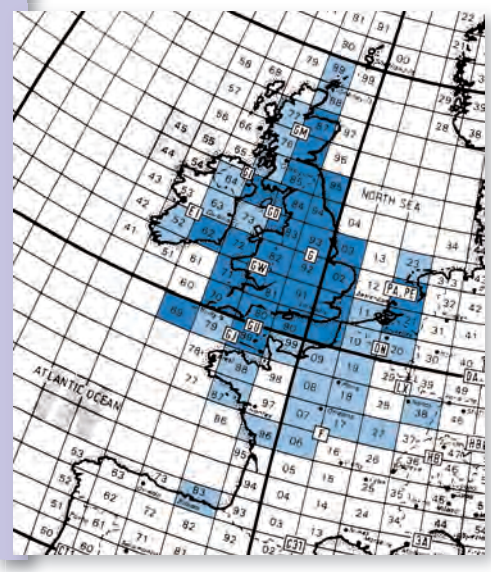


Fig. 1: Map showing locator squares of stations that entered (in dark blue) and other stations worked (light blue).

Tables & Web Site

Other details of the results can be seen in the tables and a fuller results list can be found on the website at **www.pwcontest.org.uk**

As usual all leading stations including the leaders in each square will be sent a certificate marking their achievement, as will all entrants who submitted a stamped A4–sized (so the certificate doesn't have to be folded) addressed envelope.

Check Logs

I am very grateful to both **Peter Lewis G6NSU/P**, in Devon and **Dick Giles G4LBH/P**, in Dorset who sent in check logs this year. Peter's log included **EA2TO/1** in **IN83FE**, the only Spanish station to make it into any of the logs this year.

First Timers

It's really pleasing to note – in the comments sent in with logs – that the *PW* contest is a good introduction to very high frequency (v.h.f.) contesting for many, either as single operators or as part of a team. Numerous stations commented on how far they worked and how much they enjoyed the contest.

Christian Bell M0RTM wrote: "Please find attached my log for today's competition. I hope it's in order as it's my first!"

Ricky Amos M3ZWL said: "This has been my first contest and I'm sorry if anything is incorrect. I do apologise for my lack of contacts as I had visitors on the day and could only spend a short time with the radio on. As I did get a couple of contacts I thought it only fair to log them so they get the points. It was good fun, if not a little nerve racking, but I will be doing more contests as I did

G3VRC/P.

Contest Adjudicator Colin Redwood G6MXL presents the results of the 2008 event where most entrants reported good weather!

enjoy the experience!"

Tony de Maillet M3VXJ/P commented: "This was great fun. I was astounded how far 2.5W could take me on side-band as I'm new to hobby"!

Colin North G4GBP/P wrote: "This is my first contest, having only just got my licence back after a gap of 30+ years. It was a wonderful experience and weren't we lucky with the weather?"

Morecambe Bay Amateur Radio Society G4YBS/P, is celebrating its 25th birthday this year and celebrated in style by entering the 25th *PW* 144MHz QRP contest as the society's first ever contest entry!

Paul McDonough M3VPM, submitted the log from the **Bolton Wireless Club G1ONE/P**, team. "We had a great day; it was the first time for some of us in contesting. Now we are all hooked and have the contesting bug!"

Outlying Squares

Several stations from outlying squares made pleas for stations to turn their beams towards them in future years. **Paul Irwin GI6FEN**, in **IO74** square says, "At least I tried", and included a plea with his log: "Note to all G, GM, GW, etc., please try and remember to turn your beam West or North West occasionally, you never know – you just might get a QSO!"

Jim MM0SMD/P, in **IO87** square reports: "I called for around four hours from above Drummuir near my home QTH of Dufftown and didn't think it was worth sending in my log as I only heard and worked three stations. I heard the Angus beacon and all the nearby local repeaters on f.m., so my system was working fine just no one on. I was just about to give up when the chap from Wales – GW0CCR/P – appeared."

Note: This single contact between Jim and GW0CCR/P earned winning team, The North Wales Wafflers, over 150 points! (Thanks for persisting Jim!).

So, please remember that you really do need to heed the pleas of stations in outlying squares! Make sure you turn the beam towards the squares in South-West and Northern England, the Channel Islands, West Wales, Ireland, Northern Ireland and Scotland to get a large multiplier.

There were a number of stations from several squares in the Republic of Ireland and Northern Ireland on the air. The top stations worked at least a couple of them to increase their multipliers thereby giving a real boost to their overall score.

None of the top stations managed to work **John Goody M1IOS/P** who was operating in his first contest from St Mary's on the Isles of Scilly in **IN69** square. John's log was also the only one without any points deducted for logging errors!

G8AWO/P.

Logistical & Technical Problems

Every year entrants to the *PW* QRP Contest report all sorts of technical and logistical problems. The **Worthing Radio Events Group M0REG/P,** found that "someone else got to 'our' hill first"!

The **Mid Lanark Amateur Radio Society** thought that they were well prepared by arriving on-site 22 hours before the start of the contest. Nevertheless they were still later starting! They had not counted on their mast's winch wire breaking and finding a single 12-element antenna out-performing a pair of 9-element antennas by 20dB. I'll let **Gordon Peterson MM0GPZ** take up the story.

"We had set-up the 2 x 9 element antenna on our small tower on the Saturday and all seemed to be working well. We managed a good few QSOs with really good reports, etc.

On the Sunday morning, I set-up the 12-element and put it on the drive-on mast stand at about five and a half metres. We did a comparison test with the 2 x 9 elements and were horrified to find that the low single antenna was 20db better than the stacked pair for some reason. A few tests and listening to the GB3VHF beacon proved it. The low single antenna was miles better!

So, with 30 minutes to go before the start, we were lowering the mast to remove the 2 x 9 elements and the cable snapped with about two feet to go before the mast support. The results – one brand new 9-element M2 antenna with bent reflector!

Whilst **Ian GM0OQV**, **Phil GM0LIR** and **John** worked on repairing the winch and cable, I swapped the antennas around. The cable had snapped right at the end on the winch, so it was reattached and the 12-element put on and wound back up"!

GW0TKF/P.

Even the winning North Wales Wafflers GW0CCR/P team had its fair share of problems, not only before – but after the contest! Dave GW4DMR, explains. "Age is definitely telling on us now as everything seemed like hard work (even less beer consumed this year). An initial fault on the rotator loop feeder, necessitating the main antenna to be dropped again, which didn't help either but once again, I think we did quite well!

However, we managed to solve another of last year's problems on the way up with the aid of a crowbar and a 'small' rock relocation – so no more dents in the caravan on the way down. But on our first trip back down, the mountain got its own back, destroying one of the rear shock absorbers on the Landrover!

Sadly it looks like this will be our last year entering in our present form – but then again, who knows?"

Electronic Logs

This year 75% of the logs received were sent in by E-mail. Many thanks to everyone who did this. It saves the Adjudicator a huge amount of time. Paper logs take almost 10 times longer to adjudicate than electronic logs!

Logging accuracy varied enormously. First-time entrant **Ian Harling G7HFS/P**, submitted one of the most accurate logs, and worked some of the best DX of the contest. Unfortunately Ian was only able to operate until early afternoon, but I'm sure his very creditable performance will encourage him to be back again next year!

Problem Logs

It's amazing how many different ways it is possible to get the information on cover sheets and logs wrong! Almost every station lost points as a result of logging errors although this made little difference to the position of most stations in the table.

With a few exceptions most stations moved one or two places up or down as a result of the adjudication process. One station dropped seven places as a result of losing 25 of the contacts and two multipliers squares due to careless logging.

To help everyone, I'm giving examples of many of the errors that were spotted during adjudication in the hope that this will help stations in future years. This is because I'm fully aware that there were many first–time entries this year.

Cover Sheet Errors

Several stations got their own callsign wrong on the cover sheet and header of the individual sheets by omitting /P and one station switched the last two letters of their locator around on their cover sheet. These errors became very obvious when every station they worked showed they were /P or in a different locator.

Time Errors

One station had no reports, and yet another had no serial numbers and several had logged the time in BST and not UTC. Yet another had the time about half way in between BST and UTC!

Zeros & Ones

At least four stations mixed up numeric zeros '0' with alpha letters 'O' and numeric '1' with alpha 'I' (capital I) or 'l' (small L) on their E-mailed log sheets. Computer matching is not at all forgiving here, and in order not to penalise those sending in logs by E-mail, I undertook a systematic check of logs to rectify these as I probably wouldn't have picked this up visually on a paper log.

Transcription Errors

There were also numerous suspected transcription errors between original logs and submitted logs (no matter whether paper or computer). For example, one entrant managed to change G3XFD/P into G3XED, the letters 'V' and 'U', 'W' and 'N' were mixed up by several stations – perhaps whilst trying to read a fellow team member's writing?

In another case an entrant using a paper log had tried to change a 4 to a 1 in a callsign, or was it the other way round?

Some stations managed to get the locator of stations they worked wrong, with some UK stations logged in OI94 and JO91squares (they should have been IO94 and IO91 squares respectively)! Locators ending in WE and WX seemed to get confused – perhaps the phonetics 'echo' and 'X-ray' sound a little similar in weak signal conditions?

Unfortunately, it's all too easy to loose points and multipliers through silly mistakes. For

Description	Name/Team	Callsign	Description	Name/Team	Callsign
Overall Winner	**North Wales Wafflers**	**GW0CCR/P**	Leading English Station	SADGITS	G4RLF/P
Runner Up	**Dave Hewitt**	**GW8ZRE/P**	Leading Welsh Station	North Wales Wafflers	GW0CCR/P
Leading Fixed Station	Colin Noon	2E1SBF	Leading Scottish Station	Mid Lanark ARS	MM0GMZ/P
Leading Single Operator	Dave Hewitt	GW8ZRE/P	Leading Station in Eire and N. Ireland	Paul Norris	EI3ENB/P
Leading Multi-Operator	North Wales Wafflers	GW0CCR/P	Leading Overseas	The Contest Club Alkmaar	PA1VW/P

Table 1: Leading stations.

Pos	Call	Name	Single	Score	QSOs	Squares	Locator	Transceiver	Antenna	Ht. asl
1	GW0CCR/P	North Wales Wafflers		4770	159	30	IO82IW	Yaesu FT-736R	4 x 17-ele Tonna	560
2	GW8ZRE/P	Dave Hewitt	S	4238	163	26	IO83JA	Kenwood TR751E	7-ele ZL 12-ele high SWR!	561
3	G4RLF/P	SADGITS		4176	144	29	IO80WX	TS770E	17-ele Tonna	277
4	G3ZXZ/P	Martin Stokes	S	3510	135	26	IO94MJ	Trio TR9130	11-ele Tonna	400
5	G1ONE/P	Bolton Wireless Club		3151	137	23	IO83RO	Trio TR9130	12-ele ZL special	330
6	G8AWO/P	G8AWO G4PCS		2912	104	28	IO91TW	IC 7000	9-ele Tonna	186
7	G8VOI/P	Bob Reeves G8VOI	S	2782	107	26	IO90MX	Icom IC211e	13-ele F9FT Tonna yagi	275
8	G4RUL/P	Alastair and Peter		2250	75	30	JO00CT	Icom IC 202 + Mutek	11-ele Yagi	201
9	G0HDV/P	G0HDV & G0OKF		2242	118	19	IO93UK	Icom 7000	13-ele	300
10	G6TVP/P	Mark Dumpleton & Steve Burke		2240	80	28	IO93WH	Yaesu FT-847	11-ele Yagi	152
11	G2XV/P	Cambridge & District ARC		2158	83	26	IO92XD	Trio TS 780s	9-ele Tonna	71
12	MM0GPZ/P	Mid Lanark ARS		2136	89	24	IO74VT	Icom IC706 MkII	12-ele M2 at 13m	45
13	M0EMM/P	Chris & David Martin (T.D.A.R.S)		1805	95	19	IO82NN	Yaesu 817	Tonna 17-ele	508
14	M0ECR/P	East Cheshire Radio Group		1764	84	21	IO93AD	Yeasu FT579D	Homebrew 6-ele Yagi	479
15	G3GNH/P	Clifton ARS		1638	78	21	JO01HH	Yaesu FT847	9-ele Yagi	200
16	M3AOM/P	Icecream Lickers		1600	80	20	IO92EN	Norcol FT817ND	5-ele Yagi	155
17	G6GWX/P	Cousinjack Contest Group		1587	69	23	IO70PP	Icom 746	10-ele home brew yagi	320
18	G1POS/P	Jon Page	S	1512	72	21	IO91AV	Icom IC-260E	6-ele delta beam	280
19	G0OVA/P	Tony Crake	S	1400	56	25	IO91QI	IC 706 Mk2G	13-ele modified tonna @ approx 4m high	75
20	M0MDG/P	Middlesex DX Group		1386	63	22	IO91MP	Yaesu FT-290	2 x 17-ele tonnas	255
21	G4VRS/P	Roger Piper		1365	65	21	IO91PR	Icom IC275E	9-ele Tonna	230
22	G4MCQ/P	SBMW contest group		1342	61	22	IO81UP	Yeasu FT817	9-ele Tonna yagi	240
23	G7HFS/P	Ian Harding	S	1288	56	23	JO00DS	Yaesu FT817ND	9-ele Tonna	168
24	G8HXE/P	Keith Haywood	S	1278	71	18	IO83RP	Yaseu FT290	SOTA SB-5	389
25	G2CP/P	Scarborough ARS		1196	52	23	IO94PJ	Yaesu FT817ND	Tonna 9-ele Yagi	296
26	M3ZPX/P	The Dunstable Downers		1173	69	17	IO91RU	Yaesu FT817ND	5-ele Beam	243
27	G4NVM/P	John Duddridge	S	1166	53	22	JO01FA	Yaesu FT847	13-ele Tonna yagi	110
28	G3YNN/P	QRZ ARG of Sussex		1113	53	21	JO00DX	Yaesu FT847	2 x 9-ele Tonnas	195
29	G1WOR/P	Worthing & District ARC		1008	63	16	IO90SV	Icom 275	11-ele Tonna	200
30	G4VRC/P	Bob Doran	S	988	52	19	IO90OW	Yaesu FT817	12-ele ZL Special	235
31	G0BWC/P	Bolton Wireless Club	S	969	51	19	IO83SO	IC202	6-ele lightweight yagi	425
32	2W0BYA/P	Dave Passey	S	935	55	17	IO83AD	Yaesu FT817ND	3-ele H/B yagi (SSB). H/B Slimjim (FM)	1064
33	G4RSW/P	G4RSW/P Group		923	71	13	IO82VS		15-ele beam, trailer mounted versatower	163
34	G7TBJ/P	Jeremy Kewn	S	918	54	17	IO70FD	Kenwood TR751e	12-ele ZL special	164
35	M0REG/P	Worthing Radio Events Group		846	47	18	IO90SV	Icom IC706 MkIIG	13-ele Yagi	180
36	G5RV/P	Mid Sussex ARS		817	43	19	JO00BT	Yaesu FT-817	Diamond A144S10, (9-ele), on a 3m mast	165
37	G4GBP/P	Colin North	S	702	39	18	IO80WX	MFJ-9402	SOTA 5-ele beam	277
38	G3VEF/P	Fareham & District ARC		684	38	18	IO90LU	Yaesu FT847	9-ele Tonna	100
38	GW3VGG/P	Bromsgrove & D.A.R.C		684	36	19	IO71SX	Yaesu FT897	9-ele portable at 4mts above ground	315
40	GM7NQP/P	Gary Kinnell		680	34	20	IO86RW	Yaesu FT817	TOYO 9-ele beam	475
41	G4SKM/P	Maltby and District ARS		672	42	16	IO93JJ	Yaesu FT817	8-ele Yagi	300
42	G3BPK/P	Wigan-Douglas Valley A.R.S.		648	36	18	IO83PN	Icom IC706	12-ele yagi	168
43	G4TJE/P	Keith Lewis	S	600	40	15	JO01BH	Yaesu FT817	9-ele yagi tonna	175
44	GJ7DNI/P	steeve McAdams	S	560	28	20	IN89XF	Yaesu FT817nd	9-ele j-beam	60
44	MW0GCT/P	Ynys Mon - Anglesey LFBG		560	35	16	IO83AE	Yaesu FT290R	2 x 4-ele Yagi	770
46	G3XGK/P	Carl Langley	S	528	33	16	JO02UL	Icom IC211E	14-ele Yagi	20
46	G0TUK/P	Steve Tucker and Ian Pomfret		528	33	16	IO83WE	Icom IC202S	Tonna 8-ele portable yagi	300
48	G4RYV/P	david Rumbold	S	525	35	15	IO92BA	Yaesu FT817	5-ele homebrew portable Yagi	290
49	G4PRS/P	Poole Radio Society		512	32	16	IO80WP	Icom 706	Tonna 9-ele Yagi	200
50	G3MAE/P	Hambleton ARS		496	31	16	IO94HI	Icom &46	9-ele Yagi	250
51	G4YBS/P	Morecambe Bay ARS		464	29	16	IO84NA	Yaesu FT290	10-ele Cushcraft horiz. beam (Yagi)	36
52	G3VRE/P	Chippenham & District ARC		435	29	15	IO91AI	Yaesu FT817	15-ele Yagi	219
52	2E1SBF	Colin Noon	S	435	29	15	JO02ST	Yaesu FT290	17-ele	10
54	EI3ENB/P	Paul Norris	S	416	26	16	IO62MM	Yaesu FT290	11-ele yagi for ssb Comet GP9M fm	516
55	M1VHT/P	Graeme Stoker and Keith Morrison		374	34	11	IO84VG	Yaesu FT817	7-ele ZL-Special	600
56	G0LJD/P	Brian Howard	S	352	32	11	JO01GH	Yaesu FT817	13-ele Yagi	100
57	M0ICK	Michael Heywood	S	348	29	12	IO83RO	Icom 7000	5-ele zl special	400
58	G0NWT/P	North Norfolk Amateur Radio Group		330	30	11	JO02MW	Yaesu FT290	Multi-Element Yagi	60
59	PA1VW/P	Contest Club Alkmaar		325	25	13	JO22HO	Icom IC706 MKII	9-ele TONNA	25
60	G3VER/P	Verulam ARC		319	29	11	IO91RU	Icom IC7000	9 over 9 Yagi by Tonna	230
61	M0KSJ/P	Kevin Jennings / Tony Ryan		300	25	12	JO01CJ	Icom IC7000	SB5 Sotabeam	74
62	2E1HWQ/P	Sean Cannon	S	286	22	13	JO03DI	Yaesu FT817nd	MET 144/14T	0
63	M0SGB/P	M0SGB/P		267	89	3	IO82NN	Yaesu FT817	9-ele tonna	516
64	GW4YCT/P	Camarthen ARS		209	19	11	IO72WA	Icom 7400	YG2 4-ele Moonraker	311
64	GU3TUX	Chris Rees	S	209	19	11	IN89VR	Yaesu FT817	5 ele yagi	65
66	GM4YEQ/P	Galashiels and District ARS		208	16	13	IO85NM	Yaesu FT290 MkII	8-ele yagi	305
67	G3UD/P	Graham Bloor	S	200	25	8	IO93AC	Yaesu FT290 MkII	5-ele ZL Special	0
68	2I0RPM/P	Ralph Gault	S	198	18	11	IO74AU	Yaesu FT817	3-ele delta quad	400
69	2E0ELC/P	Patrick Hawkins	S	190	19	10	IO80BJ	Yaesu FT290 MkII	8-ele yagi	304
70	G7SOQ/P	Eastern Angles		180	18	10	IO92VD	Standard C58	Sotabeam 5-ele Yagi	83
71	G0ADH	Bob Razey - Harwell ARS	S	170	17	10	IO91KO	Yaesu FT847	13-ele Yagi	40
72	M3VXJ/P	Tony de Maillet	S	168	21	8	IO92FB	Yaesu FT817nd	SOTA Beam sb270	205
73	G1EFL	Martyn Medcalf	S	157	19	11	JO01FS	Yaesu FT817	4-ele Tonna	50
74	GW0TKF/P	Wade Stuart		154	14	11	IO72XU	Yaesu FT817nd	Sota Beams SB3 3-ele beam	279
75	2J0RZD/P	Rob Luscombe	S	121	11	11	IN89	Yaesu FT290	SSB- 10 element Yagi, FM- 6-ele Yagi	100
76	M0HLT/P	Andy Cox	S	112	14	8	IO70TQ	Icom 706 Mk1	Sandpiper 3-ele Quagi	160
77	M5AEO/P	Jonathan Kempster	S	110	22	5	IO91VM	Yaesu FT817nd	7/8th Vertical	45
77	G4NTW/P	Bill Douglas	S	110	11	10	IO94DS	Yaesu FT817	5-ele beam	265
79	M0WDC/P	West Devon Radio Club		99	11	9	IO80LU	Yaesu FT817	4-ele home made quad	0
80	GC0VPR	St Tybie ARS		98	14	7	IO81AS	Yaesu FT290	10-ele Beam	291
81	PI4VNW/P	Nieuwe Waterweg		85	17	5	JO21BX	Icom IC202 & IC 260	Big Wheel & 4-ele Yagi	28
82	G7NQR/P	Eugene Purvis	S	40	10	4	IO94MJ	Yaesu FT290	4-ele Quad Jaybeam	410
83	2W1BPS	Eileen Mainwaring	S	36	9	4	IO81AW	Yaesu FT290	Dipole	60
84	M0RTM/P	Christian Bell	S	30	6	5	IO92FN	Yaesu FT817	Tonna Element Beam	170
85	GI6FEN/P	Paul H Irwin	S	25	5	5	IO74GN	Yaesu FT290	Sandpiper 3-ele Delta Quad	4
86	M1IOS/P	John Goods	S	24	6	4	IN69UV	Yaesu FT857D	3-ele SOTA Beam	10
87	G7IXP	Philip Hammersley	S	16	4	4	IO92AO	Icom 251E	Home Brew 3-ele Yagi	158
87	G0VZJ	Howard Seddon	S	16	4	4	IO83RO	Yaesu FT817	Telescopic whip antenna	362
89	G3WDS/P	Denis Spooner	S	12	3	4	IO95AF	Icom 706 MK II	3-ele Beam	260
90	G8GHD	W. Edwards	S	8	4	2	IO90PS	Yaesu FT847	3-ele Sandpiper antenna	7
91	MM0SMD/P	Jim Nicol	S	3	1	3	IO87II	Yaesu FT817	homebrew 10-ele beam (DL6WU)	300
92	M3ZWL	Ricky Amos	S	2	1	2	IO92SO	Yaesu FT480R	2m square dipole	68

Table 2: Overall results Table, Practical Wireless 144MHz QRP Contest 2008.

Pos	Call	Name	Score	QSOs	Squares	Locator	Transceiver	Antenna	Ht. asl
1	GW0CCR/P	North Wales Wafflers	4770	159	30	IO82IW	Yaesu FT736R	4 x 17-ele Tonna	560
3	G4RLF/P	Salisbury and Dist' Grand Int' Trans' Soc'	4176	144	29	IO80WX	TS770E	17-ele Tonna	277
5	G1ONE/P	Bolton Wireless Club	3151	137	23	IO83RO	TRIO 9130 TRANSCEIVER.	12-ele ZL Special	330
6	G8AWO/P	G8AWO G4PCS	2912	104	28	IO91TW	IC-7000 with a voice keyer	9-ele Tonna	186
8	G4RUL/P	Alastair and Peter	2250	75	30	JO00CT	Icom IC-202 with Mutek Front	11-ele Yagi	201
9	G0HDV/P	G0HDV & G0OKF	2242	118	19	IO93UK	Icom 7000	13-ele	300
10	G6TVP/P	Mark Dumpleton & Steve Burke	2240	80	28	IO93WH	Yaesu FT-847	11-ele Yagi	152
11	G2XV/P	Cambridge & District ARC	2158	83	26	IO92XD	Trio TS-780 with Spectrum speech process	9-ele Tonna	71
12	MM0GPZ/P	Mid Lanark ARS	2136	89	24	IO74VT	Icom IC-706 MkII	12-ele M2 at 13m	45
13	M0EMM/P	Chris & David Martin (T.D.A.R.S)	1805	95	19	IO82NN	Yaesu 817	Tonna 17-ele	508
14	M0ECR/P	East Cheshire Radio Group	1764	84	21	IO93AD	Yeasu FT-579D HF, VHF, UHF portable	Homebrew 6-ele Yagi	479
15	G3GNH/P	Clifton ARS	1638	78	21	JO01HH	Yaesu FT-847	9-ele Yagi	200
16	M3AOM/P	Icecream Lickers	1600	80	20	IO92EN	Norcol FT-817ND	5-ele Yagi	155
17	G6GWX/P	Cousinjack Contest Group	1587	69	23	IO70PP	Icom 746	10-ele home brew Yagi	320
20	M0MDG/P	Middlesex DX Group	1386	63	22	IO91MP	Yaesu FT-2902	2x7-ele tonnas	255
21	G4VRS/P	Roger Piper	1365	65	21	IO91PR	Icom IC275E	9-ele Tonna	230
22	G4MCQ/P	SBMW Contest Group	1342	61	22	IO81UP	Yeasu FT-817	9-ele Tonna Yagi	240
25	G2CP/P	Scarborough ARS	1196	52	23	IO94PJ	Yaesu FT-817ND	Tonna 9-ele Yagi	296
26	M3ZPX/P	The Dunstable Downers	1173	69	17	IO91RU	Yaesu FT-817ND	5-ele Beam	243
28	G3YNN/P	QRZ Amateur Radio Group of Sussex	1113	53	21	JO00DX	Yaesu FT-847	2 x 9-ele Tonnas	195
29	G1WOR/P	Worthing & District ARC	1008	63	16	IO90SV	Icom 275	11-ele Tonna	200
33	G4RSW/P	G4RSW/P Group	923	71	13	IO82VS		15-ele Yagi	163
35	M0REG/P	Worthing Radio Events Group	846	47	18	IO90SV	Icom IC-706 MkIIG	13-ele Yagi	180
36	G5RV/P	Mid Sussex ARS	817	43	19	JO00BT	FT-817 running on a leisure battery	Diamond A144S10, 3m mast	165
38	GW3VGG/P	Bromsgrove & D.A.R.C	684	36	19	IO71SX	FT-897 on battery supply	9-ele portable at 4m ag	315
38	G3VEF/P	Fareham & District ARC	684	38	18	IO90LU	Yaesu FT-847 TCVR 100AHr battery	9-ele Tonna	100
40	GM7NQP/P	Gary Kinnell	680	34	20	IO86RW	Yaesu FT-817	Toyo 9-ele beam	475
41	G4SKM/P	Maltby and District ARS	672	42	16	IO93JJ	FT-817	8-ele Yagi	300
42	G3BPK/P	Wigan-Douglas Valley A.R.S.	648	36	18	IO83PN	IC-706	12-ele Yagi	168
44	MW0GCT/P	Ynys Mon - Anglesey LFBG	560	35	16	IO83AE	Yaesu FT-290R	2 x 4-ele Yagi	770
46	G0TUK/P	Steve Tucker and Ian Pomfret	528	33	16	IO83WE	Icom IC-202S	Tonna 8-ele portable Yagi	300
49	G4PRS/P	Poole Radio Society	512	32	16	IO80WP	Icom 706 with standard microphone	Tonna 9-ele Yagi	200
50	G3MAE/P	Hambleton ARS	496	31	16	IO94HI	Icom &46	9-ele Yagi	250
51	G4YBS/P	Morecambe Bay ARS	464	29	16	IO84NA	FT-290R Mark 1, Lead Acid battery power	10-ele Cushcraft (Yagi)	36
52	G3VRE/P	Chippenham & District ARC	435	29	15	IO91AI	Yaesu 817	15-ele Yagi	219
55	M1VHT/P	Graeme Stoker and Keith Morrison	374	34	11	IO84VG	Yaesu FT-817. SLAB battery	7-ele ZL-Special	600
58	G0NWT/P	North Norfolk Amateur Radio Group	330	30	11	JO02MW	FT-290 MK1	Multi-ele Yagi	60
59	PA1VW/P	Contest Club Alkmaar	325	25	13	JO22HO	IC-706 MKII	9-ele TONNA	25
60	G3VER/P	Verulam ARC	319	29	11	IO91RU	IC-7000 with mast head pre-amplifier	9 over 9 Yagi by Tonna.	230
61	M0KSJ/P	Kevin Jennings / Tony Ryan	300	25	12	JO01CJ	IC-7000	SB5 Sotabeam	74
63	M0SGB/P	m0sgb/p	267	89	3	IO82NN	Yaesu FT-817	9-ele tonna	516
64	GW4YCT/P	Camarthen ARS	209	19	11	IO72WA	Icom 7400	YG2 4-ele Moonraker	311
66	GM4YEQ/P	Galashiels and District ARS	208	16	13	IO85NM	Yaesu FT-290R MkII	8-ele Yagi	305
70	G7SOQ/P	Eastern Angles	180	18	10	IO92VD	Standard C58	Sotabeam 5-ele Yagi	83
74	GW0TKF/P	Wade Stuart	154	14	11	IO72XU	Yaesu FT-817ND	Sota Beams SB3	279
79	M0WDC/P	West Devon Radio Club	99	11	9	IO80LU	Yaesu FT-817	4-ele home made quad	0
80	GC0VPR	St. Tybie ARS	98	14	7	IO81AS	Yaesu FT-290	10-ele Beam	291
81	PI4VNW/P	Nieuwe Waterweg	85	17	5	JO21BX	Icom IC-202 & IC-260	Big Wheel & 4-ele Yagi	28

Table 3: Leading multi-operators.

example, one station claimed a multiplier for working a station in IN91 square in the afternoon that they had already worked in IO91 square earlier in the day!

I found one instance where just the serial number sent and the locator received were the only items correctly recorded for one contact. Time in BST (not UTC), /P missing from the call, both reports wrong, and no serial number received!

One station failed to provide any reports in their log and asked me to, "Just mark them all as 5,9 both ways". As a result this station lost a great many points through reports not matching those in the logs of the other side of the QSOs. This is a great pity, as the station in question had worked some of the best DX in the contest.

Team Errors

In the heat of the contest some team members appear to have used their own personal callsigns rather than the team callsign for some of their contacts. Another team seems to have been very inconsistent in whether to use the /P suffix of their callsign (perhaps different operators?).

One station switched the sent and received serial numbers for short sequences of their contacts (one particular operator perhaps?), while another switched their sent and received reports around. The easiest way to avoid this is to always exchange the call sign, report, serial number and locator in this sequence e.g. "You are 59001 in J001AB". This is the sequence that everyone is expecting to hear.

GW0CCR/P.

Zero Signal Strength

Although points have not been deducted where incorrectly recorded, it's worth noting that when exchanging signal reports the strength (i.e. the S in RST) goes from 1 to 9. Several stations exchanged S0 (zero) reports!

QRP Rules Okay!

When I took over the adjudicator's role from **Neill G4HLX**, I received one request to increase the power limit to 5W as that is the maximum on the popular Yaesu FT-817. However, all the stations that used the FT-817 managed to reduce the power to within the 3W limit of the contest.

So, I really can't see any justification for an increase in power. Moreover, increasing power requires additional power supplies and there are more than enough instances of stations going QRT mid-contest due to batteries being exhausted before the end of the contest!

Another entrant suggested that the antenna system should be limited to nothing more than a dipole. Having read of the difficulties several stations had getting multi-element arrays to perform correctly, I think this idea might take a lot of the fun (!) out of the contest and risks even fewer contacts for outlying stations.

Despite a very small minority wanting either more power or limits to the complexity of antennas, the very clear message that I get from entries is that people enjoy the contest in its current format, so I'm not planning to change the rules set by our founding Adjudicator G4HLX.

Paperwork Review

I'll be reviewing the contest paperwork and web site at **www.pwcontest.org.uk** to remind entrants to include their full callsign with the /P if they are working as portable. I'm also considering providing a spreadsheet on the web site for stations to download and use as an **optional** alternative to the .rtf and .pdf log sheets.

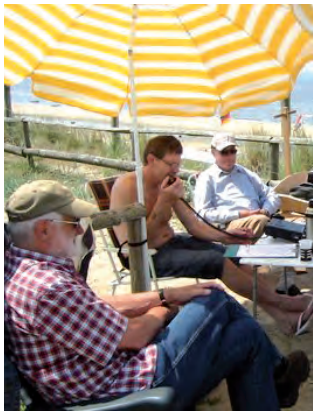
To those who prefer paper entries, please rest assured that paper entries will continue to be very welcome. And I'm giving this assurance because several stations had to switch to paper logs because of computer failures this year!

Next Year

Pos	Call	Name	Score	QSOs	Squares	Locator	Transceiver	Antenna	Ht. asl
2	GW8ZRE/P	Dave Hewitt	4238	163	26	IO83JA	Kenwood TR-751E 3W capable of 25w O/P adj	7-ele ZL 12 ELE high SWR!	561
4	G3ZXZ/P	Martin Stokes	3510	135	26	IO94MJ	Trio TR-9130	11-ele Tonna	400
7	G8VOI/P	Bob Reeves G8VOI	2782	107	26	IO90MX	Icom IC-211e run from 12V battey / mains	13-ele F9FT Tonna yagi	275
18	G1POS/P	Jon Page	1512	72	21	IO91AV	Icom IC-260E	6-ele delta beam	280
19	G0OVA/P	Tony Crake	1400	56	25	IO91QI	IC-706 Mk2G + my Auto CQ Box	13-ele modified tonna @ approx 4m high	75
23	G7HFS/P	Ian Harding	1288	56	23	JO00DS	Yaesu FT-817ND	9-ele Tonna	168
24	G8HXE/P	Keith Haywood	1278	71	18	IO83RP	FT-290	SOTA SB-5	389
27	G4NVM/P	John Duddridge	1166	53	22	JO01FA	Yaesu FT-847	13-ele Tonna Yagi	110
30	G4VRC/P	Bob Doran	988	52	19	IO90OW	FT-817	12-ele ZL Special	235
31	G0BWC/P	Bolton Wireless Club	969	51	19	IO83SO	IC-202 (1976 model)	6-ele lightweight Yagi	425
32	2W0BYA/P	Dave Passey	935	55	17	IO83AD	FT-817ND, 11.1V LiPo Battery, Avair Power	3-ele H/B yagi (SSB), H/B Slimjim (FM)	1064
34	G7TBJ/P	Jeremy Kewn	918	54	17	IO70FD	Kenwood TR751e	12-ele ZL special	164
37	G4GBP/P	Colin North	702	39	18	IO80WX	MFJ-9402 QRP 2m SSB Transceiver	SOTA 5-ele beam from PW Special offer	277
43	G4TJE/P	Keith Lewis	600	40	15	JO01BH	Yaesu FT-817	9-ele Yagi tonna	175
44	GJ7DNI/P	Steve McAdams	560	28	20	IN89XF	FT-817nd	9-ele j-beam	60
46	G3XGK/P	Carl Langley	528	33	16	JO02UL	Icom IC211E	14-ele Yagi	20
48	G4RYV/P	David Rumbold	525	35	15	IO92BA	Yaesu FT-817	5-ele homebrew portable Yagi	290
52	2E1SBF	Colin Noon	435	29	15	JO02ST	Yeasu FT-290R Adonis AM-508 Compressor	17-ele	10
54	EI3ENB/P	Paul Norris	416	26	16	IO62MM	Yaesu FT-290R	11-ele Yagi for ssb Comet GP9M fm	516
56	G0LJD/P	Brian Howard	352	32	11	JO01GH	FT-817	13-ele Yagi	100
57	M0ICK	Michael Heywood	348	29	12	IO83RO	Icom 7000	5-ele zl special	400
62	2E1HWQ/P	Sean Cannon	286	22	13	JO03DI	FT-817 ND	MET 144/14T	0
64	GU3TUX	Chris Rees	209	19	11	IN89VR	FT-817 (battery/solar powered)	5-ele Yagi	65
67	G3UD/P	Graham Bloor	200	25	8	IO93AC	Yaesu FT-290R11	5-ele ZL Special	0
68	2I0RPM/P	Ralph Gault	198	18	11	IO74AU	Yaesu FT-817 and 3-element Delta Quad ae	3-ele delta quad	400
69	2E0ELC/P	Patrick Hawkins	190	19	10	IO80BJ	Yaesu FT-290 mkII 28-ele yagi	8-ele Yagi	304
71	G0ADH	Bob Razey	170	17	10	IO91KO	FT-847	13-ele Yagi	40
72	M3VXJ/P	Tony de Maillet	168	21	8	IO92FB	FT-817ND	SOTA Beam sb270	205
73	G1EFL	Martyn Medcalf	157	19	11	JO01FS	Yaesu FT-817	4-ele Tonna	50
75	2J0RZD/P	Rob Luscombe	121	11	11	IN89	Yaesu FT-290r mkI and pre-amplifier	SSB- 10-ele Yagi, FM- 6-ele Yagi	100
76	M0HLT/P	Andy Cox	112	14	8	IO70TQ	Icom 706 Mk1	Sandpiper 3-ele Quagi	160
77	G4NTW/P	Bill Douglas	110	11	10	IO94DS	Yaesu FT-817	5-ele beam	265
77	M5AEO/P	Jonathan Kempster	110	22	5	IO91VM	FT-817ND	7/8th Vertical	45
82	G7NQR/P	Eugene Purvis	40	10	4	IO94MJ	FT-290R	4-ele Quad Jaybeam	410
83	2W1BPS	Eileen Mainwaring	36	9	4	IO81AW	Yaesu FT290	Dipole	60
84	M0RTM/P	Christian Bell	30	6	5	IO92FN	Standard Yaesu FT-817	Tonna Element Beam	170
85	GI6FEN/P	Paul H Irwin	25	5	5	IO74GN	Yaesu FT-290R	Sandpiper 3-ele Delta Quad	4
86	M1IOS/P	John Goods	24	6	4	IN69UV	FT-857D	3-ele SOTA Beam	10
87	G7IXP	Philip Hammersley	16	4	4	IO92AO	Icom 251E Hammaster 4200 desk micWa	Home Brew 3-ele Yagi	158
87	G0VZJ	Howard Seddon	16	4	4	IO83RO	Yaesu FT-817.	Telescopic whip antenna	362
89	G3WDS/P	Denis Spooner	12	3	4	IO95AF	Icom 706 MK II	3-ele Beam	260
90	G8GHD	W. Edwards	8	4	2	IO90PS	FT-847, Loft mounted, fixed (N/S) 3 elem	3-ele Sandpiper antenna	7
91	MM0SMD/P	Jim Nicol	3	1	3	IO87II	FT-817 Lead acid batterymast base be	homebrew 10-ele beam (DL6WU)	300
92	M3ZWL	Ricky Amos	2	1	2	IO92SO	2m square dipole, Yaesu FT-480R, Watson W	2m square dipole	68

Table 4: Leading single operators.

M1VHT/P.



PI4VNW/P.

MM0GPZ/P.

Square	Name	Call	No. entries
IN69	John Goods	M1IOS/P	1
IN89	Steve McAdams	GJ7DNI/P	3
IO62	Paul Norris	EI3ENB/P	1
IO70	Cousinjack Contest Group	G6GWX/P	3
IO71	Bromsgrove & D.A.R.C	GW3VGG/P	1
IO72	Camarthen ARS	GW4YCT/P	2
IO74	Mid Lanark ARS	MM0GPZ/P	3
IO80	SADGITS	G4RLF/P	7
IO81	SBMW Contest Group	G4MCQ/P	3
IO82	North Wales Wafflers	GW0CCR/P	4
IO83	Dave Hewitt	GW8ZRE/P	10
IO84	Morecambe Bay ARS	G4YBS/P	2
IO85	Galashiels and District ARS	GM4YEQ/P	1
IO86	Gary Kinnell	GM7NQP/P	1
IO87	Jim Nicol	MM0SMD/P	1
IO90	Bob Reeves G8VOI	G8VOI/P	6
IO91	G8AWO G4PCS	G8AWO/P	10
IO92	Cambridge & District ARC	G2XV/P	8
IO93	G0HDV & G0OKF	G0HDV/P	5
IO94	Martin Stokes	G3ZXZ/P	5
IO95	Denis Spooner	G3WDS/P	1
JO00	Alastair and Peter	G4RUL/P	4
JO01	Clifton ARS	G3GNH/P	6
JO02	Carl Langley	G3XGK/P	3
JO03	Sean Cannon	2E1HWQ/P	1
JO21	Nieuwe Waterweg	PI4VNW/P	1
JO22	Contest Club Alkmaar	PA1VW/P	1

Table 5: Square Winners.

Thanks to Neill

I must make a point of adding my personal thanks to **Neill Taylor G4HLX**, for all his help and support. Not only did he hand over an excellent adjudication system that does the job really well, he's also provided all sorts of suggestions at every stage, right through to advice on 'policy' decisions regarding the logging errors.

I should also like to take this opportunity of thanking Neill for devising what has become probably the most widely supported contest in the v.h.f. calendar. On behalf of all entrants over the last 25 years. Thank You all! ●

Please pencil in next year's *Practical Wireless* 144MHz QRP Contest for **Sunday 14th June 2009**. Look out for the rules in the June 2009 issue of *Practical Wireless*.

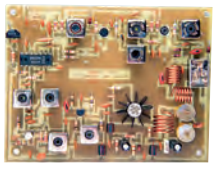
KITS & MODULES

NEW PRODUCT

OFF-AIR FREQUENCY STANDARD, crystal calibrator unit phase locked to Radio 4 using a two-loop system. Includes a monitor receiver to ensure Radio 4 is being heard loud and clear. Fixed outputs 10MHz at 2V p-p, and 1KHz at 1V p-p as oscilloscope CAL signal. Switched outputs 1MHz, 100KHz, 10KHz, and 1KHz at 6V p-p, into 500 Ohms. Single board design as featured in July & Sept 2008 PW. Background heterodyne whistle at 2KHz confirms lock condition. 12/13.5V DC operation at 65mA. **PCB kit with ferrite rod £50.00, PCB kit + drilled box and hardware complete £84.50. Ready built £129.50.**

TRANSVERTERS for 2 or 4 or 6 metres from a 10 metre rig, or 4 or 6 metre from a 2 metre rig. Includes new overtone local oscillator, and integral interface unit. 20dB receive gain, 25W transmit power. Low level drive dual IF versions **TRC2-10dL, TRC4-10dL & TRC6-10dL**, high level drive single IF versions **TRC2-10sL**, **TRC4-10sL**, **TRC6-10sL, TRC4-2sL, TRC6-2sL**, Complete kit **£163.00**. **Built £244.00**

POUNDBURY (2) SSB IF UNIT
9 or 10.7MHz SSB generator & receive IF unit. For use with an external crystal filter. Incorporates a speech processor, double balanced mixer with 40dB carrier suppression, and now has provision for two DC-switched carrier crystals. Low noise, narrowband receive IF amplifier with wide dynamic range, balanced demodulator, effective AGC generator, S meter driver, and 1W audio amplifier. **PCB and data £21.00. PCB & component kit £60.00 inc P&P**. Optional extras mic gain pot, volume control pot, £1.75 each, signal meter £9.00, 8 Ohm loudspeaker £2.00, P&P £2 50.



POUNDBURY 70MHz FRONT END as featured in July 2007 PW. Receive preamp and mixer, transmit mixer and three stage amplifier. Receive sensitivity 100nV, transmit output power 250mW minimum. **PCB and parts kit with potentiometers £44.00.** Works in conjunction with the POUNDBURY 9MHz SSB IF UNIT, the PORTLAND VFO, the MIXER-VFO, and the TA4S4 amplifier to create a tuneable 70MHz 25W SSB Transceiver.

CB to 10FM CONVERSION, suitable for CB's with LC7136/7 or TC9119P PLL IC's. Puts the rig on 29.31 - 29.70MHz. Each board is aligned prior to despatch. Data available for a variety of chassis types. Please state rig type when ordering. **SC29 Built & aligned £23.00**.

STATION PREAMPS for 2 or 4 or 6metres. RF & DC switched. Adjustable 0-26dB gain. 100W power handling. **RP2S, RP4S, RP6S, PCB & Hardware kit £29, Ready Built £47**.

MASTHEAD PREAMPS, for 2 or 4 or 6meters. 20dB gain 1dB NF. 100W through handling. RF switched & DC fed via the coax. Heavy duty waterproof masthead box, and a DC to RF station box with SO239 connectors. **RP2SM, RP4SM, RP6SM, PCB & hardware kit £38.00, Ready Built £57.00**. **Masthead fitting kit £6.00**.

MASTHEAD PREAMPS 400W rated, for 2 or 4 or 6metres. RF switched. DC fed via a separate wire. 20dB gain 1dB NF. Heavy duty waterproof masthead box with SO239 connector. **RP2SH, RP4SH, RP6SH. PCB & hardware kit £40.00, Ready Built £62.00**. **Masthead fitting kit £6.00**.

TWO TONE OSCILLATOR as featured in *PW* March 2005. A vital piece of test equipment used together with an oscilloscope for setting up AM, DSB, & SSB transmitters. **PCB & bits £10.00. PCB assembled £20. PCB & hardware kit £25. Ready Built £52.50**.

SPEECH PROCESSOR increases the average sideband power of SSB transmitters without driving the PA into clipping. Includes filtering to enhance the higher voice tones to increase intelligibility, and it sounds nice too. Panel control for clip and output level. Supplied with plugs & sockets to suit most popular rigs. Type **SP1000, PCB & Hardware kit £29.00, Ready built £63.50**.

PORTLAND VFO as featured in March 2006 PW. 7-7.2MHz as local oscillator for a 40m direct conversion receiver or transceiver. Otherwise as 7.9-8.4MHz to use in conjunction with a mixer-vfo system as local oscillator for a 4 metre receiver/transmitter with a 9MHz or 10.7MHz IF. Available with Buffer 2 for high drive output or with Buffer 1 suitable for the Poundbury project transceiver. **VFO PCB with Buffer 1 or Buffer 2 PCB and parts kit with potentiometer £14.50. PCB and parts kit with drilled box £24.00**. **Ready built £47.50**.

MIXER-VFO for 4metres as described in DiBD PW May 2006. A crystal oscillator and mixer and amplifier producing 61-61.5MHz or 59.3-59.8MHz local oscillator signal when used in conjunction with the Portland VFO. **PCB & parts kit £23.30. Ready built and tested £34.00**.

3N201 MOSFET equiv. 40673 £2.25 each, P&P £1.00 any quantity.

The Rev. George Dobb's

carrying on the practical way

Rev. George Dobbs G3RJV
PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: pracway@pwpublishing.ltd.uk

While the Rev. George Dobbs G3RJV is settling into his new home we're republishing some of his most popular projects and this month it's the turn of the 2222 7MHz transmitter.

This month's project (or should it be challenge?) - features the 'mighty' 2N2222 transistor in a QRP 7MHz transmitter.

For a number of years, QRP fans in the United States of America have grafted an extra day on to the annual Dayton Hamvention in Ohio. The Dayton Hamvention begins on Friday and the QRPers gather in a nearby hotel on the Thursday for what they called FDIM: "Four Days in May".

The four days being the QRP day on the Thursday followed by the HamVention. The QRP day is built around a symposium with a series of lectures, which are published in a proceedings document. I have attended FDIM since it began and it's a truly worthwhile event.

The QRP component is not restricted to the Thursday, there are also events on each evening of the HamVention. One of the popular events has been a construction competition sponsored by NorCal (the Northern California QRP Club).

The NorCal challenge for 1998 was to build a transceiver using 2N2222 transistors as the only active devices. Constructors were allowed to use as many of these devices as they wish, but not to use integrated circuits, although passive diode mixers were allowed. The judges at the HamVention included **Dick Pascoe G0BPS** who is of course well known to *PW* readers as an author and reviewer.

The winner of the 1998 competition was **Jim Kortge K8IQY**, with a very sophisticated 14MHz transceiver. Each section of the transceiver was modelled in software and the construction used non-printed circuit board, direct wiring techniques.

Roger Traylor WB4TPW, won second prize with a 7MHz transceiver. The third prize went to **Jim Roberts NC9H**, for a 14MHz c.w., a.m. and s.s.b. transceiver.

One of the problems for the designers of the 2N2222 transceivers was to get enough r.f. power output from what is a small signal transistor. One entrant - N7RI - used eight 2N2222 transistors in parallel in a double sideband suppressed carrier (d.s.b.s.c.) transceiver.

The various circuits drew my mind back to a little circuit idea by the late **Doug DeMaw W1FB**, for using paralleled 2N2222 transistors in power amplifiers (p.a.s). And it was the Dayton competition amplifiers which inspired me to try the simple arrangement used by W1FB.

The Circuit

The circuit of my trial transmitter for 7MHz is shown in **Fig. 1**. The section of the circuit after L2 shows the W1FB circuit. This Class C amplifier uses only a pair of the 2N2222 transistors in parallel!

Emitter ballasting is achieved with two 2.2Ω resistors. This prevents any single transistor from hogging the current, with a risk of self-destruction. It also alleviates the need to use a matched pair of transistors. The resistors also allow relatively equal transistor currents. (This is a common practice in transistor construction).

As W1FB pointed out in his original notes, many Motorola high power radio frequency (r.f.) transistors (BETs) contain several small signal devices on a common substrate. Each of their emitters is returned to the package emitter terminal via an internal 1Ω resistor. So in effect this idea is imitating a high power r.f. device!

Each 2N2222 transistor is capable of about a quarter of a watt of r.f. output. So the total output of this little transmitter is in the order of 500mW.

Rather Novel!

The output circuit is rather novel! The collector tuned circuit is not the usual common low-pass filter found in so many simple QRP transmitter designs. Instead, it's a 7MHz pi-network, with a *Q* of around eight, designed to match 144 to 50Ω. A trimmer capacitor is added to allow tuning to resonance. In the original, Doug DeMaw suggests that this arrangement is an improvement on the more common, lower *Q*, low pass filter.

The signal generating and driver section of the circuit is to the left of L2. Looking around for a suitable circuit

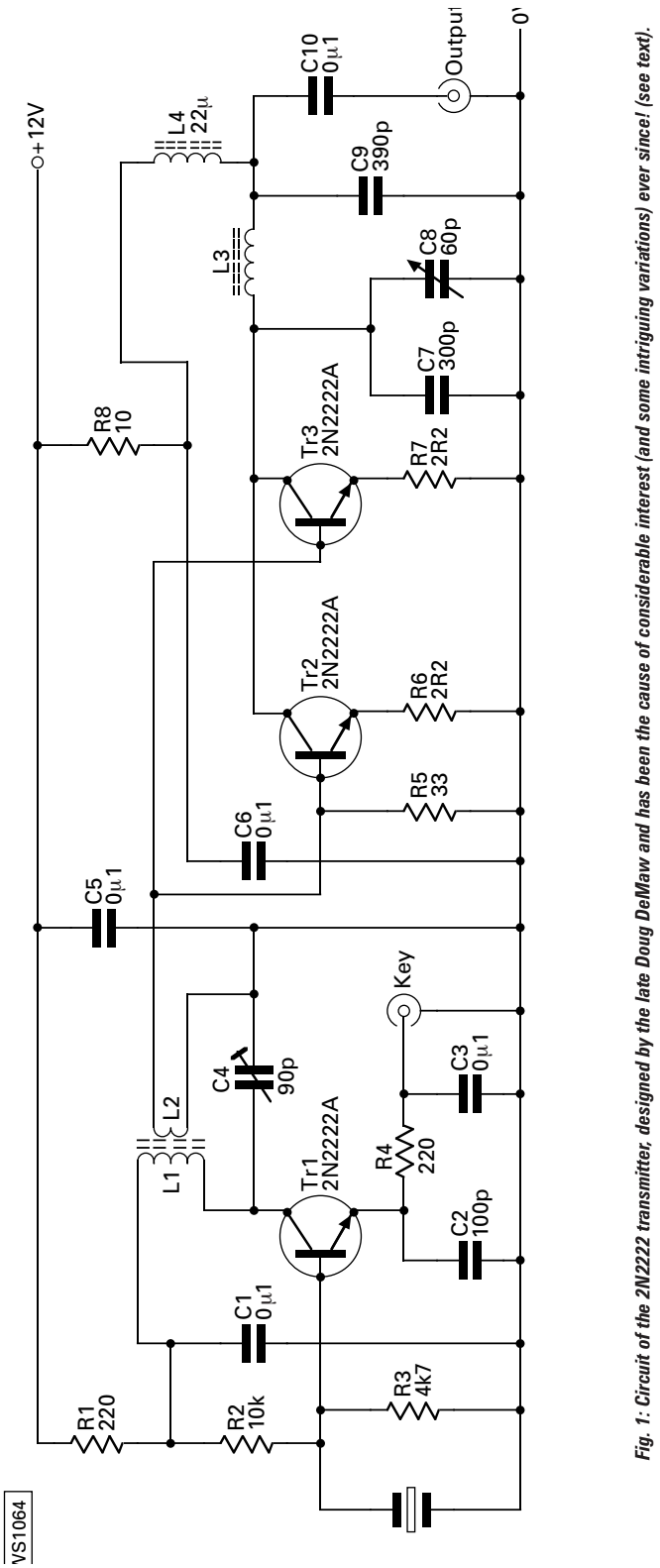


Fig. 1: Circuit of the 2N2222 transmitter, designed by the late Doug DeMaw and has been the cause of considerable interest (and some intriguing variations) ever since! (see text).

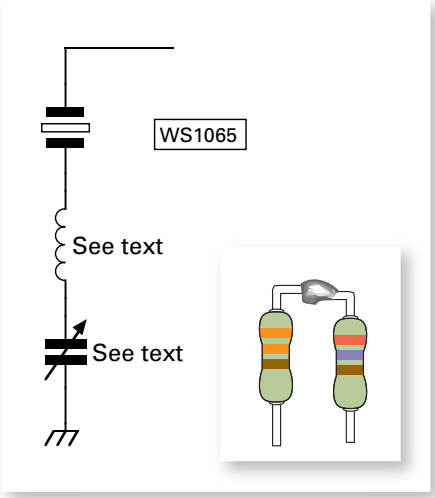


Fig. 2a and 2b: Circuit of a suitable Variable Crystal Oscillator (VXO) suggested for this month's project (see text), together with Fig. 2b, showing the arrangement for the radio frequency chokes (r.f.c.s) for the VXO.

to drive the mini p.a., I returned to the circuit I used for the *Utility Transmitter* in *Carrying on the Practical Way*, *PW* April 1998. This is a circuit with a good pedigree which I have used several times, always with success.

A fundamental 7MHz crystal is used for the oscillator. Feedback to maintain oscillation is provided by the stray capacitance between the emitter and the collector.

At frequencies lower than 7MHz, additional capacitance may have to be added to maintain oscillation. (This could be inserted between the emitter and the base).

In this circuit the oscillator is keyed. Oscillator keying can sometimes result in a poor note as the oscillator dies and then picks up again. However, in this application the note sounds fine.

The collector output is tuned for the 7MHz band. A trimmer allows the tuned circuit to be 'peaked'. The output from the oscillator is picked off the tuned circuit by means of a link winding. (This provides the required low impedance input to the power amplifier circuit).

Toroidal Cores

The inductors, L1/2 and L3 are all wound on T37-2 toroidal cores. The inductance value for L1 is 6µH and this resonates on 7.030MHz (the QRP Calling Frequency) with a capacitor of about 85pF. I used a trimmer I found in the junk box.

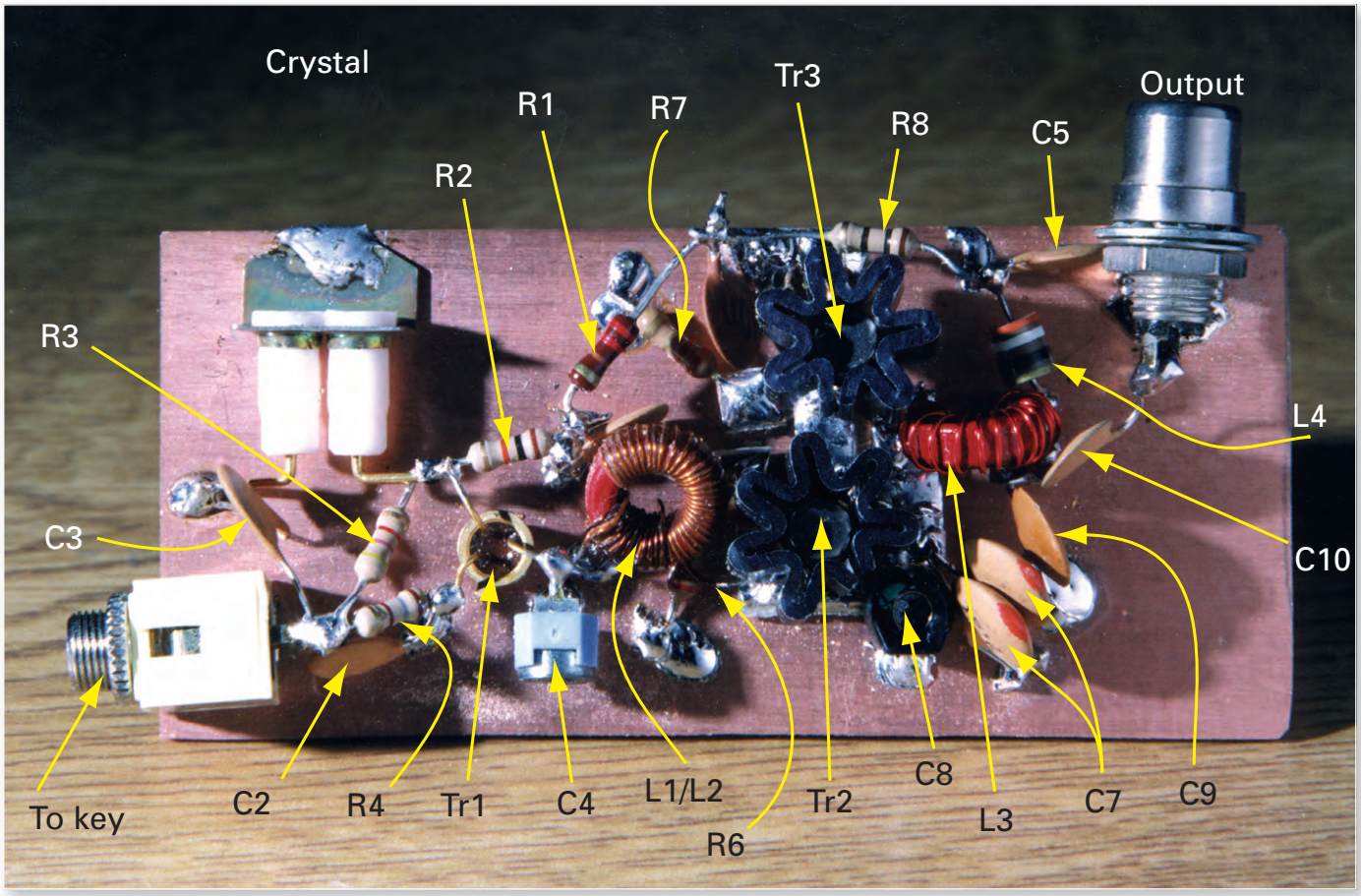


Fig. 3: Annotated photograph of the 2N2222 transmitter as built by G3RJV (note heat-sinking).

The Murata 5mm MTC-BLK trimmer (C4), which has range of 10-120pF, is ideal to resonate the inductor. This is a conveniently small component but the constructor could use a smaller value trimmer with addition parallel capacitance to make up the total value. The link coupling, L2, is wound over L1. I found it easy to solder L1 into place and then add L2.

My prototype was built 'ugly' style, on a scrap piece of blank printed circuit board material (see photograph). The grounded components provide the anchor points for the other parts.

The oscillator, 2N2222A, is mounted 'ugly-bug' style (legs up like a dead insect!) with L1/2 and the trimmer soldered directly to the collector lead. A crystal holder and key jack are added to the oscillator circuit.

Power Amplifier

The p.a. stage amplifier uses a different form of construction. The pair of 2N222A transistors is soldered to small pads made from p.c.b. material. Two pads are used for the emitters, one for both bases and one for both collectors. (I also added small heat-sinks to the output transistors).

Another method could be to make a small heat-sink from a strip of copper and soldering this to both transistor cases. The case is connected to the collector and this would provide a common collector connection as well as acting as a heat-sink.

Incidentally, the 22μH (L4) choke is a standard moulded inductor. (It's always a good idea to keep a stock of chokes to hand!).

I think it's best to build the oscillator first and check the output from L2 using an oscilloscope or simple diode probe connected to a meter. The trimmer can be adjusted for maximum output. The power amplifier section may then be added knowing that it will receive a signal from the oscillator.

Shifting The Frequency

The basic circuit in Fig. 1 is, of course, a fixed frequency crystal oscillator but it is possible, as I've often mentioned in this column, to shift the frequency of a quartz crystal by adding capacitance and inductance. The circuit for a Variable Crystal Oscillator (VXO) is shown in **Fig. 2 (left)**.

Adding the capacitance raises the frequency and the inductance lowers the frequency. Therefore the VXO circuit will allow frequency swing either side of the crystal fixed frequency.

Following the design of the Universal Transmitter mentioned earlier, **Fig. 2b (right)**, shows how two moulded axial inductors can be mounted side by side to increase the inductance value. This method is attributed to Ha-Jo Brandt DJ1ZB.

Values which give a generous frequency shift of several kHz at 7MHz would be 60pF for the variable capacitor and two 33μH moulded chokes. In practice the variable capacitor can be a trimmer.

It's not the most powerful transmitter in the world, but it is interesting to see what can be done with three common small signal bipolar devices. Perhaps, in the future I'll try one of the power amplifiers using a larger number of transistors and perhaps a cooling fan too!

●

club news

Please remember to include full details of your club, E-mail and telephone contact details and the postcode of your meeting venue - it helps potential visitors to find you!

Send all your club info to

PW Publishing Ltd.,
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E-mail: newsdesk@pwpublishing.ltd.uk

BEDFORDSHIRE

Shefford &DARS
David Lloyd. Tel: (01234) 742757
www.sadars.org.uk
The Shefford and District Amateur Radio Society meets every Thursday at the Community Hall, Ampthill Road, Shefford, SG17 5BD (next to the Chip shop). See web site for our full programme.

BERKSHIRE

Reading & DARC
Pete Milton. Tel: (01189) 695697
www.radarc.org
The Reading & District Amateur Radio Club meets on the second and fourth Thursday of the month at Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Berkshire RG5 4LY.

CHESHIRE

Chester & DRS
Graham. Tel: (07930) 655 121
E-mail: info@chesterdars.org.uk
www.chesterdars.org.uk
The Chester & District Radio Society meets on Tuesday evenings at the Burley Memorial Hall, Common Lane, Waverton, Chester CH3 7QT.

Halton RC
Sam. Tel: (01928) 714231
http://g7wfs.sytes.net/hrc/index.htm
The Halton Radio Club meets in The Play Centre, Norton Hill, Windmill Hill, Runcorne WA7 6LJ every Thursday from 7.30 to 9.30pm. There's plenty of parking and full disabled access.

Macclesfield & DRS
Ray King. Tel: (01260) 278431
www.gx4mws.com
The Macclesfield & District Radio Society meets every Monday at the Pack Horse Bowling Club, Westminster Road, Macclesfield SK10 3AT at 8pm.

Stockport RS
David Simcock. Tel: 0161 456 7832
www.stockportradiosociety.co.uk
The Stockport Radio Society meets on the first and third Tuesdays at the Bramhall Air Scouts HQ, Leewood Hall, Benja Fold off Ack Lane East, Bramhall, Stockport SK7 2BX.

Warrington Amateur Radio Club
Paul Carter. E-mail: g7odj@warc.org.uk
www.warc.org.uk
The Warrington Amateur Radio Club meets every Tuesday at 8pm at the Grappenhall Youth and Community Centre, Bellhouse Lane, Grappenhall, Warrington WA4 2SG.

CORNWALL

Cornish RAC
Ian Williams. Tel: (01872) 561058
E-mail: ianporsche964@aol.com
www.cornishradioamateurclub.org.uk
The Cornish Radio Amateur Club meets at the Church Hall, Church Road, Perranarworthal, Truro TR3 7QE on the first Wednesday of every month at 7.30pm. There is also a Computer Section that meets at the same venue and time on the second Monday of every month, except December.

Poldhu ARC
Keith Matthew. Tel: (01326) 574441
E-mail: g0wys@yahoo.co.uk
www.gb2gm.org
The Poldhu Amateur Radio Club meets at The Marconi Centre, Poldhu Cove, Nr Mullion, Cornwall TR12 7JB. Tel: 01326 241656.

COUNTY DOWN

Bangor and District ARS
Mike. Tel: 028 4277 2383
http://www.bdars.com
The Bangor and District Amateur Radio Society meets on the first Thursday of every month in 'The Boathouse', Harbour Car Park, Groomsport BT19 6JP at 8pm. Visitors and new members are most welcome.

COUNTY DURHAM

Bishop Auckland RAC
Mark Hill. Tel: (01388) 745353
http://barac.m0php.net/
The Bishop Auckland Radio Amateur Club meets every Thursday at 8pm in the Village Community Centre, Stanley Crook, Co. Durham DL15 9SN. Tuition for Foundation, Intermediate and Advanced licences is available. The club is registered as an RSGB exam centre.

Great Lumley AR&ES
David Barclay. Tel: 0191 3888113
E-mail: m0bpm@btinternet.com
The Great Lumley Amateur Radio & Electronics Society meets in the Community Centre, Front Street, Great Lumley, Chester-le-Street, Co. Durham DH3 4JD on Wednesday nights from 7 to 9pm.

DERBYSHIRE

South Normanton Alfreton and District ARC
A J Higton. Tel: (01773) 783658
E-mail: snadarc@linuxmail.org
www.snadarc.me.uk/
The South Normanton Alfreton and District Amateur Radio Club meets in the Village Hall, Community Centre, Market Street, South Normanton, Derbyshire DE55 2EJ.

DEVON

Exeter ARS
Paul Cheshire. Tel: 01392 660246
E-mail: pchesh-29@hotmail.co.uk
The Exeter Amateur Radio Society meets on the 2nd and the 4th Monday at 7.30pm in the Moose Centre, Spinning Path Lane, Blackboy Road, Exeter EX2 5RP. Tuition for Foundation, Intermediate and Advanced licence is available. The club is registered as an RSGB examination centre.

Torbay ARS
Dave Helliwell. E-mail: g6fsp@tars.org.uk
www.tars.org.uk
The Torbay Amateur Radio Society meets Fridays at 7.30pm in the Teignbridge District Scout Headquarters, Wolborough Street, Newton Abbot, Devon TQ12 1JR.

DORSET

Bournemouth RS
John. Tel: 07719 700 771
www.brswebsite.org.uk
The Bournemouth Radio Society meets on the first and third Friday of each month at the Kinson Community Centre, Pelhams Park, Millhams Road, Kinson, Bournemouth BH10 7LH. Meetings take place in Room 5 at 8pm and members assemble in the bar from 7.30pm. Visitors are always welcome.

Poole Radio Society G4PRS
'Tex' G1TEX Tel: 07966 460 552
www.g4prs.org.uk
Meetings are every Friday at 19:30 for 20:00 at the The Old Chapel Hall, Cabot Lane, Creekmoor, Poole BH17 7BX, the second Friday meeting of each month is the formal evening, all others are basically shack and Natter nights. The Foundation class has now begun again, and is presently fully booked.

EAST SUSSEX

Brighton RC
Reg Moores. Tel: (01273) 503869
The Brighton Radio Club meets on the second and fourth Tuesdays of each month at the Vallance Community Centre, Conway Court, Sackville Road, Hove BN2 3WR at 7.30pm. Anyone wishing to know more are welcome to come along to a meeting, entrance is free.

Hastings E&RC
Gordon Sweet. Tel: (01424) 431909
E-mail: gordon@gsweet.fsnet.co.uk
www.herc.uk.net or
http://g4cus.mysite.wanadoo-members.co.uk/
The Hastings Electronics & Radio Club meets on the third Wednesday at the Taplin Centre, Upper Maze Hill, St Leonards on Sea TN38 OLQ at 7pm.

ESSEX

Braintree & DARC
Keith. Tel: (01376) 329279
www.badars.org.uk
The Braintree & District Amateur Radio Society meets on the first and third Monday of the month in The Clubhouse, Braintree Hockey Club, Church Street, Bocking CM7 5LJ.

Colchester RA
David Chambers. Tel: 07766 543784
www.g3co.ccom.co.uk
The Colchester Radio Amateurs meets at 7.30pm on alternate Thursdays at St Helena School and The Colchester Institute, Sheepen Road, Colchester, Essex CO3 3LE. Members and non-members welcome.

Chelmsford ARS
Martyn Medcalf. Tel: (01245) 469008
E-mail: info2007@g0mwt.org.uk
www.g0mwt.org.uk
The Chelmsford Amateur Radio Society meets on the first Tuesday of each month in the Marconi Sports & Social Centre, Beehive Lane, Great Baddow, Chelmsford CM2 9RX at 7.30pm. On thursday 16th October there's the Essex Repeater Group AGM to be held at Danbury Village Hall 7:30pm - All welcome

Loughton & Epping Forest ARS
Marc Litchman. Tel: 020 8502 1645
E-mail: info@lefars.org.uk
www.lefars.org.uk
The Loughton & Epping Forest ARS meet Friday fortnightly at All Saints House, Romford Road, Chigwell Row, Essex IG7 4QD between 7.45 and 10pm. All visitors will be made most welcome.

GLOUSCESTERSHIRE

Gloucester Amateur Radio and Electronics Society.
Anne 2E1GKY/M3GKY 01452 548478 (After 10am)
E-mail: hamreed@blueyonder.co.uk
www.g4aym.org.uk
Meet at Churchdown School, Winston Road, Glos. GL3 2RB EVERY MONDAY EVENING 7-30pm until 10pm except for Bank Holidays when we operate from a local escarpment. It's an informal evenings on the 13th and 27th. On the 20th it's an operating evening, while on November 3rd, there's a talk, by Malcolm G6UGW called "A Street Car called Desire" about Trams.

HAMPSHIRE

Fareham & District ARC
Ken Sapsed. Tel: 023 9279 7240
E-mail: secretary@fareham-darc.co.uk
www.fareham-darc.co.uk/
The Fareham & District Amateur Radio Club meets on Wednesdays evenings from 7.30pm in the Portchester Community Centre, Westlands Grove, Portchester, Fareham PO16 9AD.

Horndean & District ARC
Stuart Swain. Tel: (02392) 472846
E-mail: g0fyx@msn.com
www.hdarc.co.uk
The Horndean & District Amateur Radio Club meets on the first and fourth Tuesdays each month in the Lovedean Village Hall, 160 Lovedean Lane, Lovedean, Hants PO8 9SF at 7.30pm. Visitors are always very welcome.

Isle Of Wight Radio Society
Tony Pegg Tel: 01983 868 978
e-mail tony.pegg1@btinternet.com
www.g3sky
The IWRS meets every Friday evening 7.00pm-10.pm at Haylands Farm,Salters Rd. Ryde PO33 3HU. Visitors very welcome.The club runs courses for Foundation, Intermediate and advanced licenses. The club is registered as an RSGB exam centre

HERTFORSHIRE

Verulam Amateur Radio Club (St Albans)
Norman. Tel: 07773 628912
E-mail: g1bsz@aol.com (sec)
www.radioclubs.net/verulam
The club normally meets every 3rd Tuesday of the month 800pm at Aboyne Lodge School.Etna Road, St Albans, AL3 5NL. New members and visitors are always very welcome. Regular talks, events, Foundation, Intermediate courses exams are held. Club nets also take place every Sunday 12.00noon 40m (7.150MHz), then 14.00pm 2m (145.375) and on Tuesday 19.45pm 160m (1.975) then 20.00pm 2m (145.375). For further information about the club and events please see the website.

HUMBERSIDE

Hull & District ARS
Raymond Penny. Tel: (01482) 504618
E-mail: sirraymond@sirraymond.karoo.co.uk
The Hull & District Amateur Radio Society meets every Friday at the Walton Leisure Centre, Walton Street, off Anlaby Road, Hull HU3 6JB.

KENT

Bredhurst RATS
www.the-brats.co.uk
The Bredhurst Radio Amateur & Transmitting Society meets on Thursdays at the Parkwood Community Centre, Rainham, Gillingham, Kent ME8 9PN at 8.30pm. If you are interested in joining the club, write to: Membership, The BRATS c/o The Club Room, The Parkwood Community Centre, Long Catlis Road, Rainham, Gillingham, Kent, ME8 9PN.

Bromley & DARS
Graham
E-mail: bdars@grahamc.net
www.bdars.org
The Bromley & District Amateur Radio Society meets in The Victory Social Club, Kechill Gardens, Hayes, Kent BR2 7NH (off B265, Hayes Lane, Bromley) on the third Tuesday of the month at 7.30pm.

LANCASHIRE

Oldham RC
Christopher Cunliffe. Tel: 07749347142
E-mail: secretaryoarc@btinternet.com
www.oarc.org.uk
The Oldham Radio Club meets on Thursdays at Royton Air Training Corps, Hillside Avenue, Royton, Oldham OL2 6RF at 7:30pm.

Ellenroad RC
David. Tel: (01706) 358650
E-mail: info@ellenroadradioclub.org.uk
http://www.ellenroadradioclub.org.uk/info.htm
The Ellenroad Radio Club (ERC) meets every Monday evening from 7 to 9pm at the Ellenroad Steam Museum, Elizabethan Way, Newhey, Rochdale OL16 4LG. The museum houses the UK's only fully-working cotton mill engine, complete with its original steam raising plant and 220ft high chimney. Newcomers are always welcome and made to feel at home.

LINCOLNSHIRE

Spalding & DARS
Graham Boor. Tel: 07947764481
E-mail: secretary@sdars.org.uk
www.sdars.org.uk
The Spalding & District Amateur Radio Society meets at the Castle Sports Swimming Complex, Spalding PE11 1QF on Fridays at 7.30pm.

LONDON

Cray Valley Radio Society
Bob Treacher. Tel: 020 8265 7735
www.cvrs.org
The Cray Valley Radio Society meets on the first and third Thursdays of the month at the Progress Hall, Admiral Seymour Road, Eltham, London SE9 1SL at 7.30pm for 8pm.

Southgate ARC
Donald F Berry. Tel: 020 8360 3614
E-mail: dfberry@eggconnect.net
www.southgatearc.org
The Southgate Amateur Radio Club meets on the second Thursday of the month at Winchmore Hill Cricket Club, The Paulin Ground, Firs Lane, Winchmore Hill, London N21 3ER at 7.30pm.

Wimbledon and District ARS
Jim Bell. Tel: 020 8874 7456
E-Mail: james@jbell5.wanadoo.co.uk
www.gx3wim.org.uk
The Wimbledon & District Amateur Radio Society welcomes new comers to our meetings whether they are licensed or not. We hold our meetings at 8pm the second and last Friday of each month at Martin Way, Methodist Church, Buckleigh Avenue, Merton Park, London SW19 9JZ. The church is on the corner of Martin Way and Buckleigh Avenue.

THE LOTHIANS

Cockenzie & Port Seton ARC
Bob Glasgow. Tel: (01875) 811723
E-mail: gm4uyz@cpsarc.com
www.cpsarc.com/news.php
The Cockenzie & Port Seton Amateur Radio Club meets in the Thorntree Inn (Lounge Bar), High Street, Cockenzie, East Lothian EH32 0HP from 7pm till late. Organised talks are held in the Port Seton Community Centre, South Seton Park, Port Seton, East Lothian EH32 0EE. Timings 18:30 to 21:30hrs.

Lothians Radio Society
Tony Sigouin. Tel: 07739742367
E-mail: enquiries@lothiansradiosociety.com
www.lothiansradiosociety.com
The Lothians Radio Society meets on the second and fourth Mondays of the month in the Royal Ettrick Hotel, 13 Ettrick Road, Edinburgh EH10 5BJ from 7pm. Membership costs £12 per year and includes a free BBQ every June!

MERSEYSIDE

Wirral & District ARC
Tom. Tel: 07050 291850
E-mail: secretary@wadrac.com
www.wadarc.com
The Wirral & District Amateur Radio Club meets at the Irby Cricket Club, Mill Lane, Irby CH61 4XQ on the second and fourth Wednesdays of each month. Other Wednesdays are informal (D&W) meetings at a local hostelry.

NORFOLK

King's Lynn ARC
Ray Dowsett, MBE. Tel: (01553) 671307
E-mail: ray-g3rsv@supanet.com
http://www.klarc.org.uk
King's Lynn Amateur Radio Club meets every Thursday at the Scout HQ, Chequers Lane, West Winch, King's Lynn, PE33 0NY off the A10 at West Winch at 7.30pm.

Norfolk ARC
Mark Taylor. Tel: (01362) 691099
E-mail: narc@g0lgj.co.uk
www.norfolkamateurradio.org
The Norfolk Amateur Radio Club meets every Wednesday at the Happy Landings, Norwich Aviation Centre, Norwich Airport NR6 6JA a 7.30pm.

North Norfolk ARG
Tony Smith. Tel: (01263) 821936.
E-mail: g4fai@btinternet.com
www.radioclubs.net/nnarg/
The North Norfolk Amateur Radio Group meets in the Radio Hut at the Muckleburgh Collection Military Museum, Weybourne, North Norfolk NR25 7EG on Wednesdays and Thursdays from 10am to 4pm and some Sundays from 1 to 4pm. New members always welcome. On 10-12th October RSGB HF Convention Trip Wyboston Lakes, 15th October Table Top Sale (Venue TBC) 18/19th October TDOTA Scouts 22nd October Members Forum (Venue TBC), 29th October Bright Sparks / Informal (Venue TBC)

NORTHAMPTONSHIRE

Kettering & District Radio Society
Lorna Froggatt. Tel: 0153 676 2523
E-mail: LornaSteveLorna@aol.com
The Kettering & District Radio Society meets each Tuesday from 7 to 9pm in the winter at The Lilacs Pub, Church Street, Isham, Northants NN14 1HD and in the summer at the Carpetbagger Aviation Museum, Sunnyvale Farm Nursery, Harrington NN6 9PF. Foundation, Intermediate and Advanced courses are held regularly.

SHROPSHIRE

Salop ARS
Richard Golding. Tel : 01743 356195
The Salop Amateur Radio Society meets in The Telepost Club, Railway Lane, Abbey Foregate, Shrewsbury SY26BT on Thursday between 8 and 10.30pm.

NOTINGHAMSHIRE

Worksop Amateur Radio Society (W.A.R.S.)
'Daz' Spence 01623 747314
Email- g3rcw@qsl.net
website- www.qsl.net/g3rcw/
Meets every Tuesday at 7:00 pm. Our cubhouse is located at 59-61 West street, Worksop, Nottinghamshire. S80 1JP. Exams and courses run frequently for all licence levels. Construction nights due to start in the autumn, and we also put on various special events amongst which is the famous Sherwood Forest. Licensed bar & hot food available on club meet nights. Membership fee for the year is £10.

Telford & District ARS
Mike Street. Tel: (01952) 299677
E-mail: mjstreetg3jkx@blueyonder.co.uk
www.tdars.org
The Telford & District Amateur Radio Society meets on Wednesdays at the Little Wenlock Village Hall, Malthouse Bank, Little Wenlock. Telford TF6 5BG at 8pm. October 15th has an evening called Hints & Tips, where members talk about their favourite ideas and methods., and on the 29th there's a video with food!

SOMERSET

North Bristol ARC
Dick Elford Tel:(01454) 218362
E-mail: g0xay@aol.com
www.nbarc.org.uk
North Bristol ARC meet Fridays at 7.30pm at SHE7, Braemar Crescent, Northville, Filton Bristol BS7 0TD. We carry out training for all the Radio Amateurs examoination, and our next training course is to be for Intermediate exams.

South Bristol ARC
Len Baker. Tel: (01275) 834282
E-mail: g4rzy@msn.com
www.sbarc.co.uk
The South Bristol Amateur Radio Club meets every Wednesday evening at the Whitchurch Folkhouse Association, Bridge Farm House, East Dundry Road, Whitchurch, Bristol BS14 0LN. October 15th there's a computer network clicic. To finish of October, on the 29th there's an 'On the Air Evening' at the shack.

Yeovil ARC
Gary.
E-mail: g.swain@tesco.net
www.yeovil-arc.com/
The Yeovil Amateur Radio Club meets at the Red Cross Centre, Grove Avenue, Yeovil BA20 2BE (on the corner where Grove Avenue meets Preston Road). October 16th Transistor Basics are discussed by G6LLP and on October 23rd Transmission Lines is the subject. Finally on the 30th, it's 'Station on Air' evening.

SOUTH GLOUCESTERSHIRE

Thornbury and South Gloucestershire ARC
Tony. Tel: (01454) 417048
E-mail: tonytsgarc@beeb.net
http://jma-databases.co.uk/tsgarc/index.php/Thornbury_%26_South_Gloucestershire_Amateur_Radio_Club
The Thornbury and South Gloucestershire Amateur Radio Club meets in the United Reformed Church Hall, on the corner of Chapel Street and Rock Street, Thornbury BS35 2BA at 7.30 - 9.30pm. 15th October - Video Night, 22nd October - On Air Night, while on 29th October - Emergency Communications with Mike G0JMD

SOUTH WALES

Barry ARS
Glyn Jones. Tel: (01446) 774522
E-mail: glyndxis@talktalk.net
www.bars.btik.com
The Barry Amateur Radio Society meets on Tuesdays from 7.30 to 10.30pm in the Sully Sports & Social Club, South Road, Sully CF64 9TG.

SOUTH YORKSHIRE

Axholme Radio Club
John Fennell. Tel: (01427) 872522
E-mail: g4hoy@tiscali.co.uk
The Axholme Radio Club meets at Hollytree Farm, Westend Road, Sandtoft, Epworth DN9 1LB on Wednesdays at 10amm to 4pm, Thursdays at 7 - 9pm and Saturdays from 10am - 4pm (other times by arrangement).

Sheffield ARC
Trevor Wood. Tel: 0114 2216947
E-mail: trevorwood6@yahoo.co.uk
www.sheffieldarc.org.uk
The Sheffield Amateur Radio Club meets at the SYPTE Social Club, Greenhill Main Road, Sheffield S8 7RH every Monday at 7.15pm. All three types of classes are held for the Foundation, Intermediate and Advance levels of licensing.

STAFFORDSHIRE

Tamworth Amateur Radio Society
Colin Marks. Tel: (01827) 700893
E-mail: colin.marks2@ntlworld.com
The Tamworth Amateur Radio Society meets every Thursday at 7.30pm at St Francis Church, Masefield Road, Leyfields, Tamworth B77 8JB.

SURREY

Sutton & Cheam RS
John Puttock. Tel: 020 8644 9945
E-mail: info@scrs.org.uk
www.scrs.org.uk
The Sutton & Cheam Radio Society meets on the third Thursday of the month at 7.30pm in Sutton United Football Club, The Borough Sports Ground, Gander Green Lane, Sutton, Surrey SM1 2EY. In addition to monthly meetings, licence training courses are held at regular intervals in Banstead Surrey.

TYNE & WEAR

Angel of the North RARC
Nancy Bone. Tel: 0191 477 0036
E-mail: nancybe2001@yahoo.co.uk
www.anarc.net
The Angel of the North Radio Amateur Radio Club meets every Monday 7 to 9pm at Whitehall Road Methodist Church Hall at the corner of Whitehall Road and Coatsworth Road, Bensham, Gateshead NE8 4LH. The entrance to radio club room is through door at the side of building next to the car park. The car park entrance is on Whitehall Road.

Tynemouth ARC
Tony Regnart. Tel: 0191 280 1981
E-mail: mail@g0nwm.com
www.g0nwm.com
The Tynemouth Amateur Radio Club meets each Friday from 7 to 9pm at St. Hilda's Church, Stanton Rd, North Shields, Tyne & Wear NE29 9QB. It's known locally as 'the church near the fire station'.

WEST MIDLANDS

Aldridge & Barr Beacon ARC
Roy Horton. Tel: (01922) 691646
E-mail: leslie137@btinternet.com
www.g0neq.co.uk
The Aldridge & Barr Beacon Amateur Radio Club is a daytime club and meets at the Aldridge Community Centre, Middlemore Lane, Aldridge, Walsall WS9 8AN on the first and third Monday of every month at 2pm to 4pm. They have a long wire and a 2 metre antenna for radio operation using the club callsign G0NEQ.

Midland AX25 Packet Radio Users Group
Miles. Tel: 01384 254199
www.maxpak.org.uk
The Midland AX25 Packet Radio Users Group, MaxPak, meets on the first Monday of the month at The Sir Robert Peel, 104 Bell Lane, Bloxwich, Walsall WS3 2JS.

Stourbridge and District ARS
John. Tel: (01562 700513)
www.g6oi.org.uk
The Stourbridge and District Amateur Radio Society meets on Monday evenings, except for Bank Holidays at The Radio Shack, Old Swinford Hospital School, Heath Lane, Stourbridge, West Midlands DY8 1QX at 8pm. We have Open Shack Nights - Tea/Coffee always available, along with an opportunity to get on the air or just a natter with whoever attends

Sutton Coldfield RS
Andy Sherman. Tel: (01827) 875155
E-mail: peugeotnut@hotmai.com
www.hamradio.piczo.com
The Sutton Coldfield Radio Society Meets on the second and fourth Monday of the month at 7.30pm (no meeting on bank holiday Mondays) in the Sutton Coldfield Rugby Club, 160 Walmley Road, Sutton Coldfield, West Midlands B762QA.

Wythall Radio Club
Chris Pettitt. Tel: (07710) 412 819
E-mail: g0eyo@wythallradioclub.co.uk
www.wythallradioclub.co.uk
The Wythall Radio Club is based at Wythall House, Silver Street, Wythall, near Birmingham B47 6LZ. They meet every Tuesday at 8pm and meetings are informal and friendly.

WEST SUSSEX

Horsham ARC
Andrew Vine. Tel: (01483) 272456
http://www.harc.org.uk/
The Horsham Amateur Radio Club meets on the first Thursday of the month at The Guide Hall, Denne Road, Horsham, West Sussex.

Worthing & DARC
Roy or Joyce. Tel: (01903) 753893
www.wadarc.org.uk
The Worthing & District Amateur Radio Club meets every Wednesday at 8pm in the Lancing Parish Hall, South Street, Lancing, BN15 8AJ. There's a free car park at the rear and full disabled access. Visitors are always welcome.

WEST YORKSHIRE

Pontefract & District Radio Club
Colin. Tel: (01977) 677006
E-mail: info@pontefractradioclub.org
www.pdars.com
The Pontefract & District Radio Club meets every Tuesday from 7pm and Thursday from 8pm at the Carleton Centre, Carleton Grange, Carleton Road, Pontefract, West Yorkshire WF8 3RJ. A feature of their tuesday meetings is a series of 'Chinese Whispers run from 1900 – 1930 by Reg, G4KMW. Go along and find out what these are!

WILTSHIRE

Trowbridge & District ARC
Ian Carter. Tel: (01225) 864698
E-mail: ian.l.carter@btinternet.com
http://uk.geocities.com/tdarc@btinternet.com
The Trowbridge & District Amateur Radio Club meets at Southwick Village Hall, Southwick (nearest postcode is BA14 9QN). On August 20th it's a Natter night

WORCESTERSHIRE

Worcester RAA
Martin Carter. Tel: 07976 917987
E-mail: secretary@m0zoo.co.uk
www.wraa.co.uk
The Worcester Radio Amateurs Association meets on the second and fourth Tuesday at the Hallow Scout HQ, off Main Road, Hallow, Worcester WR2 6PP. Visitors, as always, will find a warm welcome at the new clubhouse, as will potential new members.

OTHER CLUBS

Jersey Amateur Radio Club GJ3DVC
Rob MJ3RZD Tel: 07974 756402
E-mail: gj3dvc@gj3dvc.org.je.
www.radioclubs.net/gj3dvc
Jersey Amateur Radio Society has recently completed the club radio shack refurbishment and re-fitting. The full story can be followed in words and pictures on the new club website at **www.radioclubs.net/gj3dvc** where progress has been recorded almost as it happened. The shack is now more operator friendly and desirable as a venue for visiting DX-expeditions to the Channel Islands - details can be obtained by E-mail. Thank you to all the club members (and others) who provided their time, resources and materials for this project.

Raynet
Merseyside County RAYNET
E-mail: g6ifa@raynet-uk.net
website: www.merseyside-raynet.org.uk
16th Annual RAYNET Convention and AGM.
Merseyside County RAYNET will host the 16th Annual Convention and AGM at the Aintree Race Course Conference Centre, Ormskirk Road, Aintree, Liverpool L9 5AS, on **Saturday 1st November 2008** commencing at 0900. The theme of the Convention will be RAYNET and Tunnel Communications. All RAYNET Members or those interested in RAYNET are welcome to attend. For those RAYNET members wishing to attend, accommodation is available at the: Premier Inn (Aintree, Liverpool), Ormskirk Road, Aintree, Liverpool, L9 5AS. Contact Number 08701 977 157 (Please state that you are part of the RAYNET group). It is suggested that delegates wishing to dine on the Saturday night meet at "The Rocking Horse" pub which is adjacent to the AGM venue. Please note that there is not a specific group booking but delegates are invited to meet here on the Saturday evening. Further information including area maps and directions can be found at Merseyside County RAYNET website: or via E-mail.

Club Secretaries

Please remember to include full details of your club, E-mail and telephone contact details and the postcode of your meeting venue - it helps potential visitors to find you!

Roger Cooke's

morse mode

Roger Cooke G3LDI
PW Publishing Ltd., Arrowsmith Court,
Station Approach, Broadstone,
Dorset BH18 8PW
E-mail: roger@g3ldi.co.uk
Packet: g3ldi@gb7ldi.#35.gbr.eu

Roger Cooke G3LDI – snug in his warm shack – looks forward to even more winter c.w. on the bands.

Welcome to the Morse Mode, where the winter contest season is with us now. However, by the time you read this, a couple of the **RSGB Sprint Club** contests will be over. There are four of them in total and they make very good practice for nifty operating. Do take part if you can, rules are available on the RSGB web site **http://www.vhfcc.org/hfcc/rules/2008/rsprint.shtml**

Contesting may not appeal to all those who wish to hone their c.w. skills but they do provide a very good medium for doing just that! Although taking part in such events will give you confidence, which is usually the only thing that's lacking for a rag-chew type QSO.

With more practice you'll begin to feel more comfortable operating and nerves will fade. In fact, DX chasing can provide the other impetus and can also be very exciting and competitive. This is how most of us started 40 years ago, when Morse was the more common mode. It's a skill that will stay with you for life too!

Take a look at the RSGB Contest Calendar. There are also some other short contests that might appeal to you, such as the **RoPoCo**, the **Top Band** contests and the **AFS** in January. Yes, there will be some big guns operating – but there is always the 'QRS corall' to start in and with time (slow speed) you could become a big gun too!

Easier With Paddles!

Straight keys are fine but I think life becomes easier with a paddle!

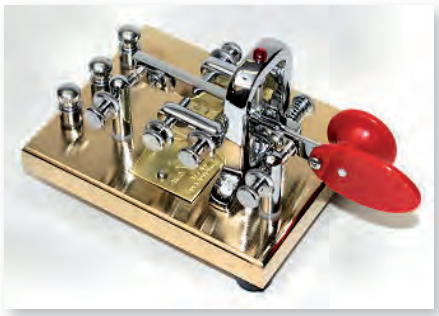

Fig. 1.

Once you are up to the 20 plus w.p.m. speeds, you'll have to consider a paddle. My old trusty Vibroplex has lasted me for 50 years now and is still going strong. I would like their presentation model however!

You should take a long look at paddles. Decide whether you can handle the lambic type, a twin lever device, or like me, you would rather have a single lever key. Try to get some advice and tuition and try both types before making that decision.

Take your time and don't buy on impulse. Once you have decided, stick with it and be prepared to put in a lot of practice before going on the air. It is best to start at a slow speed and master that before increasing speed.

Nowadays there are a large number of paddles to choose from. Try to pick one that has been well engineered, is heavy enough not to move around on the desk, and one that you feel comfortable using. A good paddle will cost a fair amount of money but it should last for years so don't buy the cheapest.

Here are some examples of paddles that you should aim for. The Vibroplex presentation is shown in **Fig. 1.** This has been around for years. I have the basic model, not as good looking perhaps, but it still keys well! The photograph, **Fig. 2**, shows the Schurr. This was on display at Friedrichshaven this year as was the Begali Simplex in **Fig. 3.** The Hensley, shown in **Fig. 4**, is an unusual design; very good looking key but I have no experience of that one. The same applies to the GHD, in **Fig. 5**, but it looks a well engineered paddle.

You can find specialist designers/engineers who will make one-off paddles to order, but they are very expensive. You can also construct you own of course, if you are skilled enough. Some of the more modern designs use magnets instead of springs, so try to handle both types before making your decision. 73 and May the Morse be with you! ●

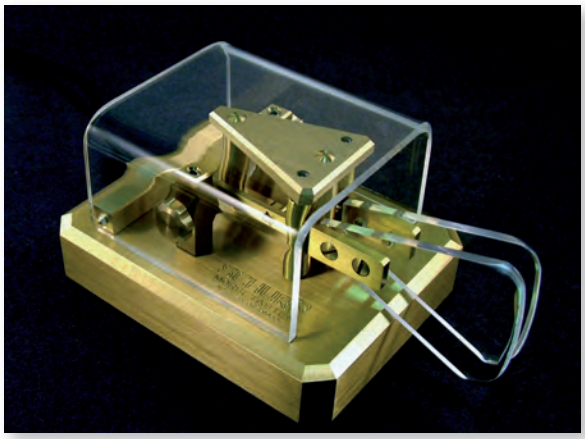

Fig. 2.

Fig. 3.

Fig. 4.

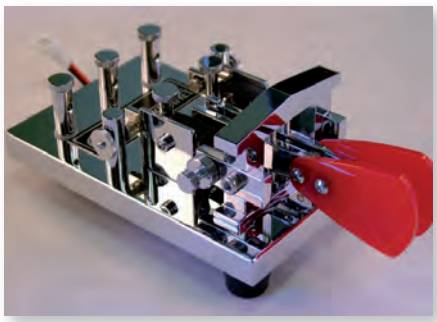

Fig. 5.

Feature

Using Surface Mount Components In Home-Brewing

Let's now venture on to the construction stage of the project by looking at the p.c.b. layout, which is shown in **Fig. 6**. The component layout is shown in **Fig. 7** and the parts list (see end panel on how to obtain the full parts listing).

The p.c.b. is single-sided with all tracks on the **component** side. It's not optimised for size (it could be reduced to 25% of the area) but is okay for practice and as a first SMD project.

Incidentally, I've used aluminium electrolytics for the large value capacitors but if size is critical, consider using tantalum capacitors as they are much smaller value-for-value. The board has a number of short links for tracks that would have required a second layer and which I could not sensibly route on the component side of the board.

The through-hole components can be mounted on either side of the board and you should choose whichever suits your own requirements. However, for conventional clockwise rotation of the volume control to increase volume, it needs to be mounted on the non-component side (I installed mine on the track side, so the orientation is reversed in the photograph).

Start the assembly stage on the board with the wire links, then mount the resistors, the ceramic capacitors and then the electrolytics C1 and 19. After this it will be time to install the first i.c., the L78L05.

When this stage is reached, you should have managed to hold a small component with tweezers (and possibly mastered locating those you fired across the room landing on the cat!). Then, having taken suitable anti-static precautions you'll be able pick up the i.c. and locate it on the p.c.b. making sure it's orientated correctly, now check again (see the note earlier).

Next, solder the opposite pins of the L78L05 to the board and then check to make sure that the regulator is correctly aligned to its pads. If it's not, carefully heat one end and tweak the location and when all is well, proceed to solder the remaining pads.

Next, install the LM386. Check for solder bridges between i.c. legs, using solder wick to remove excess solder if necessary and finally install the output capacitor C29. Then temporarily install the volume controland a speaker to test this part of the circuit – making sure you have 5V on the output of the regulator and that a finger applied to C22 causes a hum in the speaker. (You can be more scientific and apply an audio signal if you wish but at this stage it is helpful just to verify that all is well).

The most likely fault is shorting to tracks, which pass under the small components. **Note:** It helps to check briefly with an ohmmeter as soon as each component is soldered into place to make sure that all is well.

The High Filter

If the circuit functions correctly remove the volume control (it makes handling the board simpler, if you don't have to remove it) and construct the high pass filter. The filter circuit is checked by injecting a known audio signal from the switch connection and checking for the low frequency cut-off.

Typically, the output voltage should be half the pass band level at about 300Hz (-6dB). The gain of this filter is only about 5dB and can be reduced to unity gain by replacing R12 (22kΩ) with a short circuit and omitting R13.

Note: During my own tests, I find on one prototype – which used a TL081CD instead of the LF356 – that without the signal generator connected to the input of the high pass filter there was a tendency for it to oscillate. This was cured by placing a temporary resistor (680Ω) across the input. Please note that the circuit isn't unstable when it's correctly connected to the low pass or notch filters and doesn't require this resistive damping in normal use.

If all is well you can install all the remaining surface mount passive components (except the electrolytics) double checking at all times for short circuits. Then solder in the varicaps, making sure they are correctly orientated and then install the MAX7400 low-pass filter once again, taking static prevention measures. Place a temporary short circuit between the output of the low pass filter (C10) and the input of the high pass filter C18 and install the volume control and the frequency control potentiometer VR1.

With the board powered up and a frequency of about 1kHz injected into C7 it should be possible to vary VR1 until a very noticeable reduction in output is observed. This happens when the cut-off frequency of the filter drops below the input frequency.

Try varying the frequency and see what range of frequency cut-off you can obtain with the control. It should lie within the range of about 650Hz to 4.5kHz depending on the capacitance swing of the varicap diode used.

The a.f. pre-amplifier can then be installed and the circuit checked once again. It should be unconditionally

In Part 2, Barry Horning GM4TOE describes the construction stages of the SMD audio filter

stable using the values indicated on the circuit diagram.

Final Myopic Challenge!

The next job will be the fun part and the final myopic challenge – installing the MAX7410 notch filter! This component is really small and the legs are close together. Carefully tin the pads for the i.c. taking care not to overheat them otherwise the tracks **will certainly lift**.

Next, using solder wick remove any excess solder, including any excess where you previously soldered in the wire link. This has to be done,otherwise the i.c. won't sit readily on its pads.

Then carefully align the MAX7410 with its pads (remember the static precautions) and solder diagonally opposite outer legs. This is the only time I use a pointed tip on my iron (0.8mm diameter).

You should then use a magnifier to check that the i.c. is correctly aligned with its pads and carefully tweak the position using tweezers and your fine tipped soldering iron. When everything is aligned solder the remaining legs. If, (and it's almost a certainty that you'll have bridged adjacent pins with solder) use the finest solder wick to remove the excess.

With care you'll get the i.c. firmly attached to its tracks. However, you check with an ohmmeter for continuity between each pin and its relevant track and check that there's no short cicuits between adjacent pins either. Once all is well, install the notch control potentiometer (VR2) and the switch. Then it will be time for a final test.

Finally, you can power up the circuit. Attach some means of monitoring the output ('scope, speaker or a.c. voltmeter) and inject a 1kHz audio tone into the input. Check that the notch is switched out and re-check operation of the low pass filter.

Set the low pass filter control to pass the tone and switch in the notch filter. It should be possible to notch out the audio tone by adjusting the notch control. Then check the range of the notch filter – the prototype worked between about 400Hz and 3kHz. If all is okay all you'll have to do is package the circuit up and use it in anger!

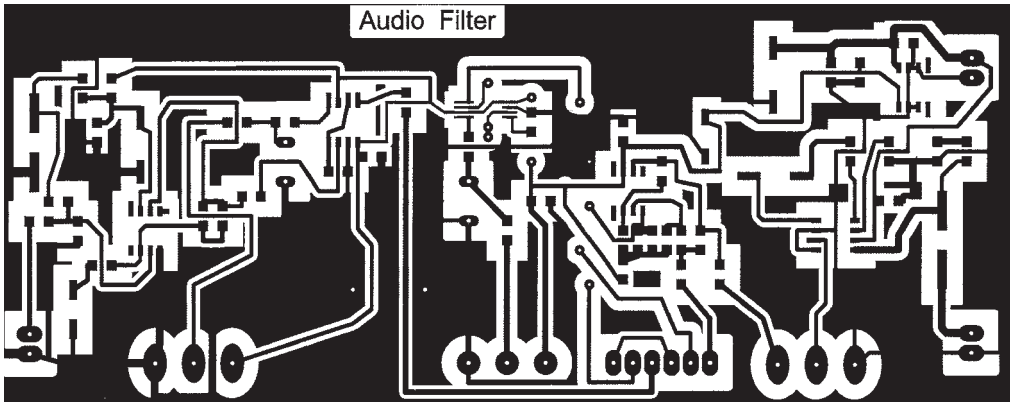

Fig. 6: The project's p.c.b. track pattern.

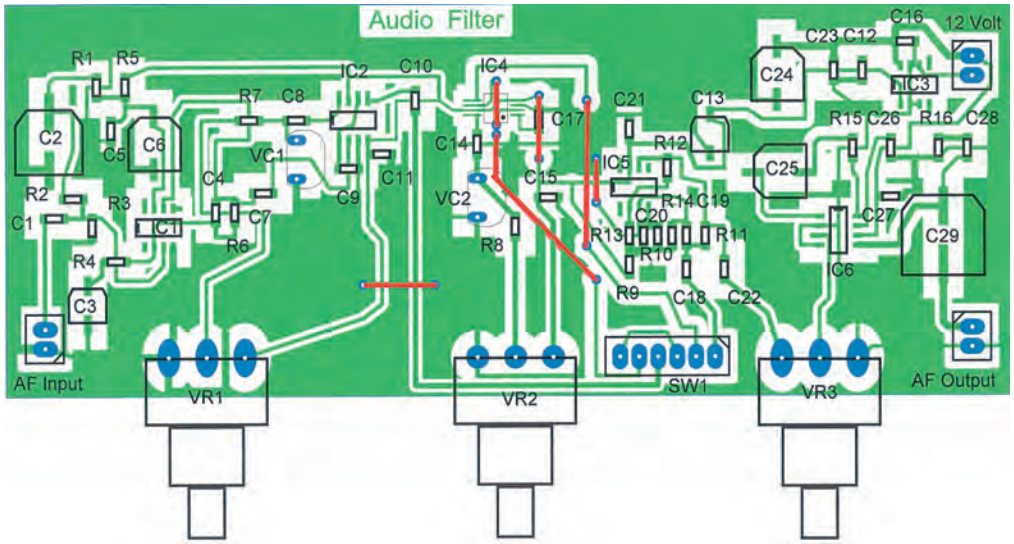

Fig. 7: Barry's prototype overlay and track pattern.

An Introduction

This article and has been an introduction to the use of surface mount devices for the beginner and hopefully shows that using SMT is not just for the youthful and for those with 20-20 vision! No attempt has been made in laying out the boards to take full advantage of the miniature properties of the devices, rather the layouts have been provided to allow easy access to solder the components.

With care it should be possible to lay out the filter (excluding the controls of course) onto a board less than 25mm square. But then you really would have a challenge assembling the circuit!

By building the project you'll then has access to some of the highly integrated circuit elements that are being produced for the home entertainment and mobile phone industries. Additionally, circuits which once might have taken weeks of experimentation to design can now be assembled and integrated into home-brew designs in short order. Good luck working with SMT and SMDs! ●

Further Reading References

Surface Mount Technology – You can work with it (*QST* April – July 1999).
A Practical Introduction to Surface Mount Devices –
Babani ISBN 0 85934 411 8
Maxim Datasheets for MAX7400 and MAX7409/7410
Maxim Application Note 431: Switched Capacitor IC forms Notch Filter
Datasheets for LF354 and LM386
ARRL Handbook 2005 Fig 12.49 Equations for designing a low pass RC Active Filter
5Spice Analysis © Richard P. Andreson

Shopping & Components Listing

To obtain a full part list please send an E-mail to **tex@pwpublishing.ltd.uk** with the text 'SMD filter Parts List' in the E-mail's subject box. Thank you. **Tex Swann G1TEX.**

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Emerging Technology

If you've been reading the adverts in *PW* – you can't have failed to see that Software Defined Radio (SDR) is becoming increasing available, particularly for high frequency (h.f.) Amateur Radio receivers and transceivers. Indeed, you can currently build your own SDR receiver either from a kit or from scratch to cover popular h.f. amateur bands, at a fraction of the cost and size of a stand-alone hardware-based receiver!

Surprisingly there are few professional offerings available in the SDR field, showing that once again Amateurs are leading the way. But now the professionals have suddenly woken up, and are seeing SDR technology as a solution to the limitations of mobile hardware, such as portable two-way radio and personal communicators including cellphones and other wireless devices.

With SDR, software replaces the controlling hardware and new standards or frequencies are added through software upgrades. So, for example, if an analogue frequency modulation (f.m.) radio wants to work with Amateur radio D-Star, a piece of downloaded software enables it.

Multi-band radio transceivers today use hardware to process different signals. The SDR system uses an analogue-to-digital converter to change signals into a digital format so the transceiver software can process it.

Communications Computer

What we effectively get is a communications computer, which converts signals from the antenna to the digital form and the software-based transceiver then becomes totally independent of frequency bands. So, using SDR technology, a given base, mobile or handheld transceiver could work across any geographic area worldwide, with any standard or frequency.

In its ideal form, an SDR transceiver would access any radio signal floating in the air; Amateur Radio, digital and analogue TV, GSM cellphone, two-way commercial, airband and marine radio, Bluetooth, cordless phones, digital and analogue broadcast radio, Internet and remote control toys, to name just a few!

One day, we could end up with just one handset – perhaps best called a "universal communication device", which will do the job of lots of other receivers and transceivers. Then, when a new mode comes along, all that's needed is a software upgrade downloaded to the handset!

In fact, SDR handsets are being created right now as the military and emergency services grasped the benefits and have been driving the technology. The European Defence Agency has provided 100 million Euro for a five-country joint research project aimed at enhancing SDR, and rescue services are expected to be early users of the technology. In a disaster, when tight co-ordination is essential, one device could communicate with many more, including water and shore-based volunteer and government rescuers, air support the police, and paramedics.

The military has certainly recognised the need for cutting across the 'tangle' of standards for efficient communication between multi-country forces for peace-keeping and prevention of terrorism. Indeed, some military handsets are already software-reprogrammable between several different standards and Europe's space technology company, EADS Astrium Ltd, has developed an SDR-related military communicator for the UK's secure military satellite communications, and they've delivered more than 300 multi-channel units to military programs.

Unfortunately, SDR is power 'hungry' at the moment and this limits its use mainly to base stations, although this is one reason why the military and rescue services will get SDR communications early too, as they're traditionally familiar with transporting radios having larger batteries. However, as battery technology and low-power devices evolve and reduce in price, SDR-based handsets for widespread public use will catch fire and that this is just a few years away.

But, isn't it nice to know that Radio Amateurs have been leading the way? – yet again!

Chris Lorek G4HCL reports on what's new in the radio and electronics field.

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Bar Codes RIP!

The bar code system has been around for a quarter of a century, and very few people haven't come across at least some use of these ubiquitous black striped markings, even on the front cover of *PW*! As we know, every time we go to the supermarket the bar codes are scanned and provide information on the product itself, stock levels (for the seller) and the price to be paid.

At home, I use a bar code scanner for a weekly shopping survey, downloading information on my purchases. From this they can see where I shopped, what I bought, and how much I paid for each shopping visit.

However, despite its widespread use, the days of bar codes could slowly be coming to an end because of radio frequency (r.f.) identification (RFID). The idea isn't new but the evolving use of RFID for possibly nearly everything we buy and use is an 'interesting' subject, with far-reaching possibilities. 'Big Brother' comes to mind here once again although the end results could well be staggering!

Manufacturers have been experimenting with RFID tags, usually placed behind bar code labels, as a wireless method of product identification for some goods. If you've a family pet, then it's likely that you may already know of the possibility of 'chipping' them so that they can be traced back to you if they are found away from home. But now, if you buy a pack of razor blades they could well have an RFID tag in the packaging. In fact, over 20 manufacturers, including Procter & Gamble, Wal-Mart (Asda), Gillette, Unilever, Target, Pepsi and Coca-Cola are all developing ways to use such tags in consumer products.

Unlike bar codes, which need to be scanned manually and read individually (the bar code reader needs to physically 'see' the bar code in order to read it), RFID tags don't need this 'line of sight' to read the information as it's done by radio of course. Depending on the amount of data that needs to be transferred, it's possible for a reader to read literally hundreds of tags a second. This typically means a trolley load of supermarket shopping can be read very quickly indeed! Rather shorter checkout queues?

But not only can these tags be read faster than bar codes, they can also hold and store a lot more information, such as product serial numbers, clothing size, colour, date of manufacture, the date and place they were made, the store they were bought in and so on. Currently, researchers working on this emerging RFID project recommend placing a 64-bit or 96-bit number called an electronic product code (EPC) on an RFID tag. The EPC identifies every item with a unique serial number, so each item you have is can be uniquely 'tagged'.

There are three types of RFID tag, described as Low Frequency (100-500kHz), Intermediate Frequency (10-15MHz), and High Frequency (850-950MHz and 2.4-5 GHz). Low frequency tags are used for applications like security access and asset management, which only need short ranges for devices to be read. High frequency tags can be used for readings at a greater range, and are used for purposes such as road and bridge toll collection.

The high frequency tags can transmit data faster and be read from farther away but they also consume more power and are more expensive than low frequency tags – so it's currently a case of 'swings and roundabouts'. But as technology is increasing right now, the tags are becoming smaller and cheaper, from what was upwards of around 25p each, to a target which is predicted to be achievable in a year or two's time, of 2.5p each in mass production. Years later, even less! Once costs come down, RFID could become as pervasive as bar codes are today.

Already one national company with a long-standing history of their popular clothes range has reportedly been placing RFID tags hidden in their clothing. So, that pair of briefs you're wearing or the lingerie gift you bought for your partner may be concealing a little more than you thought! Also, every time you walk through their doors they could know exactly what size and type of clothes you are wearing, where and when you bought them and probably from their records what else you bought. Also if you happen to have other RFID tagged items on your person, maybe some groceries, medical or electrical items, they could well also know. Frightening? Maybe so!

However the benefits could come when you get home, where your 'fridge could alert you to out-of-date food by reading the RFID tags in there, and maybe even prepare a shopping list for you for your next trip. Your wardrobe could tell what's in there to prepare suitable 'mix and matches' for you for your next night out. Your library books will let you know when to renew them or return them. The possibilities are almost endless – as many of us know!

Detecting RFI Tags

If you'd like to delve a little further – in true amateur experimentation tradition – *PW*'s sister publication *Radio User* a while ago offered a PC software program for detecting the presence of, and even reading the data from RFID tags that may be 'hidden' in your everyday items.

With the current interest in this technology it's again available in this month's (the October 2008 dated) issue of the magazine. So take a look if you're interested, it's in the monthly *Software Spot* monthly column.

More On Bus Wi-Fi

Following the last column, **Steve Norman 2E0MVB** contacted me to say he read this with a great deal of interest, especially where I covered the subject of Wi-Fi on **Trent Barton** coaches. Steve says that I and readers may be interested to know that the **National Express** service number 010, which runs from Kings Lynn and Cambridge to London Victoria, has been offering free Wi-Fi to all its passengers for over two years.

The route is operated by **Burton's Coaches**, based in Haverhill Suffolk as a third party operator. Around nine vehicles are equipped at present with a view to expanding the service onto the 787 Cambridge to Heathrow route.

Incidentally, Steve can be certain about this as his wife **Belinda**, who's licenced as **M3VSF**, is their Operations Manager! So it's 'straight from the (attractive) 'filly's mouth'! Thanks for the information Steve, which I hope will be of interest to readers.

Emerging Guidelines On RF Exposure Safety

There's been a lot of discussion in the past, which is still going on, about the possible adverse effects of r.f. exposure to human beings. In the 1970s microwave ovens were linked to health concerns, in the 1980s the debate turned to video display units (VDUs) and then in the 1990s concern was voiced about mobile phones and their base stations.

Recently, even low power Wi-Fi and Bluetooth transmitters have been the target of attention. Well it's now been decided and agreed by several bodies – there's no danger. That's it! There's no need for further tests (it's all been done), no need to avoid exposure (the only thing you may get is a warm feeling, nothing else). Surprised? This is not me – Chris G4HCL saying it – instead it's others who are a lot more qualified to do so and not just a bunch of individuals who have got together to 'rant and rave'. So here goes!

The NRPB is the **National Radiological Protection Board**, who joined with the UK's **Health Protection Agency**. The Health Protection Agency's role is to provide an integrated approach to protecting UK public health through the provision of support and advice to the NHS, local authorities, emergency services, other 'Arms Length Bodies', the Department of Health and the Devolved Administrations.

Currently, the UK's Health Protection Agency advice on possible health risk from non-ionising radiation, i.e. radio transmissions, is (quote); "There is no clear basis from which to derive a meaningful assessment of risk, nor is there any indication of how any risk might vary with exposure. In developing its advice, the NRPB has therefore concluded that the published epidemiological data do not provide a basis for restricting human exposure to EMFs. The ICNIRP has expressed the same view." and....

"There have been concerns that exposure to EMFs may be implicated in the development of long-term health effects, and in particular in the development of cancer. The NRPB Advisory Group on Non-Ionising Radiation has reviewed evidence from epidemiological studies for an association between the incidence of childhood and adult cancers and exposure to EMFs. It can be concluded from these reviews that there is no clear evidence of adverse health effects at the levels of EMFs to which people are normally exposed. The results of published epidemiological studies do not therefore provide a basis for restricting human exposure to EMFs."

The ICNIRP is the **International Commission on Non-Ionising Radiation Protection**. It's a body of independent scientific experts consisting of a main Commission of 14 members, four Scientific Standing Committees covering Epidemiology, Biology, Dosimetry and Optical Radiation and a number of consulting experts. This expertise is brought to bear on addressing the important issues of possible adverse effects on human health of exposure to non-ionising radiation and the ICNIRP's principal aim is to disseminate information and advice on the potential health hazards of exposure.

Microgeneration Technology

Before you ask "What does microgeneration technology have to do with radio?" – think about the folowing question, "How would you like to get paid to install an antenna mast, for your own use only, on your house or in your garden and with no need to get planning permission for it? Think carefuly before answering – you might even be doing something good for the environment as well!

As this is an 'emerging technology' column, one technology that's certainly emerging at a great rate is the use of wind turbines to supply energy. You can currently install a free-standing wind turbine on your property at a height of up to 11m without planning permission.

Even better, the UK government will give homeowners a grant of up to £2,500 to install one, under the low carbon buildings programme to help install microgeneration technology! However, please be aware, that if you live in an urban area the electricity provided by a rooftop wind turbine is so small that you may do more harm to the environment than good!

According to the latest report from the Carbon Trust (following an 18 month study by the Carbon Trust and the Met Office) it's been found that wind turbines don't generate enough green energy to even counter the carbon emissions created by their production, installation and operation!

However, if you live in a rural area you're in luck, as their research also found that small wind turbines in rural areas could deliver up to four times as much electricity and carbon savings as in cities and towns. This is because wind speeds are higher in rural areas, so in some parts of the countryside electricity was competitive in terms of cost with power from the grid.

So there, wherever you are, you can get a mast up to 11m as long as you stick a wind turbine on it! But be aware that future grant schemes could contain some criteria for measuring the likely carbon savings of these small wind turbines.

Now, maybe I should put a turbine up and be paid to do so, then just take the wind turbine off (as it's not 'green') for recycling or to sell it to a rural user and then use the mast for my antennas instead? I would have, of course, have also used the mast for this, to be 'green' in multiple use of such structures. Which is what the government suggest commercial radio and cellphone operators do to save multiple unsightly structures around the country!

See you soon as I explore the future on behalf of *PW* readers. Chris G4HCL.

David Butler's

vhf dxer

Share your news, views and reports with fellow readers. Reports to David by the last Saturday of each month please.

This month David Butler G4ASR has reports of a most unusual v.h.f. Sportadic-E opening. Reports and information by the last Saturday of the month please.

Welcome to the world of exciting DXing above 30MHz where I can confidently say that ionospheric propagation during August was probably better than most v.h.f. operators had dared hope for! Openings were quite good on the 50MHz band with Sporadic-E (Sp-E) propagation being reported during 23 days in August. The 50MHz transatlantic path to both North and South America, but particularly to the Caribbean area, was open for six days during the period.

As expected, there were naturally less Sp-E openings reported on the 70MHz band but even so there were 13-days during August when DX contacts were reported. And one of these openings coincided with an RSGB 70MHz contest creating much excitement for a few hours!

Considering the very poor 144MHz season during June and July it was a surprise that any Sp-E openings were reported during August. However, there was one event on August 9th that was very unusual with short-skip contacts being made between the UK and Germany. It also affected the 50 and 70MHz bands in a similar fashion.

The Perseids meteor shower that peaked on August 12th brought with it an increase in DX activity on the 50, 70 and 144MHz bands with contacts being reported beyond 2000km in some cases. Tropospheric propagation on the 144MHz band and higher frequencies was generally poor during August, unless you were located near the sea coasts in eastern and southern England. Towards the end of the month tropo conditions enhanced somewhat enabling many UK stations to make contacts up to 1200km into Scandinavia and central Europe.

The 50 & 70MHz Bands

Sporadic-E was quite prevalent on the lower v.h.f. bands during August with the 50MHz band being open on 23 days during the period. Most of the openings were towards southern Europe, although there were six days during August when the transatlantic path opened up. I'll cover these in far more detail next month, but just to whet your appetite some of the 50MHz stations worked from the UK included FM5AA, HI3TEJ, HK4SAN, KP2BH, KP4EIT, PZ5RA, V44KAI and 9Y4D.

Tom Kelly EI2AJ (Dublin IO63) who has been active for the past 47 years (using only c.w.) reports that in an opening on August 29th he contacted the stations of DJ1ZU (Germany), I5TAT (Italy), OM3CM, OM5MZ (Slovakia) and 4X4DK (KM71). Tom mentions that he runs 50W into a simple h.f. Carolina Windom antenna!

There was an agreeable amount of DX activity on the 70MHz band with openings on 13 days during August. The UK stations who were active reported Sp-E contacts being made with stations in Croatia (9A), Czech Republic (OK), Denmark (OZ), Estonia (ES4OJ), Germany (DI2PM, DL3YEE), Italy (I), Luxembourg (LX), Portugal (CT), Sardinia (IS0AWZ) and Slovenia (S5). Propagation was good during the RSGB 70MHz contest held on Sunday August 17th with some reasonable tropo' throughout much of the day and an Sp-E opening early in the afternoon.

The Warrington Contest Group M0SDA, operated by **Erik G8XVJ**, amassed a total of 108 contacts with the best DX being the station of 9A2SB (JN95) at 1770km. Other UK stations heard in the contest included G2KF/P, G3YJX and G4ADV/P (all in Cornwall), GD0EMG (Isle of Man), GU3TUX (Alderney), GU3TCU/P and GU6EFB (Guernsey), GM3HAM/P, GM4JR, GM4SIV/P and GM4ZUK/P (Scotland).

The operators from the station of **GM4SIV/P** report that their contest score was boosted by 13 Sp-E contacts, their best DX being the station of 9A2SB at 2018km. Other DX stations contacted by 70MHz operators during the Sp-E opening included DI2LP, IK3CHK, IV3MPI, IK5MEN, IZ5MAO, OK1MP, OK1VEC, OK2BGW, OZ1BNN, S57A, 9A1Z and 9A6Z.

A Most Unusual Opening

A most unusual Sp-E opening was reported by v.h.f. operators on August 9th. Hardly any activity was reported on the 50MHz band for much of the day, but at 1715UTC the band opened up with stations in Scotland making North-South QSOs into the Portugal (CT), Spain (EA), Balearic Islands (EA6), Italy (I) and Gibraltar (ZB).

Around the same time stations in much of England started making 50MHz contacts, also in a southerly direction to CT, EA, I, Algeria (7X), Azores (CU) and Canary Islands (EA8). There was nothing unusual about this and stations continued to make normal Sp-E contacts at distances of between 1500-3000km. The maximum useable frequency (MUF) at this time was still in the 50MHz region and appeared quite stable.

However, at around 1840UTC something happened in the ionosphere that triggered a leap in the MUF, creating some very short skip paths on both the 50 and 70MHz bands. The first sign that something unusual was happening was reported by the station of **Dermot Adams EI7IX** (County Mayo IO53) who suddenly heard the 50MHz beacon GB3MCB (Cornwall IO70) and the 70MHz beacon GB3WSX (Somerset IO80) over a path length of around 500km. Normally these beacons would have been inaudible via tropospheric propagation but they were heard via Sp-E with S9+ signals.

Hearing short-skip stations via Sp-E is often a sign that the MUF is rising and initially this intense cloud of ionisation was located somewhere over the Irish Sea. This enabled contacts to be made on the 50MHz band with Irish stations that included EI5GM (IO51), EI8EM (IO52) and

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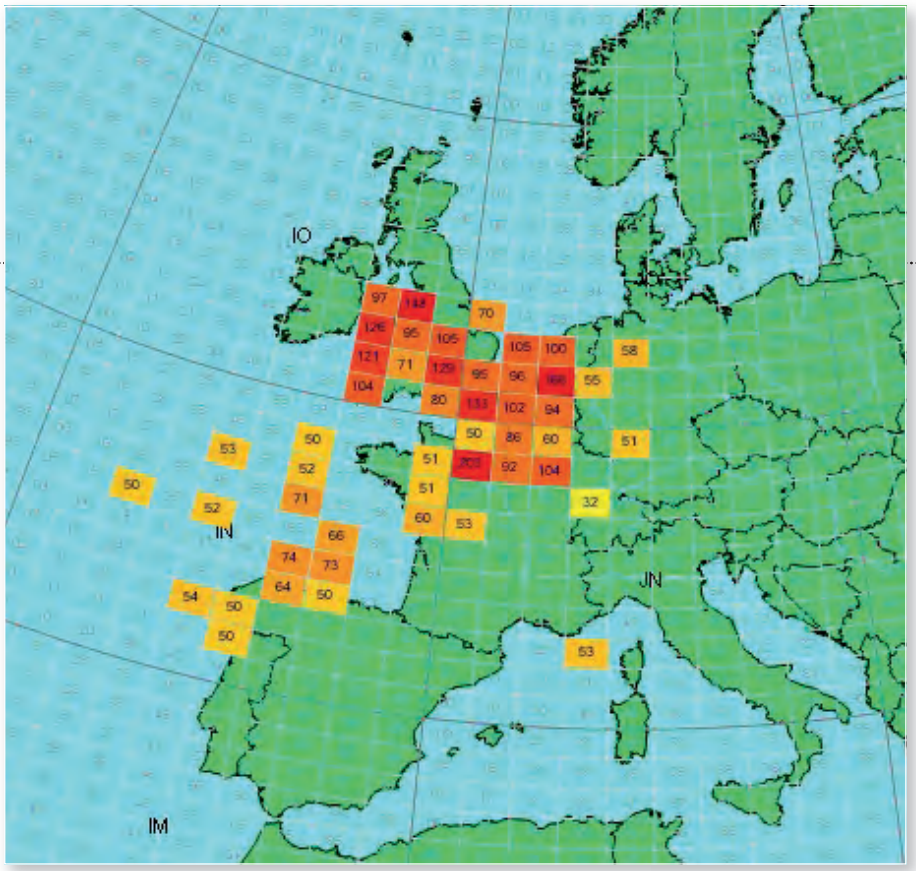

Fig. 1: The results of the Maximum Useable Frequency (MUF) on August 9th.
(Diagram courtesy of Dave Edwards G7RAU).

EI9FBB (IO51) by G-stations located to the south (IO80, IO90) and east (IO91, JO01) of the country.

Higher up in frequency the 70MHz band was also supporting short-skip contacts between Ireland and England. Contacts on s.s.b. were made from EI2IP (IO61), EI5GM and EI7IX to 70MHz stations that included G3VYF, G4FUF, G4ZJF, G8TOK, G8WXU (all in JO01) and G7RAU (IO90). **Bob Reeves G8VOI** (Hampshire IO90) also got in the action and reports making frequency modulation (f.m.) QSOs on 70.450MHz with the stations of EI2IP and EI7IX. Running only 15W output into a dipole antenna at 4m above ground, he also heard the f.m. station of EI3GYB (IO53) several times but was unable to make a two-way contact.

The Sp-E cloud was very slowly moving eastwards and moments later Scottish 50MHz stations started to make contacts into southern England and Guernsey (GU). The station of **Lionel Roithmeir MU0GSY** (IN89) reported s.s.b. contacts with GM4ZMK (IO75), MM0BSM (IO86) and MM0TFU (IO75). Meanwhile, as the Sp-E moved east, a number of EI-stations were heard making contacts with 50MHz stations in Belgium (ON), Netherlands (PA) and Germany (DL).

To further complicate matters the 70MHz band then opened up around 1850UTC with a conventional Sp-E path to stations in Italy (I), Portugal (CT) and Slovenia (S5) and continued through to 2000UTC. Among the stations worked from the UK were CT1HZE, IK1EGC, IW4BET and S52AU. The 70MHz station of **Daniele Gattolin IK1EGC** (JN35) reported making s.s.b. contacts with G0UWK (IO82), G8XVJ (IO83), MI0AYR (IO64), GW4HBK (IO81) and MW0HMV (IO71). Daniele also made f.m. contacts on 70.300MHz with the stations of G4YLV, GI4LXL, GI0ISQ and 2I0PAC.

The intense Sp-E cloud was still edging to the east and at 1925UTC operators in England and Wales reported making 70MHz s.s.b. contacts with LX1DB (Luxembourg JN39), LX2LA (JN39) and DI2PM (Germany JO30). Incidentally, the German station was operating on 69.950MHz and listening for s.s.b. replies around 70.200MHz.

At the same time UK stations active on the 50MHz band started making contacts via short-skip Sp-E into Belgium (ON), Germany (DL) and the Netherlands (PA). Lionel MU0GSY mentions making contacts around 550km in length with the stations of DG5AAG (JO51), DJ6SN (JO30), PA0O (JO33), PF7M (JO33) and PA8N (JO21).

During the opening the MUF was rising very quickly as shown in the diagram, **Fig. 1**. This is taken from the *Live MUF* program developed by **Dave Edwards G7RAU** and gives a real time indication of the location of the highest frequency that can be used for v.h.f. communications. Very quickly it had risen above 100MHz and stations in south-west England reported hearing Russian language programmes within the Band II broadcast band.

The station of **Tim Fern G4LOH** (Cornwall IO70) noticed the rise in MUF and decided to listen on the 144MHz band for any possible opening. At 1943UTC his patience was rewarded by making s.s.b. contacts with the 144MHz stations of DM4TNF (JO61), DH8BQA (JO73), OK1IA/P (JN89) and OK1TPG (JO70). During this Sp-E opening that lasted 15 minutes at his QTH Tim also heard the stations of DO5OT (JO62) and OK1TEH (JO70).

For operators in Ireland the opening only lasted for two minutes – but it was long enough for the station of EI2IP (IO61) to contact DL6SBM (JN58), DK7DR (JN47), HB9DFG (JN37) and ON7CL (JO20). However, for most UK operators the location of the Sp-E cloud, as shown in the diagram, **Fig. 2**, was almost directly overhead and as a result no 144MHz Sp-E contacts could effectively be made. This short-skip opening on the 50, 70 and 144MHz bands was indeed most unusual and at times confusing!

During the 50MHz opening that consisted of short-skip contacts between England and Ireland, Scotland to Guernsey and England to Belgium, Netherlands and Germany, the band was also open between 1715-2100UTC for the more normal Sp-E paths to southern Europe. It was

a similar situation to that on the 70MHz band, with short-skip events being reported just before and during the southerly opening that occurred between 1850-2005UTC.

What **may** have triggered this intense short-skip Sp-E opening was a solar wind stream flowing from a coronal hole. Normally, this doesn't have any effect on Sporadic-E propagation but in this instance the Interplanetary Magnetic Field (i.m.f.) was south pointing. If the i.m.f. points south, a condition that scientists call "southward Bz", then the i.m.f. can partially cancel the Earth's magnetic field at the point of contact. You can then follow a field line from Earth directly into the solar wind. A South pointing 'Bz' opens the door through which energy from the Sun can reach Earth's atmosphere.

The Sp-E opening may have been some form of pre-auroral enhancement as later that evening on August 9th the first strong auroral back-scatter opening for a few years made an appearance. In the UK the only reports were of television channels E3 (55.250MHz) and R2 (59.250MHz) turning auroral between 1900-2000UTC.

In Scandinavia the aurora was detected much earlier at 1627UTC by the station of LA/PA5DD (Norway JP42) who heard the OH2VHF 144MHz beacon with 53A signals. The auroral opening at the QTH of LA/PA5DD lasted for one hour during which time 144MHz c.w. contacts were made with the stations of OH1TM, OH4LA, OH6KTL and OZ1BNN. Later in the evening from 2320UTC Canadian and USA stations in northern latitudes reported auroral activity through to 0200UTC on August 10th.

Interestingly **Keith Fisher G4FUF** (Kent JO01) was the only UK station to report reception of the OH9SIX beacon at 0741UTC on August 10th. He heard it on 50.067MHz peaking 559 via Auroral-Es propagation.

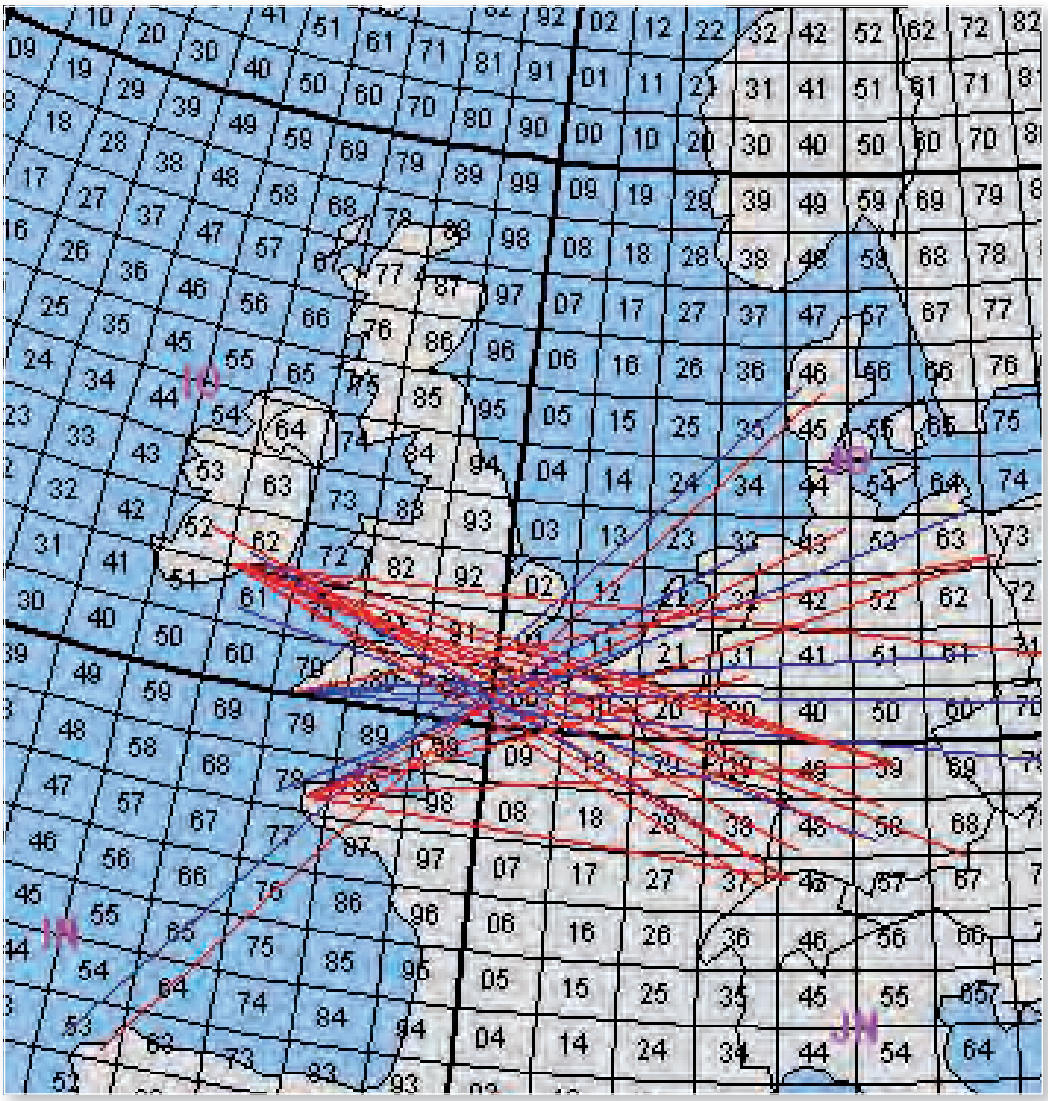

Fig. 2: Sporadic-E map on August 9th.
Diagram courtesy of Make more Miles on VHF http://www.mmmonvhf.de

The Deadlines

That's it for this month! Although the Sporadic-E season should now been over I've noticed that in the past two years there's been a resurgence during the month of October. Quite why this is I don't know – but it's worth keeping on eye out on the lower v.h.f. bands!

Last year, there were 16 days during October when Sp-E reached the 50MHz band. Surprisingly there were five days during the same period when the MUF reached as high as the 70MHz band. The autumn months are always a good time for tropospheric propagation so keep a look out on the 144 and 430MHz bands for enhanced conditions – maybe you'll hear repeaters from much further away!

Stations that have c.w. and s.s.b. capability should be able to make contacts deep into central Europe and Scandinavia. Make sure you watch the forecasts for any high pressure (anti-cyclonic) weather systems that are moving in from the West.

Remember also that two major meteor showers occur in the next few weeks and both will create additional activity on the v.h.f. bands. The Orionids shower takes place from October 17th – 25th with peak activity on October 20th – 21st. The Leonids meteor shower lasts for around a week from November 14th –21st.

The Leonids are expected to be most active in the mornings of November 17th and November 18th. If you hear or work any DX stations then **please** send me your reports – or any other news – to reach me before the last Saturday of the month. 73 David G4ASR. ●

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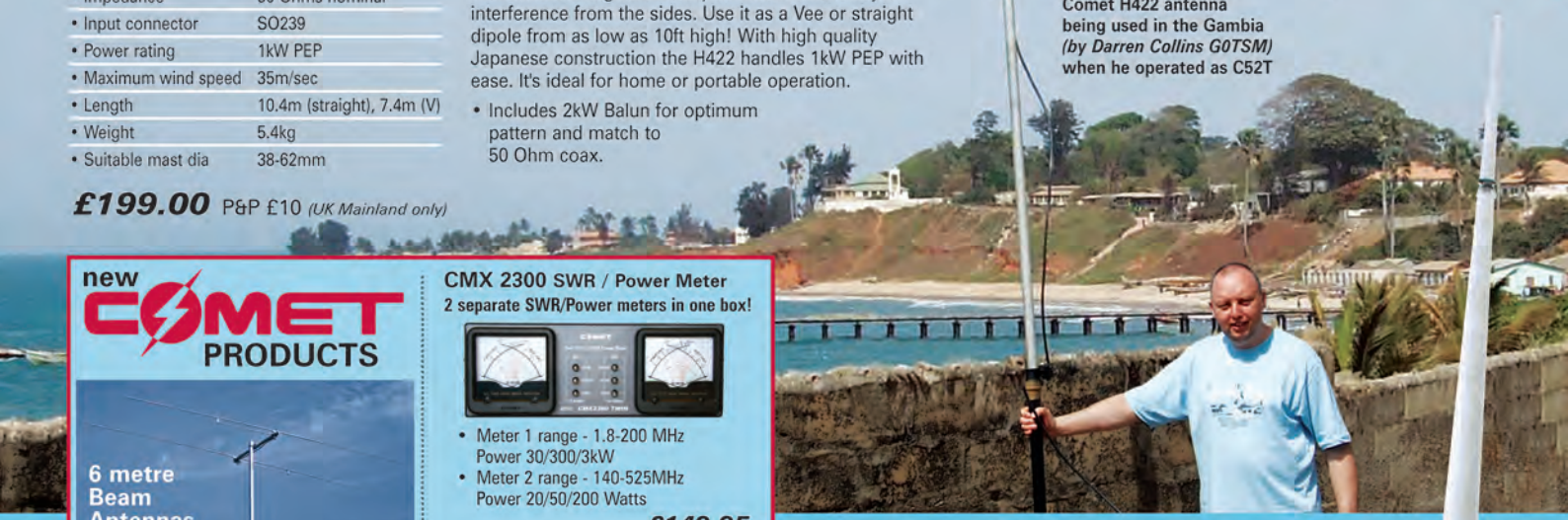
Comet H422 antenna being used in the Gambia *(by Darren Collins G0TSM)* when he operated as C52T



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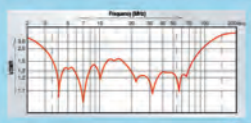

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Colin Redwood's

what next?

This month our friendly and ever-helpful Colin Redwood G6MXL looks at the world of QSL cards and callbooks.

Welcome to What next? (*WN?*) where the topic this time is QSL cards and callbooks. Amateurs have been sending QSL cards to confirm contacts that they've made since the start of the hobby. Today QSL cards are still an important aspect of the hobby for many, whether as a memento of an enjoyable contact (QSO) or as proof of a contact towards obtaining an award.

If you have been on the air and made contacts with other stations that might be considered DX (long distance) in the context of the band you were using at the time, it's quite likely that you'll have been asked to send a QSL. Likewise, the other station may have offered to send you a QSL card – perhaps via the bureau.

"So", (you may ask) "What are QSL cards?" In reply and putting it simply, they are postcards that are sent to stations that you have been in contact with, to confirm a contact. Incidentally, short wave listeners (s.w.l.) also send cards as reception reports.

Blank non-personalised QSL cards, **Fig. 1**, can be obtained from a number of Amateur Radio shops – usually in packs of 100 and these are a good idea to get you started. They can also be useful if you occasionally operate away from home, or run out of your 'proper' pre-printed QSL cards.

Reasonable Amount Of Information

To be of most use, the QSL card you send needs to contain a reasonable amount of information. Those who get bitten by the QSLing bug will soon discover that filling in blank non-personalised QSL cards takes some time. This is the point when it makes sense to get cards pre-printed, **Fig. 2**, with your details, to reduce the amount of writing, although you'll still need to enter details of the individual QSO such as the date and time in UTC for each contact.

Pre-printed information is likely to include your call-sign, name, address, country, locator, zone and perhaps details of your station. Information that you will need to complete for each QSO is likely to include date and time (in UTC), band, mode, report you sent in RST (see *WN?* October 2008 P*W*). At the bottom of a QSL card it's usual to write or pre-print and amend as necessary PSE/TNX QSL direct or via the **Radio Society of Great Britain** (RSGB) bureau. This is a simple way of conveying to the station receiving the card whether you would like a card (PSE QSL) or you are thanking them for their card (TNX QSL).

Specialist Printers

There are a number of specialist QSL card printers to be found who that advertise in the small-ads at the back of *Practical Wireless* and RSGB's monthly journal *RadCom*. I suggest that *WN?* readers send off to several printers for samples and prices.

The price you pay for QSL cards will depend on the type of card and the number of colours printed, with full colour printing generally being the most expensive. The other factor determining price will be the quantity to be printed. Generally speaking, quantities of less than 500 or 1000 will be disproportionately expensive as the amount of work involved in setting up to print in the first place is significant.

Desk Top Publishing

With modern Desk Top Publishing (DTP) software and reasonably priced laser printers readily available, designing and printing your own QSL cards is quite feasible. I'll be the first to admit that the top-rank DTP programs take a bit of understanding, so I was pleased when a local amateur suggested a program called

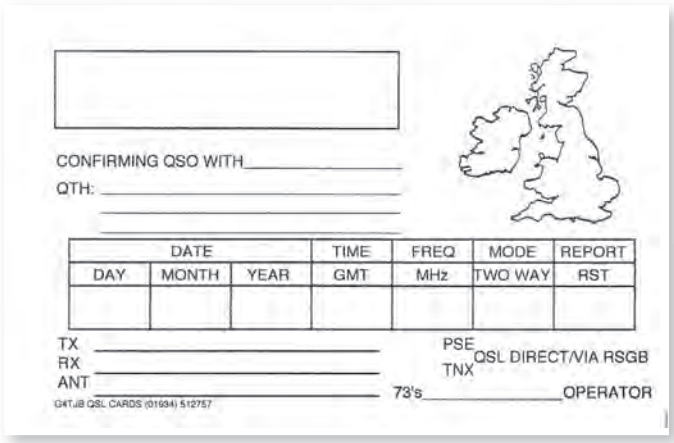


Fig. 1: A blank QSL Card.

Fig. 2: A blank re-printed QSL card for G6MXL's old address.

Colin Redwood G6MXL
PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: what.next@pwpublishing.ltd.uk

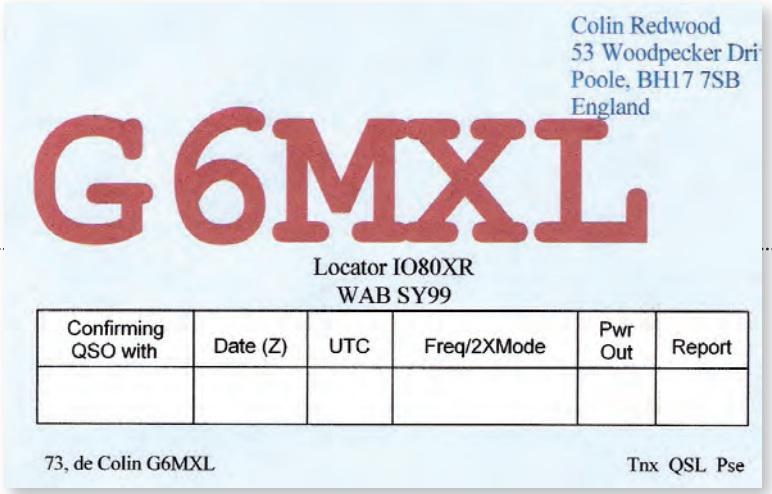


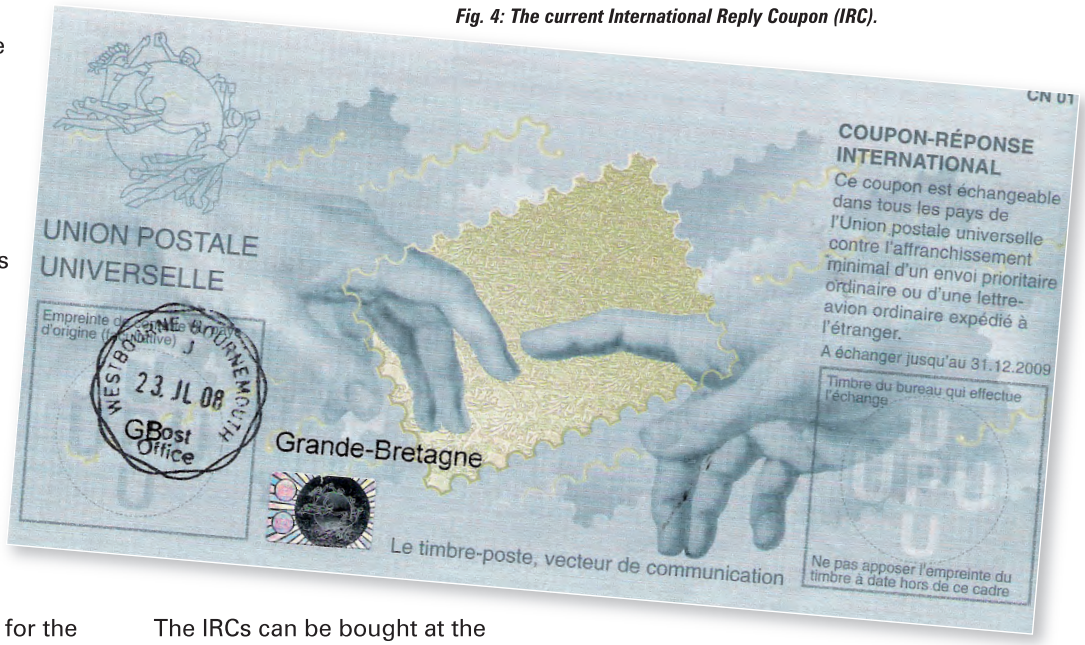
Fig. 3: A first attempt at producing a QSL card using **QSL Maker** *software.*

QSL Maker which can be downloaded for free from the Internet at **http://qslmaker.mi-nts.org/downloads/QSLmake24.zip**

The *QSL Maker* program is designed specifically for producing QSL cards. Whilst it doesn't have all the facilities of a full DTP program, as you can see in **Fig. 3**, it does more than enough to produce quite acceptable QSL cards. This was my first attempt and I thought it was quite good for less than five minutes work.

The *QSL Maker* program might be just what you need to produce a few cards for a special event station, or for the cards for a short operation away whilst on holiday. It also has one feature which also makes it particularly useful to those making many contacts because it can import a list of contacts on a file and produce cards with **all the details** of the contact filled in! Perhaps keen *WN?* readers might like to use *QSL Maker* to mock-up some designs and try them before having some cards commercially printed?

Fig. 4: The current International Reply Coupon (IRC).



Postal Service

Using the postal service is generally the fastest way to get a QSL card back. If you want to send a QSL to another Amateur, you can send it direct by putting the card in an envelope with a stamped addressed envelope (s.a.e.) if the Amateur is in the same country as yourself (s.a.e.s don't work abroad!).

For QSLs to Amateurs living in another country you can't just stick your own county's stamp on the return envelope, instead you can use an International Reply Coupon (IRC). The IRCs can be bought at the post office.

The IRC can be exchanged at almost any post office worldwide for a stamp to send a letter word-wide. They used to be valid indefinitely but more recently to be honoured they must be exchanged reasonably promptly. The current IRC shown in **Fig. 4**, costs 95 pence from UK Post Offices and must be redeemed by the recipient by December 31st 2009.

Callbooks & Addresses

Before you can send a QSL by post, you need to know the postal address of the Radio Amateur who you want to send the QSL card to. Unless you exchanged postal addresses during the QSO, you'll need to refer to a callbook to find the address. Callbooks are available in one of the three forms. Historically, and still popular, are the paper books. The RSGB publishes an annual *Yearbook*, **Fig. 5**, which contains callsigns and addresses of Amateurs in the UK and Eire. In addition the RSGB *Yearbook* has a vast amount of other information of interest to Radio Amateurs, including a list of QSL bureau sub-managers. A new edition is published annually each autumn.

The other types of call books are published on CD and by searching the internet. The internet versions can be found at **www.qrz.com** and **www.hamcall.net** These internet versions are international, so that addresses can be found for Amateurs across the world. Whilst very useful, the address details are not always up-to-date. So, I'd suggest that *WN?* readers visit the sites I've mentioned and check and update their details if they are inaccurate.

Details Withheld

Some Amateurs do not want their addresses published in callbooks and when you look up such an Amateur, you will see the words 'details withheld by Ofcom' (the UK's

regulator) rather than the address. If your details are shown as withheld in the callbook, and you want them to appear in future, you'll need to contact Ofcom via their web site to make the changes.

However, if you want to send a QSL card to an Amateur whose address is withheld in the callbook, then the QSL bureau may be the only route possible.

The QSL Bureau

The costs of QSLing direct can soon mount up! Fortunately, there's the cheaper (although slower) alternative QSL bureaux. When you're using a QSL bureau, you send a batch of cards in one envelope – usually to your national society (the RSGB in the UK), who will then sort the cards and send your cards along with many others to their counterparts around the world.

On receipt of cards, the foreign national society will arrange to send the cards either directly or via a 'sub-bureau' to the Amateur in their country. The foreign Amateur will then fill out one of their own QSL cards for you and reverse the process. The way the QSL bureau works is summarised in **Fig. 6**.

Incidentally, the RSGB very kindly allow non-members to receive QSL cards through the bureau system although to send cards through the RSGB bureau you need to be a member of the RSGB. For many Amateurs, this facility alone makes membership of the RSGB well worthwhile.

Unfortunately, the bureau system is generally **very much slower** than sending cards direct. In fact, find that it can take typically between one and two years for cards that I send via the bureau to be acknowledged with a card via the bureau in return – although cards from stations in the UK are usually somewhat quicker.

If you decide to use the QSL bureau, please make sure that you follow the rules regarding pre-sorting your outgoing cards! Make sure that you send your sub-manager a supply of stamped addressed envelopes. In the UK I prefer to use the un-priced second class stamps as this means they can still be used following (frequent) increases in postage rates.

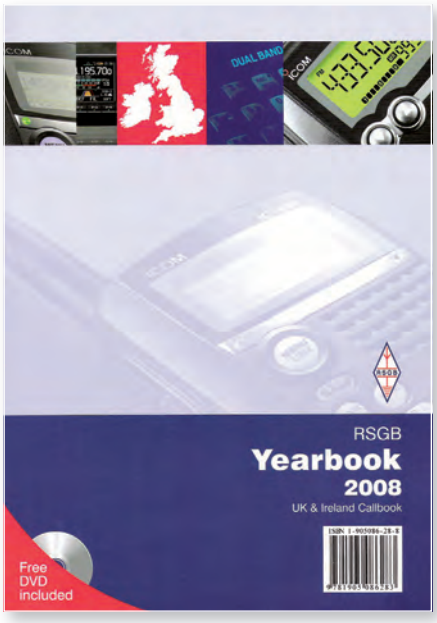


Fig. 5: The RSGB 2008 Year Book incorporating the UK and Ireland Callbook. The 2009 edition should be available in mid-October 2008.

The QSL Managers

For some stations the volume of QSL cards received is such that they appoint a QSL manager to deal with requests for QSL cards. Typically these are DXpeditions where thousands of contacts are made in short time. In these situations during a QSO or in the Amateur Radio press we will be asked to QSL via XXX, where XXX is the call sign of the QSL manager. Don't forget that you should always clearly write "via XXX" on your outgoing QSL card and sort it accordingly.

Your QSL Policy

There's certainly no need to send a QSL card for every contact you make. Most Amateurs will only send QSL cards in respect of their first contacts on a particular band or mode with a country or locator square, etc., and will send a QSL card in reply to one received only if it's specifically asked for. In addition Amateurs may send a QSL card to someone following a particularly enjoyable QSO or if they need confirmation of the contacts for an award they are trying to get.

Indiscriminate sending of QSL cards makes unnecessary work for fellow Amateurs, QSL managers and QSL bureaux. In fact, many Amateurs don't send or wish to receive QSL cards at all. So, if you're **not interested** in collecting QSL cards, please let your sub-manager know, so that they can dispose of any cards they receive for you.

Hints & Tips

Phil Whitchurch G3SWH, who is a QSL Manager for numerous DX stations and major DXpeditions, has an excellent web site with many hints and tips about QSLing at **http://www.g3swh.org.uk/**

I hope you enjoy your QSLing and that WN? has helped! Cheerio until next month. ●

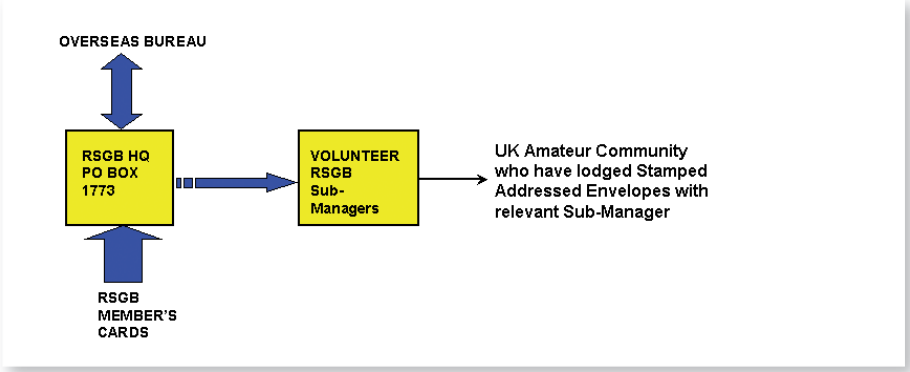


Fig. 6: Simplified diagram of the operation of the QSL Bureau System.

Colin's waiting to hear from You!

I like to solve problems with anything to do with Amateur Radio! I can answer questions and publish my findings here for the benefit of all *PW* readers.

Remember the mains supply is potentially lethal. Unless you really know what you are doing, always pull the mains plug out, do not just switch off at the wall socket, when working on equipment.

Harry Leeming's

in the shop

Harry Leeming G3LLL welcomes you to the shop where valved Yaesu rigs are always welcome – even with their rubbery glue!

Welcome to the November issue of *In The Shop* (ITS) where I'm remembering when a Yaesu 144MHz rig was brought to me for repair. The customer mentioned that the phase lock loop (PLL) wouldn't lock for the first half hour from switch on.

Of course, the rig had the usual protective coating over sensitive components. I started to remove the rubbery mess from the voltage controlled oscillator (v.c.o.) stage, to try and trace a fault, but the more glue I removed, the quicker the rig sprang to life! I eventually removed as much as was possible without damaging the components, and the 'warm up time' was then down to about 30 seconds.

At this point, I decided that discretion was the better part of valour and returned the rig to the customer to try out for a few weeks. It continued to operate perfectly apart from the 30-second delay and he was more than happy to send me a cheque for my work.

New FT-101 Valveholder

"Can you supply me with a new valve holder for my FT-101 power amplifier please"? Actually, I've had this request many times. However, in 99% of the cases I've handed all that's needed is a small repair to the original holder.

Valve holders intended to take glass-based valves are easily damaged if a valve with a bent pin is forced in. At this point many users look for a replacement, then start to fit it and so make very hard work of a very simple repair.

Most valves have some pins that aren't used, and a glance at the underside of the holder will show as to which connectors have no wires attached. These connectors are 'spare' and are only held in position by a small dimple. If you squeeze this with a pair of long nosed pliers it's possible to push these connectors out and then to use them to replace any damaged connectors. It's only a two-minute job – better than having to spending the best part of an hour or so de-soldering and swapping the whole holder and installing a replacement!

Linear Amplifier Switching

Let's now take a look at linear amplifier switching and the problems that can arise. For example, my customer **'Joe'** thought he knew what he was doing – so when he upgraded his 144MHz multi-mode rig, it wasn't long before he had his old and trusty linear wired in circuit.

Unfortunately, the transmit-receive switching didn't seem to be working and to his horror – when he disconnected his linear – Joe found that his new rig wasn't transmitting. He returned it to his supplier who, when he heard what Joe had done, explained that he had blown a switching transistor.

Such happenings aren't that uncommon, as modern rigs and linears tend to use low current solid-state switching in place of the relays that were used in the older equipment. For example, the FT-290MkII uses a very small surface mounted device (SMD) transistor 'hidden' at the back of the control panel to do the switching. This is more than adequate if Yaesu's own linear amplifier is used, but (**be warned!**) it will be destroyed if you try to switch many other linears.

Note: To test your own linear's switching current please see my comments in *ITS* July 2008.

Shutter Speed Tester

Last month I described how in the late 1960s, engineer **Derek Fielding** and myself started the task of designing a camera shutter speed tester. We planned to charge a capacitor from a source of about 30-40V, over the first 10 or 15% of the charge curve so we could obtain a linear response.

To fit in with the design requirements the meter measuring the charge required a full scale deflection of about 5V. A good (low cost) 100μa panel meter was available and by Ohms law (R= V divided by I that's 5 divided by 0.0001 = 50,000). In other words it required a series resistor of 50kΩ in series with the movement to turn it into a 5V meter. However, for the capacitor to hold its charge – to give a steady reading – meant that the meter had to have an input resistance of thousands of times more than this!

The d.c. input resistance of a transistor is approximately equivalent to the value of the emitter resistance multiplied by the gain of the transistor.

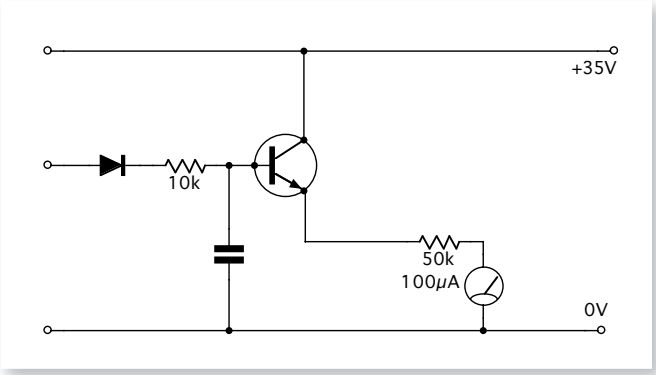


Fig. 1: Using a single BC109 type transistor transforms the 50kΩ meter resistor, to give an apparent loading of around 25MΩ across the capacitor.

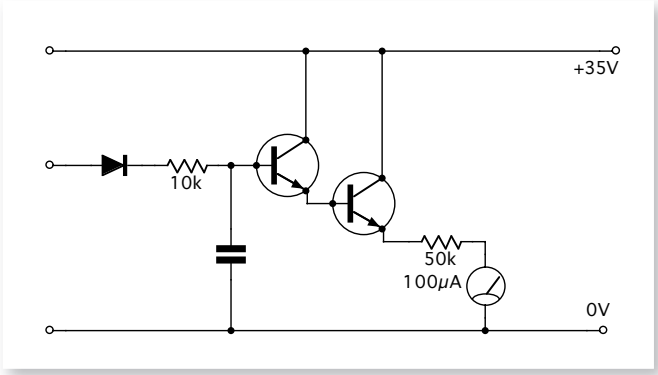


Fig. 2: A second transistor decreases the loading on the capacitor even more, this time to the equivalent of around 12GΩ resistance.

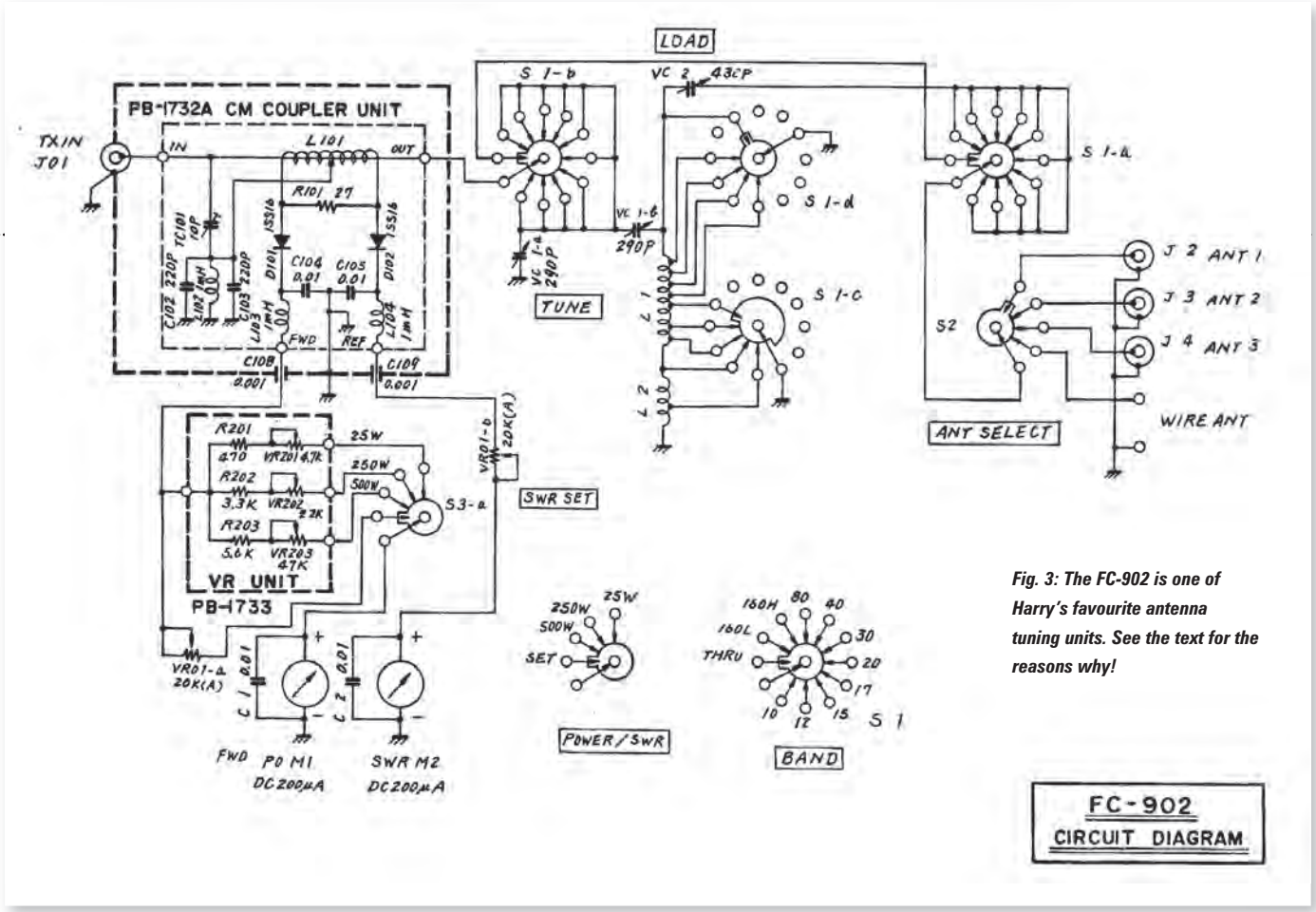


Fig. 3: The FC-902 is one of Harry's favourite antenna tuning units. See the text for the reasons why!

So, if we take a transistor with a gain of 500, connect the meter circuit as the emitter resistor the input resistance of the metering circuit jumps from 50kΩ to 25MΩ, **Fig 1**. So, I tried this and the meter reading held up to some extent, but nowhere near enough to give a steady and accurate reading!

What happens if we use the 25MΩ input resistance of the first transistor to act as the emitter resistance of a second transistor? In this case we multiply the input resistance by another 500, and end up theoretically with an input resistance of 12.5GΩ (Giga ohm!).

In practice I found that if I selected high gain samples of two BC107s, as per **Fig. 2**, the capacitor's charge and the meter reading 'held up' rock solid for a minute or more. The only problem was that a transistor doesn't conduct until it has over 500mV on its base and so in the final circuit this had to be allowed for.

I had by now started to think that if we could get the shutter tester working satisfactory and that we were on to something that we could possibly produce and sell commercially! Up to this point we had used a germanium transistor with the paint removed as the photosensitive device but we really needed something better.

It also seemed obvious that we really required a transistor with the high gain and low leakage of a BC109 – but with the voltage rating of a BC107– for the metering circuit. So, to help Derek contacted his friend at Mullard's for help.

Very soon, Derek's friend explained to us that the BC107, the BC108, and the BC109 were in effect the same transistor. They all came off the same production line, the only difference between them was that they were separately selected and stamped during the test process.

For example, transistors stamped with BC109 identifying code are selected for high gain and low noise, but only have to stand 30V. Transistors that will take 50 volts are marked BC107 and aren't required to be low noise, or have the highest gain. The BC108 transistors are only checked out at 30V and aren't required to have very high gain or be very low noise. The transistors can also be specially graded and have the suffix '**A**' '**B**' or '**C**' added with those being marked 'C' are at the high gain end of the specification and those marked 'A' are at the low end.

We were then advised that the vast majority of transistors marked BC109 would actually take well over 40V, and that the best way ahead was to order a few BC109C transistors and then to check their voltage ratings ourselves. He explained how to do this and told us about a new photo-transistor that had just being introduced (more details next time).

Yaesu FC-902 ATU

The Yaesu FC-902 is one of my favourite antenna tuning units (a.t.u.s). It has a 4-way antenna switch, is easy to use and has good size coils and capacitors. It's rated at 500W but many people push it beyond this and, apart from the metering system (which is easily sorted out) it never seems to object!

The diodes in the standing wave ratio (s.w.r.) bridge are the weak link and I've had quite a few FC-902s brought to me that were failing to read power and s.w.r. correctly because these were faulty. The original diodes – D101 and 102 are numbered 'ISS16', but if they are replaced with a pair of

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OA91 diodes they never seem to give trouble again.

However, when the diodes are substituted for the originals the calibration will be out, and the meters will read low. This can normally be corrected with the calibration pots VR201, 202 and 203, but if the adjustment is outside their range, a **slight tweak** on TC101 will normally correct things without upsetting the s.w.r. bridge's balance.

The only other complaint that I sometimes get with the '902 a.t.u. (and with others that are band switched) is that on some bands they won't tune up. It should be realised that the band settings on the range switch of a.t.u.s are correct only for a typical antenna under typical conditions.

Note: If your antenna is a bit outside the norm on a particular band, just switch the a.t.u. to the next band higher or lower. For example, if the a.t.u. won't tune up for minimum s.w.r. on 14MHz when set to 20m, just switch it to 18MHz (17m) or 10MHz (30m) and it almost certainly will tune up perfectly.

Struck By Lightning

As lightning strikes have been featuring in the *PW* Letters pages over the past few months, I thought it would be worthwhile mentioning my own servicing experiences of lightning-damaged equipment. One that came to mind was when (after a local storm) two expensive hi-fi tuner/amplifiers were brought into the shop for examination.

The first installation had suffered a direct hit on the chimney mounted Band II v.h.f. antenna and was in a sorry state. The coaxial cable down-lead had simply disappeared, leaving only a burn mark and a splash of copper outside and inside of the house! The receiver had burn marks on the outside, and its mains lead and antenna patch lead had evaporated, even the speakers had burn marks on them – at first inspection it was obviously a 'write off'!

Curiosity then got the better of me! I attached a new mains lead with a low value fuse and gingerly plugged it in. The tuning lit up. and I then attached a pair of headphones, switched to Band II v.h.f (f.m.) and I heard a loud receiver hiss in the earpieces. A screwdriver poked at the point on the tuner head where the internal antenna lead had neatly been unsoldered by the lightning then produced BBC Radio Lancashire!

Next, I soldered the internal lead back in place, connected a suitable antenna, a couple of speakers and a gramophone turntable. The unit then performed on every function, except for the long and medium wave bands where the receiver switches to amplitude modulation (a.m.).

The antenna consisted only of a ferrite rod on the rear but strangely the front-end transistors in this had 'blown', whilst the f.m. tuner head (which had been directly connected to the antenna that had been struck) was perfectly okay! Considering what had happened – and the burn marks on it – I told the customer that I could give no guarantee of the unit's safety or future reliability.

So, the customer's insurance company added it to the pile of his other blown electrical equipment and paid for a new unit. Perhaps they got off quite lightly, because if the Band II antenna system hadn't acted as a lightning conductor, they may have had to pay for a new house!

The second unit had not been struck. Instead we were just told, "It went off during the storm". On inspection I discovered it was unmarked, looked brand new, had no sign of damage inside or outside but was completely dead.

First, I found that the power supply rectifiers were open circuit, so I replaced these. Nothing at all in the resulting voltages then seemed to make sense, so I started unsoldering and testing the transistors and diodes, finding that they were all open circuit! After the first dozen or so I gave up, quickly coming to the conclusion that every solid-state device in the unit had been blown and that the unit was beyond economical repair.

To me the the second unit's massive damage makes no sense, but I'm sure **Rob G3XFD** the Editor would be happy to publish a full explanation in the letters column, any volunteers?*

That's it for now. In the meantime just remember not to darn your socks with a steel needle during a thunderstorm, unless of course you have a black cat sat on your knee! ●

Equipment Problems

I like to hear about problems with older equipment, particularly pre 1990 Yaesu rigs. Please E-mail me, (add some radio related term in the subject heading, to differentiate against spam), or write and enclose a stamped addressed envelope.

Remember that electricity is dangerous, if you are not familiar with safety precautions you must never work on your equipment whilst it is plugged into the mains. (Switching off at the wall socket does not necessarily make equipment safe).

***Editor's comment:** I'm sure that there'll be some readers who have experienced similar problems. I've already mentioned the damage to cascaded u.h.f. cable TV amplifers I experienced – with high static charges associated with 'thundery weather' in the Scottish Highlands and I think that there are bound to be *PW* readers who can share their own experiences in the Letters pages. So, Harry and I look forward to hearing from you! Incidentally, my own cat *Mowler*, is not quite black – instead she has a few brown hairs in her fur. Will she provide protection Harry? (Her fur often crackles when she's combed!). **Rob G3XFD**.

Carl Mason's

hf highlights

Share your news, views and reports with fellow readers. Reports to Carl by the 15th of each month please.

Join Carl Mason GW0VSW as he presents your h.f. reports. All reports to Carl by the 15th of the month please!

Well I'm pleased to say that my new 'Crown' loop antenna is performing reasonably well, even if the bands are not in such good shape. Results on 3.5MHz have been disappointing although I can hear stations working throughout the UK and Europe with strong signals (including **G3ROO**, **G3NUB**, **G4ZWI**, **EG8SDC**, **OZ1GD** and **UA9FMZ**) but I'm unable to work them.

I've made a few minor adjustments to the loop since it was first installed, including increasing the length by a little over 1.2m (4ft). I was very pleased to 'bag' a new QRP country when I switched on to check out 14MHz and heard **A61Q** calling "CQ" with no takers! He made my log on the third call at 1600UTC with me running a little under 4W c.w., although I only received the standard RST599 report.

A little later at 2230UTC I worked FM5LD on 10MHz who gave me 539, which is still good when you considering the noise levels on the band at that time and my low power. I shall continue to make small refinements and let you know how I get on using just an indoor antenna.

The DX News

Time for this month's DX news now and we begin in the 26th largest nation in the world, Columbia, or officially the Republic of Colombia. It's a country located in north-western South America and is bordered to the east by Venezuela and Brazil to the south, and by Ecuador and Peru. It's here that **Paco Lara EA7ATX** and **Quiros Banos Juan Luis EA7AY** plan to be active as **HK1AT.** They plan to operate from the San Bernardo Islands SA-078 on from October 14th to the October 19th on or around the IOTA frequencies. The QSL route is via **EA7ATX** direct only **Paco Lara, POB 309, 11500 Puerto de Santa Maria (Cadiz), Spain**.

The American Arawak indians were the first inhabitants of Curacao (SA-006) in the southern Caribbean Sea, lying off the Venezuelan coast. The Spanish Lieutenant Alonso de Ojeda visited the islands in 1499 and later in 1634, long after the Spanish had left, the Dutch West Indies Company claimed the island.

Curacao then quickly became a Dutch commercial centre and dealt extensively in the slave trade. The island is now one of five island areas of the Netherlands Antilles and its capital is Willemstad. Dutch operator **Joeke VD Velde PA0VDV** will be active here as **PJ2/PA0VDV** until October 29th, so keep a good ear open for him. Joeke will operate using c.w. only and a QSL is good via the bureau or direct to **Delleburen 1, 8421RP Oldeberkoop, Netherlands.**

Crooked Island NA-113 is one of four islands forming an atoll, which hugs the shallow waters of the Bight of Acklins, Bahamas. American **Ed Steeble K3IXD** will operate as **C6AXD** using RTTY and fellow American **Peter Radding W2GJ** will be **C6APR** using c.w. and s.s.b. Both calls will be active from between October 23rd and the 26th and for those of you that like to work lighthouses both calls are good for' Bird Rock' Lighthouse. Peter will also be operating in this year's CQ WW DX SSB Contest, which runs over the weekend October 25th – 26th. Any QSL cards for both calls should be sent **via K3IXD**, **202 Huntington Road**, **Summerville SC 29483**, USA. To check the rules of the CQ contest visit **www.cqww.com/2008_rules_cqww.pdf**

In the northern part of South America, bordering the North Atlantic Ocean and lying between French Guiana and Guyana. we'll find Suriname. This is where **Richard Gasparik OM2TW**, **Josef Cizmarek OM5AW**, **Stefan Hamara OM5AA**, **David Klimosz OK1RK** and **Vladimir Hampl OK1NY** will be active as **PZ5Z** from October 21st to October 30th and they will also include an entry in the CQ WW DX SSB Contest. They plan to operate both c.w. and s.s.b. on all h.f. bands from 3.5-28MHz during their stay with an emphasis on the low bands. You can QSL via the bureau or direct to **Branislav Daras OM2FY**, **POB 6**, **SK-820 08 Bratislava 28**, **Slovak Republic**. Further information on this activity and a log search will be available at **www.om0c.com/suriname/**

Finally, we're off to Italy where

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Marco IN3UFW and others will operate on all the h.f. bands, using all modes using the call **IN3IPY** to celebrate the International Polar Year. The call will be aired until the end of the year and a QSL is good via **IN3UFW** through the bureau or direct to **Marco Paglionico, K.Wolf 129, I - 39012, Merano (BZ), Italy**.

QSL Manager Update

In Bosnia-Herzegovina **Dalibor Stanic T94DO** (ex T99D and E77DO) has the new call **E79D**. The QSL route for contacts made with T94DO and T99D is still via DJ2MX. However, cards for E77DO should be sent via the bureau or direct to Dalibor at **POB18, 71260 Kresevo, Bosnia-Hercegovina**). The QSL manager for E79D is E77E either via the bureau or direct to **Robert Babec, Plitvicka 7, 78000 Banja Luka, Bosnia-Herzegovina**.

William 'Buzz' Loeschman NI5DX has become the new manager for **Steve Bloom KL7SB** who is operating in Alaska. If you work Steve then send your cards to Buzz at **717, Milton, Angleton, Texas 77515**, USA. Cards for Steve's operations as **TF/KL7SB** and **HB0/KL7SB** should still be sent to **1023 E. 17th Avenue, Anchorage, Alaska AK 99501, USA**. Buzz is also the QSL manager for **Jeffrey Hammer YI9NIK** (a US Army Officer) who is deployed north of Baghdad operating a MARS station and the **Baghdad Amateur Radio Society** station. Contacts can be confirmed once the logs are transferred and there will be a slight delay as cards are being printed.

Your Reports

On to your reports now and first off is **Keith Winward 2E0JKD** in Middlesbrough who is now using a Kenwood TS-570D and newly constructed folded doublet for 3.5MHz in his loft. So far the results have been good and 30W contacts included David G0GKH in Trowbridge, Wiltshire, OK1IF (Czech Republic) and SM1TDE (Sweden) all using c.w., although no times were given.

In Athens, Greece **Panos Dadis SV1GRN** used his Icom IC-756PROIII and about 50W s.s.b. to a long wire antenna – made just one contact when SX5C (Dodecanese) EU-001 made his log at 2027. The operators of the call were based on the islet of Stroggyli Kastellorizou (also called Strogili), which lies in the eastern Mediterranean Sea about 5 nautical miles south-east of the island of Megisti (Kastelorizo). The islet is small and covers an area of about 0.9 km^2 and is rather flat. It's not inhabited and has the claim to fame of being the eastern-most building in Greece! Operators of SX5C were based near a lighthouse, which was built in 1917 and is 9m high, on the islet called 'Ipsili' (WLOTA L-1653). You can QSL via **SV1HER**.

On 7MHz Keith uses a home-brew trapped inverted 'L', which tunes up on 3.5, 7, 14, 18, 21, 24 and 28MHz without a tuner! Using c.w. once again Keith found 'Women on the Air' (WOTA) operator **Nicky Marriott MM5YLO/P** on EU-012, DL0HEM (Germany), F6AQO (France), OK1APB (Czech Republic), YO2BMK (Romania) and RK3FWA/P (European Russia). Incidentally, there is an interesting 'Blog' at **http://wota2008.blogspot.com/** which has some interesting news and photos about woman operators from all around the world!

Also on the band was **Martyn Medcalf M3VAM** in Chelmsford, Essex who lists s.s.b. QSOs with SQ2J (Poland) 0947, LN9Z (Norway) the callsign of the 'Leia Contest Club' at 0950, DF2GN/P (Germany) operating in **Summits on the Air** (SOTA) at 1508, EA5DFV (Spain) 2241 all using a Icom IC-746, and an SGC-237 auto tuner into a half-sized G5RV.

Ted Trowell G2HKU on the Isle of Sheppy has been busy in the garden removing two conifers which had got a little out of hand! This meant he had to reposition his G5RV slightly but its performance does not appear to have been effected too much. Using his IC-703 with c.w. and 5W QRP Ted found OH0CO (Aland Islands) EU-002 'calling CQ' and worked him around 2100UTC.

The low power of **Eric Masters G0KRT** in Worcester Park, Surrey found a fellow QRP operator in US5WDT (Ukraine) at 2128UTC with Eric using a Kenwood TS-570 at 5W to a modified W3EDP antenna.

The 10 & 14MHz Bands

Back in Greece Panos SV1GRN used PSK31 via a Signalink Interface and about 30W and listed RU6YY (European Russia) 0422, JI4POR (Japan) 2017 and Mike Clark GM6OFO in Perth, Scotland at 2027UTC.

Moving up to 14MHz Ted worked ZP6CW (Paraguay) with 5W again at 2110 and then changed to his Ten Tec Omni V and operating with 70W logged EA9EU (Ceuta & Melilla), LU5FF (Argentina), CX4CS (Uruguay), A61Q (United Arab Emirates) and Peter K3ZR

(USA) in Bowie, Maryland between 2110 and 2205UTC.

In Farnborough in Hampshire, **Tom Hutton G0HUT** ran his Yaesu FT-450AT at 50W to a Cobra 14MHz vertical antenna. He logged SI9AM (Sweden) 1021, 9A73AA (Croatia) at 1124 QSL via 9A2AA, OE2009A (Austria) 1316, II3GG (Italy) at 1442, which was a special call to mark the 90th anniversary of the First World War (QSL via IV3YIM). Then came LY755W (Lithuania) 1503, a call to celebrate State Day and the 755th anniversary Crowning of Lithuanian King Mindaugas. You should QSL via LY5W. Finally, Tom worked E77EY (Bosnia & Herzegovina) 1522 and F1JSL (France) at 1555UTC.

The s.s.b. of **Jos van Gelder PA3ANF** in Utrecht, Netherlands worked C91NZ (Mozambique) 1224, J28JA (Djibouti) 1927 QSL via F5JFU, 5N8PP (Nigeria) 2101, VP8LP (Falkland Islands) SA-022 at 2005 and CX2CC (Uruguay) at 2101 QSL via EA5KB using a Yaesu FT-2000 and tri-band 2-element beam.

Back in Middlesbrough Keith 2E0JKD used Morse again to work F8MUU (France), IK2FCO (Italy) and LX1NJ (Luxembourg).

Spending some time on the band was Martyn M3VAM who logged EA6SX (Balearic Islands) EU-004 at 0902, CN2R (Morocco) 0904 QSL via W7EJ, S52OW (Slovenia) 0952, LA9LMA (Norway) 0941, R3K (European Russia) which is the call for ARC Energia, a Space Mission Control Centre in Korelev at 0942 (QSL via RN3DK). Then came 9A6OA (Croatia) 0958, EE7E (Spain) at 1043 (QSL via EC7AVB), Next Martyn worked LZ130JA (Bulgaria) at 1047 (QSL via LZ2JA), CQ3T (Madeira Island) AF-014 at 1051, S51A (Slovenia) 1105, RX9AM (Asiatic Russia) 1129 and WE3C (USA)John in Fleetwood, Pennsylvania at 1137. Finally, Martyn logged VE3EJ (Canada) 1231 and YO3FRI (Romania) at 1301UTC.

Operating /P from the **Wimbledon and District ARS** annual camp at Reigate, **Eric G0KRT** had 5W QSOs with HA802ERO (Hungary) 1713 – celebrating 80 years of the Hungarian Radio Amateur society – and IZ0MTV (Italy) also QRP at 2116, this time using a Yaesu FT-817 and W3EDP antenna. From Eric's home QTH CT3FT (Madeira Island) made it into the log with 100W s.s.b. at 1854UTC.

The PSK31 transmissions of Panos SV1GRN reached 3B8GT (Mauritius) AF-099 at 0412, 4K9W (Azerbaijan) 0442, EK3GM (Armenia) 0747, OZ4ADP (Denmark) 0804, II0SRT (Italy) 0926, 6V7L (Senegal) at 1250 (QSL via F8ATM). Panos then worked 4Z5FH (Israel) 1251, 2E0LMA Lee Allen in Stroud, Gloucestershire at 1333, HA5KN/P (Hungary) 1320, C91R (Mozambique) 1353 and 8J0YM/0 (Japan) 1454. Next came LU3HR (Argentina) 1927, YV1PX (Venezuela) 1934, CE5DRM (Chile) 1952, DL6KVP/P (Germany) 1958, LA5UF (Norway) 2012 and KP4ED (Puerto Rico) at 2022, Nearer homes was 2W0ZJA in Brecon, Powys, Wales at 2112, TI4ADS (Costa Rica) at2117 and JA1CLW (Japan) at 2123UTC

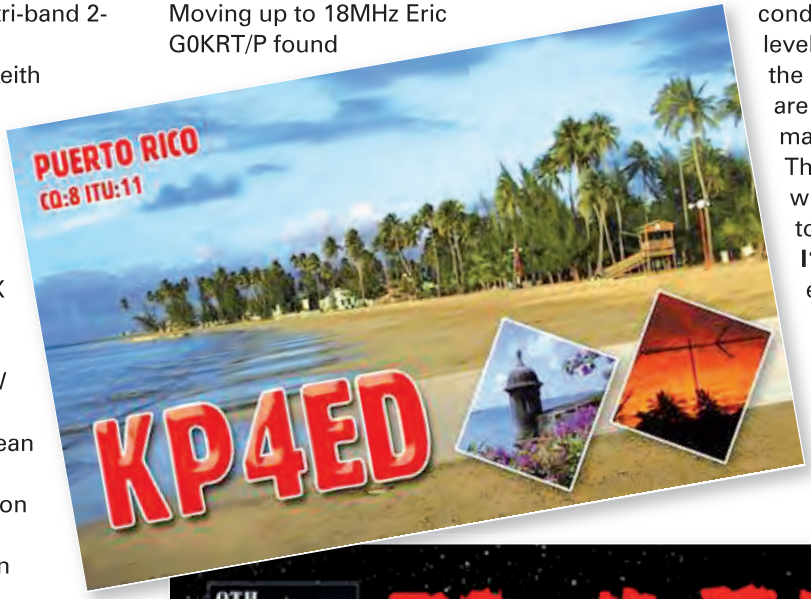
The 18, 21 & 28MHz Bands

Moving up to 18MHz Eric G0KRT/P found LA1008THR (Norway) at 1937 using c.w., while at home he used s.s.b. to work I5JXM (Italy) at 0918 and EA1GAG (Spain) at 0923UTC with 100W. Meanwhile the s.s.b. of Panos SV1GRN found C91NZ (Mozambique) at 0810. The 21MHz band then provided Panos with OD5NH (Lebanon) 0824 and slightly later UR7EP (Ukraine) at 1104UTC.

Finally, there were just a few QSOs on the 28MHz band – even though the band was closed for most of the day. Eric G0KRT used 100W to have voice contacts with S51GL (Slovenia) 1105, EA3BFX (Spain) 1536, EI3GUB (Ireland) EU-115 at 1939 and DC2IQ (Germany) at 1955 and one f.m. contact with EA1EUI at 1118. Panos SV1GRN logged only one station – but is was 5U5U (Niger, Afriuca) using s.s.b. at 1641UTC.

Signing Off

That's it again for another month. All reporters mention the poor conditions again and high levels of QRN! Even though the levels are high there are still contacts to be made if you are patient. Thanks to all those who sent in logs and to **Mauro Pregliasco I1JQJ/KB2TJM** editor of the 425 DX Newsletter for all the DX information. Until next time I wish you all good DX. 73, Carl GW0VSW. ●



TRADERS TABLE

The equipment for sale on this page is secondhand or ex-demonstration

Disclaimer

Advertisements from traders for equipment that is illegal to possess, use or which cannot be licensed in the U.K, will not be accepted. While the publishers will give whatever assistance they can to readers or buyers having complaints, under no circumstance will the magazine accept liability for non-receipt of goods ordered, late delivery or faults in manufacture.

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01202 490099

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KENWOOD TK3103 PMR446 x 8 c/w CHARGERS.....£400
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SANGEAN AT818.....£85
YAESU VR120D.....£120
YAESU VR5000.....£POA
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KENWOOD MC60.....£95
MFJ 432 VOICE KEYER.....£175
MFJ 1020C ACTIVE ANT.....£69
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KENWOOD MB11 MOUNT.....£POA
MFJ 986 3k TUNER.....£185
WELZ SP-220 SWR/PWR METER.....£65
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NEVADA

023-9231 3090

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WATERS & STANTON

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IC-R71E HF Receiver..... £ 349
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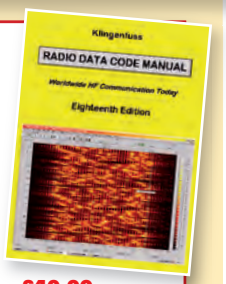

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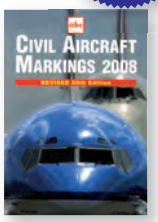

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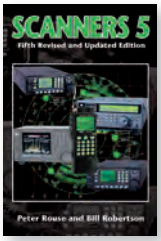

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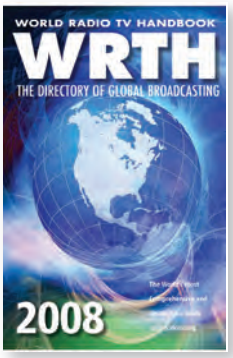

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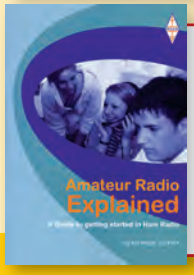

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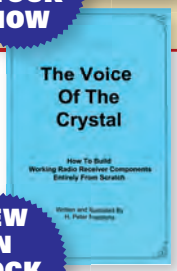

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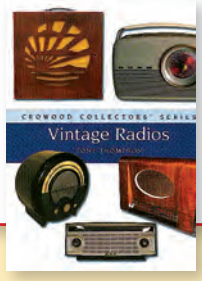

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Rob Mannion's

topical talk

This month Rob G3XFD discusses an outdoor challenge idea and the historic RAE papers now available on a website.

The *PW* letters pages have, as usual, an interesting selection of ideas, comments and feedback on many aspects of the Amateur Radio hobby. I was particularly intrigued with the suggestion for another Amateur Radio outdoor challenge that came from **John Reynolds G0UWV**. John had come across the **Geograph** website **www.geograph.org.uk** and when I visited the site myself I found it to be truly fascinating as it covers both the UK and Ireland.

The Geograph introductory page states, "What is Geographing? It's a game – how many grid squares will you contribute? It's a geography project for the people. It's a national photography project. It's a good excuse to get out more! It's a free and open online community project for all."

I then looked at what was on offer for Scotland and Ireland – two countries very close to my heart. I found myself looking at a grid square on the far west of Ireland and a dramatic photograph of Blacksod Pier (County Mayo) entitled 'Stormy Weather at Blacksod' (just like it was when I visited last year!).

John G0UWV mentions Ailsa Craig in the Firth of Clyde in Scotland, often known as 'Paddy's Milestone', which is a huge granite edifice that's clearly visible from many places on the west coast, and has many memories for me, especially from my time in broadcasting. My good friends **Eion Meldrum GM6BKK**, **Sam Ajayii** and I visited Ailsa Craig when we were working in the area. It was a fantastic trip, although Eion and I went blue with with the cold on the boat trip from Girvan. However, Sam – a native Nigerian who was also a very slim and slightly built man – went a very dark purple but kept smiling through his shivers!

My trip with Eion and Sam took place in the early 1980s so, unfortunately, I doubt that our adventure would count for the Geograph project, even though I have several photographs of the trip. Incidentally, we all came back with curling stone blanks (Ailsa craig was famous for its special granite for this purpose) but I'm afraid I lost track of my island souvenirs some years ago.

I'm now left wondering if the Geograph project could be integrated into the existing **Worked All Britain** scheme, or perhaps become associated with **Summits on The Air** in some way? Whatever happens, I think the Radio Amateurs should get involved because it's a worthwhile project and we can all earn something about the tremendously varied and beautiful group of islands we are privileged to live on!

Historic RAE Papers

Thanks to the kind efforts of **David Pratt G4DMP** (Letters this issue) a remarkable historic collection of the old form of the Radio Amateurs Examination (RAE) is available on-line for everyone. In expressing my appreciation to David for his efforts when he E-mailed me, I told him that I would immediately look up the May 1967 RAE, which led to the appearance of G3XFD on the bands in early 1968.

When I first looked at the on-line 1967 papers, even bearing in mind the difference between the old and new exams, I was surprised to see that they didn't seem as fearsome as I remember them! In fact, I immediately recalled the comments that came from many established Amateurs that the new style multiple choice style RAE 'dumbed down' the examination's standards. However, from my point of view – there doesn't seem to be much to support that argument!

Indeed, looking through the preparation material for the now well-established Intermediate and Advance licence examinations, I've no doubt that the standard hasn't dropped. In fact, I think that the standard for the Advance licence may be slightly higher than it was for the old RAE. Additionally, candidates now have to endure the multiple-choice answer format examination! What do you think readers? Take a look at David's website – **www.g4dmp.co.uk/rae** – and let me know your opinion!

Rob Mannion G3XFD/EI5IW

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