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describes the
background of an idea
that has turned into a
real winner!*

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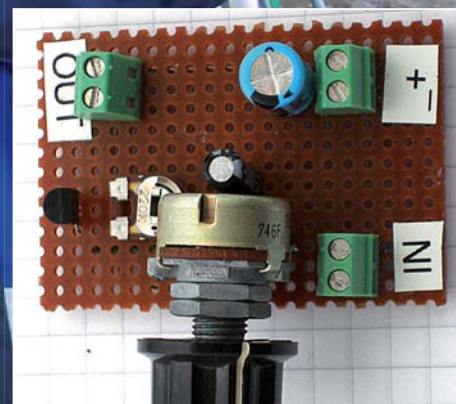
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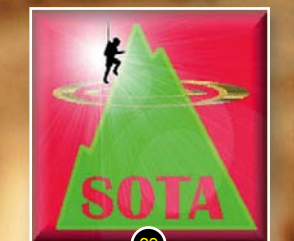
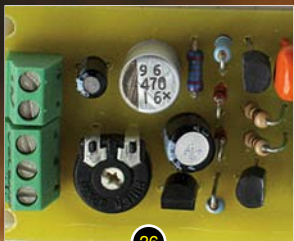
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Cover Subject
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Cover design by **Steve Hunt**.

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Rob Mannion's keylines

Twenty years of Keylines

As I'm writing this *Keylines*, I'm remembering that it's 20 years since I prepared my first 'opinion piece' as Editor of the magazine I'd read and enjoyed since the mid 1950s. However, when I prepared the first *Keylines* in late October 1989, little did I know I would be still writing them towards the end of the first decade of the new century in late October 2009!

It's the nature of the job that magazine Editors come and go, and indeed – it's rare for a particular journalist to 'take root', so to speak! But there have been occasions where a journalist seems to 'fit' their job so well that the job 'takes them over' and their name becomes synonymous with a publication. The late **Fred Camm** was one such man.

Fred Camm was often seen as a difficult-to-approach, chain-smoking workaholic and was perhaps driven by the early death of his wife and their only son. Camm was an utterly dedicated and single-minded professional who remained the Editor of *Practical Wireless* magazine – the flagship hobby title of **George Newnes and Company Ltd.** – from its launch in 1932 until his death in 1959, just short of 27 years. So, even though I may have had two decades serving the magazine and our readers worldwide – it's a long time before I can even begin to equal the pioneering Editor's service!

Fred Camm saw tremendous changes in radio and general communications technology and I've also seen equally remarkable changes. For example, who would have thought that *PW* could run with just **Tex Swann G1TEX** and I on the Editorial team? True, we're ably backed by Art Editor/Publisher **Steve Hunt** and **Peter Eldrett** (Advertising copy and make up) in the Art Department and **Alan Burgess**, our essential Accounts Manager, while in Camm's day the (computerless) Editorial Department had a staff of 40 and more!

My friend and colleague **Tex Swann G1TEX** has also recently celebrated 20 years working for *PW*. It's Tex's abilities as a photographer, technical draughtsman and his IT skills (keeping our all-important computers running) together with the Art Department's expertise that emphasise the teamwork that's necessary to produce the very specialised publication that *PW* has become.

However, there's another part of the *PW* team that we mustn't forget – and these are our authors. The regular authors, especially, have a year-round commitment that the office-based staff appreciate is **a commitment**. They, in turn, are often supported by keen readers, reporters and other supporters who keep the specialised authors up-to-date on their activities. Then there's the final link in the *PW* chain – the all-important reader. After all, without readers we would all be wasting our time! So, it's especially important for me – as team leader – to thank our readers who are to be found worldwide, for their continuing support.

Profound Changes

Although there have been significant changes in the way *PW* has been produced – they aren't as profound as the changes to Amateur Radio I've witnessed in the last 20 years. These changes have led to our wonderful pastime becoming much more accessible and have also relied – to a great extent – on the support of established Radio Amateurs assisting newcomers to the hobby as instructors. This has formalised the training and support that's been provided informally from the very beginnings of Amateur Radio.

The introduction of the Novice scheme in the UK was ground-breaking indeed and I felt privileged to have met keen Novice Licence holder who ranged from keen school-age students to a 90-year old enthusiast. The Foundation and Intermediate students are worthy successors and I welcome them.

However, the biggest change – for me – must surely be the fact that our hobby is now open to anyone who is interested, whatever their social background. The Chief Petty Officer Telegraphist Instructor at the Royal Navy training establishment *HMS Ganges* – who told me in early 1960s, "That only Officers become Radio Amateurs in the Navy", was only reflecting the elitist image attached to the hobby in the UK at that time.

Hopefully, in the next 20 years we'll see more worldwide political and cultural barriers being swept aside to permit the freedom of Amateur Radio communications where they don't exist now. Here's to the future!

Rob Mannion G3XFD/EI5IW

Practical Wireless

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Subscriptions

Subscriptions are available at £38 per annum to UK addresses, £47 Europe Airmail and £57 RoW Airmail. See the Subscriptions page for full details.

Components For PW Projects

In general all components used in constructing PW projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article.

Photocopies & Back Issues

We have a selection of back issues, covering the past three years of PW. If you are looking for an article or review that you missed first time around, we can help. If we don't have the whole issue we can always supply a photocopy of the article. See the Book Store page for details.

Placing An Order

Orders for back numbers, binders and items from our Book Store should be sent to: PW Publishing Ltd., Post Sales Department, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling. Credit card orders (Access, Mastercard, Eurocard, AMEX or Visa) are also welcome by telephone to Broadstone 0845 803 1979. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Broadstone 01202 659950. The E-mail address is bookstore@pwpublishing.ltd.uk

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.



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*.

Confusing Antenna Descriptions

Dear Rob,

I am writing to express my concern regarding an ever increasing scourge of antenna names and terms. Frankly I am fed up being told that someone is using a 'Powerstick 99', a 'Double Whopper Pro', 'Super Doodah Mk4' or whatever name the manufacturer gives the antenna!

I'm complaining because these names give no indication as to the technical parameters of the antenna and convey nothing meaningful for me to check the antenna's performance or the prevailing propagation conditions.

I'm writing to urge the use of Lambdaic Qualifier's instead and I hope that perhaps training manuals can adopt the practice in their respective operating procedures sections and basic antenna theory. Why Lambdaic Qualifiers? It's given the term because antenna efficacy is a function of how large the antenna is in terms of wavelength (Lambda and thus Lambdaic) and its Qualifier, which refers to the configuration used.

For example a five-eighths over five-eighths wavelength collinear, or a 0.15 wavelength horizontal loop means more than a manufacturers model number! So, please everyone – no more Super Doodah Mk4s, use a Lambdaic Qualifier instead. This is supposed to be Amateur radio after all and not CB! Regards.

Andy Foad G0FTD
Westcliff
Whitstable
Kent

Home-Brew Projects & Component Problems

Dear Rob,

Your magazine often publishes home-brew projects. However, they all have one drawback and that is a supplier of components. I recently went to a Maplin store and was only able to obtain about a quarter of what I wanted and so had to scrap the project I was

Star Letter

Supporting Repeater Groups

Dear Rob,

I wholeheartedly support the **Rev. Victor van den Bergh G6DIF's** suggestion (*Letters* November 2009) of financially supporting local repeater groups. I send an annual subscription to three groups even though I rarely transmit through the repeaters; but I feel that I get £15 worth of listening from each repeater over a year. Excellent value for money.

On the subject of the late **John Worthington G3COI** – would it be possible for *PW* to produce a book of his cartoons, or at least a dedicated website? With best wishes.

Jonathan Kempster M5AEO
Andersen's Wharf
Limehouse
London

***Editor's comment:** I think that Repeater Groups wouldn't struggle if we all did as you've done Jonathan! Well done and thank you for your marvelous initiative! I'm also pleased to announce our new book **Worthington's World – The Short Wave Years** featuring John G3COI's cartoons is now available and you'll find it featured on page 13. My colleagues **Steve Hunt** and **Tex Swann G1TEX** have compiled a wonderful selection of Worthy Worthington cartoons and I'm sure you'll enjoy the book as much as I did!*

working on. Could the authors of projects please give details at the end of their article where they obtained such components?

Also, I think that any article that includes the phrase, "I had one in my junk box" or similar wording makes the whole article a waste of time. Regards.

Ross Bradshaw G4DTD
Roche
St. Austell
Cornwall

***Editor's comment:** I'm disappointed you have had problems Ross. We do try our best to make sure components are available. Please join me on the Topical Talk page for further discussion and suggestions.*

Screwdriver Advice From G3LLL & G4EAN

Dear Rob,

Harry Leeming G3LLL (*In The Shop* 2009), has emphasised in several of

his excellent articles the importance of firmly pressing a well-fitting screwdriver onto a difficult screw when trying to remove it. Pressing firmly down on the screwdriver couples its blade firmly to the screw's head, which means that when the screwdriver turns then you should find that the screw will turn instead of the screwdriver slipping out of the head.

Like Harry, I have amassed a wide collection of screwdrivers over the years. One thing to be aware of is that using a screwdriver which has a damaged blade can easily damage a screw and make things worse. If you remove a screw with a worn head (or thread) then discard it and use a new one. A worn screw head can damage a screwdriver which in turn can damage another screw.

Two screwdrivers may look identical but very small tolerances in their size mean that one will snugly fit onto a screw whereas the other one slips away. I've found that 'cross-head'

screwdrivers have to be as good a fit as their plain 'flat' screwdriver cousins.

It is also bad practice to use screwdrivers with damaged handles. If or when the handle breaks then expect splinters of wood or shards of plastic in your hand. If the handle end of the screwdriver's blade is pointed then expect even worse damage to your hand. Don't underestimate the humble screwdriver. It can be a surprisingly complex tool to use properly and effectively. Best wishes to everyone at *PW*.

Ian Brothwell G4EAN/9H3YI

Arnold
Nottingham
Nottinghamshire

Club Visits - Meeting The Editor

Dear Rob,
Like many other *PW* readers I enjoyed the new Hamfest at Newark and

enjoyed meeting **Tex Swann G1TEX** again and **Steve** for the first time. Chatting to the *PW* team was great, although, of course, it would have been good to see you again Rob! Tex took a good few minutes to chat to me and I was mentioning just how difficult it is for me to join a club because of the anti-social hours and split shifts I work as a coach and bus driver.

In the past I've managed to get time off to meet the *PW* team at the old Rochdale QRP Convention, before the **Rev. George G3RJV** retired from St. Aidan's. There I was able to visit Rob's afternoon scheduled annual *PW* talk at the convention. It was ideal for me because being later in the afternoon I would be free for a few hours before picking up my passengers again, to return home. Many of my passengers are keen bowlers, so I always have a few hours free while they're playing their game. But, we're too far inland

usually to worry about Spanish Armada arriving!

The point of my letter is that in the past Rob, you have announced in *Keylines* – and on the **Southgate Amateur Radio Club's** website – which clubs you are planning to visit and for one always found it useful. I've sometimes found it possible to join clubs for the evening in the Manchester area and the north west of England when you've been in the area. This helps to off-set the unsociable hours involved with my job. However, I've always thoroughly enjoyed my driving – you see so much of the countryside, so there are compensations! It's not all disadvantage.

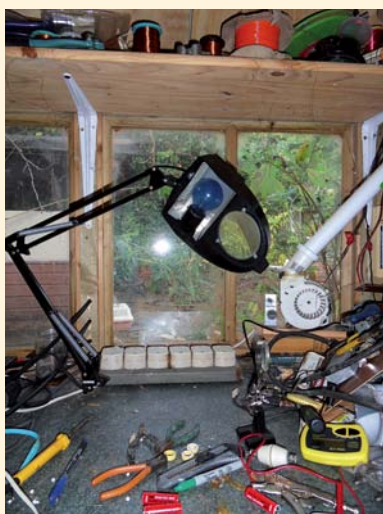
Perhaps in future Rob, you could again announce in *Keylines* what clubs or rallies you're planning to visit? And, of course, I know that Tex G1TEX is sometimes able to come with you and it would enable mobile types like me

Workshop Lighting

Dear Rob,

I was very interested to read about the problems you have encountered regarding getting the type of lighting you prefer for your shack. I have also avoided using fluorescent lighting in my own – very small – corner workshop. In fact, my very small bench is in the corner of our conservatory. Because of the transparent roofing material it's light enough in the daytime, but I find nowadays (I'm approaching 73) that after having a cataract operation, I find that although the light doesn't 'scatter' in my 'good eye' now (the one that had the cataract repair) I do need to have brighter lighting when I'm building projects.

Perhaps my eyesight was effected by my working career in the boot and shoe industry – although I repaired them, I wasn't involved in the making of boots and shoes, which this area was famous for.



It was my wife who alerted me to an excellent little clamp-on flexible bench/work table lamp, complete with a special daylight type bulb and large lens for magnifying the area you wish to work on.

In the end I purchased two of the lamps from a local hobby shop, but they seem to be available

in many different outlets. I don't have a modern digital camera and I hope the photo I have provided shows the lamp well enough.

The second lamp was bought for my wife's birthday! After I bought mine, she realised just how useful it could be for her knitting, sewing and embroidery work, it clamps on (with a protection pad) to the table next to her arm chair. The daylight type bulb is very useful but her eyesight is better than mine and she doesn't need the magnifying lens – even to thread needles. I hope you find my letter of interest and help Rob and no doubt you will be amused at seeing a 'typewritten' letter although **John Worthington G3COI** used Tippex correcting fluid, I managed to 'type' this letter carefully, with just several mistakes as you can see, on a machine that's probably much older than I am. Best wishes, and I'm looking forward to buying a copy of the G3COI cartoon book.

Reg Byres
Barton Seagrave
Kettering
Northamptonshire

Editor's comment: Thank you for your beautifully 'tryped' letter Reg - it was excellent and very well presented and I look forward to receiving many more from you. The old quarto size, watermarked paper you used also evoked many memories of my Saturday morning job at Cluett Burns Printers in Woolston Southampton – taking me back over 50 years. Unfortunately, the photo wasn't suitable for publication, but as I own an identical work-shop lamp myself I've photographed it using a semi-modern digital camera that's powered by clockwork. It's a nice mixture of technology and ideal for taking photos for April 1st! I'm sure that other readers will find your suggestion of great interest.

Send your letters to:

Rob Mannion
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Broadstone,
Dorset BH18 8PW
E-mail: pwletters@pwpublishing.ltd.uk

to catch up with you occasionally!
Thanks for *PW* and I hope that you're
fully recovered now – and maybe
we'll catch up with each other at next
Newark show and I'll try to bring some
more Chorley Cake!

Steve Robinson
Chorley
Greater Manchester

Editor's comment: *No problem
Steve! I will be pleased to announce
my PW club visits in Keylines and
also on the **Southgate ARC** website
with the help of **Richard Brunton**
G4TUT, the website manager who
can publicise topical arrangements
effectively. Obviously, my club visit
schedule was badly disrupted due to*

Good Reading At The Dentist's!

Dear Rob,

Several years ago there was quite a bit of correspondence in *PW* about helping to promote interest in the hobby by donating old Amateur Radio magazines – including *PW* – for use as reading material in Doctor's surgery waiting rooms and also at the Dentist's surgery too. However, at this stage I must be honest and tell you that I couldn't bear to part with my old *PW* magazines – although my wife really gets cross about the pile of mags under the stairs, which I use as my 'radio cupboard'!

Despite my own – perhaps mean – reluctance to part with my beloved magazines, during some recent and prolonged visits to my Dentist's surgery – the main partner comes from Poland – I've come to realise just what a powerful educational tool the pile of magazines in the waiting room can be!

Along with copies of *National Geographic Magazine* (always fascinating) I found copies of yachting magazines, *New Scientist* and some beautiful magazines and booklets featuring holidays in Poland.

I never realised just how beautiful Poland is and after looking through the magazines, while waiting for the various sections of treatment involved with root canal surgery, I borrowed one of the Polish booklets to take home to show my wife. The result is that we are now planning a holiday to Poland next year and part of our itinerary will include visiting the Tatra Mountains area, which, as you'll remember featured in a Polish Amateur Radio story in *PW* – and on the front cover – a few years ago.

So, if magazines featuring other parts of the EU can arouse interest in someone like me – an IT worker in his mid 40s – I realise just how effective it could be if we did leave one or two Amateur Radio magazines for others to read.

In future I hope that I'll be generous enough to donate the occasional *PW* to my Dentist's surgery where it could help introduce someone to our hobby. And yes, I did return the Polish travel magazine I borrowed!

Mike Brown
Clifton
Bristol

Editor's comment: *I have the same problem Mike! I enjoy a good read at the Dentist's and there's some good specialised reading available. I have no problem in donating the occasional PW but it's much easier passing on spare copies of the New Scientist magazine as it's a weekly publication. However, despite my own reluctance to leaving PW, my own Dentist tells me that they notice that donated magazines will often disappear for a while, before being returned. So, I'm confident that – like yourself – other people will be interested and maybe even encouraged by reading the different magazines.*

*my health problems during 2009, but I'm planning to 'get back on the road' in the new year. One of the first visits will be to the **Chester Club** in Waverton, this trip is a priority as my good friends there, lost out badly in 2009 because of a combination of my own problems plus organisational confusion with major Amateur Radio Shows. So, I look forward to meeting you and other PW friends at the **Chester club** – quite an easy drive for you from Chorley – if you can make it, when the date is announced.*

How About DF-Hunting In PW?

Dear Rob,

I'm to say how much I enjoyed the *PW* Huff-Duff 7MHz project by **Geoff Cottrell G3XGC** several years ago. It was particularly interesting to hear of it being used when GB75PW was on the air from the Poole Club – although I didn't attempt to build one myself until a few months later. The direction finding capabilities of the loop led me on to playing around with medium wave loops at home.

Now I'm heading towards taking my Foundation Licence, I would eventually like to have a go at 'DF Hunting' myself. I've heard it being discussed on 2 metres but I have never seen an article in *PW* on the topic. It would be interesting to read just how the DFers go about this fascinating aspect of our hobby. So, how about it – can we have an article on the subject? Best wishes to everyone at *PW*.

George Beech
Edenthorpe
Doncaster
South Yorkshire

Editor's reply: *An excellent idea George! We are aware of the interest and would be very pleased to publish something on DF Hunting. Any volunteer authors please? I'd like to hear from you soon!*

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 call sign 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.

Hot News! New HF Rig from Alinco!

It's many years since Alinco launched a major new h.f. rig and the story began when **Mike Devereux G3SED** of Nevada contacted Newsdesk: "Hi PW! Please find attached first details of a New Alinco h.f. transceiver – the DX-SR8 – to be released in November. It's a simple radio, but with many interesting features including QRP power settings, a built-in c.w. keyer and covers 5.3MHz (with modification), and lots more. I'll be providing one to PW for review as soon as they're available. Best wishes."

Mike Devereux G3SED
Nevada
Portsmouth

The Alinco press release (Edited extracts) states: "Alinco, a world leader in communications has developed a compact, dependable and easy-to-operate h.f. transceiver. From its detachable front panel and front-facing speaker to its logically laid out controls, the DX-SR8 is an intuitive design achievement. The DX-SR8 is engineered to be a quality transceiver able to endure heavy-duty cycles and harsh operating environments. There are many convenient features and a variety of setup parameters that will enhance its performance under demanding operating conditions. Alinco delivers high quality and superior value in the DX-SR8!"



ALINCO



- Coverage of all short-wave and h.f. Amateur bands (DX-SR8T/DX-SR8E)
- Covers the 1.8 to 28MHz including 5.3MHz (T-model only). Operates on c.w., a.m., f.m. and s.s.b. modes. Output power is 100W c.w./s.s.b. and f.m. 40W in a.m. with low and super-low power settings for QRP operation.
- In addition, the general coverage receiver covers 135KHz to 30MHz in all modes.
- Detachable front control panel. The completely detachable front control panel with large l.c.d. display lets you install the radio with greater flexibility whether in your car, boat or your shack. (Optional EDS-17 cable required).
- Direct frequency entry via the key pads. The main dial tunes at the default 10Hz/resolution (adjustable in set mode), the numerical key pads can be used for fast direct frequency input, band selection and more.
- Reject unwanted signals with the IF shift. Choose a narrow filter, a noise-blanker or use RIT/TXIT to reduce QRM.
- An electronic keyer is standard. You can receive c.w. using either the upper or lower side of the carrier frequency. There's a choice of side tone pitch, with full (QSK), semi or automatic break-in.
- A dynamic microphone (T/E models) and a speech compressor are standard for sharp, clear and powerful transmitting audio.
- Enhanced scan modes, RF Attenuator and Pre-amplifier selectable in 4 steps / 3 TX power output levels with a Super-Low setting (QRP 0.1 – 2W variable) / Dual VFO, connections for auto-antenna tuner and linear amplifier ALC output / Fully independent AF level, squelch, RIT and
- IF shift controls, Dial lock and key lock / TX-RX indicator i.e.d. / Alphanumeric display/Auto-power-off / CTCSS encode for 28MHz n.b.f.m. repeater accesses / Microphone, Headphone and External speaker jacks on the front panel/Large, temperature-controlled internal cooling fan with anti-overheat output power limiter / high-s.w.r. protection."

Waters & Stanton Christmas Sales Day

Jeff Stanton G6XYU contacted *Newsdesk* to remind *PW* readers that, "On Saturday, December 19th we will be repeating our successful Christmas Sales Day. This year we will be sponsored by Yaesu UK with their staff attending on the day. Everyone will be welcome! We will have many special offers on the day including light refreshments for visitors. It will be a great day for customers to treat themselves for Christmas or buy that gift."

Newsdesk has also heard (from a reliable source!) that Jeff G6XYU will be appropriately dressed and standing in for Father Christmas on the day. So, there may even be a special bargain for you in his sack if you treat yourself to a day out at Hockley! Further details from:

Waters & Stanton PLC
Spa House

22 Main Road
Hockley

Essex SS5 4QS

Tel: (01702) 206835 Fax: (01702) 205843

E-mail: jeff.stanton@wsplc.com

Web: www.wsplc.com



Rowley Shears G8KW Silent Key

Rowley Shears G8KW, died on Tuesday November 17th 2009 at the age of 90. Rowley, was internationally known for the popular line of KW equipment and many of us aspired to own the full range of the the lightweight (for their time) equipment, including the KW2000, 2000A and B transceivers. Rowley's design team showed how it was possible to pack a great deal of valved electronics into a small space and I managed to use my KW2000A mobile! Much of their transceiver technology led the way for others to follow, and many of us still have a KW rig or antenna tuner in the shack. He was a remarkable man and innovative Engineer. **Rob Mannion G3XFD.**

New Home For Icom UK

After many years at their famous Sea Street headquarters in Herne Bay on the Kent coast, Icom UK has moved to a new home. **Laura Beavis**, Icom UK's Marketing Assistant – still recovering from the move – told *Newsdesk* that that the exercise “went okay” and they didn't lose any equipment or staff!

Their new address is

Icom UK Ltd

Blacksole House

The Boulevard

Altira Park

Herne Bay

Kent CT6 6GZ

Tel: (01227) 741741, FAX (01227) 741742

Website: <http://www.icomuk.co.uk>



East Yorkshire Repeater Abuser Enforcement Action!

Mario Brashill **G2DPA**, the RSGB's Deputy Regional Manager for East Yorkshire contacted *Newsdesk* with important information: An E-mail received from **Rhys Hurd** (Media & Corporate Relations Ofcom) says, “The problem of Amateur Radio spectrum abuse (including the jamming of the **Hull Repeater GB3HS**) has been ongoing on for many years in the Hull and East Yorkshire areas and enforcement action by officers from Ofcom, assisted by Humberside Police has been taken. This action has been a result of many months hard work.” Mario carried on to say, “Speaking for myself, as the RSGB DRM for East Yorkshire, and Chairman of the East Yorkshire Repeater Group (EYRG) I can that I am absolutely delighted with this enforcement action. Thanks must go out to all involved. **Mario G2DPA.**”

E-mail g2dpa@rsgb.org.uk

Tel: (01964) 613928 /07831145244

Brief Ofcom Statement

When contacted by *Newsdesk* the Ofcom spokesperson said: “Late in the evening on 15 October, a team of enforcement officers from Ofcom, assisted by Humberside Police, apprehended an individual in the Hull region on suspicion of illegally transmitting on the region's Amateur Radio bands. Equipment was seized during the operation and Ofcom is continuing its investigations.

Rhys Hurd

Media and Corporate Relations

Ofcom

Direct: 020 7981 3414

Ofcom media enquiries line: 0300 123 4000

www.ofcom.org.uk

Editorial note: When I contacted them for further information on this exceedingly important case, an Ofcom spokesman declined to provide the name and details of the accused and alleged offences, as legal proceedings are pending and the matter is *sub judice*. However, *PW* will provide full details of the outcome of the legal proceedings in due course as and when they are available. **Editor.**

The SOTA HF Champions Wins Again!

On October 26th 2009, **Richard Newstead G3CWI** became the first person to activate every hill in England. This has taken him seven and a half years to achieve and was done using the list of hills used for the popular SOTA award programme (see www.sota.org.uk). The combined height of the hills he climbed is nearly ten times that of Mount Everest! Richard completed the task on a hill called Baystones, near Troutbeck in the Lakes using his normal home-brew station running 2W on 7MHz c.w. Afterwards he celebrated with a special pint of beer! Further details from Richard G3CWI at SOTA Beams.

E-mail g3cwi@btconnect.com

Tel: (01625) 425700



Rumour has it, that the beer engine being used by Richard Newstead G3CWI to pour a celebratory pint – also works well as a ‘pump handle Morse key’!

Send all your news to:

PW Publishing Ltd.,

Arrowsmith Court,

Station Approach,

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Dorset BH18 8PW

E-mail: newsdesk@pwpublishing.ltd.uk

Can You Help Adrian Assist The ATC?

Adrian Sims **M3HBA** contacted *Newsdesk* to request a *Can You Help?* entry and asks, “I'm currently building a radio room at our local Air Training Corps in Worcestershire, and looking for any unwanted radio equipment to be donated to our Centre. We would be grateful for any unwanted/donated radio equipment for our ATC Squadron. Please E-mail me and I'll arrange for collection. Regards **Adrian M3HBA.**

E-mail adesims@hotmail.com

www.451sqn.org.uk

Generous Donation To The IRTS



Irish Radio Amateur donates his car to his National Amateur Radio Society!

The Irish Radio Transmitters Society (IRTS) have announced on their news service to members and website that the Society has, “recently received a very generous donation from one of our members **John Riordan EI6IJ** from Buncrana in County Donegal. For health reasons, John has been forced to cease driving and has presented the Society with his 2008 Kia *Rio* hatchback automatic. The car has been converted for disabled use and professionally fitted out with a Yaesu FT-857 rig.

The IRTS committee at its recent meeting passed a sincere vote of thanks to John and a sub group has been appointed to manage the practicalities of John's donation. It is intended that the proceeds from the sale of the car would be ‘ring fenced’ in a fund that would be used to assist members who for reasons of changed circumstances such as ill health or change of accommodation are finding it difficult to practice and enjoy their hobby. The fund would also support the promotion of Amateur Radio in schools and other youth organisations. Once again the IRTS send sincere thanks to John EI6IJ for his gift to the Society”.

IRTS website: www.irts.ie/cgi/index.cgi

Notice Of Variation Issued For GB3WX

David Boniface G3ZXX contacted *Newsdesk* with good news, "The NoV for **GB3WX**, the 50/28MHz cross-band repeater, was issued on Tuesday November 3rd 2009. Our thanks go to all at the ETCC and Ofcom, for their support with this project. We would like to confirm the following operational characteristics, for the new GB3WX repeater, as defined by the formal NoV.

10m Transmit: Input Freq: 50.520MHz
- Output Freq: 29.210MHz - CTCSS Freq: 82.5Hz

6m Transmit: Input Freq: 29.210MHz
- Output Freq: 50.520MHz - CTCSS Freq: 82.5Hz

Mode: Narrow band frequency modulation (n.b.f.m.).

CTCSS: Please note that the CTCSS tone is **now** the **same** on both bands.

Output Power: Will be 25W (14dBW) e.r.p., on each band.

Antenna: Unity gain omni-directional vertical, on each band.

Beacon Mode:

"When not in use, the repeater will identify itself on both bands simultaneously, every 60 seconds, to enable direct propagation comparisons to be made between the two bands. The repeater will be co-located with the 144MHz repeater **GB3JB**, at Willoughby Hedge, in South Wiltshire, IO81VC, and will be powered by the site's solar panel and wind turbine generating system. Further information will be added to the website as it becomes available.

"Now that we actually have the NoV, we need to get moving, as we have a three month window in which to get the system operational. However, as with all our repeater/beacon systems, they are supported by donation, so your support in this area would be very much appreciated. Details on how to make a donation to the Wessex Repeater Group can be found at the group web site.

"We currently need a further £800 or so, to complete the project. This being needed for the purchase of a second transceiver, the logic controller and additional batteries to supplement the current system, which will of course have to cope with the significant additional power loading.

"To those who have already supported our unique project, we offer our thanks for your interest and trust, but hope that may more of you will find your way clear to offer your financial support.

"Please feel free to forward this communication to anyone whom you feel would be interested in its contents. Cheers and 73"

Dave G3ZXX (Keeper: GB3WX)
**thewessexrepeatergroup@
googlemail.com**

Garex Electronics Launch 70MHz Rig Up-Date Board

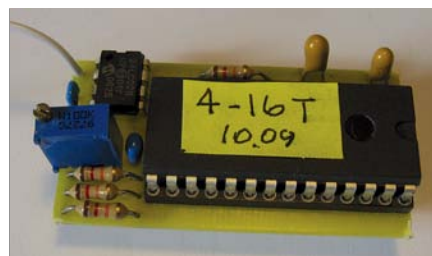
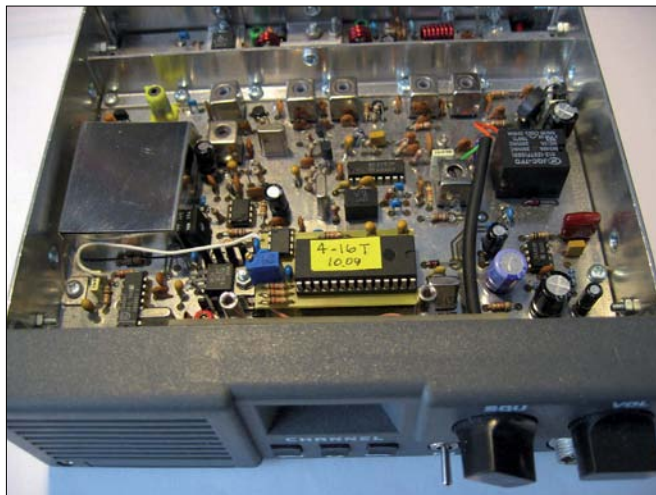
Peter Longhurst **G3ZVI**, the owner of Garex Electronics, the v.h.f. equipment specialists manufacturers have announced the launch of an up-dated board for the Garex/AKD 4001 70MHz transceiver. The board provides CTCSS encode option. The modification consists of a simple plug-in PIC module which requires only one extra connection to feed the tone to the main board. Full details

of the modification can be found on the GAREX website www.garex.co.uk

The upgrade module is priced at £19.95, available by mail order from GAREX, as are new 4001 transceivers ready fitted with CTCSS priced at £164.95.

Non-CTCSS model is £149.95. Carriage charges are extra (Please call for details).

Peter G3ZVI comments, "It's accepted that there is not a great demand for the CTCSS facility on the 70MHz band, but getting it to work on the 4001 was an essential first step to progressing to the more complicated software routines used in the other models – especially the AKD2001 144MHz rig. It's expected that these upgrades will be ready quite soon – watch



my website for details!"

Garex Electronics
PO Box 52
Exeter
Devon EX4 8WX
Tel: 07714 198374



Irish Radio Transmitters Society

Established in 1932

Amateur Radio in Ireland



Dundalk 2010 IRTS Rally & AGM

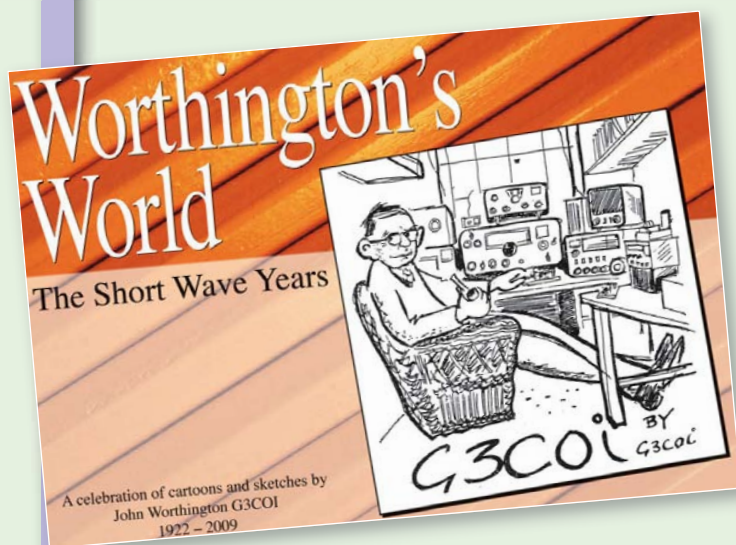
Peter Grant **EI4HX** contacted *Newsdesk* with an invitation to readers. "The Irish Radio Transmitters Society (IRTS) Annual General Meeting and Rally will be held this year, in Dundalk, County Louth, below the beautiful Cooley Mountains, in the north eastern region of the Republic of Ireland (see www.dundalk.ie). **Dundalk Amateur Radio Society**, my home club, will be the host for the weekend. The venue is the Fairways Hotel, Dundalk (see www.fairways.ie) Dates are Saturday, April 24th, 2010, with Dinner at 8pm. The rally takes place on Sunday, 25th, from 10.30hours. The IRTS AGM takes place from 1400 hours.

"A number of rooms have been pre-booked with the hotel. Enquiries on bookings can be sent to info@fairways.ie

"As usual, the IRTS are as usual inviting the usual 'Heads', from various National Societies, in our near neighbourhood and reps. from the Irish National Communications regulator ComReg. I would be pleased to hear from any PW reader, from Ireland or the UK who would like to attend. As Rob EI5IW/G3XFD knows – there's a great welcome waiting for Radio Amateurs visiting us here! 73 from Ireland."

Peter EI4HX
ei4hxperimental@eircom.net
secretary@ei7dar.com

New Books



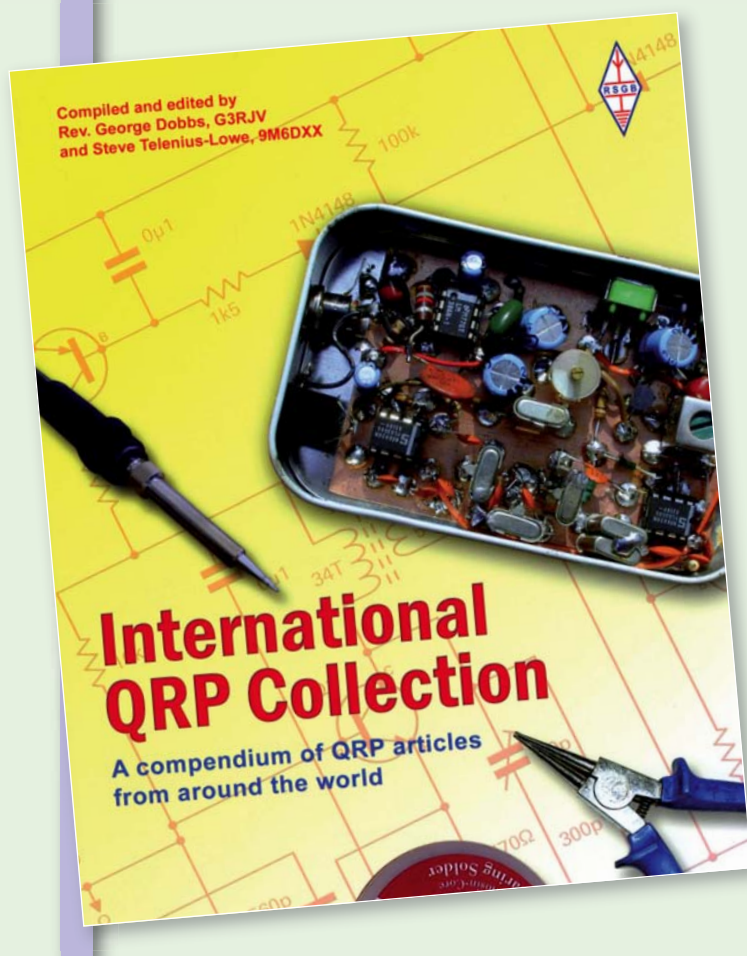
Worthington's World – The Short Wave Years

Compiled by **Tex Swann G1TEX**
Produced by **PW Publishing Ltd.**
146 pages, £9.95 plus p&p.

Rob Mannion G3XFD writes: "When our Art Editor **Steve Hunt** E-mailed me at home to ask me to read through *Worthington's World* cartoon book – designed by him and compiled by my *PW* friend and colleague **Tex Swann G1TEX** – he thought perhaps I would enjoy myself and have a real 'chuckle'. He was right – I thoroughly enjoyed it from cover to cover! It's an amazingly apposite tribute to a wonderfully zany cartoonist and succeeds because of Tex's careful choice of cartoons. They're presented in categories that blend together like a silky chocolate cake mix (John G3COI loved an old fashioned chocolate cake!).

"Apart from the tribute to G3COI in the form of the obituary that was published in *PW* itself, I wasn't involved with the preparation of this book, as I was at home recovering after a hospital visit. I mention this fact for an important reason – because I'm sure if I'd read the book several weeks earlier I would have been rushed back for stronger stitches – because of an overdose of mirth!

"I thoroughly enjoyed the 'silky blend' and was amazed at how well 'matured' John's humour is, sometimes over 50 years after the cartoons were drawn. You'll find old favourites and cartoons you missed and no doubt you'll look forward (as I do) to the next volume! **Very highly recommended.**"



International QRP Collection

A Compendium of QRP articles from around the world
Compiled & Edited by **Rev. George Dobbs G3RJV** and **Steve Telenius-Lowe 9M6DXX**
Published by the **Radio Society of Great Britain**
176 pages, £11 plus p&p.

A large number of QRP books have historically originated from American sources, especially the **American Radio Relay League (ARRL)**. Despite this, the British-based G QRP club has produced some truly excellent collections of circuits and ideas – many emanating from the 'Vicar with a soldering iron' (as he calls himself!) the **Rev. George Dobbs G3RJV**. George, of course, is well known to *PW* readers and to Amateur Radio home-brew enthusiasts around the world, due to his very many years organising the G-QRP Club. Joint Editor and compiler **Steve Telenius-Lowe 9M6DXX/G4JVG**, is also well-known through his wide-ranging work with the **RSGB** and his extensive DXing activities.

In its 176 pages the skilled Editors have produced a well balanced mix. Chapters include: An Introduction to QRP, QRP theory, Modifications, Construction, QRP operating, Equipment reviews and a helpful index.

Authors from around the world (including India, South America, South Africa, USA and the UK) present some excellent circuits. Fancy 'Pedestrian Mobile' or 'Bicycle Mobile'? – there's some interesting projects and features for you! And if you're an Alinco DX-70 owner, there's an excellent circuit to enable variable power output control. Enjoy simple s.s.b. circuits? – there's a good choice! Indeed, there's something for everyone from h.f. to microwaves. Very enjoyable – and I hope this is the first of many volumes from this Editorial team.

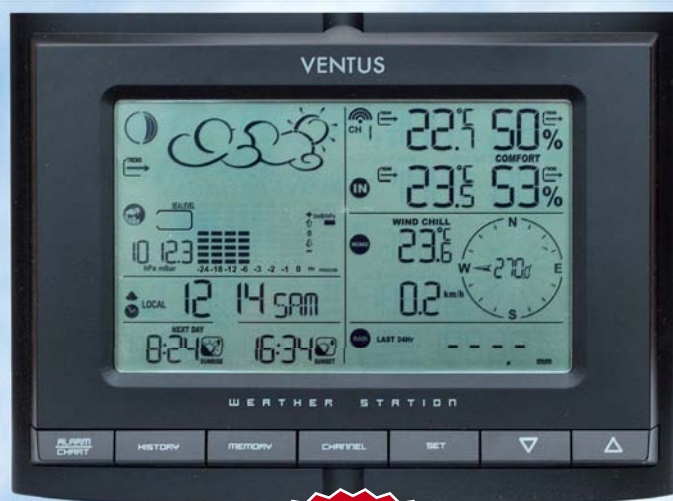
Two new books for you to add to your library – perhaps as a Christmas present?
Both are available now from the *PW* Book Store – order early for Christmas delivery.

SPECIAL OFFER

MyDEL WX-831 Wireless Weather Station

The MyDEL WX-831 Weather Station is currently on sale at £99.95 plus £10 delivery from Martin Lynch & Sons but if you order it from us, we will supply it for just **£89.95** with **FREE** delivery, a saving of £20!

Simply complete the order form (photocopies can be accepted) and send it to us at **WX-831 Offer, PW Publishing Limited, Arrowsmith Court, Station Approach, Broadstone, Dorset BH18 8PW** along with your payment and you will receive a MyDEL WX-831 Wireless Weather Station at the discounted price.



Retail
£99.95
+ £10 p&p

Our Price
£89.95
FREE p&p
(UK mainland only)

This offer closes on **December 18th, 2009** so get **your order in quick** and to make sure your order is processed before Christmas, your completed form and payment must reach our office before then, or call the mail order hotline today!



Complete the order form or call the mail order hotline:

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Between

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Signature.....

Please allow 28 days for delivery.

Prices correct at the time of going to press.

Please note: all payments must be made in Sterling, cash not accepted.
Offer Closes December 18th.

YAESU Christmas Offers!

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



When the FT-450AT was recently introduced, customers queried how could a rig offering proper IF DSP, Auto ATU, 100 Watts on HF & 6m, a roofing filter plus a whole host of other class leading features be any good when it costs less than £650?

To answer, in a recent review in Radcom, Peter Hart writes: "For a budget priced radio covering HF and 6m, the FT-450 is an excellent all-rounder for general use. With a high level of features for SSB, CW and data modes, easy to use and a good overall performance, it will suit the home station operator or someone looking for a lightweight radio which is easily transportable".

Yaesu FT-450 without ATU **£589.95** Yaesu FT-450AT with ATU **£639.95**

Yaesu FT-2000 HF Base Transceiver

FT-2000: £1869.95

FT-2000D: £2375.95

Available from stock
and on permanent
demo in our showroom



The Yaesu FT-2000 with PEP "Performance Enhancement Program" Upgrade.

The Yaesu FT-2000 has been a bestselling HF Transceiver since its introduction almost three years ago. The ability of downloadable firmware up-upgrades by the Yaesu Factory make this 100 or 200 Watt HF & 6M rig one of the most up to date pieces of equipment available to the Radio Amateur.

With the introduction of their latest release the "PEP" or Performance Enhancement Program (the FT-2000Kits without question the very best value base HF on the market today.

For more information on what the PEP upgrade delivers see: www.hamradio.co.uk/pdf/Yaesu_PEP_Enhanced_Version.pdf

The FT-2000 & FT-2000D (200W version) are available from ML&S.

- The Yaesu FT-2000 was the best selling HF Base Transceiver in 2007.
- The Yaesu FT-2000 was the ONLY radio used on the 3B7C St Brandon Island during 2007.
- There were NO FA LURES during 18 days of continuous 24 hour operation during 3B7C.
- ML&S sold more FT-2000's than any other dealer in the UK.
- ML&S always has the FT-2000 on permanent demo with large stocks of the 100 & 200 versions.
- Peter Hart said: "SON OF FT-1000MP, aimed at the serious DX and contest operator".

FT-2000 Accessories

Go for a Yaesu FT-2000 or FT-950?

Add a DMU-2000 Data Management Unit

- Spectrum Scope with Limited Bandwidth Sweep feature
 - Audio Scope/Oscilloscope Display Page
 - Swept-Frequency SWR Page
 - Memory Channel List
 - World Clock with GreyLine Page
 - Rotator Control Page
 - Log Book Feature
- DMU Price: £CALL**
- SP-2000 External Speaker with 2 inputs & filters £139.95
 - MD-200A8X Desktop Deluxe Microphone, sounds amazing with the FT-2000! £189.95
 - MD-100A8X Desktop Microphone £119.95
 - CW Filters for Sub-Receiver
 - YF-122C (500Hz) CW Filter £115.95
 - YF-122CN (300Hz) CWN Filter £126.95
 - FH-2 Remote Control Keypad £42.95
 - RF External Tune Kits
 - 3 versions available. 160m Band Kit "A". 80/40 Band Kit "B". 30/20m Band Kit "C". **NOW IN STOCK £359.95**

The Ultimate Accessory!

Quadra System VL-1000 1kW HF Linear Amplifier, PSU & Auto ATU Always available from stock **£3599.95**

NEW Yaesu FT-VX-8. ML&S £349.95 Latest 6/2/70 Handie with Bluetooth, APRS and optional GPS.

NEW Yaesu VX-3E. ML&S £144.95 Micro Handie 2/70 with scanner. Complete with Li-ion battery, charger & antenna.

Yaesu FT-60R. ML&S £142.95 Latest twin band handie complete and ready to go.

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

Yaesu VX-7R. ML&S £234.95 The UK's best selling Triple Band Handie.

Yaesu FT-7800E. NOW ONLY £199.95

Bar make the tea it'll give you 2m/70cm @50W/40W. FREE YSK-7800 Remote Kit!

Yaesu FTM-10R. ML&S £239 A small compact dual band 2m/70cm transceiver with high power output of 50W on 2m and 40W on 70cm, (adjustable power levels of 50/40W, 20/20W, 5/5W). Receive range from 0.5-1.8MHz, 76-108MHz, 137-222MHz and 300-999MHz.

Yaesu FT-8800. ML&S £289.95 Similar to the FT-7800 but can receive on 2 & 70 simultaneously.

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

FT-1802. ML&S £109.95 2m FM Mobile. 5-50W output.

Yaesu FT-897D

High Power version of the FT-897. Use as a transportable, (20W) or as a base/mobile (100W)

Latest batch straight from the factory! Call for lowest price and special "Bundle" offers

Yaesu FT-857D

The Ultimate HF Mobile Installation! Plus ATAS-120D 40m-70cm Auto Antenna
Bundle Price: £CALL
(Rig only: £543.95)

Yaesu FT-817ND

The world's only all-band portable transceiver
Only £439.95 with FREE CSC-83 Carry Case worth £19.95

All ML&S FT-817ND's include;
2 Years warranty, metal hydride batteries, charger, mic, etc.

£624.94



£543.95



£439.95



FT-950 HF Base Transceiver



Only £1099 Available from stock

Yaesu's "Midship Radio"

Many of you grabbed the new Yaesu FT-950 HF & 6M from us at the end of November. Once again Yaesu identified a position in the market and hit it spot on. When Peter Hart said it was "An eye catching radio with some very nice features" and "it represents extremely good value" he wasn't kidding. If you don't need dual receive or internal PSU like its Dad, (the FT-2000) then check out the FT-950.

All FT-950s supplied by ML&S are latest PEP factory versions!

Real Time Virtual Radar

NEW MODEL NOW INCLUDES AIRBAND and FM Receiver!

SBS 1eR Portable Low-cost Mode-S/ADS-B receiver.

RRP: £499.95 **SPECIAL INTRO PRICE £469.95**



The **SBS 1eR** Pocket Radar now includes an Airband and FM receiver and is a portable cost effective Mode-S / ADS-B Receiving Instrument designed for commercial, training and aviation enthusiasts. Supplied complete with antenna and BaseStation Virtual Radar software. The **SBS 1eR** Pocket Radar allows you to track ADS-B aircraft on a PC- simulated radar screen and identifies and displays Mode-S equipped aircraft.



Perseus VLF-LF-HF Receiver

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

Unlike lower class direct sampling receivers, the PERSEUS RF analog front-end has been carefully designed for the most demanding users. PERSEUS can also be operated in a wide band mode as a 10KHz - 40MHz spectrum analyzer with more than 100dB dynamic range in a 10KHz resolution bandwidth. PERSEUS is a Software Defined Radio and relies on PC software applications to carry out the demodulation process.

only £699.95

Beat the price increase!

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The World's Favourite Ham Store



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E-mail: sales@hamradio.co.uk

ML&S carry the largest stock holding of Icom equipment in the UK!

ICOM COUNT ON ML&S!

Icom HF products

IC-718	Basic HF Radio, 12V, 100W output.....	£449.95
IC-703	No longer in production.....	£539.95
IC-706mk11G	100W HF/6m + 2/70 Multimode Mobile.....	£739.95
IC-7200	Mr T's choice for tough HF/6M Operation.....	£779.95
IC-7000	Full DSP, TFT Screen, 100W HF/6m + 2/70.....	£939.95



IC-7400	100W HF/6M/2M Base, full DSP, Auto ATU.....	£1199.95
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IC-7600	100W, Twin RX, Huge Display. No psu.....	£3369.95
IC-7700	Superb 200W HF/6M Base, PSU/ATU.....	£Call!!!
IC-7800	Icom's Flagship radio has gone up again.....	£Call!!!
IC-PW1Euro	1kW Fully automatic HF/6m Linear Amp.....	£Call!!!
NEW IC-9100	HF through to 23cms Base Transceiver Click on our website to see a video from Tokyo Hamfair August 2009!	

Icom V/U Products

IC-E92ED	As above c/w D-Star fitted & splash-proof.....	£369.95
IC-E208E	Brilliantly easy to use 2/70 remote-head.....	£269.95
IC-E2820	Proper dual band, dual display, remote etc.....	£395.95
IC-E2820+D	Supplied with UT-123 D-Star board.....	£539.95
IC-910H	Multimode 2/70 Base Station.....	£1249.95
IC-910X	As above but with optional 23cm UX-910.....	£1449.95

Icom Receivers

IC-R9500	Flagship Base Receiver, 50kHz-3335MHz.....	£Call!!!
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PC Controlled Receivers from ICOM

Icom IC-PCR1500 & IC-PCR2500

All Windows XP & Vista Controlled via USB with four models to choose from:

IC-PCR1500	10kHz-3300MHz All Mode.....	£389.95
IC-R1500	As above but with remote head.....	£449.95
IC-PCR2500	Twin Receiver version of PCR-1500.....	£509.95
IC-R2500	As above but with remote head.....	£559.95

KENWOOD

LISTEN TO THE FUTURE WITH ML&S!

Kenwood HF Products

TS-480SAT	Remote head HF/6m 100W inc ATU Transceiver.....	£749.95
TS-480HX	200Watt version of above, no auto-ATU.....	£849.95
TS-2000E	100Watt all mode HF/2/6M with auto-ATU etc.....	£1479.95
TS-2000X	As above but fitted with 10Watts on 23cm (all mode).....	£CALL

Kenwood V/U Products

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

ICOM IC-7000



The IC-7000 continues to be the **ONLY COMPACT** base or mobile All Band All Mode Transceiver available today with a TFT Colour screen.

Don't be fooled by its mobile radio sized dimensions. The IC-7000 really is a spin-off of the IC-756Pro111 together with all the additional bands (2/70) that the IC-706mk11G has to offer.

If you require a good performance HF IF DSP transceiver that offers exceptional all round versatility then the IC-7000 is the rig for you.

Only £939.95

For more details see: www.ic-7000.co.uk

For full list of options see:

http://www.hamradio.co.uk/acatalog/IC-7000_Accessories.html

KENWOOD TS-480SAT/HX

ML&S Price:
£749.95 (SAT)
£849.95 (HX)



The very popular TS-480 is available in two versions, 100W with Auto-ATU (SAT) and the 200W version without ATU (HX). For those that want the extra power we recommend the MyDEL MP-9600 60Amp PSU and LDH AT-200Pro Auto tuner. **What a package!**

Something for your Christmas Stocking Sir?

MYDEL VENTUS G730 GPS-LOGGER

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



Ideal Christmas present for all the family!

ONLY £49.95

An example:

At the start of your walk, car or cycle ride turn on the G730 and when you finish your journey, turn it off. Once home plug the G730 into your PC, open the software, click on two icons and the route and pictures you have taken are viewed on Google earth/maps.

The G730 records your speed, altitude, distance etc., even showing how long you have stopped for during your journey. You can even use your digital images taken on route for future reference. How good is that!

Accuracy is to within 5 metres and you get up to 18 hours continuous use after a 2 hour charge via your USB port on your PC. Use the MyDEL VENTUS GPS-logger for cycling, rambling, jogging, skiing, trekking, sailing etc.

MYDEL Ventus WX-831



Introducing the next level of professional weather stations

This new much improved wireless Weather Station is built to a very high standard and even includes O-Ring seals on battery compartments that are mounted externally. The quality of external hardware is built to last for years and really moves the game on when it comes to "Professional Weather Stations"

RRP £169.95.
Introductory offer of only £99.95.

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

ML&S are the sole UK distributor for the Ventus G730 and W-831

The Window of Opportunity never lasts forever. Beat the VAT increase on the 1st of January. Buy before the 31st of December.

MyDEL



HB-1A Ultra Compact 3 Band CW Transceiver

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

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

Price around £250. Call or see website for further details.

NOW IN STOCK - very limited quantity. Ideal Christmas present!

WANT EXTRA CASH FOR CHRISTMAS? MAXIMUM PRICES PAID

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

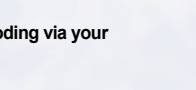
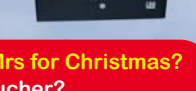
The World's BEST ANTENNA TUNERS from ML&S

LDG Auto Tuner Range

AT-100pro	Desktop tuner covering all frequencies from 1.8-54 MHz...	£189.95
AT-200pro	Designed for new generation of rigs	£209.95
AT-1000Pro	1kw 160m-6m (1.8-54MHz) High speed Auto ATU, tuning range 6-1000Ohms	£499.95
AT-897	Bolt-on Alternative Auto Tuner for the FT-897. Wider tuning range and cheaper too!	£179.95
IT-100	New version of the AT-7000	£149.95
YT-100	NEW AUTO ATU for FT-897/857 or FT-100 with additional Cat Port Control	£169.95
Z-817	Ultimate autotuner for QRP radios, including the Yaesu FT-817D	£119.95
Z-100Plus	Ultimate autotuner for Yaesu FT-817D	£139.95
Z-11Pro	Portable compact & tunes 100mW to 125W	£154.95
RCA-14	4-way DC Breakout Box	£49.95
KT-100	Dedicated tuner for Kenwood radios	£169.95
RBA-1:1	Probably the best 1:1 balun out there	£34.95
RBA 4:1	Probably the best 4:1 balun out there	£34.95
DTS-6 + 6R	Remote Antenna Switchers. 1.5kW 1-54MHz.	£43.95

NEW FTL- Meter

Jumbo size meter for your FT-857/FT-897. LDG's new version of the its popular Yaesu meter is the FTL-Meter. It's a highly readable 4.5 inch meter face with calibrated scales for signal strength or disc on receive; power out, SWR, Mod, ALC or supply voltage on transmit. Each function is selected from the radio's meter menus. RRP: 79.95 **INTRO PRICE: £67.95**



Don't know what to buy your hubby or Mrs for Christmas?
How about an ML&S Gift Voucher?
Available from only £10 value with no time limit on spend.

MyDEL

**AS REVIEWED IN PW
December Issue 2009**

CG SB-2000 USB Radio Interface

This small self contained beautifully styled box weighing only 400 grams really is a one stop solution to your data and radio control. It employs a CAT/CIV interface as standard and supports CAT with RS232 protocol.

The MyDEL CG SB-2000 Interface connects to your PC via USB and Sound Card and connects to your radio via Custom leads.

Once connected and configured you have Computer Control via USB and decoding via your soundcard using HamRadio Deluxe or other packages.

Intro price of only £99.95 High quality ready-made leads for most rigs available at only £18.95.



**NEW
PRODUCT**

Palstar New Product Palstar Commander HF-2500 1.5kW Amplifier



Palstar are pleased to announce a new range of HF Linear Amplifiers built to the highest standard (As you would expect from the USA Manufacturer). We have started with the "Commander HF-2500" which is available from stock. The 2m & 6m versions will be available during early 2010. **ML&S: £3499.95.** See web for more details.

Full range of Palstar now in stock.

See www.hamradio.co.uk for lowest prices!

AT-500	600 Watt PEP Antenna Tuner ..	SPECIAL PRICE £329.95
AT-Auto	Automatic 1500 Watt ATU	£1179.95
AT-1KP	1200W Antenna Tuner	£369.95
AT-1500DT	1500W Differential Antenna Tuner	£449.95
AT-2K	(2000W) Antenna Tuner	£399.94
AT-4K	(2.5kW) Antenna Tuner	£735.94
AT-5K	(3.5kW) Antenna Tuner	£1079.95
BT-1500A	Balanced Antenna Tuner	£659.95
ZM-30	Antenna Analyser	£359.95
PM-2000AM	Power/SWR Meter	£149.95
Palstar Dummy Loads		
DL-1500	(1.5KW)	£109.95
DL-2K	(2kW)	£229.95
DL-5K	(5kW)	£359.95
Palstar Receiver		
R30A	Receiver Palstar R30A, fitted Collins filters for SSB & AM	£549.95
MW550P	Active preselector & ATU for AM & 160M reception	£279.94
SP30	Matching Desk Speaker	£69.95
AA30	Active Antenna Matcher 300kHz-30MHz	£99.95

MyDEL CG-3000

With 200W and 200 memory channels.

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

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



CG-3000 shown with optional remote switch.

CG-5000MkII

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

Specifications:

- Tuneable frequency: 1.8 - 30Mhz with long wire antenna from 8 meters
- Input impedance: 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:
£549.95**

MyDEL Power Supplies

New MyDEL PS-30SW11

Latest high performance switch mode PSU. Die-cast Alloy chassis, full over-voltage protection and short circuit design. **RRP £119.95.**

Introductory offer only £69.95



SPS-8250	25A continuous, fully metered power supply	£79.95
MP-9626	120A, 13.8V DC power supply	£299.95
MP-8230	13.8V DC, 25A power supply	£69.95
MP-925	Linear 25-30A, 13.8V DC power supply	£99.95
MP-9600	60A switch mode power supply	£179.95
MP-6A	13.8V DC, 6A power supply	£29.95

Mini VNA PC Controlled Antenna Analyser

The mRS miniVNA is a compact 100kHz to 180MHz antenna analyser interface that is operated via a PC powered by a single USB connection. You can see at a glance where the antenna is resonant, what the SWR and the return loss is. The best (minimal) SWR frequency is automatically found and displayed. An optional internal RS232 connection is also available.



**ML&S:
£259.95**

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Buying Second-hand

Firstly, my thanks go to the many readers who contacted me either by post, E-mail, telephone and on the air about my introductory article on *Buying Second-hand*, which was published in the November 2009 issue of *PW*. I'm pleased to say that, from the feedback received to myself and the *PW* offices, it'll now be a regular bi-monthly column.

I'm planning to detail a wide range of equipment, to be found on the Amateur Radio second-hand market. Items will range from all types of transceivers to receivers and station accessories and I'll certainly not neglecting the needs of listeners as well as licensed Amateurs.

Neither will I just be dealing with Japanese and American made equipment! I'm also planning to detail equipment for bands such as 4m (70MHz), to get you up and running for next year's *PW* 4m contest.

Specific Equipment

In every column I'll be concentrating on a specific type of equipment, such as high frequency (h.f.) receivers, v.h.f./u.h.f. f.m. mobile transceivers, multi-mode base stations, transportable equipment, even ex-PMR (Private Mobile Radio) transceivers – which get many people on the air at an affordable price.

I'll be looking at typical models of each of the categories I've mentioned, with a list of 'pros' and 'cons' for each. Although the articles won't be a full-blown 'review' of each – there wouldn't be enough magazine space for several rigs each time – I hope to offer a

number of buying ideas to help you make a good choice, as well as some hints on what to watch out for such as common faults and limitations that may be encountered.

Of course, one of the benefits of buying second-hand is experience has shown, which equipment is reliable and which offers better performance than others in the same price range. However, I'm not going to try to compete with something like the excellent *Which* magazine from the Consumers Association (of which I'm a member), but I hope that the eventual conclusions will be useful to readers.

Buying FM Hand-Helds

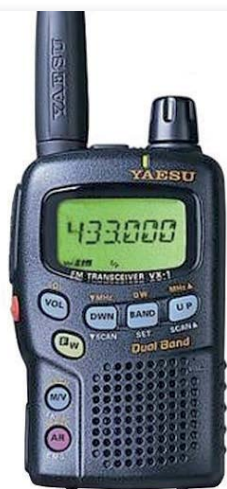
This month, from the comments I've received, has led to the decision for me to start with a general guide to choosing and buying – what must be the most-commonly purchased second-hand equipment in the Amateur Radio field – that of a self-contained 144/430MHz (2m/70cm) f.m. handheld radios. This type of rig is, invariably either the very first equipment, or if not then invariably the second transceiver, purchased by either a newly-licensed Amateur or by someone planning to become a Radio Amateur.

More Choices!

I believe that there are more individual models and choices of 144/430MHz hand-helds than any other type of Amateur Radio transceiver. My first such rig was a Standard C146A six-channel crystal controlled 144MHz



The Yaesu FT-530 is one of a few hand-helds that uses a backup lithium battery in a slot-in compartment.



The VX-1R is a compact but low power multi-band hand-held, it's one owned by G4HCL.



The Alinco DJ-500 is a classic 144/430MHz hand-held.



The IC-2E, a 'classic' – if very old – 144MHz hand-held that's usually available at a bargain price.

This month Chris Lorek G4HCL gives advice on buying a second-hand hand-held f.m. transceiver

f.m. hand-held that I purchased back in 1974.

The C146A was a veritable 'brick sized' portable transceiver, which generated a couple of Watts of radio frequency (r.f.) output. Since then I've been through a hundred or so hand-held transceivers from manufacturers such as Yaesu, Icom, Trio/Kenwood, Alinco, Standard, Heathkit, and a few rather more obscure manufacturers. Additionally, I have used ex-professional hand-helds from Pye/Philips, Motorola, Burndept and Storno, with the radios either owned by myself or tested for magazine reviews.

So, this month I'll be giving a general guide on what to look for and what to look out for, both cautionary and beneficial. In the next article I'll be detailing specific hand-helds that have both 'held their own' in terms of popularity, as well as others which you'll most commonly see on second-hand sale at the present time.

Decisions & Decisions!

So, now it's time for decisions and more decisions! But firstly I pose a question – is this your first transceiver, or an addition to your main rig or rigs? If it's your first and initially your only transceiver then you'll invariably be using it for multiple purposes, such as from home, out portable and maybe for mobile use as well. In this case flexibility will be of paramount importance.

If it's an extra rig – just for portable use – then facilities such as being able to power the set from an external direct current (d.c.) supply, to connect an external speaker microphone and strong-signal handling performance for when you connect a rooftop antenna, will be of lesser importance.

Thus, you have to decide what you want to use the rig for. If it's for a primary transceiver, then I'd advise you look for a 5W transmit power output rather than one of the 'micro miniature' sets which – although nicely compact and truly top-pocket size – may only provide around 500mW or 1W transmit output and will be a challenge to use unless you're in the immediate service area of a local 144 or 430MHz repeater.

Also, you should remember that virtually all 5W sets will allow you to switch to low transmit power when you wish – but higher power could save you having a lot of unsuccessful contacts. On the other hand, a smaller set with lower power could be 'just the job' for very local contacts.

Next, do you just want a 2m (145MHz) or just a 70cm (430MHz) handheld? A single-band transceiver will invariably cost you less as well as being smaller and lighter, but for the slight extra cost and maybe size increase, a dual-band hand-held will give you rather more versatility.

For example your local area may be primarily served by either a 144 or a 430MHz repeater, which will invariably dictate where most of the local 'on the air' activity is. So,



The Kenwood TH-79E is a popular second-hand choice for many Amateurs.



The Yaesu VX-8R is a modern fully-featured v.h.u /u.h.f. hand-held.

extend your horizons a little and you'll usually wish you had both bands at your disposal.

Listing The Cautions

Once you've decided what you want, there are a few cautions to look out for when you're buying a second-hand handheld and I'll list these in turn;

Antenna: The most common 'fault' that's encountered is usually that of a problem with the set-top rubber or plastic shrouded helically wound antenna (usually called a 'Rubber

Duck'). Indeed, it's a fact that many Amateurs use these antennas as a convenient handle to lift the set out of their pocket or to simply lift it from a desktop, rather than holding the set by its body! This puts strain not only on the antenna itself, which can sometimes become broken within its overall shrouding – but more usually on the BNC or SMA coaxial plug or socket that connects it to the set.

My advice is that prospective buyers uncouple the antenna and take a look at the centre pin of the coaxial connector, whether this is on the antenna or the transceiver, and check it isn't broken or damaged, or indeed if it's still present. In fact, I've seen a number of set-top helical BNC connectors with the centre pin missing – this sometimes has then been found still lodged in the mating set-top BNC antenna socket. This will give you at best intermittent operation on air – and a stuck pin inside the set-top BNC connector won't allow you to connect an external antenna for home or mobile use.

But if you find this type of antenna problem, it's not the end of the world – replacement antennas are, of course, readily available. A 'generic' replacement antenna from an independent manufacturer – rather than a manufacturer's direct replacement – will often be the most economic replacement.

However, the efficiency of a set-top antenna is of paramount importance! A good antenna with a copper-coated inner helical element can give you over double the effective radiated power (e.r.p.) of a cheaper non-coated antenna.

Note: I've invariably found helical antennas from the London-based professional antenna manufacturer **Panorama Antennas** provide far, far better performance – on a single band at least – than virtually any Japanese manufacturer-supplied set-top antenna. Incidentally, I've no connection with this company apart from having successfully used their antennas for over 30 years. I thought I'd share this 'trade secret' with readers who may be needing a replacement set-top helical for a single-band 2m or 70cm hand-held.

Re-chargeable Battery Pack: There are various types of battery technology, from the earlier NiCad (Nickel Cadmium), through to NiMH (Nickel Metal Hydride), to the

more recent Li-ion (Lithium Ion) types. An important thing to note here is that both NiCad and NiMH batteries have a lifetime of around 500-1000 re-charges. So, if a battery pack of this type has been methodically re-charged each day by its previous owner, it'll last no more than 18-36 months and its capacity, i.e. the amount of charge it can hold, will significantly decrease after this time.

Because of the regular use, you'll find that instead of giving you around eight or more hours of typical use after a full re-charge, you may only get an hour or two (or even less use) before it needs another charge. In regular use Li-ion packs lose 10% of their capacity each year, so after five years this type will have typically only half its original capacity, although Li-ion packs are usually only supplied with fairly modern hand-helds. The moral here is – make sure you can get another, new, battery pack for the radio if it's already several years old.

Unfortunately, manufacturer's battery packs can be horrendously expensive, if indeed you can buy one at all if it's a very early set. Don't be tempted to buy a second-hand battery pack either for such older sets, because of this very reason of loss of capacity after being repeatedly re-charged.

If however, the seller has a spare battery pack in the sale offer, you can be reasonably sure that at least one of them will have been re-charged less times and will thus have a much better capacity. And if the hand-held can be fitted with rechargeable AA sized cells of the like – then you're 'quids in' as can just use some from your local supermarket!

Internal Back-up Supply

On the subject of batteries, many earlier hand-helds as well as several newer models will have an internal lithium backup battery. This powers the internal microprocessor and is used to memorise your settings such as memory channels, the last-used frequency and the like. Virtually every current desktop PC has one of these for example and it's not limited to 'old' technology.

Disconnect the set's rechargeable battery pack, leave it disconnected for ten minutes or so, then reconnect it and see if the set comes back with the memory channels, etc., still stored. If it doesn't, someone will need to go inside, usually with a soldering iron to replace it – although some hand-helds, like the Yaesu FT-530, has this battery helpfully fitted to a slot-in enclosure. Otherwise you'll need to ensure your main battery pack never goes flat, or it's going to need a lot of button-pushing operations for you each time you switch on!

The Operating Manual

It may seem to be rather obvious, but make sure that an operating manual comes with the hand-held! If not, then you can sometimes find you'll be able to download one from an Internet source – but make sure you can do this first before you buy it. I've lost count of the number of times I've seen requests for an operating manual and most often the owners

of existing radios don't want to part with their original copy as they need it themselves, or for when they eventually sell it.

Channel Spacing

If your second-hand hand-held had its origins in the UK and is of a relatively recent vintage, then you'll usually find it has the required channel spacing, that is 12.5kHz and 25kHz steps, with appropriate receiver filtering bandwidth and the correct transmit deviation for this.

On 144MHz we use 12.5kHz channel spacing, which means receiver intermediate frequency (i.f.) filtering to suit and a transmit deviation ± 2.5 kHz. On 430MHz we use 25kHz channel spacing with a transmit deviation of ± 5 kHz.

Many hand-helds intended for the early American market have only 5kHz channel steps on their 2m band (for their 15kHz and 30kHz channel spacing on 2m) and have ± 5 kHz deviation. This, of course, is a big 'No, No' for UK and European use.

Additionally, early European hand-helds sometimes only have ± 5 kHz deviation on both their 144 and 430MHz coverage channels and don't have a switchable narrow/wide channel spacing selection. My advice is – take a look at the manual, or ask the seller if there's a 'wide/narrow' channel spacing facility on the sets 'menu'.

Otherwise you'll be getting reports of distorted audio on 2m unless you speak well away from the microphone, where you'll often then get reports of 'weak' audio. You may also suffer from breakthrough from strong signals on adjacent 12.5 kHz channels on receive.

Toneburst & CTCSS

Again, sets intended for the USA market may not have the required 1750Hz tone-burst for European 2m and 70cm repeater access. Many repeaters use CTCSS for access now, sometimes in addition to 1750Hz access, so make sure your prospective second-hand hand-held has this feature.

If it's an early set with 1750Hz tone-burst only, see whether an add-on plug-in CTCSS encoder is available. Also, if it's a ± 5 kHz deviation type on 144MHz, then a tone-burst will often over-deviate (exceed the acceptable deviation for the repeater you're trying to access) and an internal adjustment is going to be needed. But don't worry – it's not the end of the world. However, you or someone else will need to open up the set and perform the necessary adjustment either on-air – or more preferably – by using some professional test equipment.

Display Problems?

Finally, check for missing segments on the liquid crystal display (l.c.d.) on the set, or for black patches on the l.c.d.. This usually means that the set has been dropped in the past, a common occurrence with hand-helds, with subsequent damage to the display and probably to other circuitry within the transceiver. Be warned!

Next Article

Although the this month's advice may seem like 'doom and gloom' it really isn't! There are lots of bargains to be had and I've just offered some cautionary advice to make sure that you choose a set that's suitable for current needs.

In the next *Buying Second-hand* article, to be published in the March 2010 cover dated issue of *PW*, I'm planning to give a buying guide for a selection of 144/430MHz hand-helds which you'll find offered for sale. This will also come with plenty of hints and suggestions of which sets hold their value as well as a few classic bargains which are easily worth a 'throwaway' price. In the meantime, happy hunting!

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Mobiles

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ATOM-40S	7.0MHz, Length 165cm, PL259 fitting (compact design).....	£26.95
ATOM-80S	14MHz, Length 165cm, PL259 fitting (compact design).....	£29.95

MOONRAKER Dual and Triband Collinear Verticals*Diamond quality - Moonraker prices! These high gain antennas have been pre-tuned for your convenience, easy to use, easy to install, and a choice of connection ... look no further*

SQBM105P	2/70cm, Gain 2/4.5dBd, RX 25-2000MHz, Length 70cm, SO239 (Radial Free).....	£39.95
SQBM105N	2/70cm, Gain 2/4.5dBd, RX 25-2000MHz, Length 70cm, N-Type (Radial Free).....	£44.95
SQBM110P	2/70cm, Gain 3/6dBd, RX 25-2000MHz, Length 100cm, SO239 (Radial Free).....	£54.95
SQBM110N	2/70cm, Gain 3/6dBd, RX 25-2000MHz, Length 100cm, N-Type (Radial Free).....	£59.95
SQBM200P	2/70cm, Gain 4.5/7.5dBd, RX 25-2000MHz, Length 155cm, SO239.....	£54.95
SQBM200N	2/70cm, Gain 4.5/7.5dBd, RX 25-2000MHz, Length 155cm, N-Type.....	£59.95
SQBM500P	2/70cm, Gain 6.8/9.2dBd, RX 25-2000MHz, Length 250cm, SO239.....	£64.95
SQBM500N	2/70cm, Gain 6.8/9.2dBd, RX 25-2000MHz, Length 250cm, N-Type.....	£69.95
SQBM800N	2/70cm, Gain 8.5/12.5dBd, RX 25-2000MHz, Length 520cm, N-Type.....	£129.95
SQBM1000P	6/2/70cm, Gain 3.0/6.2/8.4dBd, RX 25-2000MHz, Length 250cm, SO239.....	£79.95
SQBM1000N	6/2/70cm, Gain 3.0/6.2/8.4dBd, RX 25-2000MHz, Length 250cm, N-Type.....	£84.95
SQBM223N	2/70/23cm, Gain 4.5/7.5/12.5dBd, RX 25-2000MHz, Length 155cm, N-Type.....	£69.95

MOONRAKER Multiband Mobile*Why buy loads of different antennas when Moonraker has one to cover all! SPX series has a unique fly lead and socket for quick band changing*

SPX-100	9 Band plug n' go portable, 6/10/12/15/17/20/30/40/80m, Length 165cm retracted just 0.5m, Power 50W complete with 38" PL259 or BNC fitting to suit all applications, mobile portable or base ... brilliant!.....	£44.95
SPX-200	6 Band plug n' go mobile, 6/10/15/20/40/80m, Length 130cm, Power 120W, 3/8" fitting.....	£39.95
SPX-200S	6 Band plug n' go mobile, 6/10/15/20/40/80m, Length 130cm, Power 120W, PL259 fitting.....	£44.95
SPX-300	9 Band plug n' go mobile, 6/10/12/15/17/20/30/40/80m, Length 165cm, High Power 200W, 3/8" fitting.....	£54.95
SPX-300S	9 Band plug n' go mobile, 6/10/12/15/17/20/30/40/80m, Length 165cm, High Power 200W, PL259 fitting.....	£59.95
AMPRO-MB6	6 Band mobile 6/10/15/20/40/80m, length 220cm, 200W, 3/8" fitting, (great for static use or even home base - can tune on four bands at once).....	£69.95
ATOM-AT4	10/6/2/70cm Gain 2m 2.8dBd 70cm 5.5dBd, Length 132cm, PL259 fitting (perfect for FT-8900R).....	£59.95
ATOM-AT5	5 Band mobile 40/15/6/2/70cm, Length just 130cm, 200W (2/70) 120W (40-6M) PL259 fitting, (great antenna, great price and no band changing, one antenna, five bands).....	£69.95
ATOM-AT7	7 Band mobile 40/20/15/10/6/2/70cm, Length just 200cm, 200W (2/70) 120W (40-6M) PL259 fitting, (great antenna, great price and no band changing, one antenna, five bands).....	£79.95

Tarheel Motorised Mobile*The best USA motorised antennas available here from Moonraker the European distributor - All models in stock now!*

Little Tarheel II	3.5-54MHz 200W max length 48".....	£349.95
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Tarheel 75A	7-34MHz 250W max length 8ft.....	£429.95
Tarheel 100A	3.4-30MHz 1.5Kw max length 10.4ft.....	£449.95
Tarheel 200A HP	3.4-28MHz 1.5Kw max length 12ft.....	£479.95
Tarheel 300A	1.7-30MHz 250W max length 11.4ft.....	£449.95
Tarheel 400A	1.7-30MHz 250W max length 12ft.....	£479.95

MOONRAKER GP2500**All Band HF Vertical***This is the perfect answer for anyone with limited space and requires no radials. Covering 80 through to 6M with a VSWR below 1.5:1 !!**Frequency 3.5-57MHz without tuner, Power 250 Watts, Length 7.13M***All at an amazing £199.95 !****MOONRAKER Yagi Antennas***All Yagis have high quality gamma match fittings with stainless steel fixings! (excluding YG4-2C)*

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YG4-2C	2 metre 4 Element (Boom 48") (Gain 7dBd).....	£29.95
YG5-2	2 metre 5 Element (Boom 63") (Gain 10dBd).....	£49.95
YG8-2	2 metre 8 Element (Boom 125") (Gain 12dBd).....	£69.95
YG11-2	2 metre 11 Element (Boom 185") (Gain 13dBd).....	£99.95
YG3-4	4 metre 3 Element (Boom 45") (Gain 8dBd).....	£59.95
YG5-4	4 metre 5 Element (Boom 104") (Gain 10dBd).....	£69.95
YG3-6	6 metre 3 Element (Boom 72") (Gain 7.5dBd).....	£64.95
YG5-6	6 metre 5 Element (Boom 142") (Gain 9.5dBd).....	£84.95
YG13-70	70 cm 13 Element (Boom 76") (Gain 12.5dBd).....	£49.95

MOONRAKER ZL Special Yagi Antennas*The ZL special gives you a massive gain for the smallest boom length ... no wonder they are our best selling yagi's!*

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ZL7-2	2 Metre 7 Ele, Boom 150cm, Gain 12dBd.....	£59.95
ZL12-2	2 Metre 12 Ele, Boom 315cm, Gain 9.5dBd.....	£99.95
ZL7-70	70cm 7 Ele, Boom 70cm, Gain 11.5dBd.....	£39.95
ZL12-70	70cm 12 Ele, Boom 120cm, Gain 14dBd.....	£49.95

MOONRAKER HB9CV*Brilliant 2 element beams ... ideal for portable use*

HB9-70	70cm (Boom 12").....	£24.95
HB9-2	2 metre (Boom 20").....	£29.95
HB9-4	4 metre (Boom 23").....	£39.95
HB9-6	6 metre (Boom 33").....	£49.95
HB9-10	10 metre (Boom 52").....	£69.95
HB9-627	6/2/70 Triband (Boom 45").....	£69.95

MOONRAKER Halo Loops*Our most popular compact antennas, great base, mobile, portable, or wherever!*

HLP-2	2 metre (size approx 300mm square).....	£19.95
HLP-4	4 metre (size approx 600mm square).....	£29.95
HLP-6	6 metre (size approx 800mm square).....	£39.95

MOONRAKER G5RV Wire Antennas*The most popular wire antenna available in different grades to suit every amateur ... All from just £19.95!*

G5RV-HSS	Standard Half Size Enamelled Version, 51ft Long, 10-40 Metres.....	£19.95
G5RV-FSS	Standard Full Size Enamelled Version, 102ft Long, 10-80 Metres.....	£24.95
G5RV-DSS	Standard Double Size Enamelled Version, 204ft Long, 10-160 Metres.....	£49.95
G5RV-HSH	Ha Size Hard Drawn Version, pre-stretched, 51ft Long, 10-40 Metres.....	£24.95
G5RV-FSH	Fu Size Hard Drawn Version, pre-stretched, 102ft Long, 10-80 Metres.....	£29.95
G5RV-HSF	Half Size Original High Quality Flexweave Version, 51ft Long, 10-40 Metres.....	£29.95
G5RV-FSF	Full Size Original High Quality Flexweave Version, 102ft Long, 10-80 Metres.....	£34.95
G5RV-HSP	Half Size Original PVC Coated Flexweave Version, 51ft Long, 10-40 Metres.....	£34.95
G5RV-FSP	Full Size Original PVC Coated Flexweave Version, 102ft Long, 10-80 Metres.....	£39.95
G5RV-HSX	Half Size Deluxe Version with 450 Ohm ladder, 51ft Long, 10-40 Metres.....	£44.95
G5RV-FSX	Full Size Deluxe Version with 450 Ohm ladder, 102ft Long, 10-80 Metres.....	£49.95

Accessories

G5RV-IND	Convert any half size G5RV to full with these great inductors, adds 8ft on each leg.....	£24.95
G5RV-CHOKE	inline balun to reduce RF feedback.....	£39.95
TSS-1	Pair of stainless steel springs to take the tension out of a G5RV or similar.....	£19.95

MOONRAKER Trapped Wire Dipole Antennas*Commercial quality trapped wire dipoles that resonate, so require no ATU!*

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MTD-2	(2 BAND) FREQ: 40-80 Mtrs LENGTH: 20Mtrs POWER: 1000 Watts.....	£79.95
MTD-3	(3 BAND) FREQ: 40-80-160 Mtrs LENGTH: 32.5m POWER: 1000 Watts.....	£129.95
MTD-4	(3 BAND) FREQ: 12-17-30 Mtrs LENGTH: 10.5m POWER: 1000 Watts.....	£69.95
MTD-5	(5 BAND) FREQ: 10-15-20-40-80 Mtrs LENGTH: 20m POWER: 1000 Watts.....	£119.95

*(MTD-5 is a crossed di-pole with 4 legs)***One stop ham shop****If we advertise it - we stock it!**

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See our website for full details.

AUTOMATIC TUNERS

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MFJ-928 Compact with Power Injector 1.8-30MHz 200W	£199.95
MFJ-929 Compact with Random Wire Option 1.8-30MHz 200W	£209.95
MFJ-991B 1.8-30MHz 150W SSB/100W CW ATU	£209.95
MFJ-993B 1.8-30MHz 300W SSB/150W CW ATU	£249.95
MFJ-994B 1.8-30MHz 600W SSB/300W CW ATU	£339.95
MFJ-998 1.8-30MHz 1.5kW	£649.95

MANUAL TUNERS

MFJ-16010 1.8-30MHz 20W random wire tuner	£69.95
MFJ-902 3.5-30MHz 150W mini travel tuner	£99.95
MFJ-902H 3.5-30MHz 150W mini travel tuner with 4:1 balun	£124.95
MFJ-904 3.5-30MHz 150W mini travel tuner with SWR/PWR	£129.95
MFJ-904H 3.5-30MHz 150W mini travel tuner with SWR/PWR 4:1 balun	£149.95
MFJ-901B 1.8-30MHz 200W Versa tuner	£109.95
MFJ-971 1.8-30MHz 300W portable tuner	£119.95
MFJ-945E 1.8-54MHz 300W tuner with meter	£129.95
MFJ-941E 1.8-30MHz 300W Versa tuner 2	£139.95
MFJ-948 1.8-30MHz 300W deluxe Versa tuner	£159.95
MFJ-949E 1.8-30MHz 300W deluxe Versa tuner with DL	£179.95
MFJ-934 1.8-30MHz 300W tuner complete with artificial GND	£209.95
MFJ-974B 3.6-54MHz 300W tuner with X-needle SWR/WATT	£189.95
MFJ-969 1.8-54MHz 300W all band tuner	£209.95
MFJ-962D 1.8-30MHz 1500W high power tuner	£289.95
MFJ-986 1.8-30MHz 300W high power differential tuner	£349.95
MFJ-989D 1.8-30MHz 1500W high power roller tuner	£389.95
MFJ-976 1.8-30MHz 1500W balanced line tuner with X-needle SWR/WATT	£469.95

MFJ Analysers

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MFJ-249B Digital Analyser 1.8-170MHz	£264.95
MFJ-259B Digital Analyser 1.8-170MHz	£279.95
MFJ-269 Digital Analyser 1.8-450MHz	£349.95
MFJ-269PRO Digital Analyser 1.8-170/415-450MHz	£399.95

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LDG Z-817 1.8-54MHz ideal for the Yaesu FT-817	£119.95
LDG Z100 Plus 1.8-54MHz the most popular LDG tuner	£139.95
LDG IT-100 1.8-54MHz ideal for IC-7000	£149.95
LDG Z-11 Pro 1.8-54MHz great portable tuner	£154.95
LDG KT-100 1.8-54MHz ideal for most Kenwood radios	£169.95
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LDG AT-100 Pro 1.8-54MHz	£189.95
LDG AT-200 Pro 1.8-54MHz	£209.95
LDG AT-1000 Pro 1.8-54MHz continuously	£499.95

AVAIR SWR Meters

AV-20 (3.5-150MHz) (Power to 300W)	£34.95
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AV-201 (1.8-160MHz) (Power to 1000W)	£49.95
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AV-601 (1.8-160/140-525MHz) (Power to 1000W)	£69.95
AV-1000 (1.8-160/430-450/800/930/1240-1300MHz) (Power to 400W)	£79.95

WATSON Power Supplies

POWER-MITE-NF (22amp switch mode with noise offset)	£69.95
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POWER-MAX-45-NF (38amp switch mode with noise offset & cig socket)	£119.95
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MB-1 1:1 Balun 400 watts power	£29.95
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MB-6 6:1 Balun 400 watts power	£29.95
MB-1X 1:1 Balun 1000 watts power	£39.95
MB-4X 4:1 Balun 1000 watts power	£39.95
MB-6X 6:1 Balun 1000 watts power	£39.95
MB-Y2 Yagi Balun 1.5 to 50MHz 1kW	£39.95

MOONRAKER Coax Switches

CS201 2 way coax switch, 0-1000MHz, SO239 fitting	£14.95
CS201N 2 way coax switch, 0-1000MHz, N-Type fitting	£19.95
CS401 4 way coax switch, 0-600MHz, SO239 fitting inc centre position	£49.95
CS401N 4 way coax switch, 0-600MHz, N-Type fitting inc centre position	£59.95

Cable

RG58 Standard, 5mm, 50 ohm, per metre	£0.35
RG58-DRUM Standard, 5mm, 50 ohm, 100m reel	£24.95
RG58M Mil spec, 5mm, 50 ohm, per metre (best seller)	£0.60
RG58M-DRUM Mil spec, 5mm, 50 ohm, 100m reel	£39.95
RGMINI8 Mil spec, 7mm, 50 ohm, in grey per metre (amateur favourite)	£0.70
RGMINI8-DRUM Mil spec, 7mm, 50 ohm, in grey 100m reel	£59.95
RG213 Mil spec, 9mm, 50 ohm, per metre	£1.00
RG213-DRUM Mil spec, 9mm, 50 ohm, 100m reel	£84.95
H100 Mil spec, 10mm, 50 ohm, per metre	£1.25
H100-DRUM Mil spec, 10mm, 50 ohm, 100m reel	£99.95
WESTFLEX103 Mil spec, 10mm, 50 ohm, per metre	£1.45
WESTFLEX103-DRUM Mil spec, 10mm, 50 ohm, 100m reel	£129.95
TV100U Mil spec, 6.7mm, 75 ohm, per metre	£0.60
TV100U-DRUM Mil spec, 6.7mm, 75 ohm, 100m reel	£49.95
300-M Ladder Ribbon, best USA quality, 300 ohm, per metre	£0.85
300-20M Ladder Ribbon, best USA quality, 300 ohm, 20m pack	£14.95
300-DRUM Ladder Ribbon, best USA quality, 300 ohm, 100m reel	£59.95
450-M Ladder Ribbon, best USA quality, 450 ohm, per metre	£1.00
450-20M Ladder Ribbon, best USA quality, 450 ohm, 20m pack	£17.95
450-DRUM Ladder Ribbon, best USA quality, 450 ohm, 100m reel	£69.95
FW-M Original high quality flexweave antenna wire, 2mm, per metre	£0.75
FW-100 Original high quality flexweave antenna wire, 100m reel	£49.95
FWPVC-M Original PVC coated flexweave antenna wire, 4mm, per metre	£1.00
FWPVC-100 Original PVC coated flexweave antenna wire, 4mm, 100m reel	£69.95

Antenna Wire (50m)

Perfect for making your own antennas, traps, long wire aerals etc.

SEW-50 Multi stranded PVC covered wire, 1.2mm	£14.95
SCW-50 Enamelled copper wire, 1.5mm	£19.95
HCW-50 Hard Drawn bare copper wire, 1.5mm	£24.95
CCS-50 Genuine Copperweld copper clad steel, 1.6mm	£24.95
FW-50 Original Flexweave bare copper wire, 2mm	£29.95
FWPVC-50 Original clear PVC covered copper wire, 4mm	£39.95

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Get rigged up, for full list of all options visit our website!

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GUYKIT-HD10 Complete heavy duty adjustable guying kit to suit upto 40ft masts	£49.95
GUYKIT-P10 Complete light duty/portable guying kit to suit upto 40ft masts	£29.95
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PTP-20 Pole to pole clamp to clamp up to 2" to 2"	£4.95
DPC-W Wire dipole centre to suit either 300 or 450ohm ladder line	£4.95
DPC-S Wire dipole centre with SO239 to suit cable feed connections	£5.95
DPC-A Dipole centre to suit 1/2 inch aluminium tube with terminal connections	£6.95
DPC-38 Dipole centre with SO239 socket with two 3/8" sockets to make mobile dipole	£5.95
DOGBONE-S Small ribbed wire insulator	£1.00
DOGBONE-L Large ribbed wire insulator	£2.00
DOGBONE-C Small ceramic wire insulator	£1.00
EARTHROD-C 4ft copper earth rod and clamp	£19.95
EARTHROD-CP 4ft copper plated earth rod and clamp	£14.95
G5RV-ES In-line SO239 replacement socket for 300 or 450 ohm ladder line	£4.95
AMA-10 Self amalgamating tape for connection joints, 10m length	£7.50

Mounting Hardware & Clamps

We have all the mounting brackets you could possibly want - for all options see our website

TRIPOD-HDA Free standing, heavy duty, fold away tripod, which adjusts from 50-65mm	£149.95
TRIPOD-25L Free standing heavy duty tripod to suit masts 65mm or less	£69.95
TRIPOD-20L Free standing heavy duty tripod to suit masts 2 inch or less	£59.95
TRIPOD-15L Free standing heavy duty tripod to suit masts 1.5 inch or less	£54.95
TK-36 Heavy duty galvanised pair of T & K brackets, 36 inches total length	£49.95
TK-24 Heavy duty galvanised pair of T & K brackets, 24 inches total length	£24.95
TK-18 Heavy duty galvanised pair of T & K brackets, 18 inches total length	£19.95
TK-12 Heavy duty galvanised pair of T & K brackets, 12 inches total length	£17.95
SO-9 Heavy duty galvanised single stand off bracket, 9 inches total length	£9.00
SO-6 Heavy duty galvanised single stand off bracket, 9 inches total length	£6.00
CHIM-D Heavy duty galvanised chimney lashing kit with all fixings, suitable for upto 2 inch	£19.95
CAR-PLATE Drive on bracket with vertical up stand to suit 1.5 or 2" mounting pole	£19.95
CROSS-2 Heavy duty cross over plate to suit 1.5 to 2" vertical to horizontal pole	£14.95
JOIN-200 Heavy duty 8 nut joining sleeve to connect 2 X 2" poles together	£16.95
PTM-S Pole mounting bracket with SO239 for mobile whips, suits upto 2" pole	£19.95

Antenna Rotators See website for full details

We stock all the most popular rotators to suit all requirements

AR-300XL Great entry level rotator, but strong enough for all VHF/UHF yagi antennas	£79.95
Yaesu G-250 Entry level again from Yaesu, ideal for all VHF/UHF yagi antennas	£109.95
Yaesu G-450 Medium duty rotator complete with 25m of control cable	£299.95

Telescopic Masts (aluminium/fibre-glass opt)

TMA-1 Aluminium mast ★ 4 sections 170cm each ★ 45mm to 30mm ★ Approx 20ft erect 6ft collapsed	£99.95
TMA-2 Aluminium mast ★ 8 sections 170cm each ★ 65mm to 30mm ★ Approx 40ft erect 6ft collapsed	£189.95
TMF-1 Fibreglass mast ★ 4 sections 160cm each ★ 50mm to 30mm ★ Approx 20ft erect 6ft collapsed	£129.95
TMF-1.5 Fibreglass mast ★ 5 sections 200cm each ★ 60mm to 30mm ★ Approx 30ft erect 8ft collapsed	£179.95
TMF-2 Fibreglass mast ★ 5 sections 240cm each ★ 60mm to 30mm ★ Approx 40ft erect 9ft collapsed	£199.95

Portable Telescopic Masts

LMA-S Length 17.6ft open 4ft closed 2-1" diameter	£79.95
LMA-M Length 26ft open 5.5ft closed 2-1" diameter	£89.95
LMA-L Length 33ft open 7.2ft closed 2-1" diameter	£99.95
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20ft Mast Sets

(5ft Sections)

These heavy duty masts sets have a lovely push fit swaged sections to give a strong mast set. Ideal for portable or permanent installations... also available singly

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MSP-175 4 section 1.75inch OD mast set	£49.95
MSP-200 4 section 2.00inch OD mast set	£59.95
MSP-150S 4 section 1.50 inch 5mm scaffold gauge (very heavy duty)	£69.95

Patch Leads

PL58-0.5 1/2m Standard RG58 PL259 to PL259 lead	£2.95
PL58-10 10m Standard RG58 PL259 to PL259 lead	£7.95
PL58-30 30m Standard RG58 PL259 to PL259 lead	£14.95
PL58M-0.5 1/2m Mil Spec RG58 PL259 to PL259 lead	£3.95
PL58M-10 10m Mil Spec RG58 PL259 to PL259 lead	£10.95
PL58M-30 30m Mil Spec RG58 PL259 to PL259 lead	£24.95
PL213-10 10m Mil Spec RG213 PL259 to PL259 lead	£14.95
PL213-30 30m Mil Spec RG213 PL259 to PL259 lead	£34.95
PL103-10 10m Mil Spec Westflex 103 PL259 to PL259 lead	£29.95
PL103-30 30m Mil Spec Westflex 103 PL259 to PL259 lead	£59.95

(All other leads and lengths available, ie. BNC to N-type, etc. Please phone for details)

Connectors

PL259/6mm Standard plug for RG58	£0.75p
PL259/9mm Standard plug for RG213	£0.75p
PL259/7mm Standard plug for Mini8	£1.00p
PL259/6C Compression type for RG58	£1.95p
PL259/9C Compression type for RG213	£1.95p
PL259/103C Compression type for Westflex 103	£5.00
NTYPE/6 Compression type plug for RG58	£3.50
NTYPE/9 Compression type plug for RG213	£3.50
NTYPE/103 Compression type plug for westflex 103	£6.00
BNC/6 Compression type for RG58	£1.50
BNC/9 Compression type for RG213	£3.50
SO239/N Adapter to convert PL259 to N-type male	£3.50
NTYPE/PL Adapter to convert N-type to PL259	£3.50
BNC/PL Adapter to convert BNC to PL259	£2.00
BNC/N Adapter to convert BNC to N-type male	£3.50
BNC/SMA Adapter to convert modern SMA radio to suit BNC	£3.95
SO239/SMA Adapter to convert modern SMA radio to suit SO239	£3.95
PL259/38 Adapter to convert SO239 fitting to 38" thread	£3.95

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Tony Nailer's

doing it by design

This month, Tony Nailer G4CFY looks at steps taken to modify the Top Band Receiver for s.s.b. and c.w. reception.

This month I will revisit the 1.8MHz Top Band Receiver Project, which was the subject of *Doing It By Design (DIBD)* in the September and November 2007 issues of *Practical Wireless*. The take up of the project was very disappointing, possibly due to few readers wishing to receive just amplitude modulation (a.m.) on Top Band.

One of the readers who bought a kit was **Colin Merry G4CDM**, who wished to use it for direction finding contests. He contacted me in March this year complaining that the sensitivity was inadequate. Later in the year – by agreement – he returned the unit to me for examination.

The unit was nicely put together in a heavy die-cast box and included a b.f.o., which was injected along with the signal from the preselector, at the input terminals of the main board. When tested it gave a minimum discernible signal (m.d.s.) of $2\mu\text{V}$, whereas the specified sensitivity was $1\mu\text{V}$. Now Top Band has a very high noise level, and I would have thought the sensitivity would have been adequate, but it obviously wasn't.

Active Pre-selector

To cure the problem, I changed the passive preselector into an active one with a trusty 3N201 to provide gain. This was not a new design as I had previously developed an active preselector for a customer to cover 1.8-3.8MHz. All I did was reduce the coupling to the polyvaricon and increase the fixed capacitors, so the range was limited to just Top Band.

The circuit of the preselector is shown in **Fig. 1**. I chose TOKO coil type 3426R with an inductance of $38\mu\text{H}$ as I have some stock of these parts. To find the resonating capacitance at a particular frequency, use the formula;

$$C = 1/(39.5 \cdot f^2 \cdot L)$$

At 1.82MHz with $38\mu\text{H}$,

$$C = 1/(39.5 \cdot 1.82^2 \cdot 10^6 \cdot 38 \cdot 10^{-6}) \text{Farads.}$$

By observation one 10^6 cancels with the 10^{-6} . Then multiply out the other numbers giving,

$$C = 1/(4971.91 \cdot 10^6) \text{Farads.}$$

Now 10^6 on the bottom of the equation is the same as 10^{-6} on the top. This can then be taken as Microfarads,

$$\text{so } C = 1/4971.91\mu\text{F,}$$

Tony Nailer G4CFY

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$$\text{and } C = 0.000201\mu\text{F} = 201\text{pF.}$$

Repeating the procedure for 2MHz, $C = 1/(39.5 \cdot 2^2 \cdot 38)\mu\text{F} = 166.5\text{pF}$. The tuning range then is 166.5 to 201pF. It can be made up with the bulk as a fixed capacitor and the remainder using a 300 + 300pF polyvaricon with capacitors in series with each gang.

Using The Polyvaricon

If the polyvaricon has a range of 10 to 300pF, the series capacitor has to reduce this to a change of just over 35pF. I tried several low values in the formula

$$C = (C1 \cdot C2)/(C1 + C2),$$

with the polyvaricon as $C2$ with values of 10pF and 300pF.

If $C1 = 68\text{pF}$ and $C2 = 300\text{pF}$ then, $C = (68 \cdot 300)/(68 + 300) = 55.4\text{pF}$.

If $C1 = 68\text{pF}$ and $C2 = 10\text{pF}$ then, $C = (68 \cdot 10)/(68 + 10) = 8.7\text{pF}$.

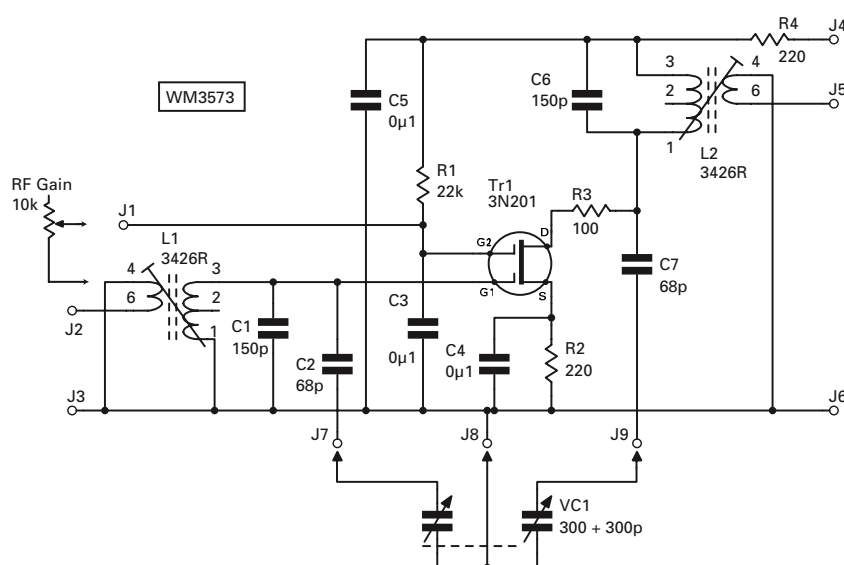
The range is $55.4 - 8.7 = 46.7\text{pF}$. A little on the high side.

Repeating the calculations with 56pF for $C1$ gives 8.5pF at minimum and 47.2pF at maximum, a change of 38.7pF. This looks perfect and could be used together with a 150pF padding capacitor to give a range of 158.5 to 197.2pF. The inductor would need to be tuned for slightly greater inductance to make it work.

As this preselector might be used with other designs covering the full range of 1.8-2.0MHz, the circuit shows the use of the 150pF padder and the 68pF in series with each gang. This will cover the full band with the variable hitting the end stop each way.

A suitable board was already available, though it had provision for mica padding capacitors. It was built up and tested fine. The coils were peaked, first near one end and then near the other end, to

Fig. 1: The active pre-selector for 1.8-2MHz with optimised capacitor values.



centralise the band within the rotation range. A voltage gain of 17dB (x7) was achieved. When wired into the receiver the m.d.s. was now 0.3µV.

The receiver was returned to Colin G4CDM, who reported back that it was now very usable. Shortly after this another reader expressed an interest in a Top Band Receiver, but also with the facility for receiving s.s.b..

The active pre-selector artwork was modified to remove the large mica capacitors and provide for the smaller disc ceramics. The p.c.b. artwork and component layouts are shown in Fig. 2.

Sideband & Morse

Old style valve communications receivers, and early transistorised general coverage receivers were designed primarily for a.m. short wave broadcast reception. Though, often sets had the addition of a beat frequency oscillator (b.f.o.), to enable Morse code to be demodulated.

With the advent of single-sideband it was found this could also be demodulated if a carrier at the intermediate frequency (i.f.) was inserted at the a.m. detector, at a frequency just above a lower sideband signal or just below an upper sideband signal. Many of the Wartime receivers added this carrier prior to the a.m. detector, which then caused additional a.g.c. action and de-sensitised the receiver. The way to overcome the de-sensitisation problem requires a product detector to be incorporated.

The main tuning dial often did not have the resolution to be able to easily position the signal so it would beat properly with the b.f.o. Consequently the b.f.o. was made tunable over the range $\pm 5\text{kHz}$ relative to the centre of the i.f. passband.

Receiver Redesign

I decided that with a little receiver re-design, I could make the Top Band Receiver resolve sideband and c.w. The previous design used a TOKO 11098 last i.f. transformer and had an unused secondary winding.

The Poundbury 14/3.5MHz (20/80m) receiver used a very successful product detector with a junction field effect transistor (f.e.t.). This was taken without changes to values and inserted into the receiver circuit.

Outputs from the original amplitude demodulator, and the new product

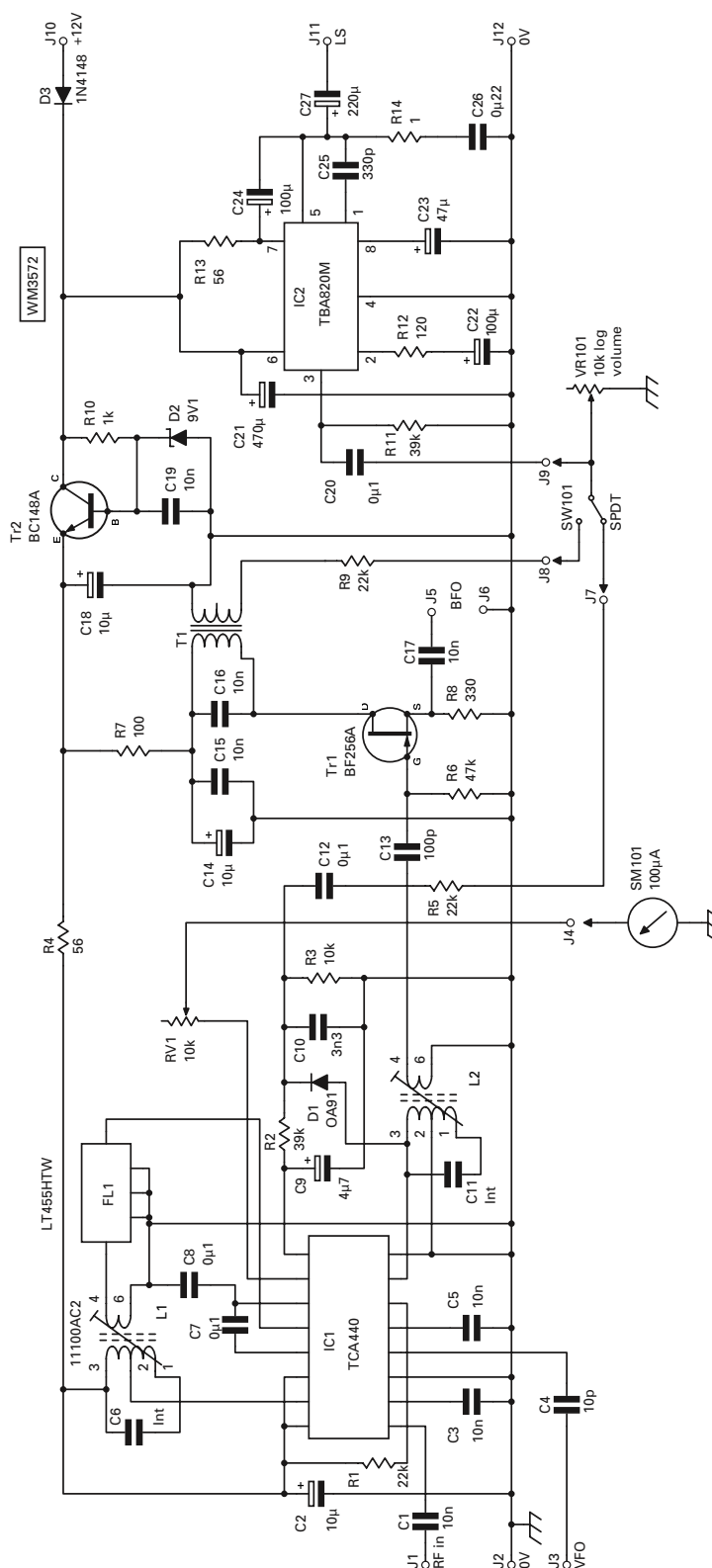


Fig. 3: The receiver circuit after the redesign to incorporate a product detector.

The original computer artwork was imported and the 'back half' of the board deleted. The product detector and amplifier stages were then added to the layout and a new artwork generated. The p.c.b. artwork and component layout are shown in **Fig. 4**. A printed circuit board (p.c.b.) was exposed, developed, etched, drilled and cropped, all ready for assembly and testing. Also required

The receiver uses the stable and high resolution Portland Variable Frequency Oscillator (v.f.o.), which means the b.f.o. does not also need to be variable.

used in many good CB radio designs. It has a -6dB bandwidth of 6kHz and a -40dB bandwidth of 18kHz . Really the bandwidth is a bit tight for a.m. music broadcast use, but is fine for speech. It's of course, a bit wide for single sideband, which often occupies only 2.1 to 2.4kHz bandwidth. Nevertheless the filter should work really well on Top Band where the stations aren't often packed tightly together.

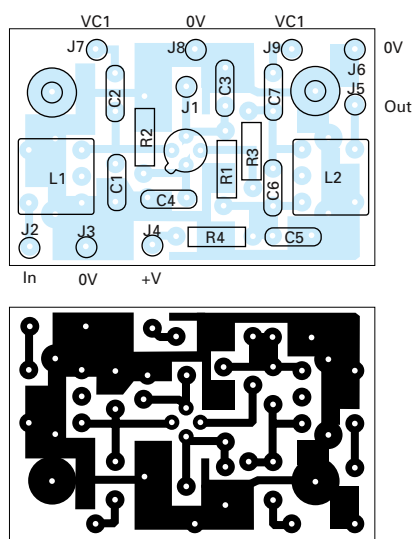


Fig. 4: The p.c.b. track pattern and overlay of the redesigned receiver.

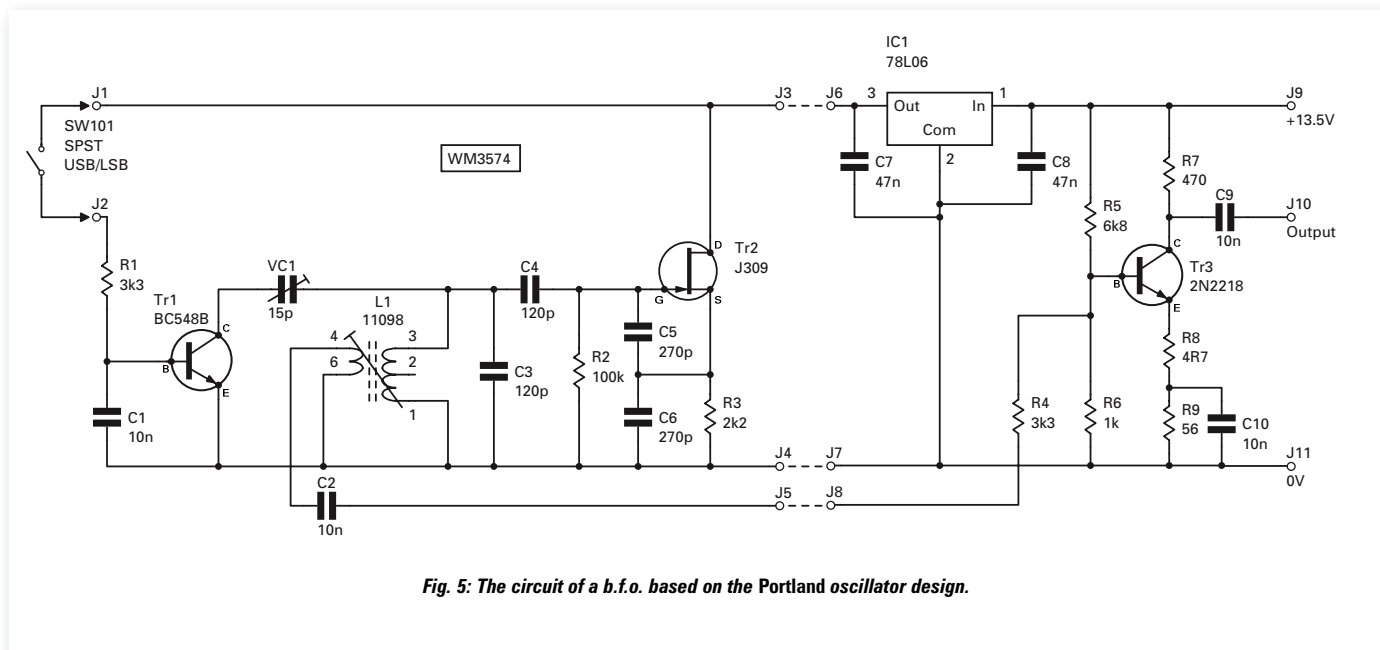


Fig. 5: The circuit of a b.f.o. based on the Portland oscillator design.

A beat frequency signal could be placed maybe 2.5 to 3kHz above the 455kHz centre frequency to decode lower sideband. Otherwise it could be set 2.5 to 3kHz below 455kHz for upper sideband, and dead centre to decode double sideband suppressed carrier (d.s.b.).

Beat Frequency Oscillator

Previous attempts to build a **stable** b.f.o. circuit have always failed for me. The drift has always been unacceptably high. On this occasion I decided to develop a b.f.o. using the Portland v.f.o. circuitry, together with a buffer. The circuit of the v.f.o. part is shown in **Fig. 5**, without its buffer.

For the circuit, I chose a TOKO coil 11098 inductor and removed the capacitor from it. The resonating capacitance is now to be made up from the parallel padder C3, and the coupling capacitor C4, and feedback capacitors C5 and C6. My rule of thumb is for the padding capacitor and the coupling capacitor to be the same value, and the feedback capacitors to be approximately double this.

The capacitor, removed from the coil by breaking it to pieces, should have been 180pF. To achieve this total requires C3 to be 120pF and the series total of C4, C5, and C6 to be 60pF. If C4 is 120pF then C5 & C6 need to be 240pF each. I chose 270pF for C5 & C6.

Let $Cs1 = (C5 * C6) / (C5 + C6)$ pF.
 $Cs1 = (270 * 270) / (270 + 270) = 135$ pF.

$Cs2 = (C4 * Cs1) / (C4 + Cs1)$ pF.
 $Cs2 = (120 * 135) / (120 + 135) = 63.5$ pF.

Together with 120pF of C3, this results in 183.5pF total across the coil. Just perfect.

Prototype PCB

A prototype board was assembled with the components of the main oscillator section, but without the switching transistor, and without the buffer. Initial tests were disappointing with the frequency way below 455kHz, and the drift was quite high at about 500Hz a minute.

I reduced the value of resonating capacitors by proportion until 455kHz was within the tuning range. Then I added the transistor switch for the padding trimcap to give the low side carrier.

I thought maybe the drift was due to the 'boded' board and lack of buffer. So I moved on to do a p.c.b. layout so it could be properly assembled and tested. Boards for b.f.o. and buffer were etched drilled and cropped and assembled. Instead of using a plastic box I made a T-shape of blank p.c.b. and secured the boards each side mounted vertically.

However, when I re-tested it, the frequency was far too high, and the calculated capacitor values had to be fitted to get the frequency back to 455kHz.

Presumably in the previous tests, without a buffer, the loading effect of the frequency counter was pulling the oscillator down in frequency. Also I noted that from switch-on the frequency always drifted higher.

I reasoned that the coil had a

negative temperature coefficient and the N150 negative coefficient capacitors were making the problem worse. I changed these to NPO types and the drift reduced to about 200Hz a minute. Output from the buffer stage viewed on the oscilloscope appeared to be a perfect sinewave, with an amplitude of 1.25V p-p.

While I was undertaking various tests and adjusting the frequency to 452kHz when the trimpot was switched into circuit, it became obvious that the drift continued on without diminishing. After five minutes it had moved about 1kHz and still gave no indication of slowing down.

With predictable temperature characteristics of the resonating capacitors, it's clear that the problem lies with the 11098 coil. It has 165 turns on its bobbin and is tuned by means of a cup core, which is over the bobbin like a hat. This is obviously containing the heat generated by the current flowing in the windings. The temperature will continue to creep up until the heat generated in the coil equals the dissipation from the can.

I have no alternative coil of similar inductance that might have better thermal characteristics. A wound dust iron toroidal transformer might do better but it would require some effort, and I know readers just don't like them. So, again I have failed to build a **stable** L-C oscillator for use as a b.f.o.

Second Version BFO

A number of years ago I developed a stereo encoder for broadcast and

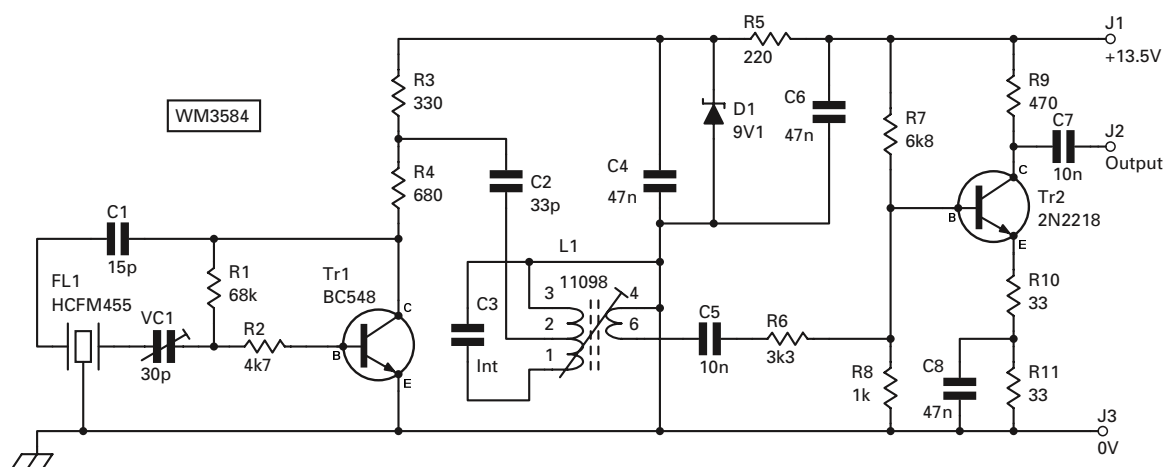


Fig. 6: The frequency stable b.f.o. circuit borrows techniques from earlier projects.

radio link transmitters. The oscillator section was based on a design that appeared in a magazine and used a 455kHz two pole mechanical filter. At that time I experimented with different values of components and optimised the circuit for a frequency 456kHz , so it could be divided by 24 to give 19kHz.

I rooted through my box of development models, and found an assembled early version board of the stereo encoder. Tests on the oscillator section revealed that it had only a limited tuning range with the trimmer capacitor in series with one side of the filter. I found that by choice of value of the fixed capacitor in series on the other side, I could put the oscillator within tuning range of either 452.5 or 457.5kHz.

The waveform shape observed on the oscilloscope was about 7V p-p and like a row of glass tumblers lined up rim to rim. That's sharp positive peak at the rims, and flat bottoms in between. This means the wave included very high levels of even harmonic distortion, and probably lots of lower levels of odd harmonics as well.

Though this waveform was fine for the stereo decoder where the following device was a CMOS integrated circuit. For use in this receiver I wanted a fairly pure sine-wave signal. Especially as the 4th harmonic of 475.5kHz is 1.83MHz.

The original oscillator circuit used a resistive collector load, so I split this into two separate resistors, and took an output via a small value capacitor to a TOKO coil type 11100. Output from the secondary winding of the coil was 1.25V p-p and looked like a good quality sine-wave. When fed to the spectrum analyser though with its 50 Ω input, the loading effect of its input damped the coil and caused the 2nd harmonic to be only 10dB below the fundamental.

I then added the buffer stage from the previous b.f.o. and tried it again. The output was now 1V p-p with the 2nd harmonic 30dB down, the 3rd harmonic 48dB down, and the 4th harmonic 53dB down relative to the wanted signal. Drift from switch on was only a matter of a few Hz, and

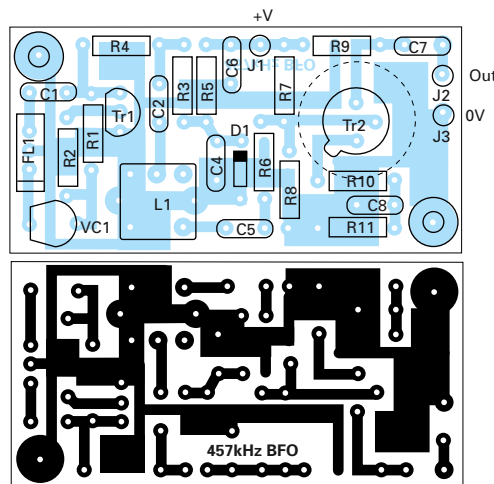


Fig. 7: The p.c.b. track pattern and overlay of the redesigned b.f.o.

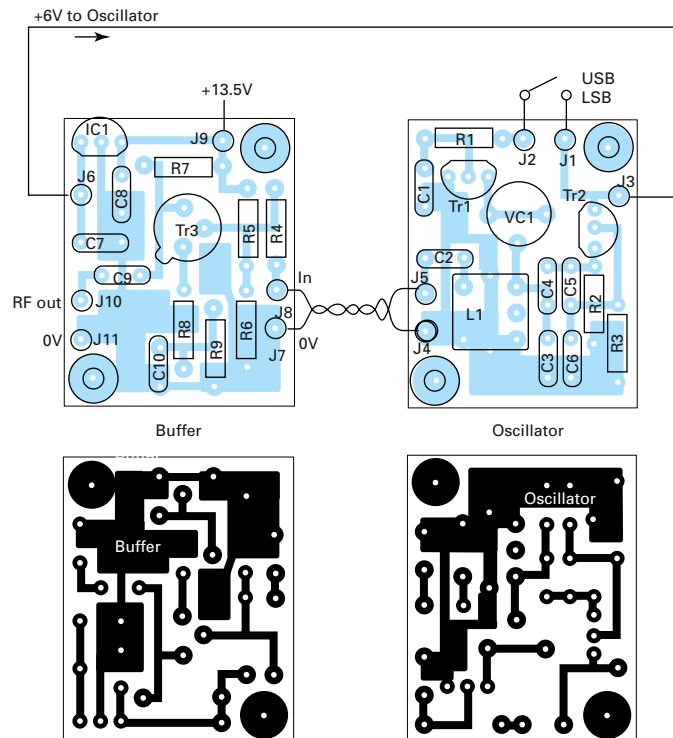
after five minutes was within 20Hz, and had stopped moving. I now had a satisfactory b.f.o!

As sideband signals on Top Band should only be on lower sideband (l.s.b.), I decided to fix the b.f.o. at 457.5kHz . The complete circuit of the new b.f.o. with its buffer is shown in Fig. 6, with the p.c.b. artwork and component layouts in Fig. 7.

If it should be necessary to have both carrier frequencies, then I would recommend building a second oscillator section and coupling it

at the tapping of the primary of L1. The oscillators could then be easily switched using the supply rail, and they will probably have very little pulling effect on each other. To make it work at 452.5kHz use 82pF for C1.

There's not space enough space this time, to discuss the assembly, test and commissioning of the main board, or the results when all parts are put together. This will be done in a concluding article in *DIBD* in March 2010 *PW*.



When developing the product detector circuit for the 1.8MHz receiver, Tony's original b.f.o. was based on his Portland oscillator with two separate frequencies, Fig. 5, (p.c.b.s are shown here for information). However, frequency stability wasn't quite adequate, and the final b.f.o. design was a single frequency version, as shown in Figs 6 and 7.

If you wish to correspond in relation to this article, I can be contacted on tony@pwpublishing.ltd.uk

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ELDORADO-BK High Sierra Motorized Vertical Antenna	£469.00
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Gemini 46 Digital Radio	£39.00
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Yaesu musen - FF-501 - Low Pass Filter 52 ohm	£30.00
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Kenwood TH-F7E Dualband Handheld Transceiver	£179.00
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Kenwood TS-850S /AT	£699.00
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Yaesu FT-1000 "CLASSIC" HF Transceiver	£1,399.00
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IC-756PRO-MKIIi Icom HF + 6m Trx	£1,795.00
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Icom IC-706MKIIg

Kenwood TS-870S HF Transceiver	£849.00
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Yaesu FT-847 HF-6-2-70 Base	£899.00
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TS-440SAT built in at	£399.00
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SMC-33 Speaker/Microphone with 3 Function	£53.00
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YD-148 Yaesu microphone	£30.00
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extension speaker	£9.99
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heil 'studio classic mic'	£99.00
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KPO speaker mic	£5.00
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Alinco EMS-14	£49.00
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Yaesu MH-57A4B Speaker/microphone for VX-7R	£20.00
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Yaesu FV-901DM VFO	£175.00
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MB-105 (IC-7000) MOBILE MOUNTING BRACKET	£7.95
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Kenwood TH-47E 430-440 MHz	£79.00
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MFJ-1817 2m/70cm Telescopic Rubber Duck	36.8cm long £22.00
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KSC-14 Fast Charger for TH-22E	£70.00
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MB-62 Mobile Mounting Bracket (Main) for IC-706	IC - £14.74
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Kenwood YK-88SN SSB Filter	£40.00
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Kenwood YG-455CN-1 - CW Crystal filter	£100.00
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Kenwood / Trio BPF-2A HF filter	£25.00
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Icom LC-158 Carrying Case for IC-R20	£12.00
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ICOM LC-168 Soft Case for IC-E92D	£10.00
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FL-257 455kHz Filter SSB wide 3.3kHz	£99.00
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VS-3 Voice Synthesizer for TS-2000 & TS-570	£30.00
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FL-101 9MHz Filter CW narrow	250Hz £60.00
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Kenwood LF-30A low pass filter	£35.00
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David Butler's

antenna workshop

Our VHF DXer columnist, David Butler G4ASR, takes a look at the 'theory' of 50/70MHz dual-band Yagi antennas.

VHF – Two In One!

As a keen v.h.f. operator I have always taken a special interest in the DX capabilities of both the 50 and 70MHz band and if you take a look at my *VHF DXer* column, shown on page 50, you'll see what I'm on about. Just like many other v.h.f. stations, I put up a separate Yagi for each individual band such as shown in the photograph, **Fig. 1**.

Up to a point this approach is okay but there comes a time when you cannot squeeze any more antennas on the mast. This problem has been very much exacerbated by the gradual release of the 70MHz band within Europe.

Many operators, often with reasonably large 50MHz antennas, are now finding it necessary to install a similar size 70MHz Yagi further up the pole. The issue here, is that to minimise any detuning effects and degradation of the polar patterns, the antennas should be spaced up anything up to four metres apart.

Of course, there are numerous stations that simply don't have the space to erect anything so fanciful anyway! What would be very useful in these circumstances is a single Yagi structure that can work on both the 50 and 70MHz bands at the same time – a dual-band antenna.

Dual-Band Antenna

If life was simple, making a dual-band antenna would have been as easy as dropping all the elements from a 70MHz Yagi along the boom of an existing 50MHz Yagi. Unfortunately, life isn't this simple – it just won't work. Both Yagi structures will be severely compromised, the matching will be anything but matched and the polar patterns will become extremely ragged with subsequent reduction in forward gain.

The interlacing – where unrelated band elements sit on the same boom – is not a bad idea though as it presents

a huge advantage over a structure that relies on common elements with traps or coils. The spacing of common elements will always be a compromise to make the best of a bad job for both frequency bands and traps also present an ohmic loss that reduces the antenna efficiency.

If you're thinking of building or buying a dual-band 50/70MHz Yagi then you'll need to consider how you are actually going to use it in operational terms. Many DX operators, particularly during the summer sporadic-E season, will probably want to have the facility to listen to both bands at the same time with two separate transceiver systems. You would think that to overcome this problem it is only necessary to have two separate feed-lines fed from two separate driven elements.

But there's a huge problem doing this and it relates to the isolation between the two bands. Measurements indicate that the isolation, maybe as low as -10dB

between 70MHz and 50MHz feeds, is definitely not sufficient to allow transceivers to be connected to each feed-line. It's okay if you never transmit but if you did, **it would comprehensively take out the front-end of the other radio!** Because of this inherent isolation problem most antenna designers opt for the simpler single feed-line solution.

Open Sleeve Element

There's an interesting technique known as 'open sleeving' that is used in the construction of single feed-lines for multi-band antennas. This has been known about for some time – particularly at h.f. – but has only recently appeared in the production of dual-band v.h.f. antennas. To start off, imagine that you push a shorter tube ('sleeve') over a dipole cut for a lower frequency. You will then discover that the tube displays a second resonance on a higher frequency.

Far simpler still, the sleeve-element can actually be replaced by two



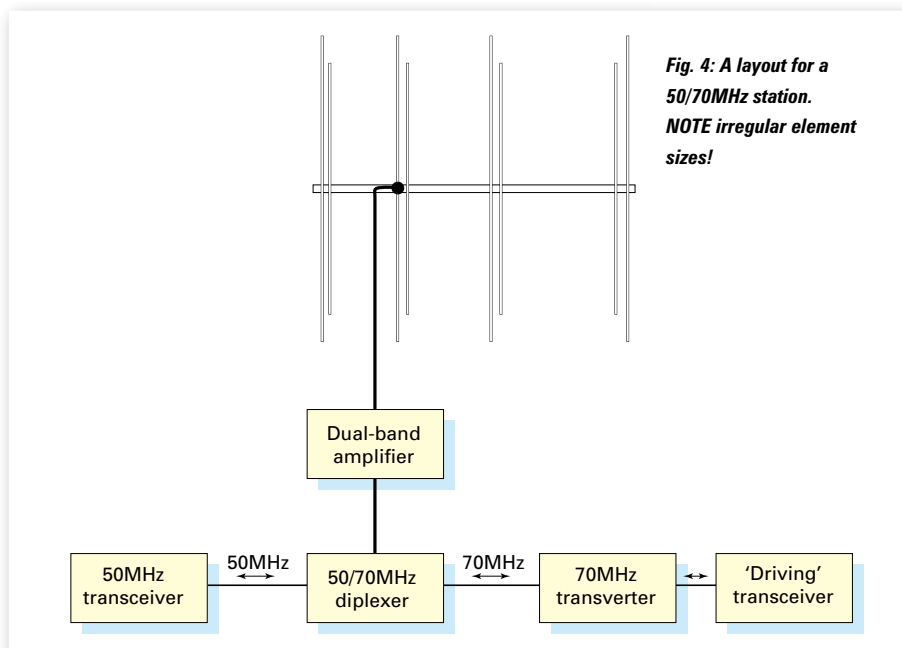
Fig. 1: The 50/70MHz dual-band Yagi (with other v.h.f., u.h.f. antennas above) at the QTH of Uffe Lindhardt PA5DD.



Fig. 2: Cross Country Wireless 50/70MHz Diplexer.



Fig. 3: Telecom 64HK 50/70MHz Amplifier.



David Butler G4ASR

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skeleton elements ('open-sleeve') in close proximity to the driven element. As in the sleeve case the open sleeve elements will experience a second resonance on a higher frequency. It was then discovered that, in reality, only one parasitic open-sleeve element is required to produce resonance on the higher frequency.

Adjusting length and distance is much easier with a single open-sleeve element, the length determining the higher frequency and the distance from the driven element setting the radiation resistance (impedance) for that higher frequency. With the correct parameters set it is possible to establish a single 50Ω unbalanced feed-point for two bands. Indeed you can design a Yagi that covers many more bands – but that's another story.

Single Feed-Line

It's relatively easy to use a 50/70MHz Yagi that possesses a single feed-line for both bands. You could simply use a coaxial switch or relay to swap between transceiver systems but that limits you to working only one band at a time. Indeed that may be all that's required for many casual operators. But if you're like me, then you'll want to listen on both bands at the same time.

Fortunately there's a device called a diplexer, Fig. 2, that will enable you to do just that. This particular diplexer, manufactured by **Cross Country Wireless** (see **Web Links**), attaches to the end of the coaxial cable in the shack. Utilising a high and low pass filter connected together it separates out the 50 and 70MHz components into two separate coaxial connectors.

The device shown in Fig. 2, handles 100W of continuous power with only 0.3dB insertion loss on either band. More importantly, the isolation between the 50 and 70MHz ports is a useful at -43dB at 50MHz and -55dB at 70MHz. Cross Country Wireless also mention that they can build special diplexers to order that handle 250W of through power.

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higher powers you could make a QRO diplexer from quarter-wavelength sections of coaxial cable as described in the March/April 1996 editions of the RSGB's *Radio Communication* member's journal. Using RG-213 cable, this diplexer can easily handle 400W of r.f. power with an insertion loss of just 0.35dB and rejection notches of around -80dB.

Incidentally although the copyright of the diplexer article belongs to the RSGB, but with their kind permission I may supply a reproduced copy. Just post an E-mail to **g4asr@btinternet.com** and I'll send you the article by return – and details of how to join the Radio Society of Great Britain!

Interestingly, there's now synergy between single feed-line Yagis and dual-band solid-state and valve amplifiers that have recently become available. Amplifiers, such as the Telecom 64HK amplifier, **Fig. 3**, that I reviewed in October 2009's *PW*. Take a look at the diagram, **Fig. 4**, as this depicts a way of connecting your 50MHz transceiver and 70MHz transverter via a diplexer and dual-band amplifier to a dual-band Yagi.

Using this method you can listen on both bands at the same time and run high-power on either if you feel the need. And it doesn't necessarily have to be a dual-band Yagi. You could of course use a v.h.f. discone or a log periodic antenna provided that either presents a low v.s.w.r. on the band you want to transmit on. As 'Aleksandr Meerkat' in the TV advert says - 'simples'!

Optimisation & Design

Interlaced single-feed Yagis are difficult to optimise as there is significant interaction between all elements and even minor changes in diameter and spacing causes significant changes in all other parameters. With an open-sleeve design even the type of insulator, shown in the photograph, **Fig. 5**, is critical. It should be made of non-r.f. absorbent material, make minimal contact and yet be sufficiently strong to support the lengthy elements.

Some years ago the mechanism for optimising a Yagi was very tedious but nowadays computer optimisation using *EZNEC* (*NEC4*) or similar antenna modelling packages enables the designer to make changes and see the effects without getting their hands

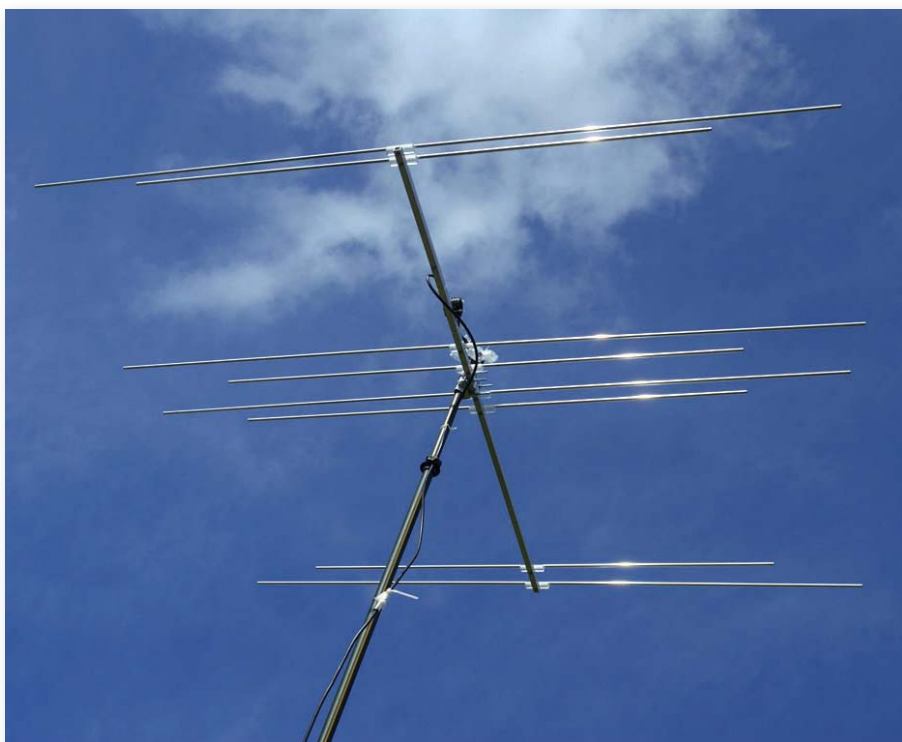


Fig. 6: The 8-element 50/70MHz Yagi designed by Justin Johnson G0KSC.



Fig. 5: Element Insulator – obtainable from Justin Johnson G0KSC.

This dual-band antenna performs as a 4-element Yagi on both the 50MHz and 70MHz bands and possesses approximately 8.5dBi forward gain on both band.

When it's my turn in the *Antenna Workshop* again I'll be describing how to build your own antenna. In the meantime you can find details of this and other 50/70MHz (and 28MHz/50MHz) dual-band antennas on Justin's web site. That's it for this time, but next time I'm in the workshop, I'll be describing how to build one of Justin's designs.

73, G4ASR

dirty! The three leading experimenters in this field include **Justin Johnson G0KSC**, **Martin Steyer DK7ZB** and **Ljubisa Popa YU7EF** (see **Web Links**).

Justin G0KSC mentions that of all his 50MHz/70MHz designs, the best performer for boom length and number of elements is the 8-element Yagi that sits on a 2.08m boom, as shown in the photograph, **Fig. 6**.

Web-Links

G0KSC: <http://www.g0ksc.co.uk>

G7CNF: http://g7cnf.me.uk/EF_Duo.htm

DK7ZB: <http://www.mydarc.de/dk7zb>

IW0FFK: <http://iw0ffk.altervista.org>

PA5DD: <http://home.hccnet.nl/uffe.noucha/log/antennas.htm>

YU7EF: <http://www.yu7ef.com/efDUOBANDS.htm>



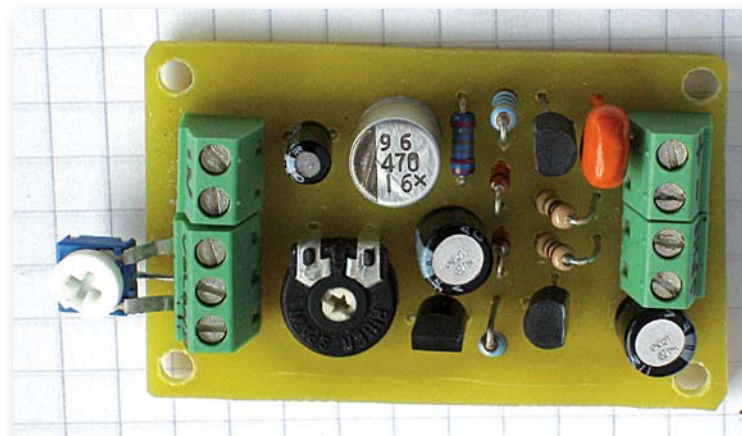
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carrying on the practical way

The Rev. George Dobbs G3RJV returns to Scandinavia – for more audio amplifier ideas – after the appropriate quotation!

"A commonplace man marvels at uncommon things; a wise man marvels at the commonplace."

Confucius



Amateur Radio, by its very nature, is a social hobby. It's based on the idea that we attempt to make contact with one another. Often this is a fleeting single QSO – although many Radio Amateurs have particular stations that they contact more frequently. There are scheduled contacts 'skeds' (scheduled contacts) that have lasted for many years. On the air friendships develop between people who may never meet in any other way.

Other Radio Amateurs are drawn together by a common specialist interest in the hobby and come to share information on the air or by E-mail. There are specialist interest groups tend to have meetings and conventions where like minded hobbyists meet together to share information and strike up personal friendships.

It's good to be part of such a personable pursuit and I'm thankful for the many friends I have come to know over nearly 50 years of Amateur Radio. They've added to my enjoyment of the hobby and many of them have added to my knowledge.

I have always been touched by the open way in which many 'professional' Radio Amateurs (with knowledge beyond mine) have been free in sharing their knowledge with a Vicar who has a soldering iron!

Johnny Apell SM7UCZ

I've mentioned my Amateur Radio friend **Johnny Apell SM7UCZ** several

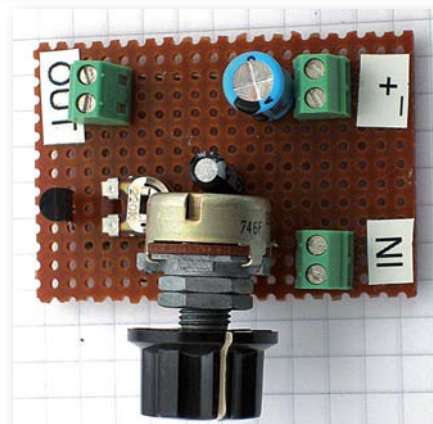
times in *Carrying On The Practical Way (COTPW)*. Johnny and his wife, **Birgitta**, have been regular visitors to the G QRP Convention, formerly held in Rochdale but now held in Rishworth, West Yorkshire.

For those *PW* readers who do not know about the QRP Convention, it may be appropriate to mention it here because I think that the typical follower of this column should find it of special interest.

The event takes place every October and is a convention rather than the usual radio rally – in fact we avoid using the word 'rally'. There are traders who sell things on stalls but these **are never** new equipment dealers. The QRP Convention welcomes traders who sell components, surplus electronics items and good, old fashioned, radio junk!

Running alongside the trading aspect, the event also includes a programme of talks and presentations on subjects related to QRP operation and radio construction. In 2009, for the first time, the convention also included a Buildathon event where beginners made a simple project under the guidance of experienced mentors and an impressive display of home-built equipment. It's not altogether surprising that people attend from European countries and the USA and keep returning every year.

To return to Johnny SM7UCZ, he's an avid builder and an advocate of novel circuit ideas. Regular readers will recall his simple high gain audio



amplifiers using the Sziklai pair circuit that I featured in the June 2009 edition of this column. The Sziklai pair is a configuration of two bipolar transistors, *npn* and *pnp* rather like the Darlington pair.

Another Novel Amplifier

Just before I met up with Johnny at the 2009 QRP Convention, he sent me details of yet another novel audio amplifier based on a shunt regulator. He was also kind enough to give me a ready-built example of one of these amplifiers. It wasn't like my usual ugly-type prototype boards – but a very smart homemade printed circuit board (p.c.b.).

A shunt regulator is a single electronic device that clamps a power supply at a pre-set voltage. The shunt regulator constantly checks the output voltage and if that voltage is over the preset level, extra current is drawn from the source to reduce the output voltage. Shunt regulation is popular in

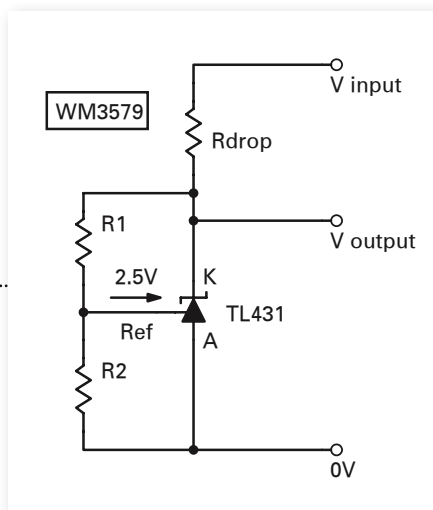


Fig. 1: The basic application circuit for the TL431. The nominal reference voltage is 2.5V and the output voltage is set with two resistors R1 and R2.

Rev. George Dobbs G3RJV

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controlling alternative energy sources.

A common example is in the use of photovoltaic solar cells. A photovoltaic panel rated at 12V output can generate up to 50% more than that in bright sunlight and could cause damage if directly connected to some equipment. A shunt regulator can clamp the output at 12V or a chosen voltage.

The commonest, and probably the cheapest, shunt regulator device is the TL431, sometimes labelled as the LM431. Described by the manufacturers as a "programmable shunt regulator" it's available in a choice of packages: the transistor style TO-92, 8-pin dual in line or the surface mount 8-SOP.

Irrespective of the package, the device is a three terminal adjustable shunt regulator that can have its output voltage set to clamp any voltage between 2.5 and 36V.

The diagram, **Fig. 1**, shows the basic application circuit and the nominal reference voltage is 2.5V. The output voltage is set with two resistors; R1 and R2. The series resistor to the supply input (Rdrop) dissipates the unwanted voltage and is often called the 'dump resistor'. The formula for setting the output voltage is as follows:

$$V_o = (1 + R_1/R_2) V_{ref}$$

Where V_o = desired output voltage and V_{ref} = reference voltage (2.5 volts for the TL431).

Interestingly, some time ago I noticed the TL431 suggested as a simple audio amplifier on a crystal set website. The site described it as "a simple audio amplifier using a TL431 shunt regulator. The amplifier will provide room-filling volume from an ordinary crystal radio outfitted with a long-wire antenna and good ground."

The circuit that Johnny SM7UCZ

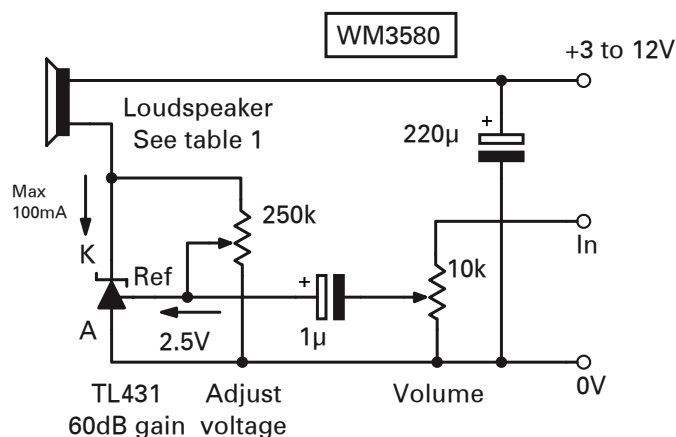


Fig. 2: Johnny Appel SM7UCZ's amplifier using the TL431 3-pin regulator.

sent to me was even simpler and is shown in **Fig. 2**. The dump resistor is replaced by a loudspeaker and the reference voltage can be set to 2.5V with a variable resistor. Note, in this case it's 250kΩ, although 220 or even 100kΩ would do the job. This voltage must be set before an input signal is applied.

The audio input signal is applied via a volume control – a 10kΩ logarithmic potentiometer and coupled to the reference pin via a 1μF capacitor. The audio input disturbs the reference voltage causing the TL431 to dump voltage in the loudspeaker. The resultant current change in the loudspeaker produces an audio output with greater amplitude than the audio input.

The result is a very simple audio amplifier. The amplifier is capable of some 60dB of gain. However, this simple circuit does have some limitations. The maximum current that the TL431 can handle is 100mA (milliamps).

Another drawback is that the dump resistance (the loudspeaker) should have a resistance in the 50 to 300Ω range. The highest impedance (a.c. resistance) loudspeaker I could find was 32Ω but an alternative is to have

a suitable transformer drive a low impedance speaker. Thankfully my junk box is quite deep – although not as deep as it used to be when I had more space.

Mouser Transformer

I found an idea transformer labelled 'Mouser 42HM004'. Perhaps they still make it? It offered a 200Ω primary and an 8Ω secondary. Both windings had a centre tap but I found, in practice, the 200 to 8Ω combination worked well in the circuit.

It worked nicely as a very simple, albeit low output, audio amplifier. I built my version on a piece of perfboard using the TO-92 packaged version of the TL431. It looks rather odd for an audio amplifier as there doesn't appear to be enough parts to make it work! However, I did find in use, that it was easy to overdrive the amplifier and the TL431 got rather hot during some of my tests.

The chart, kindly supplied by Johnny, shows the results he had at various supply voltages. I used the full 12V supply and connecting a pair of portable audio unit type headphones to the transformer did result in a more than useful output. The amplifier works in Class A which means there

is a relatively high current (some 40 to 50mA) being constantly drawn from the power supply.

Simple & Limited

Although useful, and undeniably simple, the basic TL431 amplifier is limited in its applications. A much better result can be had by using the TL431 to drive a complementary pair of transistors. One version of this idea is shown in Fig. 3, and here a *pnp* device (BC327) and *nnp* device (BC337) form a complementary pair amplifier.

Many other combinations of transistor would work in this application. An easy to find pair of transistors suitable for the circuit would be the 2N3906 (*pnp*) and 2N3904 (*nnp*).

Again the TL431 has a preset potentiometer to adjust the reference voltage to 2.5V. The audio input comes via a volume control to the reference pin on the TL431. As the TL431 conducts to dump the surplus voltage caused by the audio input, the current change drives the pair of transistors.

This amplifier has several advantages over the design in Fig. 2. Naturally, it's capable of a higher output and greater gain. An input signal of 1mV (millivolt) can give an output of about 150mW (milliwatts). Additionally, the amplifier is no longer operating in Class A, so the idle current (the basic circuit current before the input is applied) can be as low as 8mA.

The current through the TL431 needs only to be a few milliamps and this amplifier is also able to drive a normal low impedance loudspeaker. It adds up to being a very useful little amplifier.

A better arrangement using a complementary pair of output transistors is shown in Fig. 4. The TL431 pre-amplifier follows the configuration used in Fig. 1 and uses a 2.2k Ω dump resistor. It has the usual reference voltage setting potentiometer and volume control. In this version the TL431 works more like a conventional preamplifier with capacitive coupling via C1 to the complementary pair.

The amplifier is capable of 250mW of output. Although the usual alternatives can be used, the BC327 and BC337 are ideal because they can handle up to 500mA. This amplifier

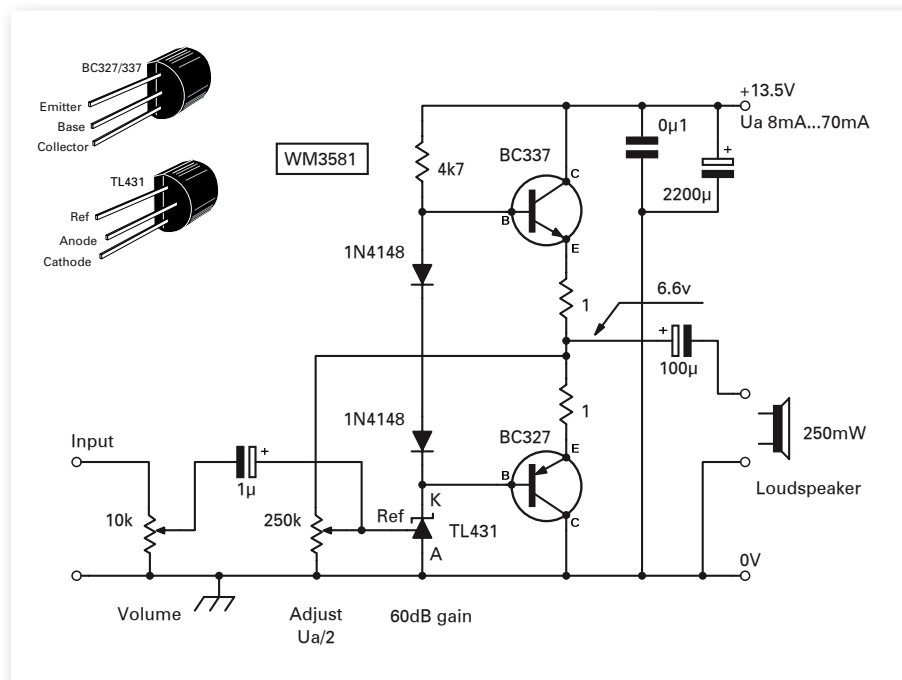


Fig. 3: Driving a complementary pair of transistors.

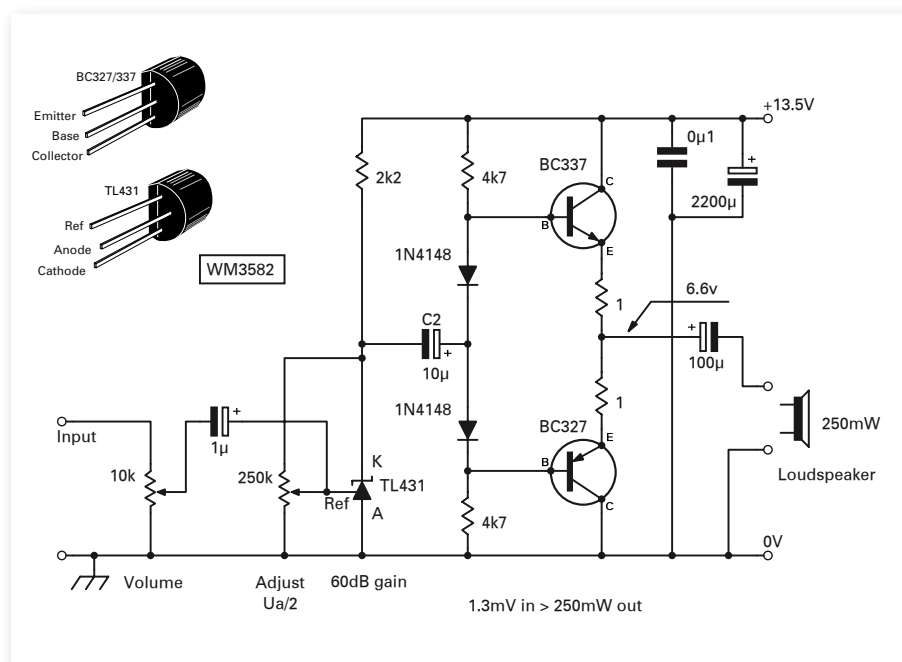


Fig. 4: Another (and better) arrangement using complementary transistors.

would serve well as the audio stages of a small receiver. It would certainly be quieter than the commonly used LM386 audio amplifier chip and with none of the instability problems sometimes encountered with that device.

Splendid Version

The photograph shows a rather splendid version of this amplifier nicely built on a custom p.c.b. Unfortunately, I can't lay any claim to having made this board – it's the example shown in Fig. 4, built by

SM7UCZ and kindly given to me. It will certainly find a place in one of my future projects!

The pre-set potentiometer mounted on the board is the reference voltage adjustment control. The pre-set potentiometer screwed into the printed circuit board header block is a temporary replacement for the volume control used to test the board.

So, once again, thanks to Johnny SM7UCZ, I'm able to offer readers another variation on the simple audio amplifier theme.

KITS, MODULES & AERIALS

NEW PRODUCT POUNDBURY 20/80m SSB RECEIVER



Classic superhet receiver for 20 and 80m using a 9MHz IF and a 5.0-5.5MHz VFO (as described opposite). Uses a 6 crystal ladder filter with near symmetrical passband, 2dB insertion loss, 1.8:1 shape factor, and 70dB stopband. Minimum discernable signal 0.2uV. Fixed tuned bandpass preselector on 20m, tunable preselector on 80m. Logarithmic AGC and Signal meter response. Maximum signal handling 1mV. 500mW audio output. Supply requirement 13.5V at up to 250mA. **VFO with its drilled box, preselector and main board PCB's and component kits including crystals £92. Complete kit including box and hardware £147.00. Ready built £240.00.**



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MASTHEAD PREAMPS, for 2 or 4 or 6metres. 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 £41.00, Ready Built £65.00. 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 £42.50, Ready Built £65.00. Masthead fitting kit £6.00.**



PORTLAND VFO now available as the classic 5.0-5.5MHz version to suit receivers and transmitters with a 9MHz IF to work on 80m or 20m. Can be supplied with Buffer 1 to suit transistor and IC mixers, or with Buffer 2 to suit a diode ring mixer. This is a development of the VFO which featured in March 2006 PW, and which now uses a 3 terminal regulator to supply the VFO section. There is now no perceptible drift from switch-on. **VFO and Buffer PCB's and components with pre-drilled box £26.00. Ready built £50.00.**

PSK31 INTERFACE KIT, as in PW Feb 2009. PCB £5.00. PCB and components £21.00. Box kit with cables £35.50.

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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 & hardware kit £28.00. Ready Built £52.50.**

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Amateur Radio

in focus Summits On The Air

Tom Read M1EYP, a keen SOTA activator describes the background of a simple idea that's developed into a real winner!

Few would have predicted the incredible growth and popularity of the Summits on the Air (SOTA) scheme, when it was launched in 2002 – not even its creator **John Linford G3WGV** or co-devisor **Richard Newstead G3CWI**. However, SOTA is now becoming a genuinely 'global brand' as an Amateur Radio awards programme and SOTA activity is to be found throughout the radio spectrum on a daily basis.

Here, as a member of the SOTA Management Team, I'm charting the progress of the idea into one of the most popular forms of portable radio pursuits. I'm also reporting the latest news and looking at potential future developments.

The idea behind SOTA came to John Linford G3WGV many years ago, but it wasn't until he ran across the **European Adventure Radio website** run by Richard Newstead G3CWI, that he put the idea down on paper. He E-mailed it to Richard with the a single question "should we try to get this going?"

The original idea only ran to a few paragraphs on a single side of A4 paper but it took well over 1,000 man-hours of work to turn that idea into a viable award programme! Many people helped along the way, including **Matthew Balmer M5EVT**, **Alan Poxon M1EYO** and **Roger Dallimore MW0IDX**.

Much of the award was discussed and dissected on the internet before it was launched on March 2nd 2002. Summits in England (G) and Wales (GW) launched first, and were soon followed by those in Scotland (GM), Northern Ireland (GI) and the Isle of Man (GD).

Huge Numbers

Although neither John nor Richard envisaged huge numbers of people participating, the award was designed to be scalable from the outset. A key objective was making the award internet-based, for this an online database was needed.

Fortunately, Richard knew **Gary Bleads G0HJQ** who is a professional database designer. John and Gary met up and, after much hard work, SOTA had an 'industrial strength' database. Gary claims that it's sized such that it could deal with all the Amateur Radio contacts made in the whole

World if required! Scores can be entered and viewed at <http://database.sota.org.uk>

However, simply having an award and a support infrastructure does not ensure success and a huge effort was put in to publicise the award. Both John and Richard wrote articles, gave numerous talks to radio clubs, at rallies and exhibitions and ran SOTA stands at various events.

Over 1,000 leaflets were given out in the first 18 months of the scheme. But even that wasn't enough. International publicity was gained by constant news releases to overseas organisations and finally, a keen band of activators made it their business to explain SOTA to everyone they contacted on the air.

On that first day in March 2002, five activations took place. These included **Black Hill G/SP-002** by **Alan Poxon M1EYO/P**

Long Mynd-Pole Bank G/WB-005 by **Richard Newstead G3CWI/P**

Caer Caradoc G/WB-006 by **Richard Newstead G3CWI/P**

Walton Hill G/CE-002 by **Pete Wesley M0COP/P**

Snowdon GW/NW-001 by **Roger Dallimore MW0IDX/P**

By the end of 2002, an increasing

number of activators and chasers were taking part and by 2003 the participation rates were growing exponentially – as SOTA became the new 'craze' in Amateur Radio. Associations in Ireland (EI), Germany (DL & DM), South Africa (ZS) and Greece (SV) were added, and SOTA had a basis for future international growth.

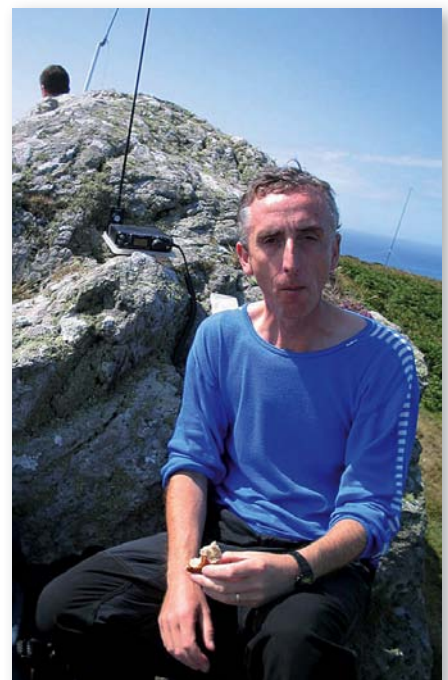
Growing Community & Friendships

A growing community and new friendships were by-products of participation in SOTA and weekend events, such as Youth Hostel meets and camping barbecues in mountain regions like the Lake District and Snowdonia became very popular. Such occasions would inevitably see many 'Summit-to-Summit' QSOs between activators on nearby mountains and such contacts became prized in the programme.

In those early days, 144MHz (2m) frequency modulation (f.m.) was the mode of choice by almost every activator. When operating on v.h.f. results are much enhanced by gaining height and getting the best 'take-off', and it was natural for activators to make the most of the enhanced opportunities afforded by their lofty locations.



A 2-element SOTA Beam on The Cloud SP-015.



Alan Poxon M1EYO, the first to win the 'Mountain Goat' Award.

SOTAwatch2 Logged in as M1EYP | [Log out](#) | [Edit Account](#) | [Help!](#)

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Latest Spots

>> [more spots](#) | [new spot](#)

Thu 16:11	OK1MCS/P on OK/PL-069 - [edit]	7.118 ssb
	(Posted by SV2KGA)	
Thu 16:10	GW3TJE/P on GW/SW-015 - [edit]	5.3985 ssb
	(Posted by GW7AAV)	
Thu 15:52	GW0DSP/P on GW/NW-062 - [edit]	7.118 ssb
	now here (Posted by ZEOPIXW)	
Thu 15:50	GW3TJE/P on GW/SW-015 - [edit]	7.032 cw
	Peter CQing, but no many takers (Posted by F5AKL)	
Thu 15:36	GW0DSP/P on GW/NW-062 - [edit]	7.032 cw
	Mike here strong 599 tnx (Posted by F5NEP)	

Upcoming Activations

>> [more alerts](#) | [new alert](#)

Fri 10:00	PA/DL8YR/P on PA/PA-002 - [edit]	7.032-cw
	(Posted by DL8YR)	
Fri 10:15	OE5HCE/P on OE/OO-159 - [edit]	7.165-ssb, 7.118-ssb
	+/- 1 hour, +/- 5 kHz qrg, it's a long tour (Posted by OE5HCE)	
Fri 11:00	M0FMF/P on G/NP-020 - [edit]	145-fm, 1297-fm
	+/- 1.5hrs! bag this one on way down for Blackpool Rally (Posted by M0FMF)	
Fri 11:00	G1JTD/P on G/NP-015 - [edit]	145-fm, 7-ssb, 14-ssb
	With M3XJV/P, may have first attempt on 40/20m HF ssb (Posted by)	

Reflector Latest

[SOTA NEWS - APRIL 2009](#)
by G4SSH, #7 by ON6DSL, 29hrs ago

[International SOTA Weekend](#)
by GM4TOE, #50 by G7MLO, 13days ...

[SPOTlite v2 - mode](#)
by M1EYP, #8 by G0VOF, 117mins ago

[The Magic Moggy and the M...](#)
by M1EYP, #2 by M0GIA, 3hrs ago

[SOTA F/PO-203](#)
by F5UKL, #7 by F5UKL, 8hrs ago

[40m Broadcast Stations - G...](#)
by G7SKR, #7 by ON6DSL, 11hrs ago

[Summits near Cardiff?](#)
by G4YTD, #3 by G8ADD, 12hrs ago

[Scafell Next Week](#)
by M0CGH, #3 by M0CGH, 27hrs ago

[Summitsbase News Published](#)
by GW4BVE, #2 by ON6DSL, 29hrs ago

[G4OBK LD/NP Activations t...](#)
by G4OBK, #4 by G4YSS, 34hrs ago

[2009 on The Cloud G/SP-015](#)
by M1EYP, #42 by M1EYP, 39hrs ago

[GW/NW-012 Cadair Berwyn](#)

The SOTA-watch screenshot (select View 100% for hi-res version)

The keenest chasers were also known to drive out into the southern Pennine hills to gain better vantage points from where to try to contact the SOTA activations taking place. Indeed, one of the contr buting inspirations for SOTA was the increased availability of lightweight affordable 144MHz hand-portable transceivers.

It wasn't all v.h.f. and f.m. though! Some activators were using high frequencies (h.f.) from the start of the programme. Indeed, Richard G3CWI pioneered the use of 7MHz (40m) c.w. (Morse) for SOTA, demonstrating it to be an incredibly efficient and effective way to contact many stations across Europe while using QRP.

Initially, the nominal frequency for

40m c.w. SOTA operations was 7.030MHz, known as a QRP frequency. However, while SOTA activators were indeed QRP, typically using 5W from a Yaesu FT-817 or a KX1, the increasing band of chasers weren't QRP operators – so 7.032MHz became the 'SOTA frequency'. This remains to date and it's rare for a day to pass without SOTA activity on 7.032MHz using c.w..

Using Morse code was one area of Amateur Radio that was certainly rejuvenated for many by the SOTA scheme. As more associations joined, such as France (F), Switzerland (HB), Hungary (HA), Austria (OE) and the Czech Republic (OK), the number of c.w. activations increased. The mode being

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much more traditional and is a typical approach to portable adventure radio situations in continental Europe.

By then, the SOTA-watch spotting, alerting and reflector facility (<http://sotawatch.org>), developed by **Jon Earnshaw GM4ZFZ**, had been added to the online facilities. With this, the high numbers of spots for c.w. activations were strikingly visible to the SOTA community. This led to several people choosing to either re-learn or refresh their c.w. skills, or in some cases, learn it for the first time from scratch.

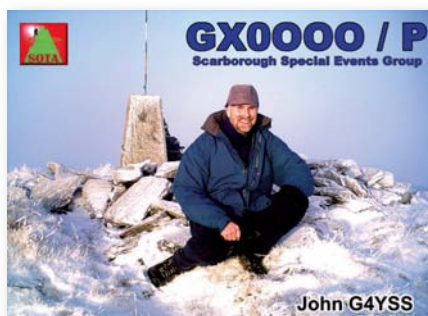
Key Feature Added

A key feature added to SOTA-watch was the ability to send and receive spots on a mobile 'phone'. This system, known as 'Spotlite', meant that activators could actually 'self-spot' when they reached the summit and wanted to advise a certain frequency and mode.

Self-spotting is frowned upon on the DX clusters, of course, but in SOTA we have a different view. This is based upon the fact that the activator may not be operational for very long – often less than 30 minutes – and that previously alerted QRV times will vary in accuracy, given the nature of fell walking.



FT-817 & Mini Palm Paddle.



John Earnshaw G4YSS using the SSEG club callsign.



The ONL5923 SWL card.



Jimmy Read M3EYP activating Pen-y-ghent NP-010 while walking the Pennine Way.



John Linford G3WGV on Helvellyn LD-001.



Richard Newstead G3CWI operating on 10GHz on Winter Hill SP-010.

Programme Expanded

The global SOTA programme continued to expand, especially with the appointment of **Les Allwood G3VQO** to the Management Team. The the USA (W1, W2 and W6), Belgium (ON), Poland (SP), Finland (OH), Liechtenstein (HB0), Norway (LA), Sweden (SM), Slovenia (S5), Netherlands (PA), Lebanon (OD), Corsica (TK), Macedonia (Z3) and Canada (VE2) launched their own SOTA associations over the next few years. Analogous to DXCC entities themselves, some associations are very commonly worked, while others are rare catches.

The varying terrain and geological characteristics of different parts of the world represents a challenge in devising a coherent scoring system and criteria for a summit to be included in the programme.

The recommended minimum is 'P150', meaning 150m of prominence, or vertical separation. This means that the land must drop a minimum of 150m on all sides of a summit, before rising up to anything higher. Here in Great Britain, this is known as the 'Marilyns' definition, and it was the Marilyns list, maintained by **Alan Dawson** and the Relative Hills of Britain group that was adopted in order to launch SOTA in England and Wales.

The list also covered Scotland and the Isle of Man, so those associations were similarly catered for when ready to launch. The existence of an Irish Marilyns list based on the same criteria was useful when Northern Ireland (GI) and Ireland (EI) SOTA came into being.

We're fortunate in the British Isles to have such a well-maintained independent list of P150 hills. Other locations aren't so well-served, although there are some prominence lists available on the website <http://www.peaklist.org>

Most overseas associations also adopt the P150 criteria for summits, but the SOTA General Rules does provide for a minimum of P100 where this would assist in making an association feasible. This is the case in Belgium, Netherlands and Hungary.

Geography Problems

Geography can cause some problems! While most SOTA associations cover a single and whole DXCC, this isn't always practical. Some DXCCs are extremely large compared to European countries. The USA, for example, has separate SOTA associations being formed for distinct call areas.

When Germany first joined SOTA, the regions covered did not extend to the Alpine area of the country. Hence, when Alpine Germany joined later, it



Roy Clayton G4SSH, as you might guess is keen on c.w.

was necessary to have a different set of scoring bands, and it became a stand-alone association.

In the UK, and in most other associations, activations must be carried out within 25m vertically of the summit. Equipment must be fully portable, and the method of final ascent must be person-powered. This does not prevent participation by those with lesser physical abilities though, as some summits have public roads over them, or very close by.

Prestigious Mountain Goats

Since the launch of SOTA seven years ago, over 50 activators have achieved the prestigious **Mountain Goat Award (MGA)** for amassing 1000 activator points. The very first of these was **Alan Poxon M1EYO** from Tintwistle, in Derbyshire in north-west England.

It was also a north-westerner – **Keith Mahood G0OXV** from Ormskirk, West Lancashire – that was first to reach the **Shack Sloth** title for 1000 chaser points. Over 300 licensed Amateurs from across Europe have attained Shack Sloth status.

As well as scoring points per summit worked or activated – summits score either 1, 2, 4, 6, 8 or 10 points (possibly with an added seasonal bonus of three for activators) – the SOTA Database records the number of unique all-time summits activated or chased for a different set of awards.

Awards & Certificates

In all sections of the programme – activator, chaser or short wave listener (s.w.l.) – certificates are available at 100, 250, 500,

1000, 2500, 5000 and 10 000 points (or uniques) – and multiples of 5000 thereafter. The Mountain Goat (activator) and Shack Sloth (chaser/s.w.l.) trophies may be claimed at 1000 points (or uniques).

Awards are made available 'at cost' because for SOTA is a non-profit organisation. Claims should be sent to the awards and events manager **Barry Horning GM4TOE**, with further details available on the SOTA website www.sota.org.uk

Several achievements of note have been recorded by SOTA participants. The third ever Mountain Goat award went to **Shirley Smith MW0YLS**. One of the aims of the scheme was to encourage Radio Amateurs to get out hill-walking – but Shirley was one of the first of several existing hill-walkers who took up Amateur Radio because of SOTA! She was the first Welsh-based Mountain Goat, the first to activate each and every one of the 75 summits in the North Wales SOTA region and remains the only YL MGA to date.

Shirley was a popular member of the SOTA fraternity, often representing SOTA at rallies and exhibitions and organising runs of SOTA sweatshirts and T-shirts. Many current activators were initially coaxed and cajoled into taking part by Shirley. She sadly passed away in late 2006 and remains very much missed.

The leading activators in the world are **Robin Morrison GM7PKT** of Fort William in the western Scottish Highlands and **Harald Schoenwitz DL2HSC** from Boernichen in Germany, both with over 4000 activator points. In terms of unique summits, **Steve Green G1INK** from Buxton, in Derbyshire leads the way with over 380 different



Shirley Smith MW0YLS.

summits activated.

A remarkable feat is that **Roy Clayton G4SSH** from Scarborough in East Yorkshire, who is the world's leading SOTA chaser on the increasingly popular c.w. mode. Roy has worked over 3500 different SOTA summits using Morse, more than 600 clear of his nearest rival – amazing! Roy also writes a monthly online news digest on SOTA-watch.

Top of the s.w.l. honour roll is Belgian based **Peter Destoop ONL5923**. Peter is one of only six short wave listeners (s.w.l.s) to have attained the SWL SOTA Shack Sloth threshold.

Back in 2006, then the 14 year-old **Jimmy Read M3EYP** walked the full length Pennine Way 430km (268) miles), activating eight SOTA summits along its route. That year he also set a record of 84 unique activations in the annual **SOTA Beams Challenge** for under 18s, a record that still stands.

In March 2008, **John Clifford GW4BVE** from Welshpool on the Welsh Borders, became the first and only person to have activated all 156 Welsh SOTA summits. Other individuals have also 'completed' an entire association – but only in the Isle of Man (5 summits) and Belgium (16 summits) which indicates the sheer scale of John's achievement. At the time of writing, SOTA co-founder Richard G3CWI was very close to completing activating all 179 SOTA summits in the English association.

True Purpose

Since its inception SOTA has brought out the true purpose of Amateur Radio in most if not all of its participants – "Self-



Simon Linney M1AVV on Green Lowther SS-056.



Keen SWL ONL5923 Peter Destoop.

training in wireless telegraphy." Taking that ideal literally, as I've already mentioned – some have indeed found SOTA to be the motivation to learn or refresh c.w. But in a wider sense, activators in particular have been driven to develop lightweight and efficient radio and antenna systems, in conjunction with the outdoor equipment necessary for an expedition.

Innovations have included methods to use a trekking pole as part of an antenna mast, waterproof logging systems and rucksack-mounted half-wave antennas. However, it isn't just equipment that has been developed either, for use of rarer band/mode combinations has been promoted via the vehicle of SOTA activations.

The 70MHz (4m) and 1.3GHz (23cm) bands have a small but dedicated following, while the otherwise rarely heard 144MHz c.w. will usually generate a pile-up in SOTA these days! One activator, and co-founder of the programme Richard G3CWI from Macclesfield has conducted summit activations on 10GHz (3cm) with considerable success.

News & Developments

Bringing things up to date with more news and developments over the past year or so, long-time SOTA activator **Simon Linney M1AVV** of Barrow-in-Furness, in Cumbria north England, became a SOTA Mountain Goat on September 11th 2008, with an activation of England's highest peak **Scafell Pike G/LD-001**. Like many 'post-Goat' activators, Simon's enthusiasm remains and he continues to be regularly heard on v.h.f. from the mountains.

John Earnshaw G4YSS from Scarborough, recorded an astonishing feat on March 15th 2009, the last day of the winter bonus period. John activated an amazing **six** SOTA summits that day, all high enough (over 500m ASL) to attract the three bonus points and this included one spectacular four mountain traverse!

John kicked off with an activation of **Little Mell Fell G/LD-037**, just after midnight on March 15th. This bagged him two points, plus three bonus points. After the descent, and a short sleep in his car, he then ascended **Helvellyn G/LD-003** via Swirral Edge. This netted ten points, plus the bonus. John then walked south to the steep sided **Seat Sandal G/LD-022** for six points, plus the bonus and then over to **Fairfield G/LD-007** (8+3). The route back to Patterdale took him over another peak – **St. Sunday Crag G/LD-010** (8+3), but John was not done yet!

After being reunited with his car, John took the decision to 'squeeze' another big one in, and tackled **Blencathra G/LD-008** for eight points plus three bonus. We might think that John's chosen MO would have been 144MHz f.m. using a small handheld for such a gruelling day – but think again! He set up h.f. on each summit, working 1.8 and 3.5MHz (160 and 80m) operating both s.s.b. and c.w. John used the Scarborough Special Events Group club callsign **GX0000/P** on each of his six activations, which netted him an astonishing total of 60 activator points for the day.

Even more incredible is that John is approaching his 60th birthday, and experienced true winter conditions throughout the day. Some of the keenest SOTA chasers managed to work John on all six activations, netting themselves 42 chaser points.

Richard Marshall G4ERP from Bishop's Cleeve completed the South Downs Way long distance trail in mid March 2009, activating a series of SOTA summits en route. Radio operations were carried out from **Butser Hull G/SE-004**, **Chanctonbury Ring G/SE-009**, **Ditchling Beacon G/SE-006** and **Firle Beacon G/SE-010**. A fifth activation from the final Marilyn summit on the trail, **Wilmington Hill G/SE-011**, had to be cancelled due to poor weather and time constraints.

An **International SOTA Weekend** was held on May 2nd and 3rd 2009. This was the idea of **Sean Amesbury MOGIA** and stimulated a special effort by activators in as many world associations as possible to be QRV from a summit. Activity was particularly high on both days, as were the

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500kg brake winch. BARGAIN PRICE

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Winch wall bracket.....£22.99

numbers of cross-association summit-to-summit QSOs.

In August 2008, a group of ten SOTA activators convened in Girvan, in Ayrshire, south western Scotland for an expedition over to the island of **Ailsa Craig**, 16km (10 miles) off the Ayrshire coast in the Firth of Clyde. The island has been a coveted location for WAB and Islands of Scotland expeditions in the past, but its lofty 338m (1110ft) summit (**GM/SS-246**) had never been activated for SOTA. The group spent nearly three hours working pile-ups on a variety of bands and modes, and Jimmy Read M3EYP (working as MM3EYP/P) claimed the first SOTA activation of the summit.

Back in 2007, **Paul Howett G4MD** from Stourbridge in Worcestershire in the West Midlands suggested the idea of weekday evening activations. These started to take place on Tuesdays, and quickly gained support with several activators operating simultaneously on the summer evenings. These events became known as 'SOTA Fun Evenings', and most operation was on 144MHz f.m.

However, several operations switched to participate in the RSGB Activity Contest at 8pm (British Summer Time). The usual contests for involvement by SOTA activators were 144MHz (first Tuesday of the month), 430MHz (2nd Tuesday) and 50MHz (4th Tuesday). My own activities (**M1EYP** from Macclesfield, Cheshire), continued contesting by torchlight through the winter, from my local summit **The Cloud G/SP-015**. I also won the 5th Backpackers contest of the 2009 series from a SOTA summit (**Gun G/SP-013**). Plenty of SOTA activity, including v.h.f./u.h.f. contesting, is expected throughout 2010.

The SOTA Associations

The number of SOTA associations currently stands at 30, but dialogue continues with prospective new associations. Discussions continue with several interested parties as SOTA looks to expand in Asia and the Americas, as well as extend its base in Europe.

The SOTA Management Team is fortunate to have gained the services and digital mapping expertise of **Marc Tinkler G0AZS**. Most other countries don't enjoy the detailed mapping of Ordnance Survey or the regular comprehensive review by RHB (Relative Hills of Britain), so Marc provides essential support with new associations.

The full list of current SOTA associations is shown in **Table 1**.

Table 1:

Prefix	Association	Manager	Active From	Regions	Summits
G	England	M0ZZO	2nd Mar 2002	10	179
GW	Wales	MW0IDX	2nd Mar 2002	3	156
GD	Isle Of Man	GD0NFN	1st Jun 2002	1	5
GM	Scotland	MM0FMF	1st Jul 2002	6	1214
GI	Northern Ireland	GI0RQK	13th Jul 2002	5	66
ZS	South Africa	ZS1AN	1st Jan 2003	10	317
EI	Ireland	EI7GY	15th Mar 2003	4	387
DM	Germany (Low Mountains)	DL2LUX	1st Jul 2003	11	548
SV	Greece	SV1COX	3rd Aug 2003	12	276
OE	Austria	OE1CWA	1st Jan 2004	9	2560
DL	Germany (Alpine)	DD1LD	1st Mar 2004	9	397
HA	Hungary	HA5CQZ	1st May 2005	5	243
HB	Switzerland	HB9TNF	1st Aug 2005	25	1116
W2	USA	KC2EUS	1st Mar 2007	4	118
F	France	F5NEP	1st Apr 2007	11	2649
OK	Czechia	OK1HRA	1st May 2007	13	968
ON	Belgium	ON5EX	1st Jul 2007	1	16
SP	Poland	SQ6JNX	1st Apr 2008	15	222
OH	Finland	OH7BF	1st Apr 2008	4	127
HB0	Liechtenstein	HB0RER	1st May 2008	1	11
LA	Norway	LB1GB	1st May 2008	19	1099
SM	Sweden	SM5KRI	1st Jun 2008	11	352
S5	Slovenia	S58R	15th Jun 2008	10	416
PA	Netherlands	PA0HRM	1st Sep 2008	1	4
OD	Lebanon	OD5RW	1st Sep 2008	4	16
TK	Corsica	F5NEP	1st Mar 2009	1	154
Z3	Macedonia	Z35M	1st May 2009	2	69
W1	USA	N2YTF	1st Jun 2009	13	1103
W6	USA	KI6MWN	1st Jul 2009	5	204
VE2	Canada	VA2SG	1st Sep 2009	10	59

A full list of all expressions of interest from other countries appears on the main SOTA website <http://www.sota.org.uk>. The website also has the contact details for all the Management Team members, some of whom are available to visit radio clubs to give talks and presentations.

The best way to begin participating in SOTA is to register for the online facilities. Firstly, you should register an account on the scoring database – <http://database.sota.org.uk>. This is where you will enter all your SOTA activator and chaser logs. Your scores, and position in the honour rolls, will be calculated automatically.

The database also includes other information such as list of the 50 most recently activated summits, and the 50 most activated summits, currently topped by **The Cloud G/SP-015** in Cheshire, with over 500 activations. Secondly, it is recommended that you also create a user account on SOTA-watch – <http://sotawatch.org>. Here, you can list all your intended future activations, which are then sorted into date/time order and listed with others' plans on the SOTA-watch Alerts page.

Other features in SOTA-watch include the real-time live spots of SOTA activations in progress, additional data and statistics (including your personal progress) about the SOTA summits worldwide, and a

discussion forum. Here, you'll bump into one of the more recent Management Team recruits, Reflector Moderator **Brian Carter G8ADD**, amongst many other participants sharing route and equipment tips.

The listeners' table can be found via the SOTA Yahoo-group – <http://groups.yahoo.com/group/summits>

Smaller World?

It's often said that the world is a smaller place these days. But the SOTA world continues to grow, and exciting times lie ahead. You can participate as a chaser or s.w.l. from the shack, but why not pull on the boots and taste life as an activator? The views, fresh air and exercise, not to mention the take-off and QRM/QRN-free environments, all beat what the shack has to offer!

So whether you prefer the exposed rocky summit of **Tryfan GW/NW-006** in Snowdonia, or a grassy area a few yards from the car park on **Ditchling Beacon G/SE-006** in the South Downs, SOTA activating might just be for you!

For more details about SOTA contact Tom Read M1EYP, at 31 Merebrook Road, Macclesfield, Cheshire SK11 8RH.
Tel: 07990 824158 or via
E-mail: tread@sgfl.org.uk



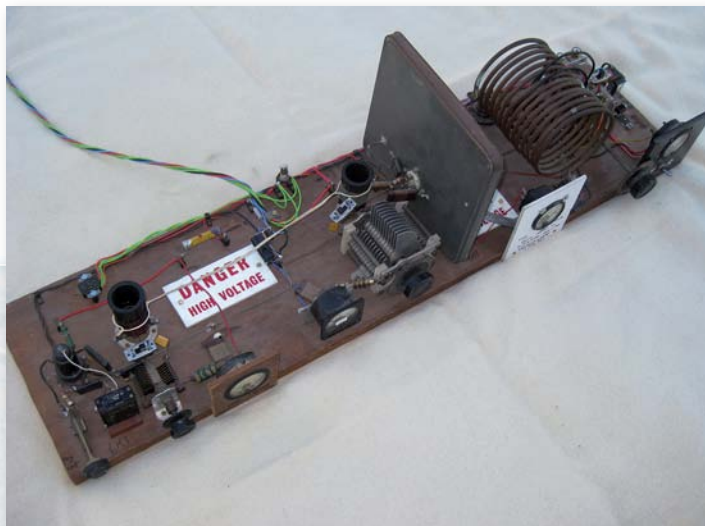
Tim Walford's

valve & vintage

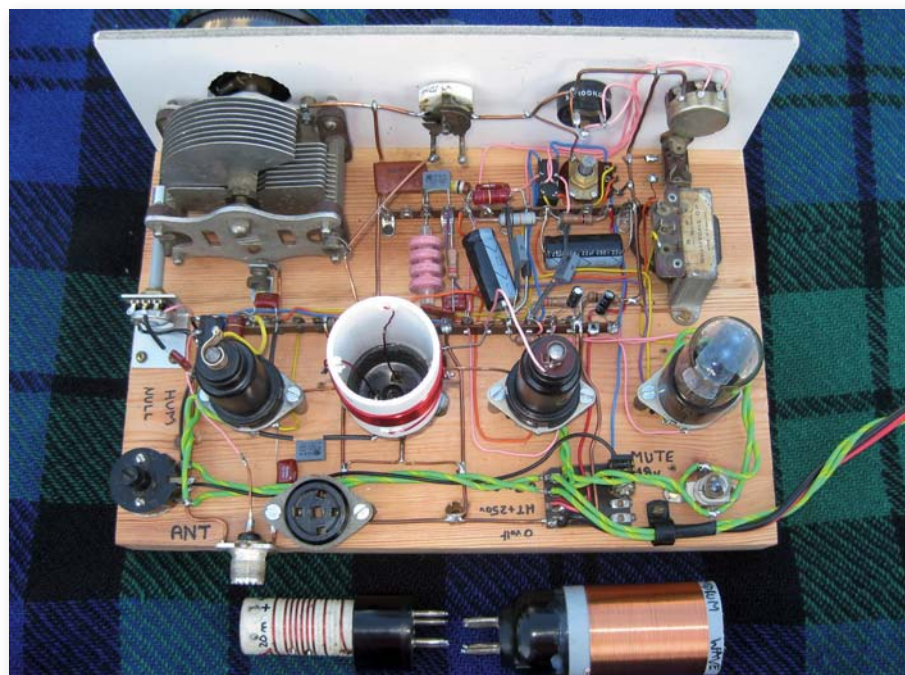
Tim Walford G3PCJ presents a rather unusual vintage receiver project this month and it may require some carpentry skills!

I'm honoured to be allowed to make an unusual contribution to the *Valve & Vintage (V&V)* series because I normally write about rather more recent devices! The *Plank*, **photo 1**, was originally made by the late **Eric Godfrey G3GC** in the 1950s

to demonstrate what he'd used when first licensed in about 1938. Eric died in March 2007 and



The original Plank transmitter as built by G3GC.



The Plank t.r.f. regenerative receiver built by G3PCJ..

I assisted with clearing his radio shack and decided that *The Plank* should be rescued and resurrected as a tribute to him.

The resurrection idea then led me on to the receiver project that I present this month!

Plank Transmitter Described

The Plank is a c.w. telegraphy only transmitter that was originally built for operation on 7MHz (40m) but had been converted at some stage for the 3.5MHz (80m) band. The design comprises a keyed crystal controlled oscillator stage using a 6K7 octal valve, feeding via two loosely coupled resonant circuits, to the output stage which is a single 807 valve – mounted horizontally in the middle of a biscuit tin lid to provide the desired screening!

The whole circuit is mounted on a long wooden plank with (almost) rectangular wiring rather like the domestic radios of the 1920s. With the present 450V high tension (h.t.) supply it produces about 15W of radio frequency (r.f.) output from the impressive output 'tank' coils made from copper brake pipe! This inductor is centre tapped so that the small neutralising capacitor (made up from two stiff wires) feeds r.f. back in anti-phase to the grid to make the stage stable.

I can recall **Ian Keyser G3ROO** spending most of a day operating with

PW Publishing Ltd.,
Arrowsmith Court,
Station Approach,
Broadstone,
Dorset BH18 8PW
E-mail: info@pwpublishing.ltd.uk

So, I decided initially to put it back to the original 7MHz configuration and, after carefully re-activating a suitable power supply unit (p.s.u.) with low input volts, it worked more or less first time!

Later I decided that two-band operation would be desirable, and because all three inductors had air variable tuning capacitors, it was easy to add slide switches and fixed capacitors to make them resonate alternatively on 3.5MHz.

Having got the bit between my teeth on valved projects, I soon realised that I had to build a matching receiver, which I'm presenting this month. So, I set about designing something that would use similar octal valves, with whatever was in my various 'stores' and a similar physical layout without any metal-chassis. (Followers of my kit designs will know I find metalwork uninteresting or expensive if purchased readymade!)

[illegible]

Fig. 1: Circuit of The Plank receiver.

based dual-triode 6SN7 for the audio stages to minimise the number of valves, with the second half capable of driving a small loudspeaker or low impedance headphones.

For the regenerative stage I chose a pentode because altering the screen grid voltage can dictate whether it oscillates or not, and because the screen grid is not part of the resonant circuit, it doesn't alter the frequency. The 6K7 were available so, that's what I used! The receiver circuit (**Fig. 1**) is conventional, except that I found it sensible to add a grounded-grid r.f. stage to isolate the antenna from the regenerative stage.

Regenerative detector receivers are often plagued by hum problems, and I found that grounding the heater supply by the slider of a low value pot across the supply, allowed me to null out the worst of these effects. Using a large old air-spaced variable capacitor, with many other pieces from Eric's stores, enabled the *Plank Receiver* to take shape (**Photo 2**). The three plug-in coils (using old British 4-pin valve bases) allow reception on 7/14MHz, 3.5/1.8MHz, or the medium wave band (which is handy for demonstrations). As well as a good slow motion drive for the main tuning dial, I added a small band-spread tuning capacitor.

Physically, the project comprises of a thick (but planed) wooden plank with a front panel of rigid plastic, which is stiffened by the mounting of the tuning capacitor. Since it lacked any metal sheet to form any continuous electrical ground, I used a lot of 2.5mm² solid copper wire (stripped mains cable) formed into a grid of squares with sides of roughly 25mm.

Transmitter VFO

Although I'm not presenting the circuit this month, when I considered I had a decent receiver, I felt that a 'rock bound' (crystal controlled) transmitter was a bit limiting. So I started thinking about variable frequency oscillators (v.f.o.s) and crystal mixing, as an alternative driver for the *Plank* transmitter keyed first stage.

An easy scheme is a v.f.o. running near 3MHz, mixed with a crystal oscillator on 6.5MHz for 80m or 10MHz for 40m. A twin triode 6SN7 functions as v.f.o. and buffer, feeding into a 6K8 frequency changer whose triode section is the crystal oscillator.

The anode of the 6K8 mixer section has a double-tuned bandpass filter



Crystal mixing type v.f.o. unit to drive the *Plank* transmitter.

to select the wanted mixer output. It also proved possible to use a single air-spaced variable capacitor to cover both 3.5 and 7MHz without changing coils.

Since upwards of 20V peak-to-peak (p-p) of r.f. is needed to replace the crystal in the transmitter (and it would present a high impedance load to the mixer's filter) this stage could have a high impedance output, provided any extra load capacitance from the connecting cable could be compensated by a reduction in its resonating capacitor.

Hence, the filter has separate variable capacitors for the anode and output inductors – enabling slightly different settings of each for 3.5 and 7MHz. The final item was a small r.f. voltmeter to assist in tuning the filter!

Physically, I opted for the same style as the *Plank Receiver* as is evident in **Photo 3**. Incidentally, I've been very surprised how stable a valved v.f.o. running at 3MHz can be when resonated by silver mica fixed capacitors and a good air variable!

The Future

Having got this far, I decided that the rig has to be given an a.m. 'phone capability – c.w. entries in my log book are extremely rare! I had some 6L6s

for a push-pull modulator output stage, which could be driven by a 6SN7 speech amplifier and phase splitter. The snag is the modulation transformer because for conventional anode modulation of the 807, it would need unusual turns ratios.

Ordering a specially made modulation transformer isn't economic nowadays, so I have to consider a mains transformer – but even this is difficult, as it needs a push pull primary and a single-ended high voltage secondary. I hope to try a standard 115V twin primary transformer with its twin 55V secondary windings connected in series for a nominal 115-0-115:110 scheme – this should suit a modulator and r.f. power amplifier (p.a.) stage running off about the same supply voltage.

Finally, I hope readers will realise that none of these plank projects are intended as kits but they might inspire you to see what is in your junk box and experiment (carefully) – because fully equipped machine shop is not necessary! Throughout this project I have been kindly helped by **Richard Booth G0TTL** with supplies of high voltage components – and the good news is that he's examining the possibility of some kits using valves!

Future Projects: Although we are only presenting the receiver project that resulted from Tim G3PCJ's vintage-style activities, I'm confident that enough readers will be interested in the full transmitting circuitry (particularly the valved crystal-mixer v.f.o.) to enable us to proceed further. I've discussed the possibilities with Tim and we both look forward to hearing from interested readers. **Editor.**

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HF/6/2/70/23cms





David Butler's

vhf dxe

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 numerous 50MHz Sporadic-E openings during October and has news of activity on the 70MHz band.

Two months ago in this column I wrote, "Although the summer Sporadic-E season is now over I have noticed that in recent years there has been an upsurge in Sp-E activity on the 50MHz band during October". And indeed that was the case with a total of 14-days during the month when Sp-E openings were reported on the 50MHz band! One opening even reached the 70MHz band on October 25th with contacts being made into Portugal and Slovenia.

I also wrote "Keep a look out on the 144MHz and 430MHz bands for autumnal tropo openings during periods of high pressure weather systems". This forecast also proved correct with some good tropospheric openings to southern France and Spain being reported on the v.h.f. and u.h.f. bands during October.

However, these Sp-E and tropo openings generally favoured stations located in central and southern England and Wales. In addition there were some favourable meteor scatter contacts made during the Orionids shower and, surprisingly, one auroral

back-scatter opening even in the depths of sun spot minimum.

Sporadic-E Openings

It didn't surprise me that there were a considerable number of 50MHz Sp-E openings reported during October. Just what causes this to occur in October I can't say, but I can see a great correlation between sun spot maximum and this very much extended sun spot minimum. Around sun spot maximum there is always a terrific amount of geomagnetic activity with consequent auroral back-scatter, F2-layer and Trans-Equatorial propagation.

The solar activity tends to disrupt, but not eliminate, the formation of Sp-E activity and you will notice over time that certain types of E-layer propagation are more prevalent at sun spot minimum. There have always been a very small number of openings in October but if you take a look at the table, **Fig. 1**, you will observe that there has been a significant rise during the last four years 2006-2009. I suspect however that Sp-E openings during October 2010 will be far less than that experienced during 2009 due to a possible rise in solar activity.

The 50MHz band was open for 14 days during October with the more lengthy openings occurring on the 20th, 21st, 24th and 25th. The opening on October 20th commenced around 1730UTC and lasted just over two hours during which time stations in the southern half of England and

Wales made c.w. and s.s.b. contacts into Italy (I), Sardinia (IS0), Sicily (IT9) and Malta (9H). Some of the DX contacted included the stations of IK0FUX, IK0OKY, IW0FFK, IW0SAF, IZ0FMA, IZ0GYP, IK5HHA, IW7EBE and IS0GQX.

The low power beacons stations of IQ0AH (50.029MHz), I5MXX (50.007MHz), IK5ZUL (50.021MHz) and IT9X (50.056MHz) were also heard with very strong signals. At my QTH (IO81 Herefordshire) contacts were made with the stations of IOJX, IK0TUM, IW0GXY, IK5ACO, IZ5EME and 9H1XT (JM75) at 2260km – not bad for a late season Sp-E opening.

On the following morning at 0758UTC of the 21st I heard the Spanish beacon EA4Q (50.061MHz) peaking 559 for over 20 minutes before disappearing into the noise. Later, between 1045-1235UTC I made c.w. and s.s.b. contacts with the stations of CT1FJC (IM57), CT1HZE (IM57), EA4ZK (IN80), EA7/G1WUU (IM87) and EA7DUD (IM76) at 1700km distant. The beacon stations of CS5BALG (50.035MHz), CS5BCP (50.032MHz), CS5BLA (50.075MHz), ED7YAD (50.074MHz) and IQ0AH were also heard very strongly at times.

A very small auroral back-scatter event, caused by a coronal hole, occurred on October 22nd and effectively put paid to any Sp-E activity for a couple of days. By October 24th the E-layer had recovered sufficiently to allow an opening to take place between 1300-1500UTC.

Year	Openings in October	Countries Worked from the UK	50MHz DXCC
2004	4	6	9A, CN, I, IS, S5, YU
2005	10	8	CN, CT, EA, EA9, I, IT, LZ, S5
2006	17	33	5B, 9A, CN, CT, CU, DL, EA, EA6, EA9, ES, F, HA, HB9, I, IS, IT, LZ, OE, OH, OH0, OK, OM, OZ, PA, S5, SM, SP, T9, UZ, YL, YO, YU, Z3
2007	16	29	1A, 4Z, 5B, 9A, 9H, CN, CT, DL, E7, EA, EA6, ES, F, HA, I, IS, IT, LZ, OE, OH, OK, OM, S5, SP, T9, UT, YO, YU, ZB
2008	10	16	9A, CN, CT, DL, EA, HA, I, IS, IT, LZ, OE, SP, SV, UZ, YO, YU
2009	14	19	9A, 9H, CT, DL, EA, EA6, HA, I, IS, IT, OE, OZ, S5, SV, UT, YO, YU, Z3, ZB

Fig. 1: The rise in countries worked on 50MHz over the last few years.



Fig. 2: It's a well-equipped station at IS0AWZ.

This event was different from others reported during the month insofar that propagation was more to the east rather than to the south and it also allowed stations in northern England and Scotland to participate.

Contacts were made with stations in areas of Europe such as Austria (OE2UKL JN68), Hungary (HA8FK KN06), Poland (SP6MLK JO80), Romania (YO2IS KN05), Serbia (YU1KY KN04) and Slovenia (S51WX JN75). Beacon stations are an essential aid for propagation monitoring and although very low power they can often be heard when suitable conditions occur. During the Sp-E event on October 24th many stations reported hearing HG1BVB (50.007MHz), HG7BVA (50.031MHz), HG8BVB (50.022MHz), OE3XAC (50.066MHz), OE3XLB (50.058MHz) and S55ZRS (50.022MHz).

A lengthy four hour opening occurred between 1020-1435UTC on October 25th, with contacts being made over much of southern Europe. Operators situated in central, southern England and Wales reported making c.w. and s.s.b. contacts with stations such as 9A5CY (Croatia), CT1FJC (Portugal), EA5/G3XGS (Spain), EA6QY (Balearic Islands), HA2VH (Hungary), I0/LZ2OG (Italy), IS0AWZ (Sardinia) shown in the photograph, Fig. 2, IT9CJC (Sicily), OE4VIE (Austria), SV3FUP (Greece), YU1EO (Serbia) and ZB2EO (Gibraltar).

Chris Hore G6GWX (Cornwall IO70) mentions that it was very interesting to hear Sp-E openings during October. His 50MHz contacts included the s.s.b. station of IW0SAF (JN63) contacted at 1812UTC on October 20th and IK0FTA (JN61),

IK4UPI (JN54) and CR5A (IM59) during a midday opening on October 25th.

The 70MHz Band

On to 70MHz now and I have received some excellent news from the Finnish Communications Regulatory Authority (FICORA). From November 5th 2009, stations in Finland and associated territories are allowed permanent access to the 70MHz band. Three new DXCC countries, Finland (OH), Aaland Island (OH0) and Market Reef (OJ0) can now use the frequency bands 70.000-70.175MHz and 70.225-70.300MHz.

Unfortunately, the section 70.175-70.225MHz is currently used by commercial operators but it's expected that these will eventually move to other frequencies. Up to 100W output power is allowed depending on licence class but power restrictions do apply for stations located closer than 50km to Norwegian and Russian borders. Full details of all international 70MHz allocations can be found on the Four Metres website

<http://www.70mhz.org>

Ron Price GW4EVX mentions that as far as he knows he is the only 70MHz contester who operates portable both as a vehicle-based station and also as a backpacker. A backpacker by the way is someone who scales hilltops or mountains carrying all of the communication equipment including batteries and antenna.

Ron uses a Spectrum transverter driven at 28MHz by a Yaesu FT-817 transverter. Both the transverter, running 30W output, and the transceiver are powered from a

David Butler G4ASR

Yew Tree Cottage
Lower Maescoed
Herefordshire HR2 0HP
Tel: (01873) 860679
E-mail: g4asr@btinternet.com

12Ah sealed lead-acid battery. The antenna is a Sandpiper 3-element Yagi supported on a 5m tall mast (made up of 1-inch diameter aluminium tubing, 2 x 2m and 1 x 1m). This makes quite a heavy backpack but it helps to keep him fit when carrying it all up the hills! Fortunately he lives in north-east Wales very close to the Clwydian Range so there is no shortage of suitable sites to operate from.

A favourite summit is Moel-y-Gamelin which at 578m a.s.l. gives a very good take-off on the v.h.f. bands as shown in the photograph, Fig. 3. It's a steady slog of about 50 minutes to reach the summit but well worth the effort. Sometimes the portable station of GW4EVX/P is vehicle based and he is able to use a much bigger battery to run an 80W power amplifier and 6-element Yagi.

The 70MHz Sp-E season this year occurred throughout the months of May, June, July and August 2009. The first event was a short opening on May 13th and the last a very brief opening on August 28th. There were 12 days of openings in May, a total of 23 in June, a similar total in July with 24 days of openings but only NINE days during August when the 70MHz band was open for DX contacts.

In total there were 19 DXCC countries reported to have been worked by UK stations during these 4 months. These included stations located in Croatia (9A), Portugal (CT), Madeira Islands (CT3), Azores (CU), Germany (DL), Spain (EA), Balearic Islands (EA6), Canary Islands (EA8), Estonia (ES), Luxembourg (LX), Czech Republic (OK), Slovakia (OM), Faroe Islands (OY), Denmark (OZ), Slovenia (S5), Greece (SV), Dodecanese (SV5), Crete (SV9) and Gibraltar (ZB).

It was reported that 70MHz stations well over 2500km distant were worked on many occasions during June and July. Some of the longer distance contacts made from the UK included c.w. and s.s.b. contacts with the stations of CT3HF (IM12), CU8AO (HM49), SV1OH (KM18), SV2DCD (KN00), SV3BSF (KM08), SV5BYR

(KM46) and SV9CJO (KM25). The station of D44TD (Cape Verde HK86) was heard on a few occasions during the summer but unfortunately no two-way QSO has so far been completed.

The distance from Cape Verde to central England is around 4300km, so 70MHz conditions have to be quite exceptional to make the contact. Other stations worked from the UK during the summer season included 9A2SB (JN95), CT1JAD (IM57), DI2PM (JO30), EA7BYM (IM66), EA6CA (JM19), EA8BPX (IL18), ES3RF (KO29), LX2LA (JN39), OK6IM (JN69), OM3CLS (JN99), OY1CT (IP62), OZ2PBS (JO55), S57NBT (JN76) and ZB3B (IM76). Of course, there were considerably more stations active than this but it does give you a flavour of the DX activity that can now be found on the 70MHz band during the summer season.

David Rumbold G4RYV (Surrey IO91) reports that he is using a Spectrum Communications TRC4-2SL transverter running 25W output into a home-made 5-element Yagi. During a Sp-E opening on July 2nd he contacted the station of EA1YV (Spain IN52) and heard CT1DHM (IN62) in neighbouring Portugal. Other 70MHz contacts made in July included the stations of EA6FB, EA6SX and EA6VQ.

Up & Coming Activity

Three major meteor showers (Geminids, Ursids and Quadrantids) occur in the next few weeks and all should create additional activity on the v.h.f. bands. Even if you're not interested in meteor scatter and the regimented operating procedures, it's still worthwhile taking a look at the 50MHz band in particular. That's because ionisation levels can often be quite high during the peak of the shower and it is possible to make conventional s.s.b. contacts in a reasonably relaxed manner. Try it and you'll discover that at the low end of the v.h.f. range distant signals can remain audible for many minutes at a time.

The **Geminid** shower is active in the period December 7th-17th with maximum activity occurring on Monday December 14th. This is mainly a night-time event, the shower rising at 1800UTC and setting at 1000UTC. The best direction during the shower is to south-east Europe around 0400-0500UTC.

The **Ursid** shower follows on

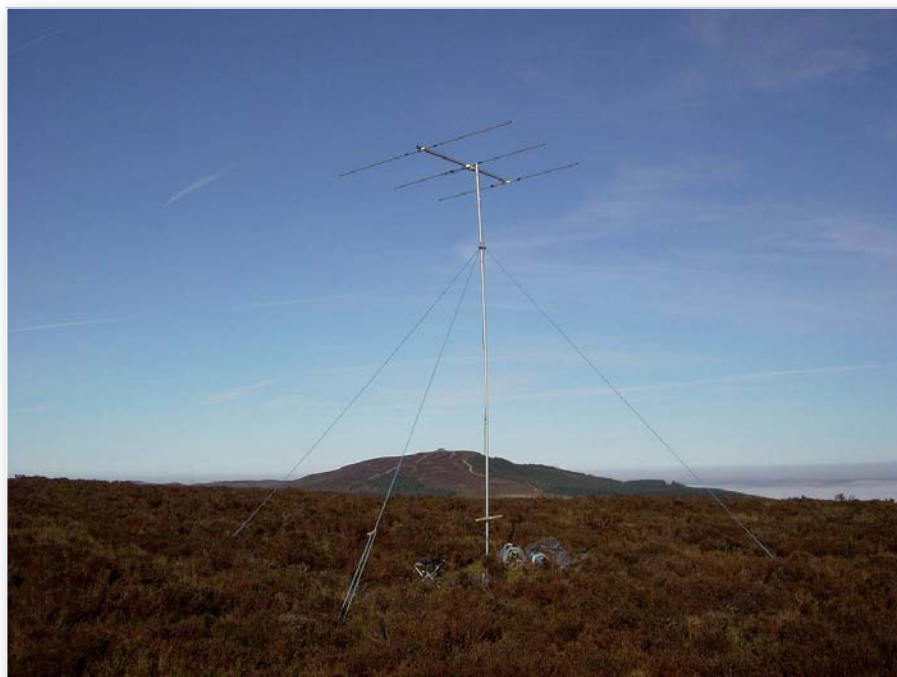


Fig. 3: It can be lonely operating portable, as GW4EVX's station shot shows.

from the Geminids and takes place between December 17th-26th with most meteor activity occurring on Tuesday December 22nd. North-South paths are particularly poor during this shower but those to the north-east, east and south-east are quite productive at any time during the 24 hour period.

The **Quadrantid** shower, the first in 2010, peaks sharply on Sunday January 3rd with significantly less activity for two days either side of maximum. The best path is north-east towards Sweden, Finland and the Baltic States around 1200-1600UTC. A weekend peak always guarantees an increase in activity so why not take a listen.

The 50MHz band may possibly sound like there's a Sp-E opening in progress, but with signals coming in from most directions. During these showers you should hear s.s.b. activity between 50.150-50.200MHz and around 144.200MHz. Operators using JT6M can be found on and around 50.230MHz and those using FSK441 around 144.370MHz.

Don't Forget!

Don't forget that in recent years there have been some very good tropospheric openings on the 144MHz and 430MHz bands during December. In the last six years c.w. and s.s.b. contacts have been made with DX stations located in Scandinavia-Denmark (OZ), Finland

(OH), Norway (LA) and Sweden (SM).

There have also been tropo openings further afield into the Baltic States and nearby countries that have included Belarus (EW), Estonia (ES), Kaliningrad (UA2), Latvia (YL), Lithuania (LY), Russia (UA) and the Ukraine (UR).

The v.h.f. and u.h.f. bands will often be open in December to Germany (DL), Austria (OE), Switzerland (HB9), Czech Republic (OK) and Poland (SP) so just keep an eye on the weather maps for periods when high pressure systems move in and settle over the UK and areas of Europe.

The Radio Society of Great Britain (RSGB) have organised a series of short cumulative contests for four days during the Christmas holiday period.

You'll find contest activity on the 50, 70, 144 and 430MHz bands between 1400-1600UTC on December 26th, 27th, 28th and 29th. The contest exchange is RST, serial number and six figure locator, for example 59001 IO81MX. Further details can be found at <http://www.rsgbcc.org/vhf>

Deadline Time

That's it again for this month. If you do 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. Have a Happy Christmas and I'll see you in the New Year.

73 David G4ASR



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

AYRSHIRE (Scotland)

Kilmarnock & Loudoun ARC
Graham MM0GDM: (0780) 2954 739
E-mail: mm3gdc@btinternet.com
www.klarc.org

We meet every 2nd and 4th Tuesdays at the clubhouse at E. Ayrshire Internal Transport, 36a Main St., Crookedholm, Kilmarnock KA3 6JS

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, Amphil 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. Mid-September sees commencement of the Advance Licence Course run by Alison Johnson G8ROG, details from g3ngx@radarc.org

CAMBRIDGESHIRE

Huntingdonshire ARS
Gerald G8AKL. Tel: (01487) 740794
E-mail: hunts.hams@yahoo.co.uk
www.hunts-hams.co.uk

Huntingdonshire ARS meets at the Medway Centre, Medway Road, Huntingdon PE29 1SF. Meetings are from 7.30pm until 10pm on the 2nd & 4th Thursday of the month.

Peterborough & DARC G4EHW

www.radioclubs.net/padarc
Meets on 4th Wednesday of the month at Southfields Community Centre, Stanground, Peterborough. PE2 8RZ. Directions and full details on website.

CHESHIRE

Chester & DRS
Barbara Green.
Tel: (07957) 870770
E-mail: barbara@rutland.go-plus.net
www.chesterdars.org.uk

The Chester & District Radio Society meets on Tuesday evenings at the Burley Memorial Hall, Common Lane, Waverton, Chester CH3 7QN.

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

Adie Dodd. Tel: 0795 7765511
www.gx4mws.com
The Macclesfield & District Radio Society meets every Monday at the Pack Horse Bowling Club, Westminster Road, Macclesfield SK10 3AT at 8pm. Licence courses are run year round and visitors are always welcome.

Stockport RS

David Simcock. Tel: 0161 456 7832
E-mail: secretary@gx4mws.com
www.stockportradiosociety.co.uk
The Stockport Radio Society meets on the first and third Tuesdays at their new location of: Waltheow House, Shaw Heath, Stockport SK2 6QS

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
Steven G7VOH
Tel: (01209) 844939
E-mail: g7voh@btinternet.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.

Newquay and District ARS

Joe Bell. Tel: (01726) 891557
E-mail: joe_bell@btinternet.com
www.btinternet.com/~kevin.francks/index.html
The Newquay and District ARS meets every other Thursday at Treviglas Community College, Bradley Road, Newquay. TR7 3JA with either arranged talks on the evening or just a general chat amongst members. Also the club offers training towards the Foundation Exam on club nights and then the opportunity to take the Foundation Exam.

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.

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 AR6ES

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 Highton. Tel: (01773) 783658
E-mail: Snadarc@aol.com
www.snadarc.com/
The South Normanton Alfreton and District Amateur Radio Club meets in the Village Hall, Community Centre, Market Street, South Normanton, Derbyshire DE55 2EJ.

DEVON

Exmouth ARS
Mike G1GZG. Tel: (01395) 274172
E-mail: micael.newport1@btinternet.com
The club meets on the 1st and 3rd Wednesdays

of each month at 'The Scout Hut', Marpool Hill, Exmouth Devon EX8 1TD.

Exeter ARS

Phil 2E0PCJ
Tel: (01392) 877413
E-mail: philjays@aol.com
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

Blackmore Vale ARS (BVARs)
Nick Perrin. Tel: (01747) 838936
E-mail: bnperrin@theiet.org
www.radioclubs.net/bvars/
BVARs meets in The Youth Club, Coppice Street, Shaftesbury Dorset SP7 8PF each Tuesday evening at 7.30pm. The Club callsign is G4RBV. The main meeting is the second Tuesday of the month and details of events and full details of the Club can be found on the website.

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 meeting of each month is the formal evening, all others are basically shack and Natter nights.

DUMFRIES & GALOWAY (Scotland)

The Wigtownshire Amateur Radio Club
Ellis Gaston. Tel: (01776) 820413
Web: www.gm4riv.co.uk
The club meets every Thursday from 19:00 Hrs at the The Aird Unit, Stranraer Academy, Stranraer, DG9 8BQ, South West Scotland.

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 E6RC

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 0LQ 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

www.g3co.com.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@g0mwrt.org.uk
www.g0mwrt.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, Essex CM2 9RX at 7.30pm. - All welcome. August 4th "Where do our wavelengths come from?" - The work of the IARU by Peter Chadwick G3RZP. Sep. 1st "D Star" by Murray Niman G6JYB and Clive Ward G1EUC.

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.

South Essex Amateur Radio Society

Dave (G4UVJ)
Tel: (01268) 697978
E-mail: southessex.ars@btinternet.com
www.southessex.ars.btinternet.co.uk
Local Network: 145.225MHz
Meets: Meet at 8pm on the second wednesdays of each month at South Benfleet Primary School, High Rd, South Benfleet, Essex SS7 5HA. (Entrance: 51°33'10.45N 0°33'39.65E). (Opp. Smiths Wood Yard). All welcome. Meetings are: July 26th we're holding the Waterside Farm Railway Special Event Station.

FIFE (Scotland)

Glenrothes & DARS GM4GRG
D Francis MM0DYX.
Tel: 01383 823878
Meet Wednesdays at the Football Pavillion, Station Rd. Thornton Fife KY1 4AX. Club Chairman Ken GM3YBQ runs course at all licence levels.

GLOUCESTERSHIRE

Cheltenham ARC G5BK (CARA)
Derek G3NKS.
Tel: 01242 241 099
E-mail: g3nks@blueyonder.co.uk
www.caranet.co.uk
The club meetings are held on the first Friday of each month, starting at 8p.m. at Prestbury Library, The Burgrave, Cheltenham, Gloucestershire, GL52 3DN.

Forest of Dean Amateur Radio Group

Adrian Lane M3TVF
Email: adrian@fodarg.com
www.fodarg.com
We will be meeting every Tuesday night as from now at 19:30 hours at Ruardean Sports & Social Club, Ruardean Hill, Drybrook, Gloucestershire GL17 9AS. Anyone with an interest in any aspect of radio or electronics is welcome.

Gloucester Amateur Radio and Electronics Society

Anne 2E1GKY/M3GKY
Tel: (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 at 7.30pm until 10pm except for Bank Holidays when we operate from a local carpark. Monday Oct 5th Talk by Brian G4CIB on LUNDY, 12th Sale of Junk and Books, 19th Operating Club Equipment, 26th Informal Evening.

GWYNNEDD (Mid-Wales)

Merion ARS

John Tel: (07824) 562656

Email: tawelfan@talk21.com

<http://meirionars.multiply.com/>

Merion amateur radio society meet on the first Thursday of each month at The Royal Ship Hotel in Dolgellau Gwynedd LL40 1AR at 19.30. Visitors and new members are very welcome. Regular talks, all the details for meetings and special events can be seen on the club website.

HAMPSHIRE

Andover Radio Amateur Club.

Martin M0MWS. Tel: (01980) 612070

E-mail: martinsmith@kukltd.co.uk

www.arac.co.uk

The Andover Radio Amateur Club meets on the first and third Tuesdays in the month at the Club venue in The Village Hall at Wildhern, SP11 0JE. Map Ref SU305010 at 19.30 hours.

Fareham & District ARC

Alastair Sinclair.

Tel: 01329 235397

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 Fareham Sailing & Motor Boat Club, The Boathouse, Lower Quay, Fareham. PO16 0RA

Farnborough & District Radio Society (FDRS)

Derek G3OFA

E-mail: mail@fdrs.org.uk

www.fdrs.org.uk

Meets every 2nd and 4th Wednesday in the month at 7.30 for 8.00 pm in the Farnborough Community Centre, Meudon Avenue, Farnborough, Hampshire, GU14 7LE Visitors and new members are always most welcome.

Hordean & District ARC

Stuart Swain. Tel: (02392) 472846

E-mail: stuart.swain@hotmail.co.uk

www.hdarc.co.uk

The Hordean & 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. The will be running a Foundation Licence course and exam in October in the Waterloooville area. Pre-registration is essential, and more details can be obtained from Stuart.

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-10.00pm 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.

Itchen Valley ARC

Charlie M0WYM. Tel: (02380) 439560

E-mail: secretary@ivarc.org.uk

www.ivarc.org.uk

The Itchen Valley ARC meets on the second and fourth Friday of each month at The Scout Hut, Brickfield Lane, Chandlers Ford, SO53 4DP, doors open 7.30 pm. See website for our programme, visitors welcome. Join our club net on 145.550, Thursday evenings at 8.30 pm. The club is a registered as an RSGB examination centre.

Lymington Community Association Radio Club

Keith G8MZF Tel: (01590) 672337 (work)

(02380) 849395 (evenings)

Email: lymcomass@aol.com

The club meets at Lymington Community Centre, New Street/Cannon Street, Lymington SO41 9BQ, on Friday nights. Talk-in on the night on or near 145.550 club call M0LCC. All are welcome. Start time hopefully 7.30pm bar open from 7.00pm. Plenty of free parking nearby.

HERTFORDSHIRE

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.

Stevanage & District ARS

John. Tel: (01462) 459254

Secretary E-mail:

jmcutcheon@freeuk.com

www.sadars.org/

The Stevanage and District Amateur Radio Society meet every Tuesday 7.30pm, at the Stevanage Resource Centre, Chells Way, Stevanage, SG2 0LT. Regular talks and demonstrations. Registered centre for Foundation/Intermediate/Advanced exam courses (40+ passes last year). Club Net last Friday of month 7.30pm on 145.450MHz. All welcome, see website for further details.

HUMBERSIDE

Hull & District ARS

Keith Shaw. Tel: 01482 217776

E-mail m3shw@yahoo.co.uk

raymond penny Tel: 01482 376835

E-mail penibs@penibs.karoo.co.uk

Hull & DARS meet every Friday night at 1930 - 2200 at the walton street leisure centre, goathland close, walton street hull, East Yorks HU3 6NG.

JERSEY

Jersey Amateur Radio Society GJ3DVC

Rob Luscombe (secretary) ZJ0RZD.

Tel: 07797 923916

E-mail: gj3dvc@gj3dvc.org.je

<http://www.radioclubs.net/gj3dvc/>

The Jersey Amateur Radio Society meets every Friday at 7.30pm at The German Signal Station, Rue Baal, La Moye, St. Brelade, Jersey, JE3 8HQ, also on a Wednesday evening from time to time to maintain, alter and improve the shack, antennas etc. and also for club training. Coffee and car parking available, visitors are always welcome, shack rental available. See our website for further information.

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.

Hilderstone Radio & Electronics Club

Mike Howland

E-mail: g4mix@waitrose.com

www.g0hrs.org.uk

Meetings now at The Science Block, Chatham House School, Chatham Street, Ramsgate, CT11 7PP on 2nd and 4th Friday of the month at 7.30pm.

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.

LANARKSHIRE (Scotland)

Mid-Lanark ARS

Dennis. Tel: 07505529335

Email: mm0dnx@yahoo.co.uk

www.mlars.org/

The Mid-Lanark ARS meets on Friday evenings at the Newarthill Community Education Centre, 288 High Street, Newarthill, Motherwell ML1 5JU. Visitors and new members are very welcome. The club has HF and VHF shacks for use on club evenings. Courses for foundation, intermediate

and full licences are also run at the club. See web site for details of our upcoming meetings.

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 220ft high chimney. Newcomers are always welcome.

Morecambe Bay ARS

Martin Hazel. Tel: (01524) 848193

E-mail: martin@mbars.internationalham.com

www.mbars.internationalham.com

Morecambe Bay Amateur Radio Society meet at the Trimpell Sports and Leisure Club, Out Moss Lane Morecambe, every Tuesday evening from 1930. They also have a new website at all of their events calendar for the next year is to be found there.

Thornton Cleveleys ARS (G4ATH, & G6GMW)

John. Tel: (01253) 399377.

E-mail: m3waz@hotmail.co.uk

www.tcars.org.uk

Meet Monday evenings at the Frank Townend Center, Kensington road, Cleveleys, Lancashire FY5 1ER starting from around 7.30pm.

LEICESTERSHIRE

Loughborough & District ARC

Chris Walker. Tel: (01509) 504319

Email g1etz@aol.com

www.radioclubs.net/ladarc

Loughborough & District Amateur Radio Club meets at the Glenmore Community Centre, Thorpe Road, Shepshed, LE12 9LU on a Tuesday evening from 7.30pm. The clubs programme of events can be found on our websites. Visitors and new members most welcome.

LINCOLNSHIRE

Franklin ARC

Brendan.

Tel: (01754) 820204

E-mail: bren.sykes@btinternet.com

We meet the last Wednesday of every month at the Victoria Inn Wainfleet Road Skegness Lincolnshire PE25 3RG. @19:30hrs. We also have regular nets, on the 1st and 3rd Tuesday of every month on 145.550± @20:00hrs. Registered as an RSGB examination center for courses run by G0OTH Robert. We are organizing special events, field days and our own rally (See Rallies Section) this year so listen out for us, our call sign is M0FRFC.

Lincoln Short Wave Club

Pam Rose Tel: 01427 788356

E-mail: pamelagrose@tiscali.co.uk

www.g5fz.co.uk

The Club meets every Wednesday 8 p.m. at the BSA Social Club, Village Hall Lane, Aisthorpe, Lincoln, LN1 3SJ and some Saturday mornings in the shack for Foundation/Intermediate course tuition and to air the club call signs G5FZ and G6COL.

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.

Stenigot "Chainhome" Amateur Radio Club

Steve Burke M5ZZZ.

Tel: (01507) 600202

E-mail: m5zzz@btinternet.com

www.stenigotchainhomearc.co.uk

Meetings are held on the third Friday of the month commencing 19.30 at Gayton le Marsh Village Hall, Gayton le Marsh, Lincolnshire. LN130NW.

LONDON

Cray Valley Radio Society

Bob Treacher.

Tel: 020 8265 7735

www.cvr.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.

Edgware & District Radio Society

Michael G4RNW.

Tel: 020 8950 0658

E-mail: michael.stewart5@ntlworld.com

Edgware & District radio Society meet at the Watling Community Centre, 145 Orange Hill Road, Burnt oak, Edgware HA8 0TR.

Radio Society Harrow

Linda Casey Tel: 020 8386 8586

Email: lcassey@imperial.ac.uk

www.g3efx.org.uk

The Society meets on Friday at 20.00 on the 2nd and 4th weeks of every month, at The Elsie Fisher Room, St Lawrence Centre, St. Lawrence Church, 2, Bridge Road, Eastcote, Pinner HA5 2SJ. All welcome! We also run exam courses - see website for details

Southgate ARC

David Sharp. Tel: 01992 422622

E-mail: david.sharp1@tesco.net

The Southgate Amateur Radio Club meets on the second Wednesday of the month at Hazelwood Lawn Tennis and Squash Club, Ridge Avenue, Winchmore Hill, London N21 2AJ at 7.30 for 8 pm.

Wimbledon and District ARS

Jim Bell M0CON

Tel: 020 8874 7456

E-Mail: jamesm0con@o2.co.uk

<http://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 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 LOTHIAN (Scotland)

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@wadarc.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@golgi.co.uk

www.norfolkamateurradio.org

The Norfolk Amateur Radio Club meets every Wednesday at the Eaton CNS School, Eaton Road, Norwich, NR4 6PP, where it meets weekly, from 7-10pm, usually in 6th form centre at front of school, every Wednesday from 7-10pm.

North Norfolk ARC

Tony Smith.

Tel: (01263) 821936

E-mail: g4fai@btinternet.com

www.radioclubs.net/nnarc/

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.

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.

Telford & District ARS

Mike Street. Tel: (01952) 299677

E-mail: m1streetg3jkr@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.

NOTINGHAMSHIRE

Workshop Amateur Radio Society (W.A.R.S.)

'Daz' Spence. Tel: (01623) 747314

E-mail: g3rcw@qsl.net

www.qsl.net/g3rcw/

Meets every Tuesday at 7:00 pm. Our clubhouse is located at 59 - 61 west street, Worksop, Nottinghamshire. S80 1JP. Exams and courses run frequently for all licence levels. Licensed bar & hot food available on club meet nights. Membership fee for the year is £10.

SOMERSET

Mid Somerset Amateur Radio Club

Shaun MORTS/G11OK

E-mail: m0rts@hotmail.co.uk

Shaun has reformed the Mid Somerset Amateur Radio Club which unfortunately folded in 1997. The new club now meets on the 2nd tuesday of every month at: Peter Street Rooms, Peter Street, Shepton Mallet BA4 5BL at 7:00pm.

North Bristol ARC

Dick Eford 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 examination, 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 Thursday evening at Novers Park Community Centre, at the rear of 122-124 Novers Park Road, Filwood, Bristol BS4 1RN

Yeovil ARC

Steve G7AHP

E-mail: steve@g7ahp.co.uk

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).

Weston-super-Mare Radio Society (WSMRS)

Kirstie M3UWI (01934) 613094

Email:- Kirstiejones1@msn.com

www.radioclubs.net/wsmrs/

Meets every Monday at the Devonshire Road social club BS23 4LG at 8pm. Main meeting including talks/Guest speakers every 3rd Monday of the month. Training in all levels of Licence available.

SOUTH GLOUCESTERSHIRE

Thornbury and South Gloucestershire ARC

Tony. Tel: (01454) 417048

E-mail: tonytsgarc@sky.com

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.

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 10am 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, Masfield Road, Leyfields, Tamworth B77 8JB.

SUFFOLK

Bury St Edmund's ARS

George Woods G3LPT.

Tel: 01359 259518

Darren Coe G7SDC

Tel: (01284) 701732

storno@yahoo.co.uk

www.radioclubs.net/bsears/

The Club meets on the third Wednesday of the month (except August and December) at the Culford school, Culford, Bury St. Edmunds, Suffolk IP28 6TX at 7.30PM. Visitors are welcome. Please see our web site for further details.

SURREY

Coulsden Amateur Transmitting Society

Steve Conway G7SYO

Tel: (01737) 353517

E-mail: steve.conway@landg.com

www.sthost.co.uk/webpace/cats/

Regular meetings are held on the second Monday in each month at: St. Swithun's Church Hall, Grovelands Road, Purley, Surrey CR8 4LA at 20:00 to 22:00hrs. On the first Saturday of month at 1715 Crescenta Valley / CATS Net on Echolink Normally via MB7IPL node on 145.2875 MHZ.

SRCC - Surrey Radio Contact Club

Ray Howells G4FFY

Tel: 0208 644 7589

www.g3src.org.uk/

The club meet 1st and 3rd monday evenings of each month at Trinity School, Shirley Park, CROYDON, CR9 7AT with meetings starting at 7.45p.m.

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 G8YFA. Tel: 0191 280 1981

E-mail: mail@g0nwm.com

www.g0nwm.co.uk

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'.

WARWICKSHIRE

Coventry Amateur Radio Society

John Beech G8SEQ.

Tel: 079 58777 363

www.coventryradio.org.uk

Coventry Amateur Radio Society meets most Fridays at 2030hrs in St Bartholomew's Church Hall, Brinklow Road, Binley, Coventry CV3 2DT. Further details on CARS activities can be obtained from the Secretary - John G8SEQ

WEST MIDLANDS

Aldridge & Barr Beacon ARC

Ted Roberts. Tel: (01922) 614169

E-mail: albertg0kfs@raynet-uk.net

www.radioclubs.net/alldridgearc

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 v.h.f. antenna for radio operation using the club call sign MOGRX.

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.

South Midlands RS

Don. Tel: 0121 458 1603

South Midlands RS meet in the West Heath Community Centre, Condoval Rd., West Heath Birmingham B31 3QY. macrh 13th and 20th are construction evenings. 223rd is a 'ragchewing' evening.

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

Rob 2E0ZAP: (01827) 288 483

E-mail: spirit.guide@hotmail.co.uk

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

Denby Dale Amateur Radio Club

Gerald, G3SDY.

Tel: (01484) 602905

www.g4cdd.net/

The Denby Dale club meet at Pie Hall, Denby Dale, Huddersfield HD8 8RX. October 7th Mini-rally, surplus sale and flea market. 21st Annual General Meeting.

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.

WIGTOWNSHIRE (SW Scotland)

Ellis Gaston 01776 820413

www.gm4riv.co.uk

Wigtownshire ARC meet weekly at The Aird Unit, Stranraer Academy, Stranraer DG9 8BQ. Visitors always most welcome

WILTSHIRE

Trowbridge & District AR

Ian Carter. Tel: (01225) 864698

E-mail: ian.i.carter@btinternet.com

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Colin Redwood's

what next?

Colin Redwood G6MXL continuing his guide to getting on the air, looks at getting started on the h.f. bands.

Last month I started a step-by-step guide to getting on the air on very high frequency (v.h.f.) and ultra high frequency (u.h.f.) using f.m. with a new transceiver powered by an internal battery power supply.

This month I am looking at getting started on the h.f. bands using single sideband (s.s.b.) and continuous wave (c.w.) Morse, using the Yaesu FT-817ND as the example rig, but this time using an external power supply and a simple external antenna.

External Power Supply

While batteries can be used, most Amateurs, when operating from home, will, I'm sure, prefer to use a dedicated mains power supply. Fortunately, most portable transceivers can use an external power supply as an alternative to internal batteries. Most 'base station' transceivers either have a built in mains power supply or require an external source of 13.8V.

Fixed Or Variable Voltage?

I'm a strong advocate of fixed voltage power supplies and almost without exception, transceivers require 13.8V d.c. If this is what they require – why use a variable power supply with the risk that the voltage might accidentally be set too low or too high?

Setting the voltage too low, may result in a distorted or low power signal, while setting it too high may damage the transceiver. To prevent either of these problems, I think it



Fig. 2: A useful dipole centre with a PL-259 socket.

makes so much more sense to use a fixed voltage power supply – it's one less thing to get wrong!

Plenty Of Current!

In choosing a power supply, it's important to remember that transceivers are not 100% efficient. For example, when running at 5W output power, the Yaesu FT-817ND takes 2A (2 amps) at 13.8V. The power going into the rig is some 27.6W (13.8×2), but we're only getting 5W of r.f. energy output. So, it's less than 20% efficient at converting d.c. input to r.f. output and this is typical of most small rigs. Efficiency does tend to rise with higher output powers, but rarely climbs much above 40%. If it was 100% efficient, then $13.8V \times 2A$ should result in 27.6W.

Even when running QRP (low power), some transceivers fitted with internal antenna tuning units (a.t.u.s) or antenna matching units

(a.m.u.s.) still require a surprisingly high current to operate these. So, if you are buying a power supply, make sure it can comfortably deliver the current requirements indicated in the instruction manual of the transceiver.

Connecting The DC Supply

It's important to connect the direct current (d.c.) power supply with the correct polarity. Fortunately, most manufacturers show the polarity on their transceivers (Fig. 1). The plug used to connect an external d.c. supply to the Yaesu FT-817ND has the centre positive and the 'barrel' negative. Incidentally, this is the opposite of some earlier Yaesu rigs such as the very popular FT-290R. So be particularly careful to use the correct polarity – mistakes here can prove to be very costly, and I write from bitter experience on this!

The HF Antenna

In looking at the v.h.f. and u.h.f. operation using frequency modulation (f.m.) last month, I was able to take advantage of the fact that the FT-817ND is supplied with a portable flexible antenna suitable to cover the 50MHz (6m), 144MHz (2m) and 430MHz (70cm) bands.

However, things are somewhat different for the h.f. bands and – in common with just about every Amateur h.f. transceiver, the FT-817ND isn't supplied with any h.f. antennas. To simplify things, I would suggest the following as simple options for antennas to get on the air on h.f.



Fig. 1: The coaxial external d.c. power socket on the rear panel of the Yaesu FT-817ND, clearly show the correct polarity.

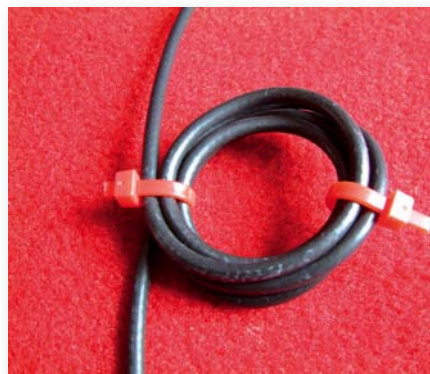


Fig. 3: A simple halun as part of the feeder to a dipole.

Summary HF Band Plans (MHz)

	CW		Narrow Band		Phone & CW		
1.810	1.810	1.838	1.838	1.840	1.840	2.000	2.000
3.500	3.500	3.580	3.580	3.600	3.600	3.800	3.800
7.000	7.000	7.035	7.035	7.040	7.040	7.200	7.200
10.100	10.100	10.140	10.140	10.150	-	-	10.150
14.000	14.000	14.070	14.070	14.099	14.101	14.350	14.350
18.068	18.068	18.100	18.100	18.109	18.111	18.168	18.168
21.000	21.000	21.080	21.080	21.149	21.151	21.450	21.450
24.890	24.890	24.920	24.920	24.929	24.931	24.990	24.990
28.000	28.000	28.050	28.050	28.190	28.225	29.200	29.700

CQ Zone 14

ITU Zone 27

IOTA EU-005

Table 1: A summary h.f. band plan table.

Resonant Dipole

A dipole made to be resonant on one Amateur band is a very good starting point. With a resonant antenna, there's no need to use an antenna matching unit (a.m.u.), which, is often called an antenna tuning unit (a.t.u.).

At this point in the sun-spot cycle, I would suggest a dipole for any of the lower frequency (longer wavelength) Amateur bands between 1.8MHz (160) and 14MHz (20m). Because of the propagation on 20m, contacts will not generally be possible once it gets really dark. Please also note that the 10MHz (30m) band is for c.w. and narrow data modes (e.g. PSK31) only.

Regular readers may remember that I looked at making a dipole in the July 2008 issue of *PW*. If you missed that issue, check with the *PW* offices as they may still have some back numbers available.

For the s.s.b. part of the 14MHz (20m) band you need a piece of wire 10.03m (32 feet 10 inches) long. But if you prefer to operate using c.w., then for the c.w. part of the band the overall length of the wire needs to be 110mm longer (making it 10.14m). Next, cut the wire exactly in half (i.e. 5.02m for the s.s.b. part of the 14MHz band, 5.07m for the c.w. part of the band), and attach each half to a dipole centre (Fig. 2).

I recommend the use 50Ω feeder from the transceiver to the dipole centre antenna, winding a few turns of feeder to make a balun (50Ω feeder is unbalanced, whereas a dipole is a balanced antenna). See Fig. 3.

Mobile Whip

A simple alternative to a dipole is a

mobile whip antenna. However, please bear in mind that these antennas require a ground-plane and, for the lower frequency (l.f.) bands and present a good match in just a small part of the band.

At the very least you will need to



Fig. 4: Adjustment screws on a mobile whip antenna. When loosened the top section of the whip antenna can be adjusted to obtain the best v.s.w.r. readings possible.



Fig. 5: The SO239 r.f. connector (bottom right) and the red 3.5mm jack socket for Morse keys (top left) on the rear panel of the Yaseu FT-817ND.

Colin Redwood G6MXL

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monitor the voltage standing wave ratio (v.s.w.r.) to know whether the antenna is correctly matched in the part of the band you want to operate in. If you need to adjust the length of the antenna to achieve the best v.s.w.r. (usually referred to as s.w.r.), there are usually one or two small grub screws that can be loosened with an Allen key. This enables the top part of the mobile antenna to be pushed in or pulled out a little to get the length correct for the part of the band that you want to operate on. See Fig. 4.

Hint: It's a good idea, until you become familiar with a particular antenna, to leave an in-line v.s.w.r. meter in circuit between the transceiver output and the antenna itself. This simple approach will enable you to monitor the r.f. output and antenna tuning very effectively.

Connecting Up

Using the recommended 50Ω coaxial feeder and a correctly fitted PL-259 plug, connect the feeder to the rear SO239 socket of the transceiver (Fig. 5).

Using USB Or LSB?

Next, choose the band you wish to operate on – this should, of course, be the band that your antenna is resonant on! – and press the band up or band down buttons to cycle through the bands until you get to the one you wish to use. Likewise, do the same with the mode buttons.

Remember that on the h.f. bands, lower side band (l.s.b.) is used

on frequencies below 10MHz and upper side band (u.s.b.) is used on frequencies above 10MHz.

Band Plan

You'll also need to refer to the band plan, to make sure that you are in the right part of the band and avoid transmitting out of band. I have included **very** simplified band plans for the main h.f. bands (**Table 1**) to assist. Detailed band plans for all UK bands can be found on the RSGB web site at <http://www.rsgb.org/spectrumforum/bandplans/>

Looking at the table, observant readers will notice that there are some gaps in some of the bands such as between 14.099 and 14.101MHz. In general these are areas which should not be used for normal contacts and in many cases these are reserved for beacons (and satellite use in the 28MHz band). Please note that there's no 'phone operation in the 10MHz band.

Tuning Up

In practice, I've found that the **SEL** dial on the bottom left of the front panel of the FT-817ND will allow quite rapid tuning across a band (**Fig. 6**). I have then used the main **VFO** tuning knob



Fig. 6: The left-hand side of the Yaesu FT-817ND front panel showing the main **SEL** rotary control.

on the front panel to carefully tune into a specific station.

Tuning into s.s.b. signals, no matter whether they're using l.s.b. or u.s.b. will need careful tuning. As you find a station, tune very carefully, and aim to get the pitch of the voice as natural as you can.

In my experience, most beginners seem to get the pitch of the voice too high. If you can, try practising with s.s.b. signals of an Amateur whose voice you know. I have found that listening using headphones can help, as many transceiver speakers are quite small and tend to attenuate low frequency audio signals.

Answering CQ Calls

For a first contact, I generally think it is easier to answer a "CQ" call. I suggest finding a station with a strong signal that is calling "CQ" without many replies. Incidentally, you may be surprised just how far 5W will travel.

Using a 14MHz dipole at about 6m above the ground I have worked stations in YU (Serbia) and DL (Germany) with ease, each on my first calls with my FT-817ND.

Calling CQ

An alternative approach is to call "CQ" yourself. Here you'll need to find a clear frequency within the Amateur band, ask if it's in use and then call "CQ". If you are a bit nervous about doing this – don't worry, nobody will bite your head off!

Other Bands

Whilst it's tempting to try other bands (there's no problem with listening), transmitting into an un-matched antenna will result in a significant amount of the power being reflected back into the transceiver. While the FT-817 is remarkably tolerant of mismatches, particularly at low power settings, it's not reasonable to expect the output stages of every transmitter to survive long-term mismatches.

So, an antenna matching unit needs to be considered if you want to operate with non-resonant antennas, such as a long-wire and it's

best to monitor the s.w.r. as I've already suggested.

No Power?

When you first start to operate on s.s.b. it's important to remember that even though the transceiver is set to transmit by pressing the push-to-talk (p.t.t.) button on the microphone, almost no radio frequency signals will leave the transmitter unless you are talking into the microphone.

So, to tune up effectively you'll need to switch to c.w. and key the transmitter (press down on the Morse key) to at least generate sufficient r.f. to allow you to match the transceiver to the antenna (either manually or by using an automated matching unit). You can use either f.m. or a.m. mode at the same frequency to do this to generate a carrier – if you don't have a Morse key! Some transceivers have a special 'tune' setting to allow matching to be done at low power.

Using CW

Having made some contacts on s.s.b., perhaps you may fancy having a go using c.w.?

There's certainly plenty of Morse code to be found on the h.f. bands. For low power operation I would suggest on or about the following QRP frequencies: 1.843, 3.560, 7.030, 10.106, 10.116, 14.060, 18086, 18.096, 18.106, 21.060, 24906 and 28.060MHz.

A traditional Morse key can be plugged into the red socket on the back of the FT-817ND using a 3.5mm mono jack plug (**Fig. 5**). If you prefer to use a 'paddle key', then this will need a 3.5mm stereo jack plug. In both cases the instruction manual clearly describes the wiring needed. **Note:** Many base station transceivers use 1/4-inch (6.25mm) sockets for Morse keys.

Nervous? Don't Worry!

If you are a bit nervous about transmitting for the first time on the air by yourself, please don't worry, as next month I'll be looking at a few suggestions for making it seem a bit easier!

Operating Techniques

In a future *What Next?* I'm going to be looking at a variety of operating techniques. I would welcome readers recommendations of techniques that they've found works for them, no matter what band or mode. Cheerio until then!



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Harry Leeming's

in the shop

This month Harry Leeming G3LL discusses audio problems.

Welcome to *In The Shop*, where as usual, I'm looking back to my days in the Amateur Radio and electronics trade. Incidentally, when I'm sitting down to type this column, I sometimes need something to jog my memory to enable me to fill the space allocated and **Dale ('Slim') Haines G4IPZ**, happily obliged by sending me an E-mail!

Slim detailed how he'd cured a fault on a Yaesu FT-290, which had low and distorted receive audio. Strangely, he'd found that if the

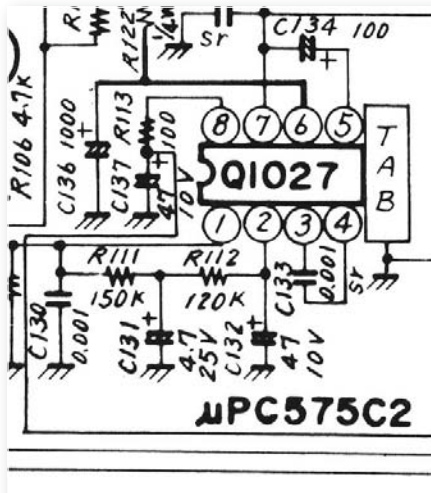


Fig. 1: 'Slim' Haines G4IPZ cured a fault on his Yaesu FT-290, which had low and distorted receive audio. Slim eventually traced the fault to C131.



Fig. 2: Harry had problems with Mr. X who had his own difficulties with power supplies (hence the wrong coloured terminal caps), which ended up in a court case.

set was switched on with only 3V direct current (d.c.) applied, with this gradually increased over 10 or 15 minutes, the audio recovered. He eventually traced the fault to C131, (see Fig. 1).

Whilst I've never had an FT-290 exhibit the slow recovery of audio that Slim G4IPZ mentioned, I have had trouble with capacitors in this position when they were associated with the UPC575C2 integrated circuit (i.c.) in the FT-290 and other rigs. The problem first raised its ugly head during an upsurge of packet activity. An FT-290 came in with very low and 'gritty' audio. The rig sounded just like the output i.c. was faulty and I concluded that it had been blown by a short in the packet wiring.

I proceeded to replace the UPC575C2 (not an easy task!), only to find that the set was no better and that I had wasted an hour's time and an i.c. I then proceeded to check the voltages around the audio i.c., and found that the voltage across C131 was low, I replaced it, and the fault was cured.

Since then I have come across the fault quite a few times and have been able to advise *PW* readers – who have E-mailed me trying to obtain a replacement i.c. – that there was every chance that they didn't need one!

However, you're obvious question must be, "So how do you go about checking C131?"

To start answering the question, the resistors R111 and R112 form a d.c. feedback loop around the i.c., with C131 serving to remove any audio. The resistors are very similar in value and because of this the voltage across C131 (which is at their centre point) should be approximately midway between the voltages measured on pins 1 and 2, (i.e. around 5 to 7V depending on the supply voltage). If the voltage is much lower than this, C131 is probably leaky.

The intended replacement should be checked with an ohmmeter and must have an insulation resistance of at least a few Megohms if it's to be suitable for use in this position.

Note: a tantalum type of capacitor of around 3 to 20 μ F and 16V working is recommended.

Passing Amateurs

Being just off the M6, our shop attracted passing Amateurs from all over the UK. Over the years I got to know many faces, and heard many tales, some not suitable for *PW*! Perhaps I seemed a good shoulder to cry on, but at least the visitors kept the till ringing. On the odd occasion I found that we both knew the same

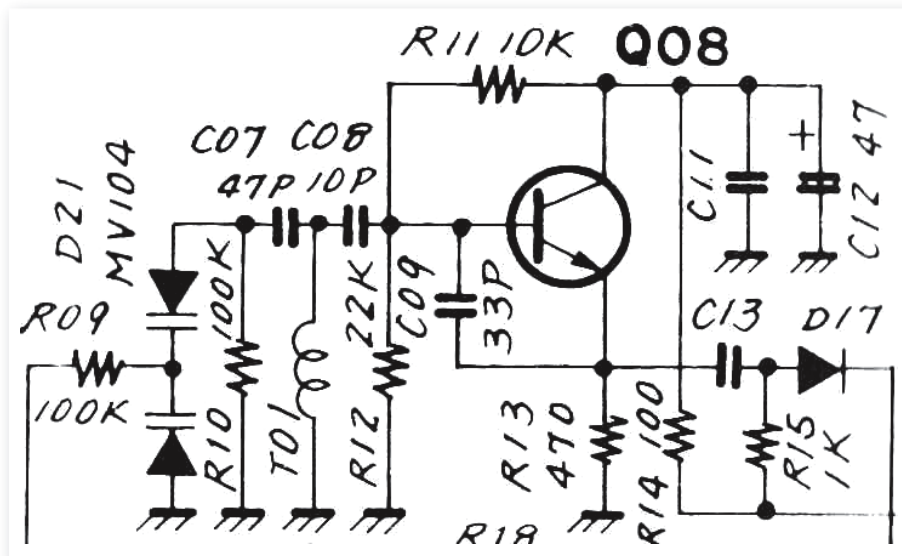


Fig. 3: Basic circuit diagram of a voltage controlled oscillator (v.c.o.).

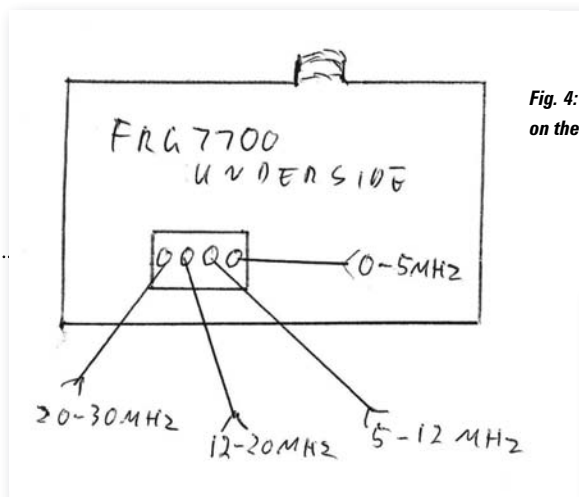


Fig. 4: Identifying the correct tuning slug on the FRG-7700 receiver.

Harry Leeming G3LLL

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E-mail: G3LLL@talktalk.net

person, which in some cases was not to that person's advantage!

I had seen 'John' (not his real name) many times before, but one day he started to tell me his tale of woe. It transpired that when a friend died, his widow had approached John and asked for help in selling a pile of Amateur Radio equipment. John had taken all the equipment home, tested it, and arranged a Silent Key sale. He'd kept full records and had made no profit on the deal.

Just over a year later the purchaser of a power supply unit (p.s.u.) was on the phone, "You know that power supply you sold me, I have only just tried it and it is faulty, what are you going to do about it?" John reminded the purchaser that he had sold it on behalf of a widow, that it was not a commercial sale and that there was no guarantee. This was obviously not good enough for the purchaser, as John showed me a letter had received, demanding that he attended the Small Claims Court division of the County Court. (Presumably this was intended to frighten him into paying up).

I started to say to John that I did not think that the complainant had a case but at this point something rang a bell, and I asked, "What's his name, where does he live?" It was an amazing coincidence – because it transpired that I had also had dealings with this gentleman and a power supply!

Although I sold a few items that we made ourselves, such as our r.f. clipper through the post, I didn't otherwise do a lot of postal business, but Mr. 'X', as we will call him, had phoned me and ordered a power supply. Months later he was on the phone again, "You know that power supply you sold me, I have only just

tried it and it's faulty, what are you going to do about it?"

I had some doubts about his story, but arranged for the carriers to deliver a replacement p.s.u., collect the old one, and return it to us. On examining it, I found that the fuse was blown, that the red terminal retaining screw cap was screwed onto the – terminal, and that black one was on the + terminal (Fig. 2). I replaced the fuse, correctly fitted the screw terminals and the PSU then worked perfectly. I presumed that Mr X. had somehow managed to get the terminals crossed, had applied reverse polarity to a piece of equipment and that this had blown the fuse.

I didn't contact Mr. X, and had just 'written off' the cost of carriage, to experience, together with the fact that the p.s.u. was then second hand. I told John my story and he requested that I confirmed it in writing.

When John arrived at the Small Claims Court, he carried a letter on my company's headed paper. It stated my experience with Mr. X, my doubts as to his ability to use a p.s.u. without damaging it, and my lack of confidence in his ability to judge as to whether a p.s.u. was faulty or not.

My letter also made the point that when I (as a trader) sold second-hand goods on commission on behalf of a customer, I sold them strictly on the basis that they were on seven day's approval, without any long term guarantee.

I commented in the letter that it

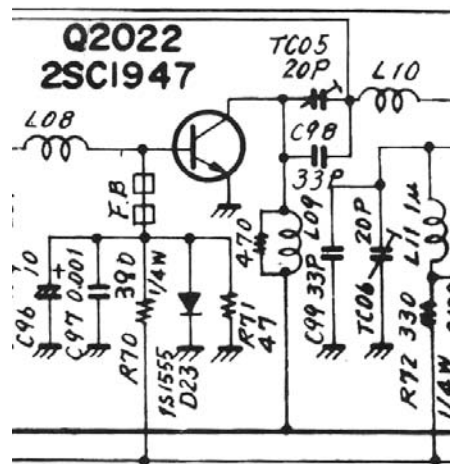


Fig. 5: Curing transmitted audio problems on the Yaesu FT-290. Resistor R70, (390Ω) should be replaced with a 330Ω resistor.

seemed strange that Mr. X expected a better guarantee from a private individual, selling at no profit on behalf of a deceased person's estate, than he would get from a dealer like myself.

John told me later that when my letter was produced in the court, Mr. X protested loudly that this evidence was not acceptable. However, he was told firmly by the Adjudicator, that he (the Adjudicator) would decide what was and was not admissible evidence, and not Mr. X. The claim was thrown out, and John was told that as Mr. X's claim it was completely and utterly groundless, he was entitled to have Mr X. pay all his expenses.

A few days later Mr X. was on the 'phone, threatening never to give his custom to me again. Perhaps I should have recorded the conversation and reported him for intimidating someone who had supplied evidence to a court – but speaking quite frankly I was just happy to be rid of him – who wants a customer like that?

Chatting About Receivers

I recently received a complaint that I haven't given sufficient coverage to receivers in the column – so here goes! An FRG-7700 was brought to me with the complaint that the tuning 'cut out' at the end of the tuning range. Unfortunately though, this effect is not uncommon with any equipment that uses a voltage controlled oscillator

(v.c.o.) that's held on frequency by a phased lock loop (p.l.l.).

The diagram, **Fig. 3**, shows the basic circuit of a v.c.o., the FRG-7700 has four of these, each of which cover a different part of the tuning range. The receiver is actually tuned by a d.c. voltage, which is applied via R09 to the diode D21, this acts as a variable capacitor in parallel with T01. As the set ages, or if the coil cores moves, the tuning drifts at one end of the tuning range the variable capacity diode can no longer 'pull' it onto the correct frequency.

The cure is simple; either look up the alignment details in your manual, or take the following short cut. Find the correct tuning slug as shown in **Fig. 4**, warm it a little with a soldering iron until it's free and then adjust it a fraction of a turn until the tuning locks in at the missing end of the range. Check that the tuning operates correctly at both ends of all the bands and the job is done!

The Truth?

The Internet provides a wealth of information about everything under the sun. If you want a data chart or a supplier for a valve or an i.c., or even a manual for your rig, it's all there, along with a lot of rubbish, such as very doubtful downloads and questionable advice. If you do have a problem with your rig or computer, it's always advisable to check any advice you find before diving in too deeply.

When *Windows* refused to recognise the CD player on my computer, I tried typing the problem into the Google search engine. One of

the multitude of answers that seemed to make sense, told me to delete a file, but was this correct? Or would it do more harm than good?

If a sceptical historian or *New Testament* scholar is trying to check on the truth behind some 2000 year old event, they will consult all the ancient writings they can get their hands on. If different documents by different writers tell the same basic story, but disagree on some facts, the researcher will conclude that this shows that the writers investigated the matter independently and didn't copy it from a common source. It's their **disagreement** that points to there being some truth behind the story, not as (you might first expect) their agreement.

In my search for a solution I found two similar answers by different people, who wrote about the problem in different ways, but their logic seemed to make sense. One advised deleting two files, which he identified in long strings of capital letters, the other only indicated one of the files, which he quoted in small letters. I could only find one of the files on my computer and so I took a deep breath, deleted it, re-booted the computer and all was then well!

Distorted Transmitted Audio

Before I sign off this month, here's one more story of an FT-290. '**Pete**' had a problem with his FT-290 – the output had disappeared, and a friend had traced the fault to a blown 2SC1947 power amplifier (p.a.) transistor. This he had replaced and all seemed back to normal in the frequency modulation

(f.m.) mode – but then he tried to use it during an s.s.b. contest.

Unfortunately, Pete received so many reports of poor audio quality that he decided to carry out some tests with a local station. Surprisingly, he was told that the audio was not too bad if he spoke loudly, but that the quieter he spoke – the worse the quality became.

Transistors vary and so most rigs have an adjustable potentiometer to accommodate differences in the characteristics of output transistors. For some reason no such 'pot' was fitted to early production FT-290s. Perhaps Yaesu batch tested the transistors before fitting them? Experience has shown that if you fit a new output transistor the odds are it will result in distorted transmitted audio.

The cure is to replace the 390Ω resistor (R70) in the bias circuit with one of about 330Ω. (**Fig. 5**). To be sure though, you should check the p.a. standing current. Next month, I'll be looking further into the problem of replacing, and setting up output transistors.

Finally, please do have a wonderful Christmas, and just to be sure that you can join us all in the New Year, how about dropping a hint to Father Christmas about a subscription you could even leave a copy lying around open at the subscriptions page? In return myself and the other authors will keep busy doing our best to provide an ever-improving magazine! ●

Dealing With 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.

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Roger Cooke's

morse mode

As promised, Roger Cooke G3LDI looks at 'squeezing' some Morse from a paddle keyer.

Roger Cooke G3LDI

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Welcome to the *Morse Mode (MM)* where, as I promised in the last column, I'm providing the details on the Morse keyer designed by **Dale Chadwick G3VMK**. The circuit can be built on Veroboard and all components should still be available. I would be grateful for any feedback on the results from *MM* readers who build the project.

The Keyer

Dale Chadwick G3VMK's Telegraphy Systems SK-2 Keyer circuit is shown in **Fig. 1**. The connections shown ending in a square are BY+ (6V in the original). The supply circuitry at the bottom right hand corner was intended for the original's NiCad battery, although of course anything can be used up to CMOS's maximum voltage. All gates

are 4001 types (x4), and all flip-flops are 4027 types (x3).

Starting from the paddle terminals: R2/C2, R3/C3 are the de-bounce time constants; R1/C1, R4/C4 feed the low-going edges, on contact closure, to the gates of IC2 to set the flip-flops of IC1, which form the independent dot and dash memories. Note that the memories are <reset> (Bar-Q to H) when 'set', and vice-versa!

The remaining two gates of IC2 and all four gates of IC4 are the mode-determining logic which give the non-iambic squeezing; IC4 pin 11 enables the dash circuit (both halves of IC5), while the extra two gates on the dot side ensure that a dot cannot be sent while a dash is in progress.

Note also that the dot flip-flop (the half of IC3 fed from IC6 pin 4) is explicitly reset by the RC differentiator

from the first half of IC3 Bar-Q. Note also that the unusual design of the dash generator ensures that edge conditions cannot occur within a dash, the circuit again having an explicit re-set (via IC7 pin 4) to terminate the character. The dot and dash generators also connect back to the dot and dash memories of IC1, to ensure that each memory is cleared (Bar-Q to L) when its character is sent.

Dot & Dash Generators

The dot and dash generators are combined in IC6, the output at pin 3 of which is active low. The 'Data Out/In' connections were provided for a shift-register memory, so D6 can be bypassed for use without such a memory.

The output circuit is rather complex, and it was found that in

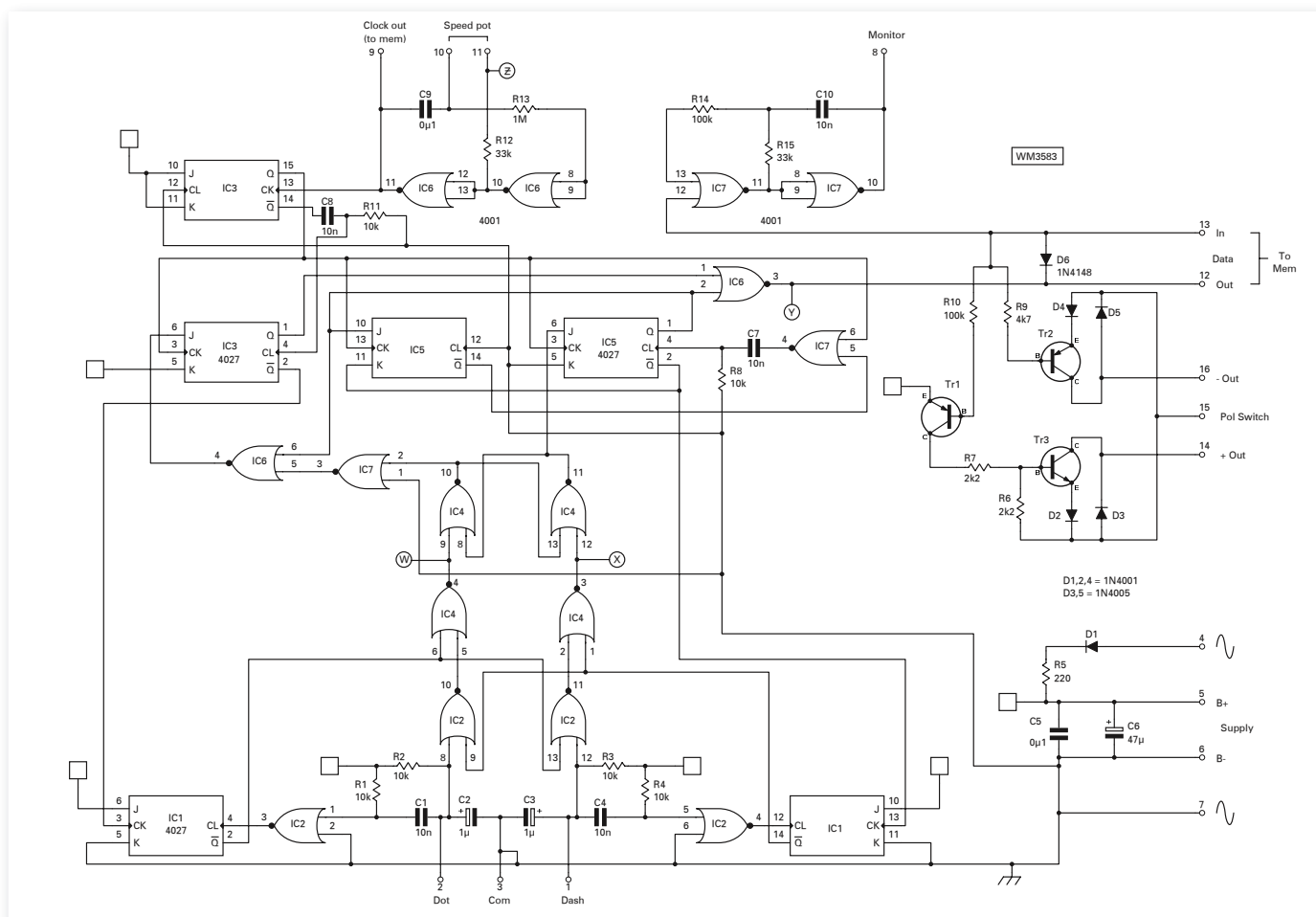


Fig. 1: The circuit diagram of Dale Chadwick G3VMK's Telegraphy Systems SK-2 Keyer.

negative keying mode, the fact that the output was grounded to BY+, while the paddle was still grounded to BY-, led to some unfortunate accidents involving shorting out of NiCad cells – not recommended!

For '+ve' only keying, or if a reed relay is used, this part of the circuit can (should) be much simplified, essentially keeping just Tr1 and Tr3 of the original (plus associated resistors).

The two oscillators at the top of the diagram are the clock (IC6) and the sidetone (IC7). The speed potentiometer is 250kΩ, which selected speed down to about 16 words per minute (w.p.m.) and up to a manic speed, the latter intended to allow quick 'clocking' through memories when installed. Possibly R12 and the potentiometer could be re-scaled for memory-less operation, when 250w.p.m. or so isn't desired!

In Fig. 2, the points labelled W, X, Y and Z are the points where the clock gate connects for those who don't want a free-running clock. Essentially, when W (dot ready) OR X (dash ready) OR Y (sending) is low, then the clock is allowed to run. When all of these points are HIGH, an *nnp* transistor pulls point Z down to 0V and stops the clock.

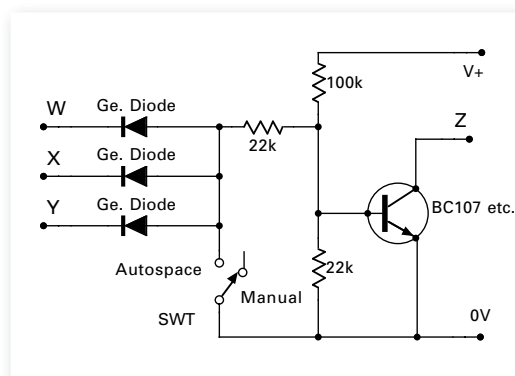


Fig. 2: This additional auto/manual circuit is described in text.

Alternatively, putting the switch SWT in the **Autospace** position leaves the clock to free-run, resulting in either perfectly spaced Morse or perfectly spaced garbage, according to the skill of the user! (It **does** take a bit of getting used to when the character **does not** necessarily start the moment you close the paddle contact)

Happily, grounding point Z – “somewhere along the timing resistance” – doesn't seem to muck up the first dot after enabling the clock, as it might have, and manually spaced Morse still sounds okay as a result – if you're used to it. (Dale says: “I've preferred autospace for so long that I run letters together badly when trying to use manual spacing, the result of always 'padding' ahead of the free-running clock”).

Note also that it's possible with a free-running clock to put in a 5-dot-length space, which isn't proper Morse spacing but which would take a heck of a lot of gates to eliminate.

Cootie Slide Show

For the side-swiper enthusiasts, take a look at the slide show on the Cootie Slide Show site. There are a number of home-brew keys, including some steak-knife specials! It's surprising how many Cootie users there are! Even the latest Begali paddle can be switched to the Cootie mode! See <http://sideswipernet.googlepages.com/slideshow>

73 and May the Morse be with you!

Roger G3LDI

rallies

Please check with the organisers that the rally is 'on' before leaving home.

2010 January

January 17th

The Red Rose Rally

The West Manchester Radio Club will be holding their Red Rose Winter Rally at the Lorton Civic Centre, Hesketh Meadow Lane, off Newton Road WA3 2AJ (just off the A580 East Lancs Road). Doors will open at 10.00am and there will be talk-in on S22, a free car park, traders, a Bring & Buy, special interest groups, catering with a licensed bar, an RSGB Bookstall and facilities for the disabled.

Steve

Tel: 01942 888900

E-mail: rally@wmrc.org.uk

<http://wmrc.org.uk>

January 31st

The Horncastle Rally

The Horncastle Winter Rally will be held at the Horncastle Youth Centre, Lincolnshire LN9 6DZ. The doors will open at 10.30am (10.00am for the disabled) and admission will be £1.50. There will be free car parking, catering and facilities for the disabled.

Tony G3ZPU. Tel: 01507 527835

E-mail: G3ZPU@yahoo.co.uk

February

February 7th

The Canvey Rally

The 25th Canvey Radio and Electronics Rally will take place in The Paddocks, Long Road, Canvey Island, Essex SS8 0JA, which is at the southern end of the A130. There will be free car parking, the doors will open

at 10.30am and admission will cost £2.00. There will be trade stands, catering and facilities for the disabled.

Dave G4UVJ

Tel: 01268 697978 (evenings).

www.southessex.ars.btinternet.co.uk

February 14th

The Harwell Rally

The Harwell Radio and Computing Rally will be held at the Didcot Leisure Centre, Mereland Road, Didcot OX11 8AY. Admission will be £2.00 (under 12s free) and the doors will open at 10.30am (10.15am for the disabled). There will be talk-in on S22 and V44, a free car park, trade stands, special interest groups, catering with a licensed bar and facilities for the disabled.

Ann Stevens

Tel: 01235 816379

E-mail: rally@g3pia.org.uk

www.g3pia.org.uk

February 14th

The Northern Cross Rally

The Wakefield & District Radio Society will be running the 19th Northern Cross Rally at the same location as last year – Ossett School and Sixth Form College, Storrs Hill Road, Ossett WF5 0DG. Talk-in will be available under the callsign GB0NCR via the local repeater GB3YW on 145.7875MHz (CTCSS 82.5). Doors will open at 10.30am (10.15am for the disabled) and the entry price will be £3.00. All the usual facilities will be available and visitors who attended

last year's rally should rest assured that action has been taken to ensure that the difficulties that were experienced with both the toilet facilities and the electrics should not recur.

Ken Quinn 2E0SSQ

Tel: 07900 563117

E-mail: kquinn27@o2.co.uk

www.northerncrossrally.org

February 21st

The Swansea Rally

The Swansea Amateur Radio Society Amateur Radio and Computer Rally will be held at the Afan Lido (Aquadrome), Aberafon Seafront, Port Talbot SA12 6QW. This is one mile from J41 on the M4 – follow the signs for Hollywood Park. The doors will be open from 10.30am to 4.00pm and admission will be £1.50 (50p for juniors). There will be a free car park, trade stands, a Bring & Buy, special interest groups and catering.

Roger Williams GW4HSH

Tel: 01792 404422

www.geocities.com/gw4cc/

radio rally.html

February 28th

The Rainham Radio Rally

The Bredhurst Receiving And Transmitting Society (BRATS) Rainham Radio Rally will be held at 10.00am in the Rainham School for Girls, Derwent Way, Rainham, Gillingham, Kent ME8 0BX. This is just off the A2 and J4 of the M2.

Trevor Cannon G6YLW

Tel: 0771 7678795

E-mail: trev@wig1.co.uk

www.wig1.co.uk

March

March 7th

The Exeter Rally

The fifth Exeter Radio & Electronics Rally will be held at the America Hall, De la Rue Way, Pinhoe, Exeter, EX4 8PW. The hall is well equipped and offers easy access as it's only a few minutes from the M5 and other main roads. Doors will open at 10.30am (Bring & Buy booking in and disabled 10.15am) and admission will be £2.00. There will be talk-in, traders, a Bring & Buy and refreshments (in-house inexpensive catering by the XYLS, including their celebrated bacon rolls). All profits from the event will be shared between GB3SW, GB3EW and GB3EX, the local 2m and 70cm repeaters.

Pete G3ZVI

Tel: 07714 198374

E-mail: g3zvi@yahoo.co.uk

March 20th

The Lagan Valley Rally

The Lagan Valley Amateur Radio Society Rally will be held in The Village Centre, 7 Ballynahinch Road, Hillsborough. Doors will open at 11.30am and there will be car parking, catering and trade stands.

Jim G10DVU

Tel: 02892 662270

E-mail: jim.henry@ntlworld.com

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Carl Mason's

hf highlights

Carl Mason GWOVSW has a lot of news for you this month! Reports to Carl by 15th of the month please.

Welcome to *HF Highlights* (HFH), and before I get stuck in to the news – please note my new ‘phone number on the information panel. ‘It’s good to talk’ – if we have the right number! There is a good deal to get through this month so I will begin with some DX news and to Canada where **The Vancouver Olympics Amateur Radio Group** or VOARG is promoting and coordinating the operation of a series of special event callsigns to commemorate the **Vancouver 2010 Winter Olympic and Paralympic Games** to be held in February and March of next year. Three special callsigns will be used by amateur radio operators and groups resident in British Columbia. **VG7V** has already been aired from October 1st to November 30th.

The other two callsigns are **VG7W** running from December 1st to January 31st 2010 and **VG7G** which will run from February 1st to March 31st 2010. A website with more information is under construction and you can QSL via the bureau or direct to VOARG, 9362-206A St., Langley, BC V1M 2W6, Canada. Activity will be on all bands using all modes and all contacts will be uploaded to Log Book of the WORLD (LoTW).

To Australia now, where **VK6IOA** is to be the callsign used from the Houtman Abrolhos OC-211 between December 31st and January 4th next year. The Houtman Abrolhos, more informally called the Abrolhos Islands, are a chain of 122 islands and coral reefs in the Indian Ocean, lying about 80km (50 Miles) west of Geraldton off the west coast of Australia. At the moment the team consists of three operators Wally Gelock VK6YS, Nigel Dudley VK6NI and Bruce Lee KD6WW, but a fourth is expected to join the team shortly.

The current plan is for two stations to operate simultaneously using the Icom IC-706 MkII G and IC-7000 as main rigs with a Spiderbeam for 14/18 and 21MHz, a vertical dipole for 7 TO 28MHz and a quarter-wave vertical

for 7/10MHz. The QSL route will be via VK4AAR.

In Afghanistan **David Quental CT1DRB** has been active as **T6AG** for a further three months. He operates c.w. only and for the time being will concentrate on 10MHz with other bands hopefully following shortly though he might have problems with 3.5 and 14MHz. The QSL is via the bureau or direct to Joan Carles Barcelo Torta EA3GHZ, POB 51, Sant Carles Rapita, E-43540 (Tarragona), Spain. Further updates and a logsearch will be available at <http://t6ag.nra.pt/>

Credit Update

The following calls that have been active from Nigeria **5N0EME** the callsign of the Nigeria EME group (See www.dl3och.de for pictures and information) and the recent operation by **Bodo Fritsche 5N0OCH** have just been approved for DXCC credit. If you have had QSOs rejected in a recent DXCC submission you can send an E-mail to dxcc@arrl.org and be placed on the list for an update.

Unfortunately, a pirate used Bodo’s call on a few occasions and as far as is known, the rogue was active on August 2nd on 3.5MHz and October 8th on 3.5 and 7MHz. Bodo asks that you

check his on-line log at www.clublog.org/charts/?c=5N0OCH before you send for a direct QSL and if there is any doubt drop him an email to dl3och@darc.de

Your Reports

On to your reports now and the log of **Eric Masters G0KRT** in Worcester Park, Surrey, who had one QRP contact with Tony M3NFU at 1922. He also had 100W QSOs, that included CR3L (Madeira Island) AF-014 at 0529 and the contest call of Walter Skudlarek DJ6QT, followed later by LX/PA6Z (Luxembourg) at 1802UTC running a Kenwood TS-570 with a home-brew modified W3EDP antenna tuned with a SG-230 auto tuner.

Bill Ward 2E0BWX who lives in Edwinstowe, Nottinghamshire uses a Icom IC-7400, 50W and SRC X65 end fed wire antenna to work s.s.b. stations PA3JD (Netherlands) 1710, OL7R (Czech Republic) 1807 QSL via Vaclav Muska OK1WMV, Nerudova 1390, Stribro 349 01, Czech Republic and DG3FK (Germany) at 1955UTC.

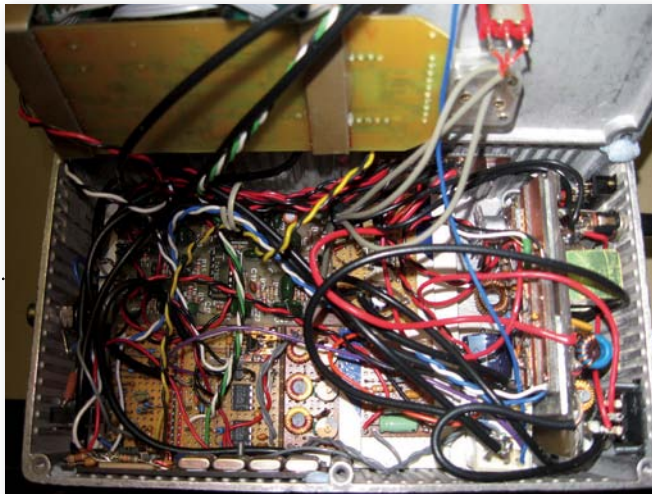
The 7 & 10MHz Bands

There was an interesting contact for **Owen Williams G0PHY** in Biggleswade, Bedfordshire who said, “I was quite



EA6/GOVXG QRP station North coast of Menorca at Son Parc. The station includes a homebrew 10MHz transmitter-receiver, a.t.u., 13V power pack and key.

Inside Richard's homebrew QRP rig (You can just make out the yellow toroids mentioned in his paragraph in the reports).



active during the past month with lots of Scandinavian contacts on 7MHz. However, the star contact of the month, maybe even the year, was an s.s.b.

contact with KH7XS in Hawaii OC-019 at 0556UTC using my repaired FT-747, 100W and a quarter wavelength inverted "L" antenna. He was calling for Europe and working simplex with a very good signal strength.

"Shortly after I first heard him he started calling by the numbers starting with number 7 but he quickly moved through the 8s and 9s with no takers. Eventually he started on the 'zeros' and I was staggered when he came back to me and we completed the QSO with me receiving a 5/3 report. Afterwards, I looked him up on *QRZ.com* and discovered that it was a contest station some 800 feet above sea level and close to the Pacific Ocean. The station has a stack of 7MHz Yagis at 152 and 80 feet with the top antenna able to rotate a full 360° while the lower one rotates from JA through to Europe and both North and South America. This allows the operators a 'full stack' to 95% of the world's Amateur population and would explain why he had such a strong signal and was able to hear me!" (Well done Owen!)

Also spending some time on 7MHz was Bill 2E0BWV who used his end-fed wire again to work PD1D (Netherlands) 0840, OZ8CTH (Denmark) 0920, HA5X (Hungary) 1115 and RX3FS (European Russia) at 1650UTC.

Meanwhile, Eric G0KRT made a s.s.b. contact with UA9PC (Asiatic Russia) at 2002 while there was one station logged on 10MHz where 100W c.w. found UA2FCB (Kaliningrad) at 1501UTC.

The 14MHz Band

Running special event stations has kept **John Wakefield M0XIG** busy this year and his last for 2009 was **GB2BST** from Bramshaw in the New Forest, Hampshire. John used his Yaesu FT-1000MP MkV once again with a Acom

amplifier and a Comet H-422 antenna in a 'V' configuration and around 300W working s.s.b. on the 14MHz band.

John logged ZL2IFB (New Zealand) OC-036, Gary Hinson ex G4IFB on North Island at 0851, A71EL (Qatar) 0859, RX9WN (Asiatic Russia) 0901, CX4BTW (Uruguay) 0947, T77CD (San Marino) 1040, SM7DZD (Sweden) 1055, HZ1GW (Saudi Arabia) 1056, LA9VK (Norway) 1058, 5B4AHL (Cyprus) AS-004 at 1102, ES1IP (Estonia) OZ1GCT (Denmark) 1112, a long list of American stations including W2OSR (USA) in Glen Cove, New York at 1134, VE3XN (Canada) in Listowel, Ontario at 1431, HS0ZIN (Thailand) 1433 and HB9JCB (Switzerland) at 1840UTC.

In Cambridge, New Zealand, **Peter Leng ZL4TE** missed a few weeks operating as house improvements took over his spare time. Returning to the bands he found that 14MHz had improved dramatically enabling some good DX. He used a Yaesu FT-1000MP MkV and a Ranger amplifier to put out 500W into a Cushcraft AV-3 3 band vertical and managed JA1NFV (Japan) 0721, KH6QR (Hawaii) at 0753, LZ/PA6Z (Luxembourg) 0808, LA2FKA (Norway) 0827, OH6IU (Finland) 0836, **David Honey M0DHO** in Hampshire at 0840 for his first ZL-UK contact, PD2BA (Netherlands) 0841, BX2AAL (Taiwan) AS-020 at 0913, YC9MDX (Indonesia) 0916, BD4WZH (China) 0935, EA1ABT (Spain) 1000 and SP120SP (Poland) at 1013UTC. Peter said "I have not heard the UK in the year I have been here and I worked two, David M0DHO and **The St Helens DX Radio Club GP0STH** in the space of 24 hours! The path to Scandinavia has been particularly good so maybe conditions are on the up!"

The log of **Martyn Medcalf M3VAM** in Chelmsford, Essex continues to grow and he is having a lot of fun

Carl Mason GW0VSW

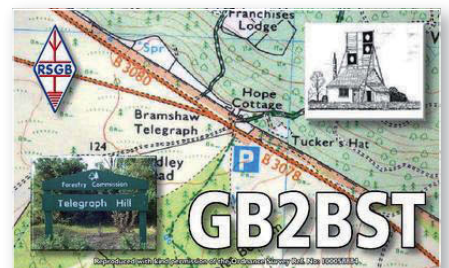
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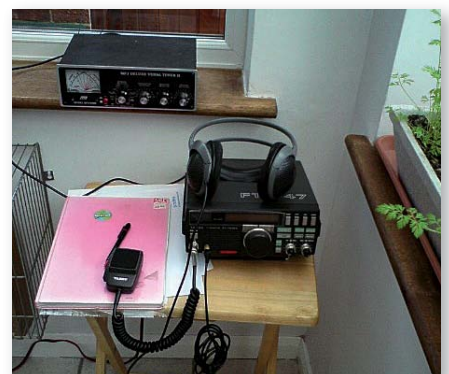
The QRP rig's front panel.



Martyn M3VAM in his new shack.



The GB2BST Special event QSL run by John Wakefield M0XIG.



Owen G0PHY's shack!



The ZY7C QSL card received by Eric G0KRT.



The DL0KHZ special QSL received by Martyn M3VAM.



The K6L QSL received by Owen G0PHY.

using his Comet CHA-250BX vertical antenna. Stations worked using s.s.b include LZ2LP (Bulgaria) 1213, ES7FQ (Estonia) 1342, IK2YCW (Italy) 1429, OH6NT (Finland) 1458, OZ8CTH (Denmark) 1646, RN3AHL (European Russia) 2035, DL0KHZ (Germany) a call to celebrate 40 years of the twinning between Karlsruhe and Nottingham at 1925. Then came SM4WKT (Sweden) 1921, CT2HXM (Portugal) 1935, TA3AX (Turkey) 1945, F8DRE (France) 2035 and CR2F (Portugal) 2109, a Faial Island DXpedition QSL via CT1GFK. All contacts were made with an Icom IC-746 and 10W.

Also on the band was keen QRP enthusiast **Tom Kelly EI2AJ** in Ireland who has treated himself to a new Yaesu FT-817 and with a "hastily thrown up inverted V" worked UT4UH (Ukraine) 1800, LZ12MS (Bulgaria) 1845, N2GM (USA) 2100 in Hillsdale, New Jersey, followed by KG9N in Congerville, Illinois at 2148UTC. Tom was using c.w. and just 2.5W.

Another QRP operator is **Richard Wilkinson G0VXG** in Telford, Shropshire, worked DL2BA (Germany) 0730, OK1FAN (Czech Republic) 0731, G4PSI 0800, GW0VSW 0810 for a two-way QRP contact and R6VPY (European Russia) 0850UTC. Perhaps not that unusual except that Richard was operating from The Balearic Islands on Menorca EU-004 and using a home-brew QRP rig. Richard said "this consists of a DDS (AD9834 chip) superhet with an i.f. of 6.5536MHz and a 4-crystal ladder filter."

Richard's rig uses a 10MHz bandpass filter on the input to SA612s, a Howes 500Hz audio frequency filter, an LM386 amplifier, driving headphones and a power pack (under the rig) which contains 11 NimH 2.5Ah cells. The power is switchable between 2 or 5W and the design was 'created' over many years mostly from articles in *Sprat* and *PW*. Richard went on to say "I used a

dipole for the antenna but found I had a lot of QRM from broadcast stations and had to turn the r.f. gain almost to zero when operating." Since his return from holiday Richard's installed

a new band-pass filter using three 'Yellow' toroids which he hopes will reduce some of the broadcast station interference.

Back in Worcester Park Eric G0KRT found s.s.b. stations RV9LM (Asiatic Russia) 1237, VE3TA (Canada) 1500 in Toronto, Ontario, CT3HF (Madeira Island) 1505, 4L0A (Georgia) at 1537 QSL via EA7FTR, K1RX (USA) 1556 in Kensington, New Hampshire. Then came ZY7C (Brazil) 1954 the Fortaleza DX Group - FORDX - QSL via PT7WA. All QSOs were made using 100W.

The s.s.b. of Bill 2E0BWX worked 9A7A (Croatia) 0845, OG6N (Finland) 0940, IZ1MKR (Italy) 1120, RZ3AXX (European Russia) 1130, TR9P (Romania) 1640 QSL via YO9HP, K1IM (USA) 1900 in Union, Connecticut. This was achieved using a mixture of an end fed wire and Diamond CP-6 vertical.

Finally, Owen G0PHY made it TO7RJ (Mayotte) AF-027 at 1709 QSL via DJ7RJ and K6L (USA) 1709 the Westside Amateur Radio Club of Los Angeles, California, using s.s.b at 100W to a dipole antenna.

The 18, 21, 24 & 28MHz Bands

On 18MHz Eric used 75W of c.w. to contact RA1OW (European Russia) at 1150 and K8CW (USA) 1544UTC in Mansfield, Ohio.

On 21MHz Bill 2E0BWX logged AA3B (USA) 1305 in Boyertown, Pennsylvania and C4I (Cyprus) AS-004 at 1310 with s.s.b. and vertical antenna, while Eric G0KRT had one 100W c.w. QSO with K3KZO (USA) at 1400UTC.

The 24MHz band had a few openings and one contact for Bill 2E0BWX as IZ1MKR (Italy) made his

s.s.b. log at 1120 before he changed to 28MHz where he worked I8QJU (Italy) at 1140 followed a little later by LP1H (Argentina) at 1745UTC QSL via EA5KB.

Signing Off

As winter approaches and the weather takes a turn for the worse it looks like many of us will be spending a little more time inside and possibly more time on the h.f. bands. It was with this thought that I was interested to listen in on a few QSOs that took place on the 3.5 and 14MHz bands where some observations were being made after a major weekend contest from several Amateurs on both sides of the pond.

Nearly all respondents said how strange it was that over the previous weekend the h.f. bands, including WARC, were full of activity and yet a few days **after** the contest the bands were almost completely empty again! I'm sure many of you have also had the same thought. If we can make contacts during a contest why can't we do the same at other times? Admittedly, many contest stations are running high power, often into extensive antenna farms which helps a great deal.

But, as you can see from this month's reports, simple antennas and lower power levels can still be effective even if the contacts are not classed as exotic DX! As I have said in this column before, a few "CQ" calls may bring in some interesting additions to your logbooks for those prepared to make the effort!

As usual my thanks go to all our reporters for their logbooks and to **Mauro Pregliasco I1JQJ/KB2TJM** editor of the *425 DX Newsletter* for all the DX information. That about rounds things up for another month and indeed another year! So, until next time I wish you all good DX and a very

Happy Christmas. 73, Carl GW0VSW.

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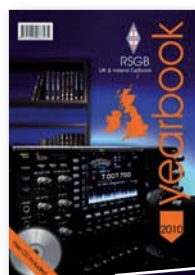
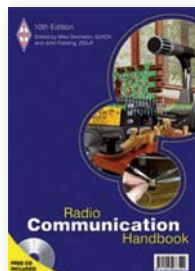
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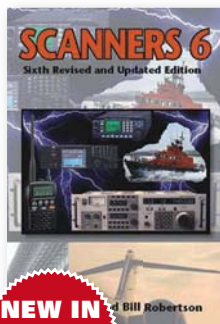
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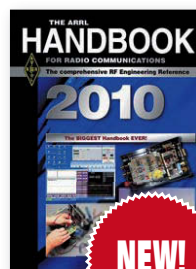
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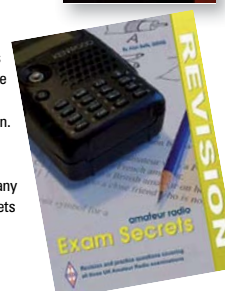
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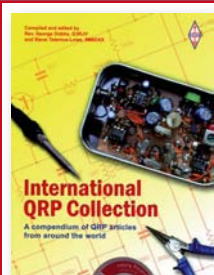
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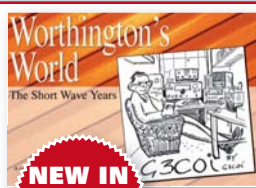


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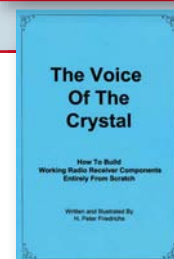
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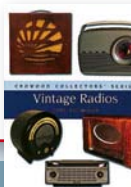
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Rob Mannion's

topical talk

Rob Mannion G3XFD reflects on the problems some readers may have encountered searching for components for magazine projects.

The letter from **Ross Bradshaw G4DTD** (*Letters* this month) mentions a problem encountered by many constructors, especially for those who may be undertaking their first project. And, although Ross G4DTD (a *PW* author himself) doesn't mention the actual project he was intending to work on – I can sympathise to a certain extent with him and anyone who has problems finding specialised components.

Whenever we feature major projects – such as those presented by **Tony Nailer G4CFY** in the *Doing it By Design* series, readers have the options of buying a full kit, or they can purchase specialised components while using the printed circuit board (p.c.b.) design published in *PW*. Tony G4CFY goes to great lengths to ensure a supply of essential components for readers who buy the complete kits, partial kits or specialised components for his projects.

When **Tex Swann G1TEX** and I consider articles for publication, we are always anxious to ensure that components are easy to obtain. This is of paramount importance, because over the past 20 years we've had to withdraw several excellent projects before publication, because vital components have become unavailable.

One particular project caused Tex and I some real problems – it was a frequency counter pre-scaler project using a seemingly widely available integrated circuit (i.c.). Regular readers may remember the problem project (it used a Siemens i.c.) and that we had made regular checks to ensure it was still available and we were assured it was a current component. Unfortunately, when the project was published the i.c. became unavailable, as it was only on sale 'until stocks sold' before becoming officially obsolete. Frustratingly, there's absolutely nothing we can do – apart from making as many checks as we can and perhaps being a bit more cynical when talking to i.c. manufacturers and suppliers!

In his letter Ross G4DTD only mentions Maplins, and there's little point discussing this component source any more as the topic has been widely aired in the *Letters* pages. Fortunately though, *PW* has some excellent specialised component suppliers

who regularly advertise in the magazine and they directly cater for Amateur Radio customers.

In particular, I've had superb service over the years from **Robin Sykes G3NFV** at **Sycom** and **Will Outram** of **Bowood Electronics**. Both gentlemen offer an amazingly quick postal component service for customers and – importantly – both traders will look for special items for our readers. Increasingly, I feel that our readers who are keen on building projects and who don't have a large junk box, these can take advantage of the expertise of these extremely valuable sources of components.

I realise that many of us would prefer to browse (rally style) choosing components we need – but it's vital we support the specialised component suppliers. Please give them a call – they need us as much as we need them!

But I must disagree with Ross G4DTD on one point – many of us do have extensive junk boxes! I rely on my 'junk box' and I'm always adding to it and during my club visits, I meet keen students (often in cramped 'digs') who have often managed to acquire a small stock of components. So, even though most of us will move home many times in our working lifetimes, junk boxes can shrink and expand to suit our situation. So, my advice is – start hoarding now, it will be to your advantage!

Cover Price Held

Finally, readers may have noticed that we have held the cover price of *PW* for the second year running and we're covering our ever increasing costs by reverting to saddle stitching (rather than perfect binding, which has become very expensive). Many Publishers are reducing issue sizes too – but we're keeping the size of *PW* to a healthy 84 pages, making it superb value for money.

Finally, if you enjoy the magazine but regularly read someone else's copy, please, please, please, purchase your own, as extra sales will help us improve the value and content even more by being able to afford to increase the issue size as

Rob Mannion G3XFD/E15IW

coming next month



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Roy Walker G0TAK takes over the Antenna Workshop garden to discuss his techniques for 'digging his antennas in'!

Valve Classification Systems

Stef Niewiadomski decodes the fiendishly secretive (to many of us!) valve classification systems so everyone can tell the difference between a 6J6 and 6L6!

Getting tired calling "CQ" in the PW Contests?

If so, try **Barry Horning GM4TOE's** *Contest Voice Keyer* project to save your voice for the QSO!

Coil Winding

Sam Dick G80WX provides some practical ideas and theory to take the fear and hard work out of preparing inductors.

Making Transistors 1950s style

Bill Jarvis GM8APX looks back to 1955 when his science teacher demonstrated how he could make his own semiconductors!

Technical for the Terrified

This month **Tony Nailer G4CFY** demystifies the circuitry behind oscillators using crystals and ceramic resonators

What Next?

Colin Redwood G6MXL aims to reduce the knee-shaking trepidation when you undertake your first QSOs! Colin says there's no need to be shy of that microphone – it won't bite!

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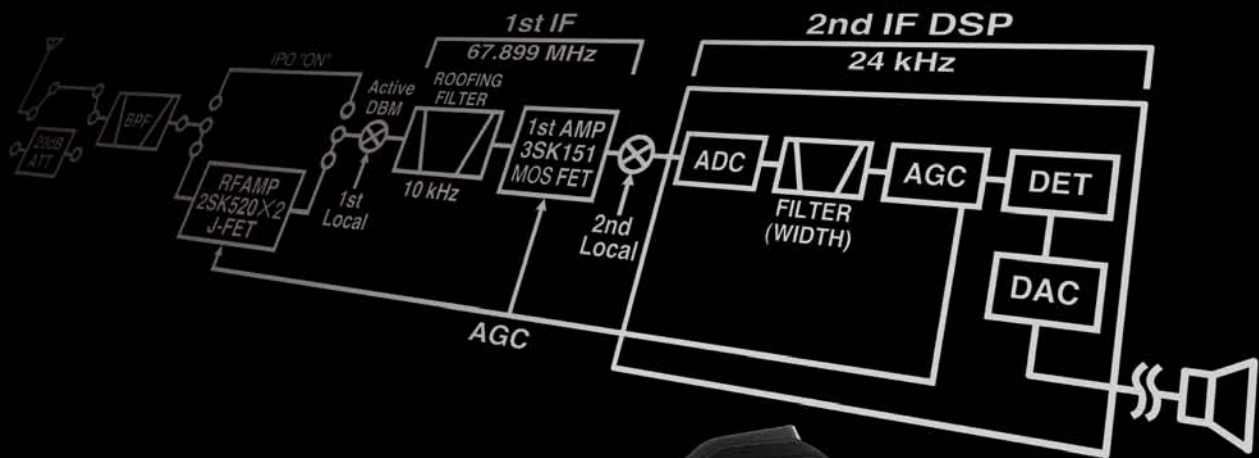
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