



SPRAT

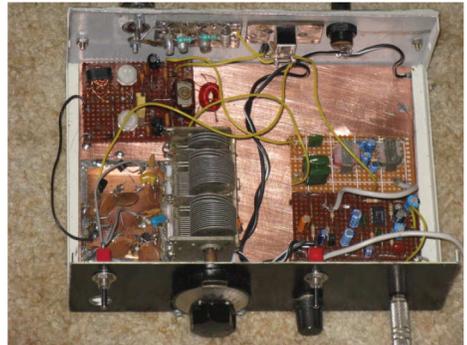
THE JOURNAL OF THE G QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

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WINTER 2013/14



HB9TWS 80m Receiver

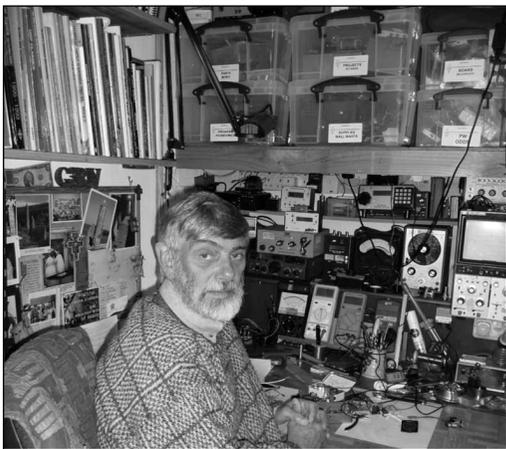
VK3YE unpolished Phasing receiver

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JOURNAL OF THE G QRP CLUB



Rev. George Dobbs G3RJV



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You will notice some extra centre-fold pages in this issue. These are to correct the pagination problems we had with the last issue. This restores what should have appeared in the last issue and adds the latest subscription information. Will **American members** please note that if you prefer to pay locally, please remember to send your subscription to **Dave Yarnes W7AQK** who has replaced Bill Kelsey N8ET. Our thanks again to Bill for his long service and we wish him a speedy and full recovery.

May I thank all club officers and workers for their generosity of time and effort over the year and wish everyone a happy and fulfilling 2014.

72/3

G3RJV



The W1FB Memorial Award 2011/2012 (UPDATE)

As you will see from this issue, the response has been amazing. From only having received one entry before the original closing date and extending that date, I then had a “rush” of entries. I received another entry the day I typed this text ... so I will extend the date to the end of February. To remind readers, it is a simple theme: A Beginner’s Receiver. Please supply circuit diagram(s), full component values and brief notes. A SPRAT formatted page (MS Word) can be supplied on request but any format including hand written may be used. A special plaque is presented for the best design.



The Simple 80m Receiver

Stefan Heesch, HB9TWS, hb9tws@heesch.net

Last year I tried to build a simple regenerative receiver that would cover the whole CW section of the 80 m band. All parts for this receiver have been taken out of my junk box, no special integrated circuits are required for the construction and with only 27 parts it might be used during the minimal art contest.

Features

- Frequency range 3500 – 3600 MHz
- CW, SSB and AM reception
- Stable regeneration
- Very sensitive
- 3 knob operation: frequency, regeneration and volume
- Sufficient output to drive speaker or low impedance headphones
- Power supply 9 – 14 volts DC

Circuit stages

- High-Q frontend with two transistor regenerator
- One transistor NF preamplifier, $V = 100$
- Three transistor final NF stage, $V \sim 50$, Pout ca. 50 - 100 mW

Construction notes

The coil in the frontend is made out of a 25mm plastic tube as it is used for electrical home installations and 1mm magnetic wire:



A solid construction is important for a good frequency stability of the RF frontend. Use wires with at least 1mm diameter and keep all connections short. The antenna coil (L1) has 5 turns, the tuning coil (L1 and L2) in total 31 turn with a tap a 6 turn from the end that is connected to ground. You can fix the windings with some glue to improve mechanical stability.

For tuning a variable capacitor C4 is used. With the described coil and tuning capacitor of 8 – 330 pF the receiver covers the whole CW part of the 80 m band. The frequency and tuning range is determined by the inductors L2, L3 and the capacitors C2, C3 and C4. For other frequency and tuning ranges you can play the variations of these parts.

And here some more constructions hints:

- One can use a single sided PCB in combination with ugly construction to build the receiver. Do not use double sided PCB since it will increase stray capacitances which might introduced unwanted couplings.
- Keep the NF output stage away from the tuning circuit.
- If possible put the simple 80m receiver into a metal housing.
- If you connect the receiver to a long wire antenna you might want to experiment a little bit with the antenna coupling capacitor C1.

A 9Volt battery works fine as power supply, but also 12 Volt or 13.8 Volt can be used to operate the simple receiver. I used a connector that automatically detaches an internal 9 Volt battery if an external power supply is attached to the simple 80 receiver.

Operation

Operating a regenerative receiver requires first to adjust the regeneration just at the oscillation start, you will start to hear some noise at that point. The receiver has now the highest sensitivity. This working point depends slightly on the tuning frequency, so when tuning one might need to readjust the regeneration again.

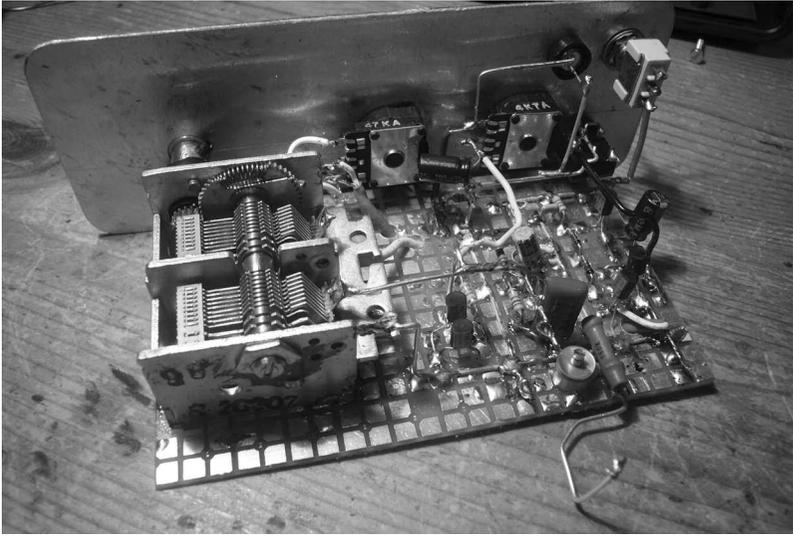
In the evening or during the night strong signals from broadcast stations might interfere with the reception. A metal housing helps to avoid these ghost signals. If the antenna voltage is to big you can reduce the value of the antenna coupling capacitor C1.



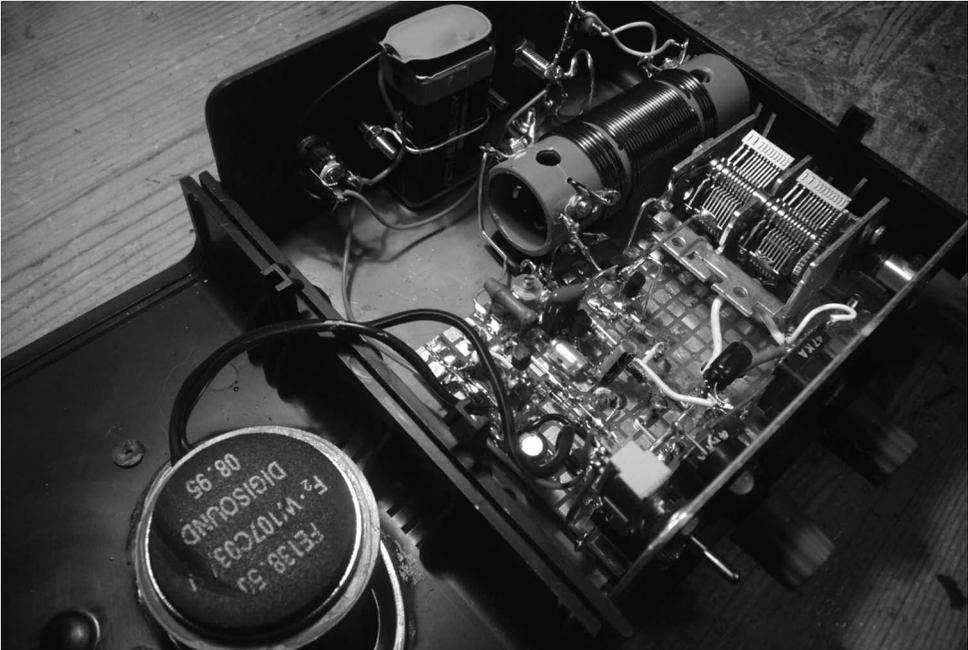
Receiver front

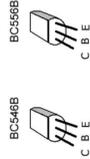
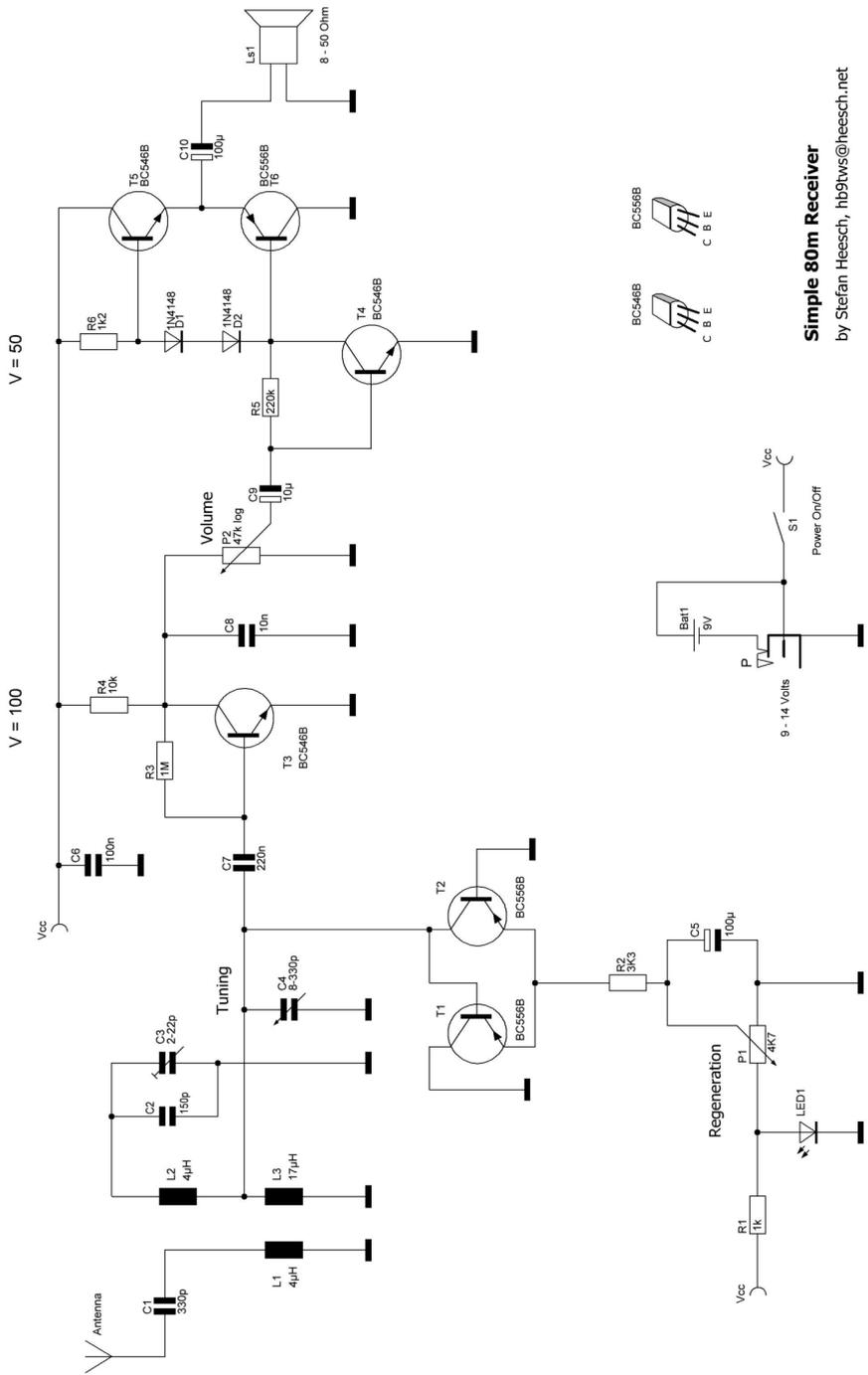
Receiver rear





Receiver built Ugly style on experimenter's PCB





Simple 80m Receiver

by Stefan Heesch, hb9tws@heesch.net



WIFB MEMORIAL ENTRY

DC Rx 2013

Trevor Shackleton, G6PSZ, W. Mids. (g6psz@bueyonder.co.uk)

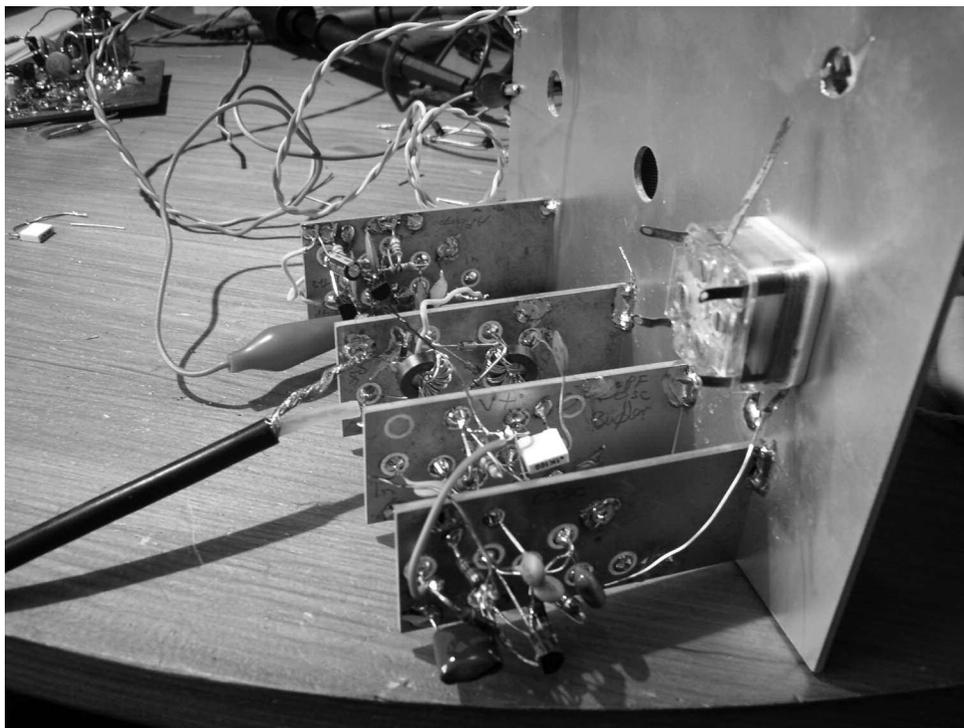
I remember my interest in radio being kindled by a chance spot in my local library of a book entitled 'Making Transistor Radios'. At 11 the concept of actually building my own radio was both novel and intriguing. So now, some years later, I decided it was time to try my hand at radio design. A simple & effective receiver to me suggests regenerative or Direct Conversion (DC), as I had previously built regen's but not a DC receiver this became the most interesting choice.

The concept applied is a modular approach allowing sub-circuits to be tested & debugged individually. This facilitates swapping circuits to try, experiment and improve.

Schematics are drawn in LTspice which freely downloadable from LT (see reference at end) and an excellent simulation tool.

The collection of small circuits brought together should form a working receiver.

All 'difficult' to obtain parts are currently available form club sales.

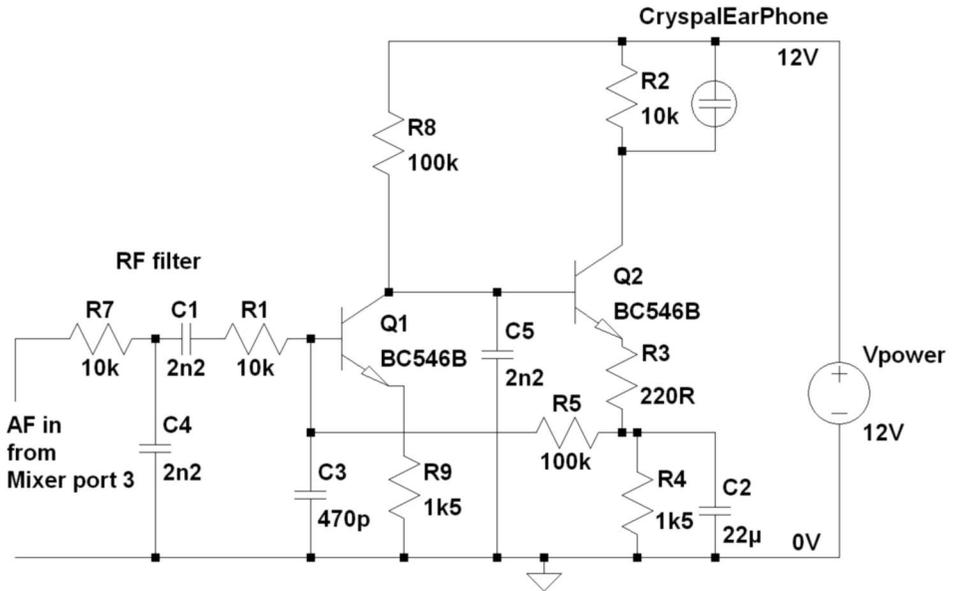


AF Amp

The first circuit module is the Audio Frequency Amplifier. I designed using BC546B, but the circuit should be happy with any silicon NPN transistors with $hFE > 100$ (current gain), and $fT > 100$ (Unity gain frequency). This applies to all the transistors used in this receiver, so 2SC536 should be OK.

Build this circuit first, check wiring, connect power & listen. Touching the input mains should be heard from stray pickup even though gain at mains frequency is low.

It may be useful to add more gain and a volume control at later date, but the current circuit is functional and not excessively loud so is quite usable in its current form.



Mixer

The mixer is the receiver's core. The aerial is connected to port 1. It is better to add a filter between the aerial and port 1 but a wire straight in here will work. A local oscillator (LO) signal is injected into port 2. The mixer will convert a Radio Frequency (RF) signal at the oscillator frequency directly to recovered audio at port 3. It is a passive double balanced circuit, sometimes called a ring mixer. Isolation between the RF and LO ports keeps LO radiation down. Two transformers are used, they are identical. Each has 3 windings of 8 turns, wound trifilar.

Making a trifilar wound transformer takes a few minutes. Take 300mm of enamelled wire, 30SWG=0.315mm is suitable. Small variations will matter little. Fold into 3 to make 3 strands 100mm long. Hold one end in a vice, twist the wire about 3 turns/10mm, (by hand or clamp the free end in a drill chuck turned at screw driver speed), tension lightly. You now have 3 strands that will wind as one.

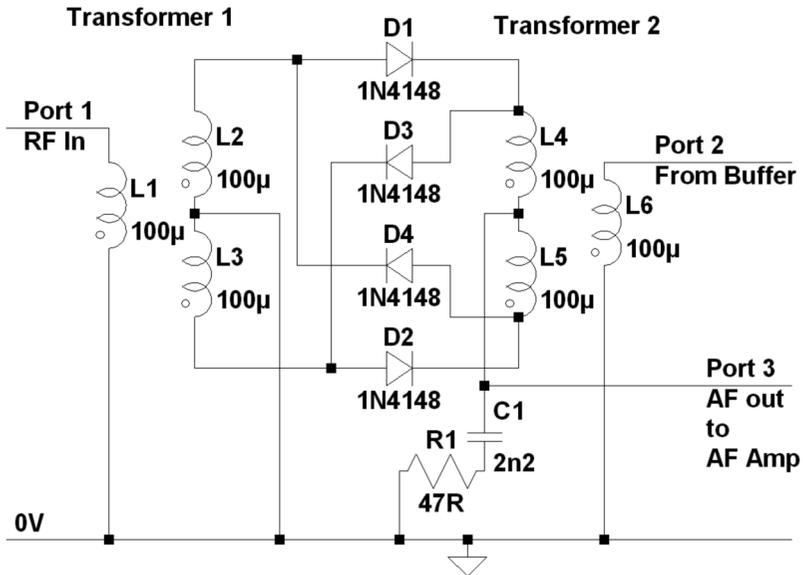
Take a ferrite toroid, FT50-43, pass nearly half the triple wire through the hole making the first turn. Take one loose end of the wire and pass it through the toroid hole again to make another turn, continuing each pass though the hole counts as a turn. Repeat with the other end until 8 turns (passes through the hole) are completed.

Cut and strip the individual wire ends. A hot soldering iron will burn the insulation off modern solder-able magnet wire, older enamel needs to be scraped off with emery cloth or carefully with a knife blade.

There are now 3 identical 8 turn windings to be connected. Pick any winding start, use an ohmmeter/continuity tester to find another winding end. Solder these two wires together to form the centre tap (L2 meets L3). The winding not yet connected is L1.

A similar procedure produces the second transformer L4 L5 & L6, linking the start of L4 to the end of L5 to form the centre tap for port 3.

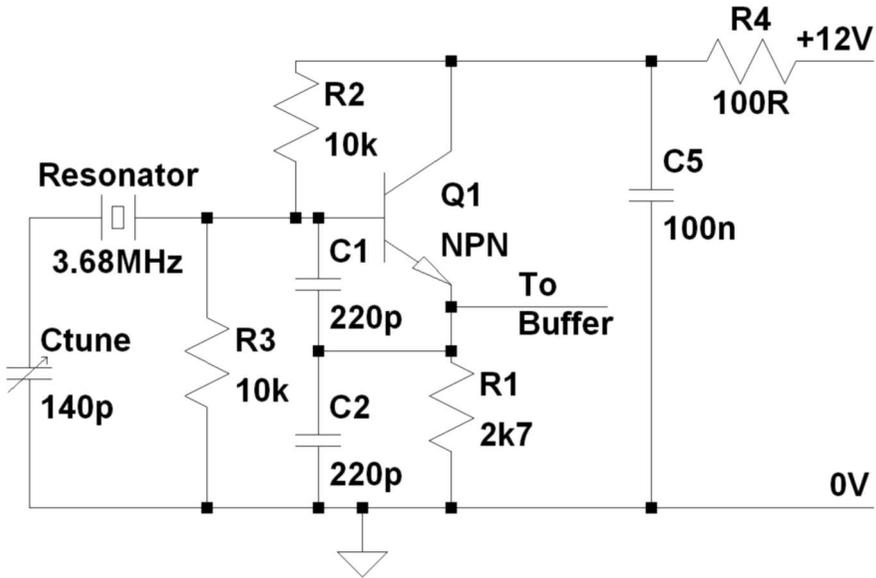
Schottky diodes should give a small improvement in sensitivity at an increased cost over the standard small signal silicone junction diodes shown.



Local Oscillator

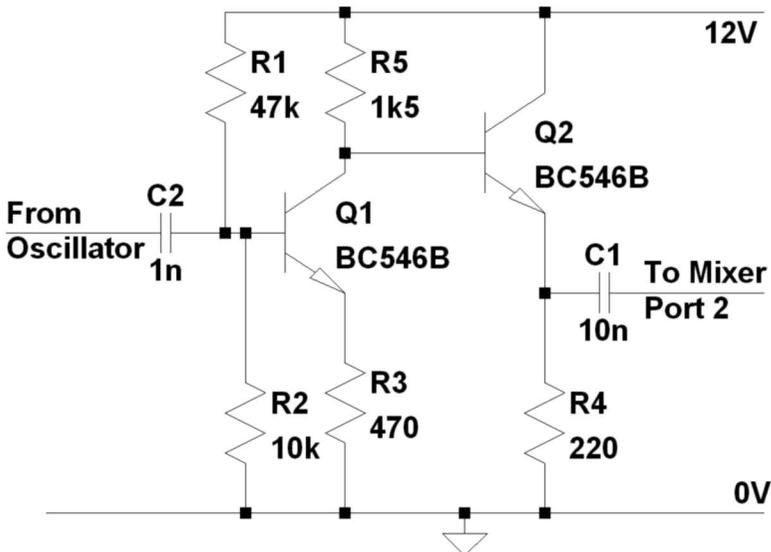
This sets the frequency the radio will receive. A ceramic resonator as the frequency determining element ensures the receive frequency without the need for test equipment. Ctune is a variable capacitor that will 'pull' the resonator frequency by about 100kHz. The oscillator is a Colpitts topology. A polyvaricon is suitable for tuning, air spaced is fine if you have one. If you have or can borrow a receiver capable of tuning an SSB or CW signal close to the resonator frequency you can test the oscillator by listening to the whistle dropping in frequency then increasing as the variable capacitor is tuned through the receivers set frequency. A piece of wire on the oscillator output should provide sufficient signal if the receiver aerial is not adjacent to the oscillator.

I used a 3.68MHz ceramic resonator from club sales for a chunk of the SSB section of 80m. Expect signals to appear after dark. Tuning is higher in frequency than the resonators marked frequency, with a span of over 100kHz. An option for easier tuning is to use a 60pF variable capacitor with 10pF in parallel to tune from around 3700kHz to 3650kHz. The span should comfortably include the QRP SSB calling frequency of 3690kHz.



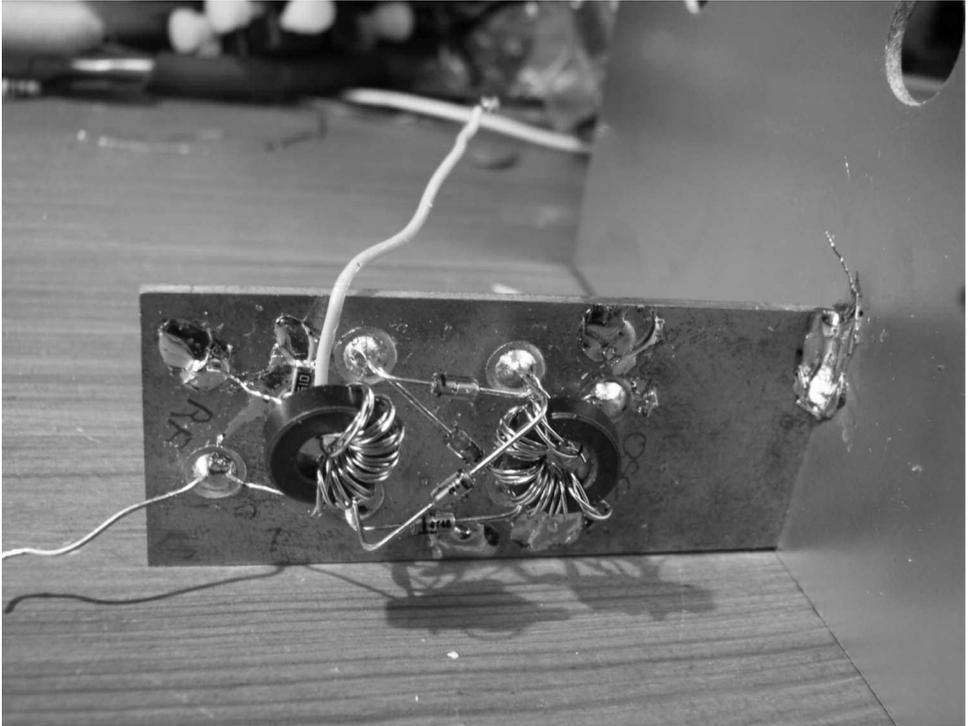
RF Buffer Amp

The buffer amp provides suitably drive into the mixer and presents a stable load for the oscillator to minimise external influences pulling the oscillator.



Construction

This receiver is constructed in blocks, each circuit on its own small PCB. This facilitates substitutes and experiments later, and eases de-bugging. Single (or double) sided PCB is suitable, SPBP or FR4 fibre glass. Most of the copper is left on the board and used as a 0V plane. 0V connections (the triangle symbol on schematics) are simply made by soldering directly to the bulk copper. Each point where components connect is termed a node. The copper island construction technique uses a diamond cutter to route out a moat leaving a node of isolated copper to solder component leads to. A suitable routing tool is available from GQRP sales. It really does require a pillar drill to use this effectively. Alternatively Manhattan construction can be used, sticking on a small square a copper clad PCB for each node.



Mixer board pictured using copper island construction.

A simple easy to plan a layout is copy the schematic. Draw a ring round each node. Pencil round the outline of a small PCB and with the physical parts to hand, draw in a circle within in the PCB outline for each node, loosely following the Schematic flow, matching the component lead spacing. Transistor leads are best slightly splayed out, resistors can have leads bent at 90deg or hair pinned bending one lead back down the body. Nodes with many wires, say >4 may be best done with 2 islands shorted by wire. A few extra islands in spare space can come in handy for later modifications. If using clamps

to assemble, leave sufficient clear board for assembly. When happy with the layout pencil in the node circles on the copper and route out the islands, Solder on parts, visually inspect preferably with a magnifying glass. A continuity check looking for shorts islands to copper plane is often useful. Once checked power up and listen.

The individual circuit blocks are soldered to a copper clad board that also serves as the front panel. I used a full euro card size 160 x 100mm, drilling holes for the variable capacitor, spares for pots, switches & ear phone socket, optionally aerial socket. Depending on choice this could be a neat job for a finished receiver or one with extra holes for likely future additions. The circuit block boards at 90deg to the panel serve as support feet. A useful jig is available from club sales. Mounting the board's this way also provides some screening between the circuits.

Development

Feel free to substitute blocks from other designs into this little receiver and experiment. I hope to further develop and improve the design. A variable frequency oscillator could be substituted for wider frequency coverage and/or other bands. A selective front end would likely benefit the receiver. More AF gain and a volume control could be added. This is just a starting point.

Useful References

LTspice <http://www.linear.com/designtools/software/#LTspice>

2 Volt Rechargeable Batteries

Bill Kitchen, G4GHB (bill.kitchen1@ntlworld.com)



I recently acquired a Roberts Radio M.W./ L.W. radio from about 1939 and the valves wanted 2 volts for the heaters. As QRP builders still use valves I thought this information might be useful.

Looking on the internet I found Farnell Electronics can supply rechargeable 2 volt batteries in a range of physical sizes and various capacities. The one I bought was an 8 A.H. to fit into the radio and was just under £17. They are

manufactured by Cyclon in the U.S.A. Picture enclosed for an idea of size, it is 44mm diameter x 109mm height and 0.6 Kg. weight.

A No Cost KX3 Stand

Tom Sorbie GM3MXN (gm3mxn@blueyonder.co.uk)

I have recently moved into sheltered housing, bungalow type with small back garden where I have managed a stealth doublet a bit on the low side, with an 80 ft top. I was thinking of the W3EDP but never tried it. The only transceivers I use now are the FT817 and KX3. It is just as well that I use QRP as I have a Defibrillator and Pacemaker wired to my heart....getting long in the tooth at 78.



I was unhappy about the KX3 sliding on the bench supported on peg legs, and I noticed that I could purchase from the States a stand which is a bent metal support. Not having heavy gauge metal to make one, and no workshop, I thought about what I could use. I came up with what is shown here; costing nothing. I used an old socket set box. I cut two slots for the peg legs which keeps it from sliding right or left.

The lid is supported at the required angle and fixed to the locking tab of the case. The KX3 is now high enough to use the optional paddle and is not rubbing along the bench.

“It is vain to do with more
what can be done with less”

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Feet for projects.

Bill Kitchen, G4GHB. <bill.kitchen1@ntlworld.com>



I was in a Wilko store, not looking for anything in particular, when I came across a pack of what they describe as “Bumper Stops - black plastic 16 mm diameter” in the hardware section.

.....I instantly thought, “Feet!”

I bought a pack of 16, I think they were £1.69, and two weeks later I opened the pack to find they are self-adhesive and they simply peel off and applied them to the underside of my home brew rig one at each corner. It took two weeks to open the pack as nothing is rushed at this QTH.

They were ideal as the rig would not be easy to drill now with switches and circuit boards being in the way of screw fixed feet.

The 30th Yeovil QRP Convention – 27th April 2014

The Yeovil Amateur Radio Club would like to announce that the 30th QRP Convention will take place at the Digby Hall, Sherborne, Dorset, DT9 3AA.

The doors will be open at 9:30 am and close at 3:00pm. There will be catering and a bring and buy sale together with the usual trade stands. Ample parking is available nearby and talk-in will be on S22

The scheduled talks will be

10.30 “The first 2-way QRP DX”. Speaker: G3MYM

12.00 “My Club visit adventures including a parachuted PW” Rob Mannion , G3XFD.

Contact: Steve G7AHP. Email: steve@g7ahp.co.uk 01803 666407



WIFB MEMORIAL ENTRY

BRUNO

Beginner's simple superhet for 75/80 meter band
K.P.S. Kang (kangkps@gmail.com)

I very well remember the old days when I started home brewing. Doug's circuits from QST always seemed so simple, exquisite and elegant. When I started putting up this project for WIFB prize entry the entire focus was on the lines Doug had always adhered to in his designs.

Bruno is a simple superhet receiver. I incepted its design using a self oscillating mixer using a bipolar transistor. I used BF199 as it was available on hand but many other like BF494, 2N2222 and even 2N3904 are good choices for this stage and they are assumed to be as good as anything. Both the antenna and oscillator coils are taken from old BC transistor radio set and are not critical.

One may choose to wind their own on those popular 6mm slug tuned formers or may choose to use Kang or similar brands of ready built ones. The output of the mixer is 455KHZ which is fed to the ceramic filter through IF transformer.

A popular TRF MW IC ZN414 is used as main IF subsystem. It provides ample gain and the overall sensitivity exhibited by the receiver is remarkable. A simple ceramic resonator oscillator serves as the BFO and its injection is fed to the input of ZN414 for the reception of CW/SSB signals.

I recommend use of HI-Z phones as with this arrangement the battery drain can be kept low for longer portable operations. However an amplifier stage can be added without question, to drive a speaker.

Alternative equivalents to ZN414 are available with club sales and can be ordered.

KANGA
PRODUCTS



**Radio Kits and Electronic
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****New** Open QRP 40m CW Transceiver £99.00**

****New** Kanga K14 Keyer Kit - See Website**

****New** Arduino Sudden TX Shield £25.95**

AD9850 Modules - £6.50 Arduino DDS Shield 17.50

SDR Receivers – Finningley £16.50, Acorn £19.95

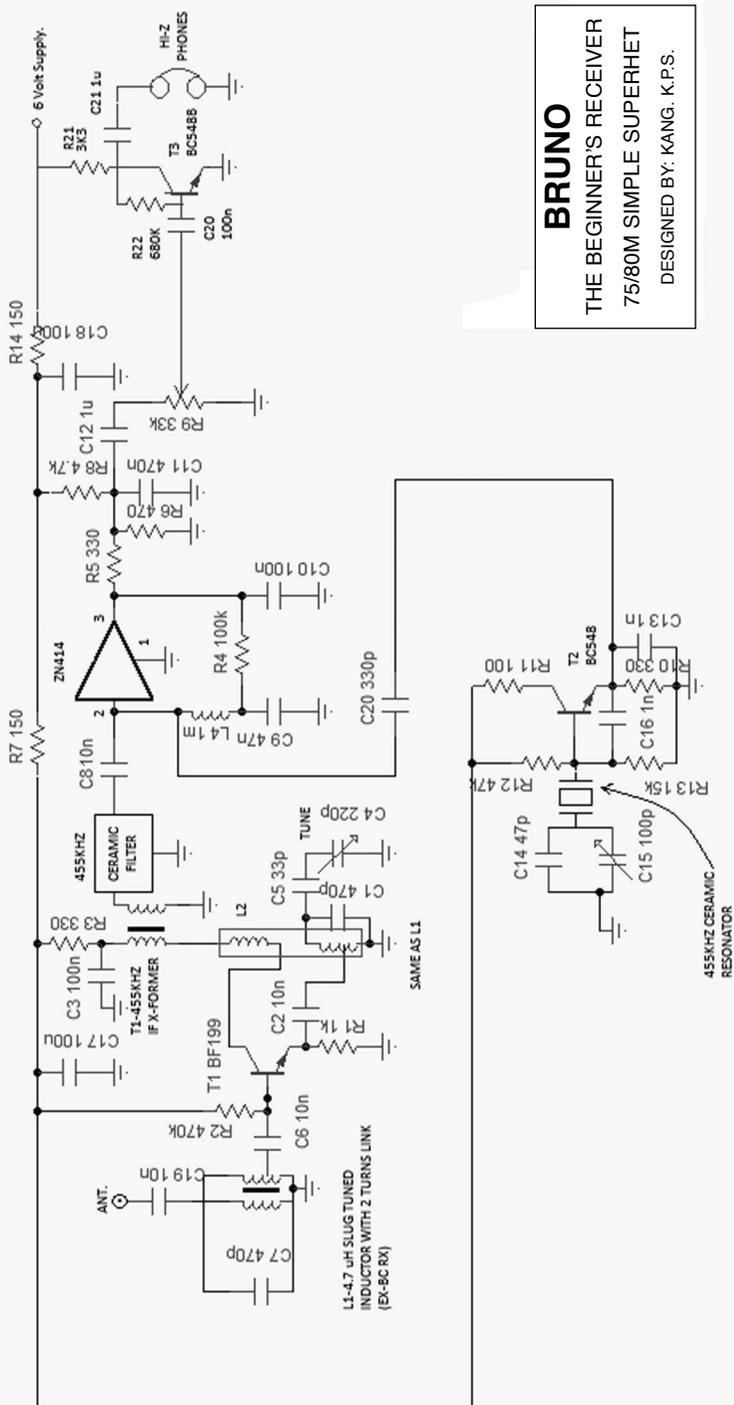
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ATU with re-use of old valve XCVR PA housing

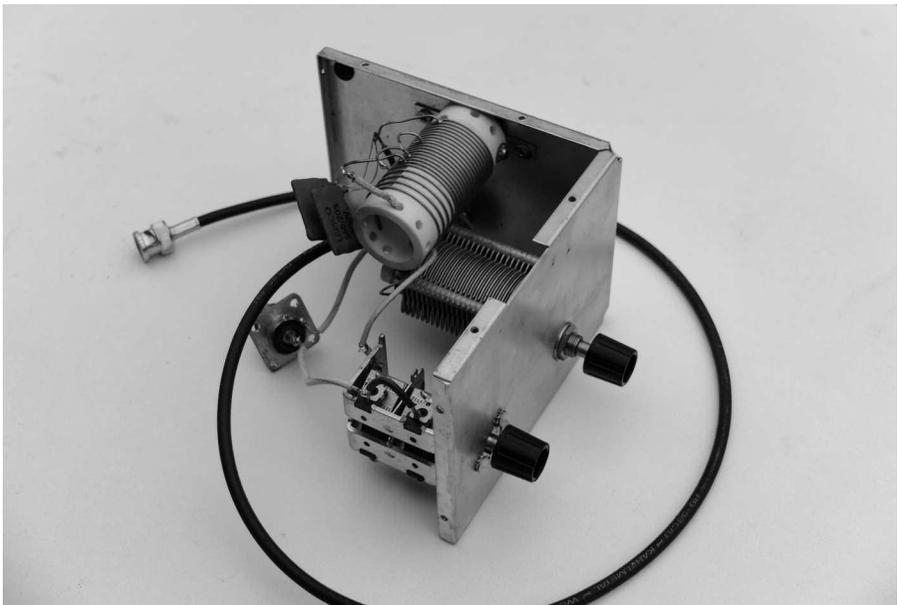
Jesper Fogh Bang OZ1XB, Elmevej 10, DK-3500 Vaerloese, Denmark
[fogh.bang@gmail.com]

After a strip-down of an old valve XCVR I ended up with the PA output housing as a complete unit with the two variable capacitors and a nice inductor wound on a ceramic former. The idea then came up to re-use this as an antenna tuner which would save some mechanical construction work.

I decided to convert the unit into a phi-C matching network [1] mainly because it has inherently low losses but also because it requires only a single inductor per band together with one variable capacitor at chassis ground level. The other variable capacitor has to be insulated from the chassis which has been done with 3mm nylon screws and insulated spacers. The shaft was long enough to hold the knob even if the capacitor had to be relocated backwards by the spacers.

The ATU on the photo is the prototype for a 60m ATU which made use of the original inductor without any modifications. Some of the missing cladding was part of the original XCVR enclosure and it will obviously have to be finished with new parts of metal or wood or whatever comes to hand.

[1] SPRAT issue Nr. 138



HF Noise Measuring Campaign Protect Your Spectrum

**David Cutter, G3UNA <d.cutter@ntlworld.com>
Chairman Ripon and District Amateur Radio Society**

Please support the HF Noise Measuring Campaign started by Gwyn G4FKH and the RSGB Noise Floor Study.

See

www.g4fkh.co.uk/projects/noise-measuring-campaign

<http://rsgb.org/main/technical/propagation/noise-floor-study/>

www.psyphi.net/cgi-bin/hfnoise

www.crosscountrywireless.net

Professional bodies do not listen to amateurs (however well qualified and experienced they may be as individuals) unless they can provide continuous, calibrated, traceable and repeatable evidence in sufficient quantity to make a scientifically provable case. That applies to water pollution, air pollution, food and radio pollution to name a few.

The radio authorities are driven by other criteria than satisfying radio amateurs, especially as amateurs get their privileges free of charge when other users of the spectrum are charged very large sums of money and have a proportionate voice.

The way to persuade such bodies is to provide data using calibrated instruments on a large enough and diverse enough scale that inadequacies in current spectrum management become evident, especially where it impinges on basics like the radio background noise floor. It should be treated as if fighting a court case. Without scientific evidence we will fail.

Many radio amateurs spend a sizeable proportion of their incomes amounting to many thousands of pounds in a lifetime. Radio noise pollution is a rising menace that presently is unseen by most and it is on the shoulders of unpaid amateurs to provide the evidence for the authorities to act, simply because no-one else will. The RSGB have enlisted a university to provide the 3rd party necessary for the job.

It will take a long time to conquer this threat and we will have to spend our own money doing it; but it can only be done in a coordinated way. I fully support this initiative and have purchased the Sentinel sdr and calibrated antenna from Cross Country Wireless for my personal use. My club has also purchased a set to enable each member to record the noise signature at their QTH which will be re-tested on a timely basis.

Please join us; we need a wide coverage of the country in all environments and your measurements can be used as evidence of noise pollution at your site.

The ‘Unpolished’

A four transistor 80 metre phasing SSB receiver

By Peter Parker VK3YE <parkerp@internode.on.net>

“Perfection is achieved, not when there is nothing more to add, but when there is nothing left to remove.” Antoine de Saint-Exupery

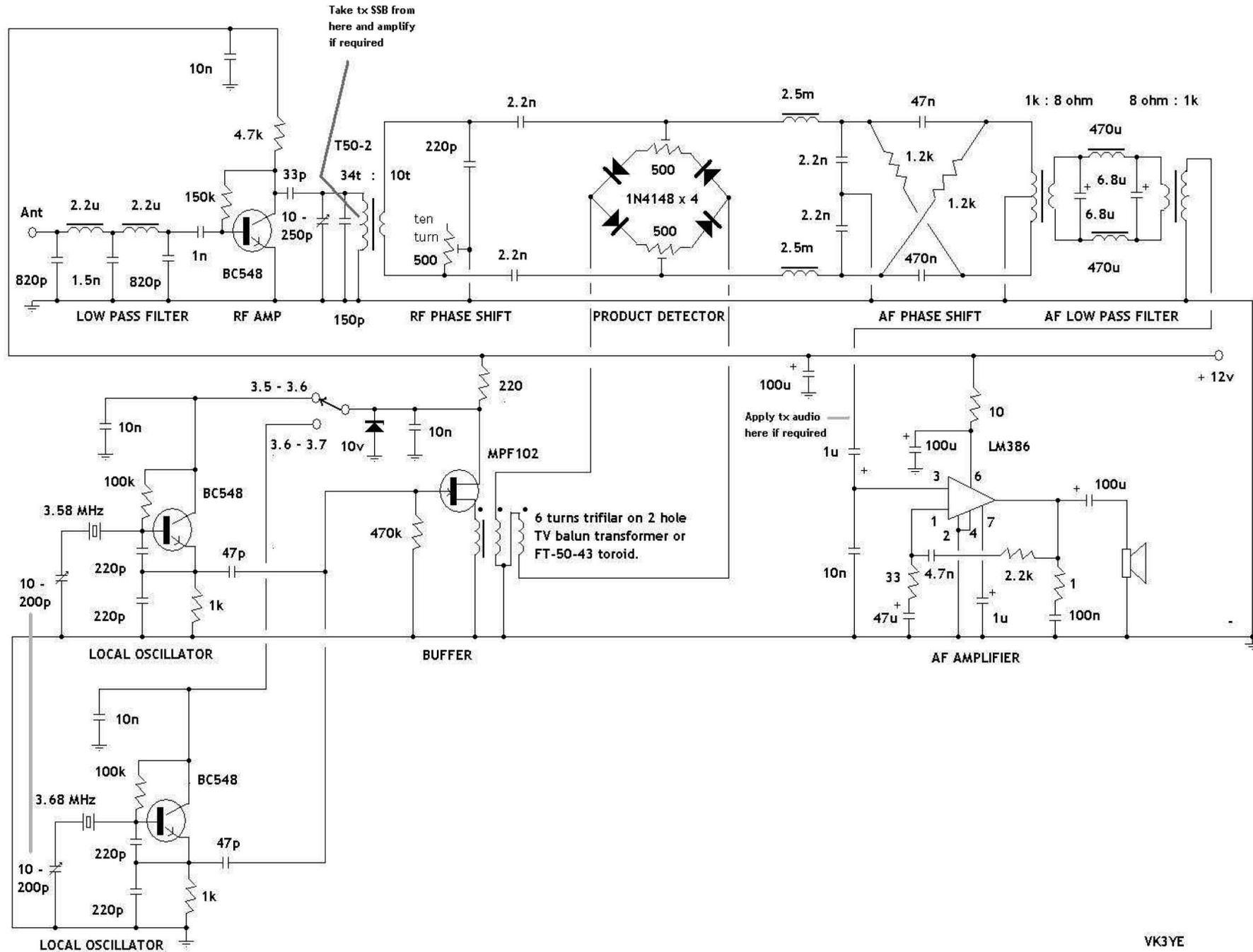
Described is my adaption of the receiver part of SP5AHT’s super-simple phasing SSB rig. While by no means finished, results are sufficiently good to warrant describing here. The original was described in Elektronika dia Wszystkich magazine July 2009. This is available online at http://sklep.avt.pl/photo/_pdf/avt2906.pdf (paste text into Google Translate if necessary). Key to its simplicity is the passive audio phase shift network. This has few parts, draws no power, and, being bidirectional, avoids switching if used in a transceiver. The rest of the circuitry uses common discrete parts except for the IC audio amplifier.

Changes made

Most changes made were to match parts at hand rather than overcome any shortcoming in the original design. These included:

- A front end low pass filter to reject local FM and TV signals. This filter will also attenuate harmonics when a transmitter is added.
- A T50-2 toroid (instead of T37-2) for L2 and L3 and 2.5mH (instead of 470uH) in the product detectors to suit available components. A compression trimmer at L2 allows easier peaking of signals.
- Making the RF phase shift network (the 120 ohm and 330 pF across L3) variable. Either done by making part of the capacitance variable (by adding a 200pF compression trimmer in parallel with a 150 pF capacitor) or replacing the 120 ohm resistor with a 500 ohm trimpot (ten turn preferred). Making one element variable allows adjustment for optimum image rejection, a key aim in any simple phasing design.
- A ceramic resonator VFO instead of the original’s free-running circuit. Two switched oscillators, with resonators for 3.58 and 3.68 MHz connected to one gang of a two gang variable capacitor, tune 3.5 to 3.7 MHz in overlapping segments. Omit one oscillator and the changeover switch if desired.
- An ‘unleashed LM386’ audio amplifier circuit instead of the three transistors to better drive low impedance headphones (and even a speaker on strong signals). Reduce the 33 ohm resistor at Pin 1 for more gain if needed.
- Omitting the 3kHz LPF at L7. This avoids rare 100mH inductors or winding hundreds of turns. I’ll suggest a substitute later.
- Replacing L6 with audio transformer(s), again to save coil winding. A 3k : 3k audio transformer (centre tap on primary winding earthed) gave good results except for minor hum.

"Unpolished" Phasing SSB Receiver



Membership News

Tony G4WIF

This is the issue of Sprat that reminds you it is time to renew your subscription. Please go find that label on the packaging that contained this copy of Sprat and see if it says “expires end of 2013”. UK members with existing standing order arrangement with their banks need do nothing until your Spring Sprat arrives. If your expiry date hasn't incremented by then, assume something has gone wrong and you need to contact me. Your standing order mandate must quote your membership number or we won't know who has paid.

As previously, can I remind members that it is me you should contact for membership matters. Not Graham in Club Sales or George the Club Secretary – it is probably no surprise how much extra work members cause us when they do not contact the correct club officer, but each year people do just that. If you write by post please always include a stamp (or an email address) if you expect a reply.

As always *please* no staples in your letters. It has been my experience that cheques do not get lost in the envelope if you don't staple - but they do stick in my fingers while removing them. Also quote your club number as well as your name and callsign in all correspondence – it really does help.

All cheque payments should be to “GQRP club” and not in the name of any club officer.

For UK members who wish to switch to automated payment there was a UK bank standing order form in the Autumn issue of Sprat to send to your bank (and not me) in time for your payment which must be timed for the 15th January 2014. As well as ensuring the continuity of receiving SPRAT you also help reduce the thousands of letters which I will otherwise have to open in the new year.

You can save me a phenomenal amount of work if you pay using PayPal. Please see www.gqrp.com/paypal for more details. Please only use the special form on the club website which will add a little to cover PayPal administration charges. We have kept the charges to around what it would have otherwise cost you to buy a stamp to post your subscription.

Please refer elsewhere in this issue to the list of DX representatives to whom you can pay in your local currency. For the remainder of the world without PayPal access you can pay by international bankers draft (in pounds sterling). Cash in UK Pounds (to me), Euro or U.S. Dollars (to the correct DX rep) will be accepted - but of course you send cash at your own risk and each year many of these payments never arrive.

Finally my sincere thanks to all overseas representatives who give up their time to deal with local members throughout the year.

My special thanks to new volunteer Dave Yarnes W7AQK our new DX representative in the USA who replaces Bill Kelsey N8ET.

SUBSCRIPTIONS FOR 2014 ARE NOW DUE

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SUBSCRIPTIONS FOR 2014 paid direct to G4WIF or overseas representative.

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You can pay by direct transfer but please write to Graham, G3MFJ, to say that you have arranged the transfer. Our bank account details are:- G-QRP CLUB NO. 1 ACCOUNT, NATIONAL WESTMINSTER BANK PLC, ROCHDALE BRANCH (SORT CODE 01-07-44 a/c 04109546). Overseas members please contact G3MFJ.

*members can use the form provided in the Autumn Sprat if they would like to pay by standing order or to amend their existing standing order to the 2014 subscription rate of £6.00. This payment must be in place with your bank to execute on the 15th January. **If your standing order does not quote your membership number then your payment can only be treated as an anonymous donation and your membership will expire.***

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All cheques must be made payable to “G-QRP CLUB”
Please do not make cheques payable to individual club officers.



Please

enclose this form with your payment write your callsign & number on the cheque **do not staple your cheque** to this form. Send to G4WIF, GGRP Club, PO Box 298, Dartford, Kent. DA1 9DQ

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Changes or additions

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Please send your subscriptions to the following overseas representatives:-
(for email addresses see www.gqrp.com – membership renewals page).

Country & Representative	Amount
U.S.A Dave Yarnes W7AQK, 12630 E. Cape Horn Drive TUCSON, AZ 85749 USA	\$18.00
Germany: Dieter Klaschka, DL2BQD, Kuelzviertel 20, D-16303 Schwedt, Germany. Überweisen Sie bitte den Klubbeitrag von 12 Euro bis Ende Januar auf das Konto Deutsche Bank, Klaschka, Karl Dieter und Rosmarie Ktnr: 260 70 59 63 BLZ 120 700 24	€12
The Netherlands Henk Smits, PE1KFC, Storm Buysingstraat 30, 2332 VX Leiden, Nederland. Tel 06-13267146. Maak voor 1 Januari 12 Euro over op rekening nummer 45.04.06.334 t.n.v. H.W.Smits te Leiden. Vergeet uw call en uw G-QRP nummer niet te vermelden! Een email ter bevestiging wordt op prijs gesteld.	€12
Belgium Jos Warnier ON6WJ, Kalendijk 28, B-9200 Dendermonde, Belgium. Tel. 052 220996. Vergeet niet Uw call en clubnummer te vermelden! N'oubliez pas d'indiquer votre indicatif et votre numero de membre! Contributie/cotisation: 12 Euros voor/avant le: 1 Jan op nummer/ au numero: 979-6393074-03 €12	€12
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Italy. Fabio Bonucci - IK0IXI. Via delle Sterlizie, 10 I-00053 Civitavecchia Italy. "La quota annuale per l'iscrizione al GQRP Club dall'Italia è di 12 Euro. I pagamenti possono essere effettuati tramite: 1) Direttamente sul sito GQRP tramite PayPal. 2) PostePay - € 12.00 3) Diretto (contanti € 12.00). Rischio di smarrimento a carico del socio. Si può effettuare la ricarica PostePay in ogni Ufficio Postale al costo di 1 Euro, oppure tramite le ricevitorie Lottomatica al costo di 2 Euro. Per informazioni inviare email a Fabio oppure SMS 320-4839771	€12
España, Jon Iza, EA2SN, A. Gasteiz 48-7 izq, 01008 Vitoria-Gasteiz. Cuota: 12 Euros. Envía un correo electrónico si quieres hacer una transferencia bancaria. €12	€12

Any other overseas to Tony Fishpool G4WIF, GQRP Club, PO Box 298, Dartford,
Kent. DA1 9DQ [Europe: £10 GBP / DX: £12 GBP]

Club Information – Who Does What

Sprat

Articles & editorial	G3RJV
Members news for news column	G4BUE
Communications news	M1KTA
SSB news	M0NJP
VHF news	G8SEQ
Delivery and Sprat Index	G4WIF

Membership

Membership queries, subscriptions (+ any QTH & call changes), Sprat address labels	G4WIF
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General

Secretarial	G3RJV
Treasurer	G3MFJ
VHF matters	G8SEQ
SSB / Data matters	G0BPS
EUCW representative	M1KTA

SALES

General items & back issues of Sprat.	G3MFJ
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SERVICES

QSL Bureau - in, out & sorting	GM3VTH
Antenna advice & awards	G3VTT
Circuit & construction advice	G3ROO
Internet GQRP club reflector & web site	G4WIF

Please quote your membership number in all correspondence and include an addressed envelope with postage if you need a reply.

- Replacing the 3k:3k transformer above with two 1k : 8 ohm transformers with the 8 ohm sections wired together. This combination rolled off the audio lows, removed the hum and improved readability on weak signals. Adding 6.8 uF across the 8 ohm windings provided a handy audio top cut.
- Wiring a 2.8 kHz low pass filter between the two 8 ohm windings of the back to back transformers. This comprises two 470 uH RF chokes and two 6.8uF electrolytics. Filtering audio at 8 ohms allows small inductors to be used. It has an insertion loss so is best left out if the receiver's gain is marginal.

Measuring image rejection

Those unfamiliar with phasing SSB receivers may not know how to measure image rejection. Image rejection is a ratio between the strengths of two signals: desired versus image. A higher ratio means better rejection.

A simple direct conversion receiver does not attenuate its audio image so may fail under crowded band conditions. In contrast a filter or good phasing transceiver may have an image that's one ten-thousandth or one hundred- thousandth of the desired signal (40 – 50 dB down), burying it below band noise. In between are phasing designs such as this where undesirable signals may be one hundredth the power of desired signals (ie 20 dB down). Images will still be audible, but seldom annoyingly so.

Measure image rejection with a calibrated frequency RF signal generator and an accurate AC millivoltmeter across the headphones. Note the voltage at frequent intervals as the carrier is moved from several kilohertz below the receiver's centre frequency to several kilohertz above it.

Graph audio output voltage versus frequency. Compare voltages above and below the centre frequency and note the ratio between them. One side should be much stronger than the other. If the upper side is stronger reverse the product detector's audio output connections to give the desired LSB response for 80 metres.

From Ohms Law, recall that power equals E^2/R . This means that a ten times voltage increase across a given resistive load corresponds to a power difference of 100 times, or 20 dB. Bear this in mind when calculating image suppression.

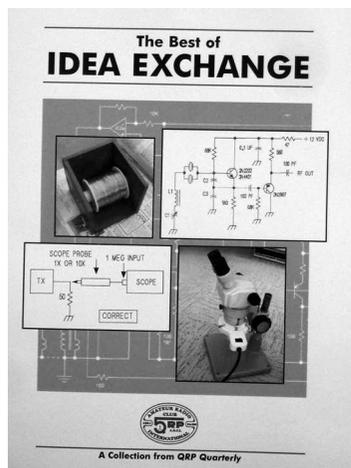
Results and conclusion

A test when there were SSB signals on 3590, 3595 and 3600 kHz showed that each could be tuned with only minimal bleedover from the other frequencies. Weaker signals were clearer due to the narrower bandwidth. And it was easier to receive amateurs using AM. Whereas a basic direct conversion receiver would have struggled on all three counts. This demonstration proved the value of even relatively low image rejection ratios, especially given the small number of added parts needed.

This has been a fulfilling project. If you've shied away from phasing circuits because winding audio coils is too hard or you can't measure large inductances, try this circuit. Get it working on receive first, then when satisfied, make the transmitter.

“Idea Exchange” – Book Review

Steve Farthing, G0XAR, squirrox@gmail.com



“ For those of you who don’t know QRPARCI is one of the longest running QRP Clubs in the business. It publishes a magazine. QRP Quarterly which is many ways complimentary to SPRAT. It is larger, the articles are pretty lengthy and in some cases will give you detailed instructions on building a project or an in depth look at the theory behind an interesting topic. Its all “good to the last drop” as the advert says. However, for me, the best part is “Idea Exchange” which focuses on contributions from club members. This book, ably edited by Mike Czuhajewski WA8MCQ and Mike Michaelis W3TS and designed by Gary Breed K9AY, is their selection of articles from almost 20 years worth of the column.

Firstly K9AY has done a beautiful job in producing the book. Its 137 pages, almost A4 in size, have nice clear diagrams and black and white photos, the typefaces and layout make it very easy to read. Each of the chapters focus on a different topic. In the components chapter you can find out everything you need to know about choosing capacitors, the history of the NE602, how to evaluate unknown toroids and how to scrounge crystals. The circuit design chapter covers topics such as wide range VXOs , a single chip SCAF and home brewing the taylor detector. In the test and measurement chapter you can learn simple ways of measuring RF Power, how to make an audio noise generator and saving money by making your own Kelvin clips. Other chapters cover tools and techniques, repairs and modifications, antennas and miscellaneous ideas.

I think this book is brilliant and mine already has flux stains on it. It is available from the shop on the QRPIARCI website <http://www.qrparci.org>. While you are at it you should consider taking out membership as well. “

CHILDREN IN NEED: A Report from Richard, G3UGF

I thought that you would all like to know the result of everyone’s efforts at the Rishworth Convention . The Bring a Book, Buy a book sale was extremely busy as usual – thanks to all who donated. We had a terrific result from the Silent Key auction of the Oscilloscope, plus the raffle, resulting in our best total to date. Graham Firth and I will be cashing in a whopping £670.00 to **BBC Children in Need**, plus of course the extra benefit they will get from Gift Aiding the money.

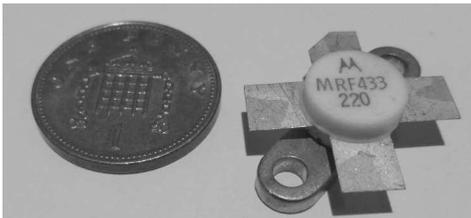
Well done GGRP – Begin to gather technical books for NEXT YEAR!

G-QRP Club Sales and more special deals!

Graham Firth G3MFJ

Firstly, the last few issue's deal of MePads/MeSquares is still available – thanks to a new offer from Rex – still at £9.50 for one of each.

The club has bought some MRF433 transistors – we got them relatively cheap, but the customs guys added quite a fee, so they are £5 each I'm afraid. Here is a picture of one with a UK one penny coin for sizing.



There are three items in this month's deal:

Firstly, with thanks to a member (apologies to him – I have lost his name & call), we have been given a large quantity of 22.1184MHz crystals – these are £2 for 12.

Secondly, thanks to Jan GOBBL who gave us a large number of 13.00MHz crystals and we can offer them at £2 for 12.

Thirdly, thanks to Kurt OZ7OU who has given us a quite a few 82.2MHz roofing filters (TEW MF82UB6) – we can offer these at £4 each.

The previous offers of TMOT-2.5.6 RF transformers, and the TFM-2 mixers are still available, and are still £5 each.

All the above are plus postage per order – UK £1.20, EU £2.60, DX £3.80.

We have run out of the Club 9MHz CW filters – we have sold a lot of them over many years but all good things come to an end I'm afraid. Stocks of the SSB filter are also running low – we have sold a lot more of them, just a few left now.

Finally, many thanks to all who order through PayPal, and who make their remittance a gift. PayPal take 20p plus 3.4% from all orders, and this makes small & medium orders close to loss making for us as the club has low profit margins. If you send the money as a gift, then you pay their charges and we get the full amount.

MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS

OFFERS INVITED: SHIMIZU DENSHI SS-105S All Mode HF Transceiver. Covers 80, 40, 20, 15, 10, Mtrs SSB/CW Plus 29MHz FM. Power Varies 4 to 12 watts depending on band in use. Prefer Buyer Collects. MFJ CUB 40 Mtrs 1 Watt output. £35.00 including U.K. postage. Morris Chapman G0BQI 020 7359 8885. morrischapman@hotmail.co.uk

FOR SALE: Yaesu FT7b with YC-7B Yaesu digital display £300, Icom IC-R71A receiver £300, Eddystone 840c HF valve receiver £100, SGC SG-2020 HF 20w transceiver £600, Ten-Tec Scout 555 with noise blanker and all the band modules £500, Norcal 20m qrp transceiver £95. FlexRadio Flex1500 £450. LG 20MHz oscilloscope £75. G7Vfy 07956544202. N. London. Stephen Walters.

2014 QRP CALENDAR

3rd Nov (2103) - 24th March	EU QRP Foxhunt
1st Jan	Last day of Winter Sports
1st Jan 0000z-2359z	FOC Pump Handle Party
4th Jan 2000z-2300z,	EUCW 160m Contest
5th Jan 0400z-0700z	
1st Feb	Last Day for Winter Sports logs to M1KTA
10th Feb	Last Day for Chelmsley 2013 logs to M1KTA
22nd Feb 1600z to 24th Feb 2359z	CZEBRIS
8th to 9th Mar	RSGB BERU Contest (See RSGB Contest Website)
8th Mar	AGCW-DL QRP Contest
21st Apr 1400z-2000z (Every Easter Monday)	Slovak Low Power Sprint
22nd Apr to 26th Apr	EUCW / FISTS QRS Party
29th Apr	Last Day for CZEBRIS logs to M1KTA and OK1AIJ
29th May 1900-2300z (Each Ascension Day)	QRP-Minimal Art-Session
17th Jun	IARU Region 1 International QRP Day Contest
15th Jul	Last Day for International QRP Day Contest logs (M1KTA)
20th July(?)	RSGB Low Power Contest (See RSGB Contest Website)
26th to 27th July	RSGB IOTA Contest (See RSGB Contest Website)
Saturday 00:00z 24th August to Sunday 24:00z	GQRP Summer Sizzler
1st September	
October TBA	Rishworth QRP Convention
16th Nov 1300-1700z	QRP Contest Community HOT PARTY (3rd Sun in Nov)
26th Dec - 1st Jan 2013	G-QRP Winter Sports

(Please advise M1KTA of any errors, or omissions.)

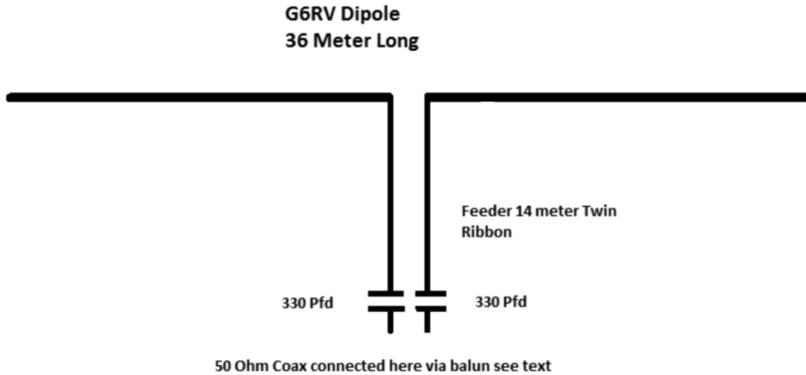
I have added a couple of extras in the calander for a couple of reasons. They all have QRP categories, I have worked other GQRP members in them and they offer a real opportunity for QRP stations to work some DX.

Antennas Anecdotes and Awards

Colin Turner G3VTT 17 Century Road, Rainham Gillingham,
Kent ME3 8TJ
G3VTT@aol.com

It was very nice to see so many of you at Rishworth. Thanks for your positive comments about my presentation on 'Medium Waves, Salt Water and QRP'. If you want to improve your signal strength then go and live by the sea but - get in the queue behind me! Either that or find a salt marsh in top of a mountain. With QRP Valve Day behind us and Winter Sports looming this is your chance to be active on the bands over the Christmas break. Why not try this multiband antenna from the Garden of England. Once again Peter G3ORP has written to me giving details of a modified multi band antenna that is easy to build and is fool proof. It follows the principles set out by G5RV over 50 years ago that are modified and produces a design that is still viable today gives consistent good results. Peter writes from somewhere to the west of Maidstone.

'A number of Kentish men found out that a simplified G5RV is not actually resonant or matched on most bands, (*it should offer a reasonable match on 20 meters being 1.5 wavelengths – G3VTT*), but it is both XYL and neighbour approved at many locations hence its popularity. The purpose of the G6RV is to overcome some of the bugs and improve the all band efficiency of the earlier design. I was inspired by some early articles by W5ANB and G4ZU which seemed to indicate that this type of antenna does work rather well. I will leave any gain figure claims and computer proofs to the salespersons amongst us. Basically the 36 metre top is resonant on the 10 and 15 Metre bands and if fed with a length of 300m slotted ribbon radiates in several directions extremely well. You should prune the feeder, about 14 metres long, for your "sweet spot" with lowest SWR on the 14 MHz band and then leave it alone! If a 330 pfd capacitor is inserted in each leg of the ribbon a rather good match can be obtained on 3560 KHz (a good choice folks!). A Maplin capacitor order code N47CN can be obtained locally throughout the UK which should do the job nicely. Note that 270pf is fine for the middle of the EU 80m band. As has been found with most W3DZZ and G5RV style antennas 50 ohm coax is not the best choice for all band use. It is far better to use 75 ohm with CT100 good on the HF bands. Some TV167 from Cablehub, (in line with the price!), is better for very long main feeder runs and 93 ohm RG62AU is also a good choice. At the junction of the capacitors and coax an 8 metre length of coax main feeder needs to be coiled up in a 200mm diameter bundle to provide an RF choke and ten Maplin N48FK ferrite beads randomly distributed around this decoupling choke will improve its line current decoupling performance and bandwidth. A *double pole relay with a simple DC on off switch arrangement is used for converting this dipole arrangement to a Marconi Tee.*

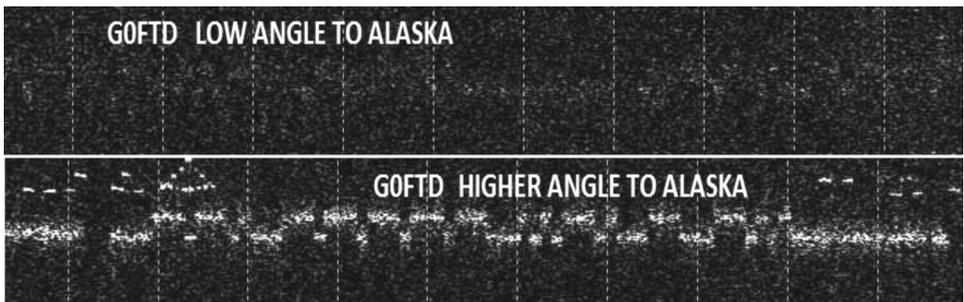


To operate on 160m a Maplin NO8AW 10amp relay is used to strap the 300 ohm ribbon together and short the capacitors for Marconi Tee usage on Topband and 7Mhz. Note the ribbon is now the radiator so keep it well clear of other conductive objects especially the ground! Thin poly propylene line, (not carbon fishing line), and bamboo can help support any spare ribbon into a delta or similar shape. The Topband TEE configuration is usually self-resonant around 1940 KHz. A wire mesh ground plane and many radials won't improve the SWR but will increase your radiated power. Don't be tempted to prune the ribbon again or you will ruin your previous good work. Postage stamp dwellers have found that sharply sloping the ends down for 5 metres seemed to improve DX performance on some HF bands also it induced vertical radiation mode instead of horizontal and produced rather surprising results at times. Most modern rigs include line flattener auto tuners but if one band proves problematical add a few metres to the coax and prune to suit. Manual tuners usually cope rather well because on most bands the SWR will already be low. Coax for the main feeder is house friendly and keeps the RF outside of the shack. Does it work? G0JUS used this as a sked keeper on the 20m band to work VK5QG 2 days a week over a 20 year period and it always outperformed his out in the clear Butternut vertical. It won't cost you megabucks to build one and shouldn't cause local riots! The SWR is NOT 1:1 on all bands however a 50 ohm dummy load is, (think about it!). If the relay wiring causes brain cell damage when developing the wiring and switching arrangements then crocodile clips or banana plugs can be used but these are bad news in a rain storm! To prevent static build up discharge 2.2 megohm resistors should be wired in parallel with the 80m resonating capacitors. This antenna is not a high angle cloud warmer on 160m and 40m but is good for DX and line of sight low angle work. With loud QRN on Topband switching to horizontal on receive often helps. The highest SWR will be on the 30m band which is where the low loss feeder helps. A separate 1/4 wave 10 MHz vertical is also worth a try. Gain on the HF bands should be similar to a dipole with radiation being mainly off the ends and a cloverleaf pattern on 14 MHz Any LF bands "directivity" is usually caused by local site conditions or interaction which is hard to avoid in a small garden. Good luck! (I'll try and include the diagram for the 160m operation next issue. As usual I am short of space – G3VTT).

High angle radiation, a better choice for QRP operation?

Andy Foad, G0FTD. GQRP 13690

Another Man of Kent is Andy G0FTD who often works portable from the Whitstable area. Andy has been experimenting with various high and low angle radiation antennas and come up with an interesting theory which could be the start of some stimulating experimentation. ‘Over the last year I had been using my G0UPL Ultimate 2 transmitter for QRP work, especially the QRSS mode, and using about 1 watt. I had configured my two 10 MHz antenna system to be low angle radiators and had observed my signals as received on various online QRSS “Grabbers” over many months. These online receivers ranged from about 100 km away to 6000 km away. The results were acceptable but nothing special. I then reconfigured one antenna system to be a high angle radiator with most radiation being almost 10db greater skywards than the previous antenna configurations. After this change I observed an instant improvement on **ALL** online receivers. The crowning glory was when I managed to finally get seen on the KL7L grabber in Alaska which is a notoriously difficult path over the North Pole often suffering from severe attenuation, multipath and Doppler shift as the signal has to pass through the aurora oval. Previously I could hardly be heard at all except for a noisy signal trace but now I’ve become a fully respectable signal because of this simple change. The screenshots below illustrate the typical change seen on my QRSS signal achieved by boosting the high angled radiation sent at 77-90 degrees by about 10db. The upper trace just shows a noisy smudge of my signal. The lower trace shows a much more positive and clearly identifiable signal.



Why the better results you may ask? I have a theory. I’m starting to think that if you launch an already low powered signal at low angles then you’re expecting it to travel through or graze lots of objects, both man made or natural, before it finds a clear path to the ionosphere and introducing attenuation losses. These losses probably outweigh the advantages of low angle radiation paths because an already weak signal is now made even weaker! The chances of being spotted by anyone casually swinging their VFO about are now reduced and besides a DX path has an inherently longer path anyway that makes signals weaker. You might as well give a QRP signal the best chance to escape terra firma by launching it via a lesser attenuated high angle path and settling for short to medium

distance QSO's that will also be stronger in signal strength because of lesser attenuation!
73 de Andy G0FTD

Tips and Hints from GW8AWT I receive regular letters from Wynn which are full of useful tips mostly about antennas. He suggests visiting the local hardware stores and purchasing garden hose 3/8 UNF Tee pieces as dipole centres. He also warns against using Lead Acid batteries outside as they could suffer from premature failure in cold weather.

From Walt Bullerwell KF4YJQ Clarksville, TN

'Having spent the last 3 years doing extensive testing on about 15 different shortened quarter wave antennas, I have come to the following conclusions. First and most obvious is that these antennas do not perform as well as a common dipole or yagi. Having said that I would quickly add that although the shortened quarter wave antenna does represent a compromise and it can also be quite effective if properly installed. My experiments have shown that if these antennas are about 15 feet above ground with a wire mesh ground system, (that is also elevated), they can and do perform quite well. There is an old myth which suggests that a longer radiating element, (the 'Stinger' is an example), will outperform a shorter one. Not so, as evidenced by the "Outbacker" Joey antenna which has a radiating element that is just a bit over 1 foot long. Where the taller 1/4 wave antenna does outperform the shorter unit is on receive. They do indeed receive better because of their greater capture area. I don't consider this to be much of an advantage since our QRP rigs are unlikely to connect with the weaker signals in any event. While my experimentation is hardly a scientific study it has been quite extensive and has served to question some of the "conventional wisdom" related to the use of a shortened 1/4 wave antennas. Much literature has been published which suggests that an SWR of 1.3 to one is perfectly acceptable. This is probably true for those using 100 or more watts but it is certainly not true at QRP power levels of 5 watts. Most modern QRP rigs will not produce their full power potential with an SWR much above 1.1 to 1. Do use a QRP wattmeter at all times to ensure maxim power output. The wattmeter should be installed between the transmitter and the ATU. Of the 15 or so 1/4 wave antennas that I have tested Vern Wright's W6MMA MP1 is my favorite. It is well made, inexpensive, easy to use and performs well. I would quickly add that the "Outbacker" Joey is a very close second. I'm too old to erect dipoles at the 40 or 50 foot level and my quarter wave units have served me quite well'. Take a look at the link below and the reviews on Eham. Any comments?

<http://hfink.com/hfpack/pacificon2006/w6mmp1superantennas.html>.

Good grief! It's Christmas again! It remains to wish you all a happy and healthy New Year and thank you all for your ideas, notes, articles and support over the last twelve months.



COMMUNICATIONS AND CONTESTS

Dom Baines, M1KTA, 34 Bury Road, Stapleford, CAMBRIDGE. CB22 5BP
m1kta@gqrp.co.uk

Hi I hope everyone has had an interesting time on the air this Autumn and are looking forward to the Christmas holiday period. I see the contest between some QRP members for the most worked DXCC in 2013 (**Chelmsley** Trophy) has been increasing lately and some amazing DX has been worked. Some recent exchanges on the email reflector might provide some encouragement for some others and an interesting note that other contests QRP categories throughout the year have added significantly to their totals for 2013. There seem to be several members above 125 DXCC which is a great accomplishment when considering these are all QRP.

I hope you had fun in the other contest QRP categories this year.

Myself I have been absent from the air from August until recently due to a new job and then rebuilding the shack . But I did take part in the excellent Valve Day (Thanks Colin G3VTT) in November I managed to be QRV on 80m (3559, 3560, 3560.5, 3563) G5RV centre 23ft AGL, 60m (5.260, 5.262) (separate dipole at 30ft) and 40m (7.0305, 7.030, 7.0295) same G5RV up until noon (from 8am). RX was a HRO, TX should have been an open 6V6 home-brew TX but the glass valve rolled off as I was carrying the TX to the new shack so it let out the magic gas and cannot yet remember where I put the spares... so TX was KX3, operating as if fixed frequency and manual switching between RX and TX. I thought there was plenty of activity G, GW, GM, DL, EI (No F or I heard!) ON, PA, SM, EA up to noon then the bands petered out for me. Lovely to hear the weep weep coming from all those old TX and nice to hear such nice signals using the HRO. There were lots of 5nn tu etc just below 7.025 as there was another contest on.

I will be on the air as I am sure several others will be for the annual:

G QRP Club Winter Sports

The G QRP Club Winter Sports is one of the most popular QRP operating events. Each year between Boxing Day (December 26th) and New Year's Day (January 1st) the club invites any operators to join in a QRP "QSO Party" using 5 watts of RF output or less. The operating takes place on and around the International QRP Calling Frequencies.

The Winter Sports is not a contest, although the G4DQP Trophy is awarded to the operator thought to have made the best overall contribution to the event. It is usual for operators to exchange their G QRP Club membership number. Those taking part are invited to submit logs and comments to the G QRP Club Communications Manager, Dominic Baines, M1KTA, email at m1kta@gqrp.co.uk, Dom Baines, M1KTA, 34 Bury Road, Stapleford, CAMBRIDGE. CB22 5BP.

Operating for all these activities should take place on and around the International QRP Calling Frequencies.

CW: 1843, 3560, 7030, 10116, 14060, 18096, 21060, 24906, 28060

SSB: 3690, 7090, 14285, 21285, 18130, 24950, 28360 kHz

I recommend if there are a few stations on frequency spread out a bit if you can.

Please take part if able and join Jos ON6WJ, and friends as they keep QRP enthusiasts active all through the winter. He has organised his so-called EU FOXHUNT twice weekly, from **November 3, 2013 - March 24, 2014**. It's well worth taking part as they will love to have members from GQRP take part. There is a website

http://www.on5ex.be/foxhunt/foxhunt_view_unreg.php

Summer Sizzler (around the August Bank Holiday) I received a single entry so perhaps operating during the summer was not of interest to members please can you let me know if you have any suggestions.

G-QRP-DL-Treffen 2014

Das traditionelle G-QRP-DL-Treffen fuer Mitglieder des G-QRP-Clubs findet auch 2014 wieder am **letzten Wochenende im April (25/26/27) statt – in Waldsassen**, in der Nähe von Cheb/OK – unsere QRP-Freunde aus OK sind herzlich willkommen. Weitere Infos gibt es von DJ3KK, POB 801, D-25697 Meldorf (bitte SASE) - oder auf der Homepage: <http://www.g-qrp-dl.de>

Zu Vortragsthemen und Beiträge usw. bitte Bernd via DK3WX@DARC.DE kontaktieren – vy 72 es awds

Fred,DJ3KK - Bernd,DK3WX - Oliver,DF6MS - Manuela,DL2MGP

The traditional G-QRP-DL-meeting for members of the G-QRP-Club will be held at the last weekend of April 2014 (25/26/27) in **Waldsassen near Cheb/OK** – our QRP-Friends from OK are welcome.

Further infos via DJ3KK, POB 801 , D-25697 Meldorf (pse SASE) and on our homepage: <http://www.g-qrp-dl.de>

For lectures and articles etc., please contact Bernd via DK3WX@DARC.DE
72 es hpe cu Fred,DJ3KK - Bernd,DK3WX - Oliver,DF6MS - Manuela,DL2MGP

Ooops.

SSB Generator article in Sprat 155 (page 16) C23 is shown reversed, also the input pins of IC1a & IC1b are the wrong way round, 2 & 3 needs to be swapped round and pins 5 & 6 on IC1b, need to be traversed.... being marked the wrong way round.

This affects the schematic only, the PCB layout and tracking being correct.

Dave, G4COE

MEMBERS' NEWS

by Chris Page, N4CJ (G4BUE)

312 Quail Avenue, Sebring, FL 33870, USA
E-mail: chris@g4bue.com

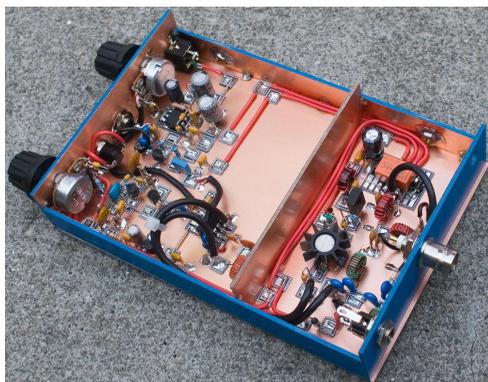


I am writing this just before the CQWW CW Contest at the end of November when the great HF conditions of the last few weeks look as if they are going to hold for the contest, giving us the best contest conditions for many years. This in turn means QRPers should be able to get amongst the action and add new countries to their QRP band/countries scores. I look forward to receiving your reports on the CQWW CW Contest for the Spring 2014 edition of *SPRAT* - thanks.



IKØIXI used this old Hallicrafters S-20R receiver (left), his latest restoration project, for a morning test on 40m QRP. Fabio had several QSO with other Italian stations and says the pre-WWII radio worked very well after 'just' 74 years. The second photo shows his homemade RX/TX/tuner and 12V battery charged by a hand generator (ex-UK Army). **G5CL** finally got some good DX in his log on 19 September with **J28NC** on 10m and an HI, USA and UA9 stations on 15m. Ryan QSO'd three JAs in a row and a BY station on 22 October, plus some good QSOs with the USA on 10 and 15m. In November he made a junk box antenna – an Inverted L made from 125ft left-over wire, a 4:1 balun that was doing nothing, and two 50ft odd wires to act as counterpoises, which he ran off and grounded to the metal framed car port. After hoisting it up 30ft in the air and running the co-ax to a LDG tuner, Ryan was very surprised to hear **VK3EGN** calling CQ on 10104kHz, and even more surprised when he answered his call - he had never worked VK on 30m before! Since then, and with a bit of further tinkering, he has QSO'd BY, JA, UAØ, VR, CX and VP9 (on various bands) bringing his QRP DXCC up to 119 for the year and says, "Not bad for a load of old rubbish lying around at the back of the garage".

AA7EE built a 'fun' little 40m DSB transceiver recently (below) - the **VK3YE** Micro 40. Dave's puts out about 1W of DSB and covers 128kHz of the phone portion of the US 40m band with a 7.2MHz ceramic resonator. His longest distance QSO to date is **N7UVH** at 736 miles. Dave says he was inspired to build it by his friend **KB6QVI** who kept telling him what a nice receiver it was to listen to - and he was right. The version of the LM386



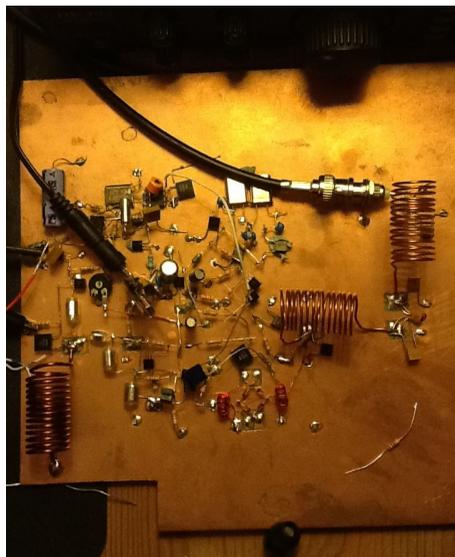
audio amp used manages to get good gain without resorting to the use of a 10uF cap between pins 1 and 8, and the amp has relatively low noise as a result, easily driving a small speaker. Some construction details are at <<http://aa7ee.wordpress.com/2013/10/19/the-vk3ye-micro-40-dsb-transceiver/>>.

IZ5ZCO uses a FT-817ND and 16.4ft whip and made QSOs with **NH2T** (Guam) and **FK8CE** on 20m CW, and **IAØMZ** (Antarctica) and **OX3XR/AM** flying between OX and TF on 20m SSB. Nicola says the first three QSOs were on long path. **G4GXO** travelled through France and Spain in September with his FT-817 and short ATX whip, a huge performance compromise but very compact he says, and from the seafont at Saint Jean de Luz in SW France worked into Brittany and the UK Midlands on 20m with 2.5W SSB. Whilst camped near Pamplona in Spain the same set-up gave Ron a very enjoyable 30 minute QSO with a station in North Yorkshire (UK).

GØUCP built the Eden DSP module (right) devised by **G4GXO** of Cumbria Designs that he gave a talk about at Rishworth last year. John says it can take the place of a computer and sound card for use with any of the small SDR units such as the Softrock receivers or transceivers. With a modified v6.0 RXTX it was possible to have an SSB QSO on 80m. The photo (right) shows the Eden module and a small low noise audio amplifier. The Softrock and VFO are each housed in separate boxes, ideal for experiment!

Welcome back to **GØJCN** (ex-**G6ZHV**) who gave up radio 10 or 12 years ago but has just been 're-bitten'. At the beginning of October Martin was QRV on 40 and 30m QRP and on 2m and 70cms with FM. He is going to build CW QRP sets for all the HF bands over the next few months. Welcome back also to **GØKJN** who has returned to amateur radio after a 19 year absence. John built the 30m Sudden Limerick RX kit and is astounded at its sensitivity. He is using a 25ft single wire just six feet high and realises further progress is required! He says, "The new style of component mounting, smaller layouts and eyesight not as good, has all proved a big challenge, but the end result was worth it, what next?". He thanks **G3MFJ** for his repeated help in arriving at the successful end.

Sympathy please for **G3XGY** after losing a 100+ year old beech tree that acted as his antenna mast in the October storms. Brian's main interest is CW QRP on HF and he has only just restarted the hobby in earnest. He bought some crystals from Kanga, including 5262kHz at 50p each - a bargain - and says 60m activity seems low. Brian has disconnected the RX path to his FT-840 that is connected to a Wellbrook ALA-1530 loop in the loft, as it is the only way to reduce his local noise to hear weak signals. The TX path is connected to a 66ft long-wire only 13ft high - not good, but he is working on it. He has also collected some 6V6 valves to put something together for Valve Day.



MØVVC's first superhet receiver is pictured left and he thanks the G-QRP Club and its members for helping him achieve his goal. When Matt joined the Club, he bought the *SPRAT* DVD, which he scoured for information, bought books including *QRP Basics* and finally bought the necessary items from Club Sales. All that contributed to the successful build of his receiver and he thanks everyone. He says it is still in development and the specification so far is: VFO running at ~4MHz with ~7dBm output; diode ring mixer (6MHz IF); simple 30m bandpass filter, modelled in QUCS; 20dB cascode RF amplifier (as seen in a recent *SPRAT*); two pole CW crystal filter; SA602 2nd mixer and NE5534 audio headphone amp.



The famous duo of **GM4VKI** and **GM3WIL** were at the Galashiels Rally in October, but this time they were under supervision from **G3MFJ** (or **GM3MFJ?**) and **W1REX** (or **GM/W1REX?**). The left photo shows Rex in the hat on the right and Graham sitting facing the camera. The other photo shows Dave serving over the tables with Graham standing behind. Roy says sales as per usual were ‘flying out of the door’ with the Sudden Range of kits the best seller. Rex had his range of Tuna Tin kits on display and was trying to understand the local twang; “I Jimmy” was about all he understood! The following week Rex was at Rishworth, although he was still reeling from his Scottish visit to Blair Castle after the Galashiels Rally. Roy says their next date could be 3 May 2014 at Avimore at St Andrews Church Hall.

G4ICP was looking for inspiration for a simple but effective DX 10m antenna and found the *Pillbox Special* by **G3LGX** in *SPRAT* 57. Dick set his up in the loft, ‘dipped’ the 75ohm matching section with a GDO, and a quick tweak of the trimmer C resulted in a perfect match. Did it work? “Yes it did!”, says Dick, “Joining in some of the contests I have worked nearly all USA call areas plus South America and the Middle East etc with the IC-703 and 5W CW. My antenna was made from some scrap aluminium wire from an old microwave oven transformer primary, some plastic choc blocks and a 30pF trimmer from the junk box. Total cost £0. I would encourage others to use these dark winter evenings to browse back over their old issues of *SPRAT*. I promise you will be inspired!”.

EA2SN is the G-QRP rep for Spain and has been writing articles with kit reviews (mostly QRP) for the Spanish *Radioaficionados* journal (the *EA QST* and *RadCom*). Jon has also prepared Buildathons for his local radioclub <<http://www.ea2rcf.blogspot.com.es/>>, with some of the information translated into English <<http://db.tt/ZR4yggjK>>. He has been invited to give a talk on kits at the Spanish National Ham Convention on 7 December in Bilbao and will cover makers and concepts from the 1960s to present. **G3YTN** is working on a 40m TCVR ‘hacked together’ from several kits and modules: a Sudden-derived RX, junk box special TX, VXO to drive them both, low pass filter and some form of T/R switching arrangement between all the bits. Roger says, “It will undoubtedly not be efficient in terms of the number of components used, but it should be fun getting them all to hang together!”.

N2CQR built a 17m version of **VU2ESE**’s BITX SSB transceiver using a 5MHz IF and a 23.1MHz VXO (right). It is ‘all discrete’ without ICs and built Manhattan style on a single copper clad board. Bill’s first QSO with the new rig was CU (the Azores where Bill lived between 2000 and 2003) and he rates this as one of his all-time favourite homebrew projects. **OK1CDJ** was QRV as **IS0/OK1CDJ** on 24 September. Ondra was called by **OH2BF** but didn’t hear Erkki’s 5W (or 10W!) signal, but he did make a two-way QRP QSO with **YU7AE** running 5W (TS-950SD) and a ZS6BKW doublet. **G0RQQ** operates mainly QRP SSB with a FT-817, FT-857 and FT-920, mostly at 5W and often less, down to 500mW. Keith’s 6-40m antenna is a wire loop in the attic, about a wavelength perimeter for 20m, through a 9:1 balun and an MFJ-945 tuner. With



500mW on HF he has QSO'd around Europe and VE, 5B, EA8 and VE, whilst 5W has got him CU, PY, HK, UN, USA with 4W and XE with 1W, and 5W SSB on 6m around Europe (Italy with 500mW). Keith has earned the *1000 Miles Per Watt* awards from QRP-ARCI using 500mW SSB on each of seven bands: 40, 20, 17, 15, 12, 10, and 6m and says, "This means you don't need high power or a big antenna to have fun!"

M3KXZ made his first VK CW QSO on 1 September with **VK2GWK** on 17m with his 5W to a 10ft whip on his truck parked on the cliffs overlooking Brighton Marina. On 29 September Pete set up his mil surplus 16.4ft long Racal Clansman whip on a tripod with a short counterpoise wire on the beach at Ovingdean (just east of Brighton) and answered a CQ from **VK7BO** on 20m CW with his FT-817ND at 1W and Palm Mini paddle. On his way home from work on 2 October Pete had 5W CW QSOs with **PY4BZM**, **PR7AR**, **LW2DOD**, **LU7HF** and **TU5DF** on 10m, with **HK1ANP** and **LU1YT** on 12m and **CO8LY** on 15m - truly amazing, and on 10 November he enjoyed the nice sunny weather on the cliffs overlooking Brighton Marina and QSO'd PY on SSB and LU, YV, VP2 and USA on 10m.

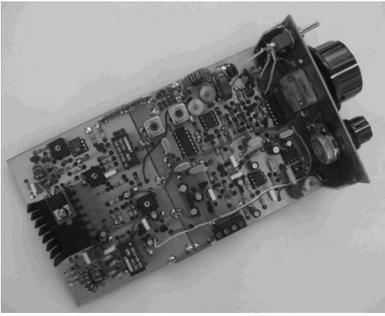


Above is the antennas and outdoor 'shack' of QRP Special Event Station **GB1BOL** that **MMØIMC** set up at the Largs Pencil Monument on 2 October for the 750th Anniversary of the Battle of Largs. After setting up the fan dipole for 40m and 20m on the fibreglass roach pole, and using 5W SSB with a Yaesu FT-817ND with a 12V sealed lead acid battery, Ian made 12 QSOs through the WAB net frequency on 40m and an Italian 1W QRP station on 20m. Sadly the weather changed after two hours causing him to QRT and go home.

G4CCQ made his first SOTA activation from Detling Hill G/SE-013 in September and found the contacts on 40m "came thick and fast". Mervyn used 4W with his HB-1B and a 33ft fishing pole strapped to the trig point that supported an end-fed half-wave in a rather droopy inverted L fashion. A home brew keyer and Hi-mound paddle completed the setup and he says, "I will definitely be doing it again". On 17 October **G4AKC**, operating as **G4AKC/Pedestrian Mobile** on Blackpool Beach, had a great QSO with **KF3CD/Bicycle Mobile**. Mike made a video while riding his bike of the QSO with Dave, see <<http://www.youtube.com/watch?v=YG_tOj-PC0s&feature=>>

On 28 September **G3YMC** wrote, "Conditions in the past few days have been excellent on 12 and 10m in the afternoons, despite the almost total lack of sunspots. I worked **KG9N** on 10m earlier and just now had an excellent QSO with **WA6TLA** near Los Angeles on 12m, the first W6 on the higher bands for a very long time, and 12m has been full of s9+ UA stations all afternoon. Maybe the second peak of cycle 24 is here after all?". During a week in the middle of October Dave QSO'd **ZM1MA** and **5X1NH** on 20m, **TO2TT** (FH), **5X1NH**, **EX8M** and **TN2MS** on 12m and **N5XZ**, **CN8KD** and **4K9W** on 10m. On 21 October **GØKYA** had a QSO with **N1EP** (ME) on 28060kHz nearly ruined due to, "...weird signals that keep popping up on 28060kHz. You get a carrier and then two characters - just heard 'EO' - Russian taxi QRM!?" Steve asks if anyone knows what it is?

Thanks to all the contributors to this column. Please let me know how your winter goes for the spring edition of *SPRAT*, in particular what you have been building, who you have been working, and any other information, news, ideas, suggestions or opinions about QRP, by 20 February 2014. Also interesting photographs please, don't be shy in letting members see what you have been building and/or where you have been operating from, your antennas, who you have been meeting and even a shack photograph to let other members know what you look like! Let me know if you intend operating from somewhere other than home during the spring and summer, so I can members know to listen out for you.



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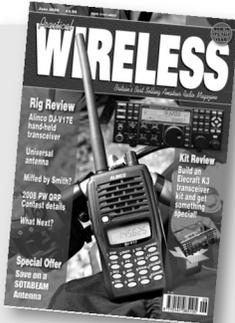
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PICAXE-08M – 8pin – £2 each; CA741 op-amps 8pin DIL – 5 for £1 } Use just

LM386N-1 – 4 to 15v, 300mW, 8pin DIL – £0.40 each } that

LM386M-1 – 4 to 15v, 300mW, 8pin SMD [0.2" (4mm) x 0.25" (5mm)]- £0.35 ea } postage

TDAT052A – 4.5 to 18v, 1W 8pin DIL low noise & DC vol control – £0.60 each } If ordered

TA-7642 Radio IC – direct equivalent of MK484 (& ZN414) – 75p each } with books

2SC536 transistors (npn) fT – 100MHz, hFE-320, VCBO +40V – 5 for 50p } or CDs

MPSH10 transistors (npn) fT – 650MHz, hFE 60, VCEO 25V – 8p each } add this

2N3904 transistors (npn) fT – 300MHz, hFE-150, VCBO +40V – 10 for 50p } postage

2N3906 transistors (pnp) fT – 250MHz, hFE-150, VCBO -40V – 10 for 50p } as books

FETs - IRF510 – 50p; 2N3819 - 17p; 2N7000 - 10p; BS170 – 8p - all each } or CDs

Dual gate MOSFET – BF981 – SOT103 – 1GHz (diode protected gates) – 85p each } do not

Pad cutters – 2mm shaft – 7mm o/s, 5mm i/s diam – 5mm pad with 1mm gap £5.75 each } travel well

10K 10mm coils – 0.6uH, 1u2H, 1u7L, 2u6L, 5u3L, 11u0L, 45u0L, 90u0L, 125uL – all 80p each } with parts.

Magnet Wire – 18SWG – 2 metres – 60p; 20 & 22 SWG – 3 metres – 60p;

24, 25 & 27SWG – 4 metres – 40p; 30, 33 & 35SWG – 5 metres – 30p. } Postage

This is solderable enamel insulated. Max of 3 sizes per member per order } as for

QRP heatsinks - TO92 – 30p; TO39/TO5 – 40p; TO18/TO72 – 60p (pics in Sprat 148) } as for

Axial lead inductors (they look like fat ¼W resistors) these are low current – a few hundred mA } components

4.7, 6.8, 10, 15, 18, 22, 33, 39, 47, 56, 100, 150 and 220 – all uH and all 18p each.

Toroid Cores – priced per pack of 5 – max of 2 packs of each per member

T25-2 – 50p, T25-6 – 60p, T30-2 – 60p, T30-6 – 70p; T37-2 – 75p, T37-6 – 80p; T50-1 – £1.00; T50-2 – 90p;

T50-6 – £1.10; T50-7 – £1.20; T50-10 – £1.20; T68-2 – £1.80; T68-6 – £2.20; T130-2** – £1.50ea; T130-6** – £2.00ea. FT37-43 – 80p;

FT50-43 – £1.20; FT37-61 – £1.20; FT50-61 – £1.60; FT140-43** – £2.50 ea; FT140-61** – £2.50; BN43-2402 – £1.20; BN43-202 –

£2.00; BN43-302 – £2.00; BN61-202 – £2.40. Ferrite beads – FB73-101 (3.5mm dia x 3.2mm long, 1.2mm dia hole) – 40p for 5

All toroids are plus postage – up to 5 packs = £1.20 (UK), £2.40 (EU), £3.50 (DX). Each additional 5 packs, please add 50%

** Except ** items – they are heavy and each counts as 2 packs (ask for quote if you want more than 2 of the large toroids)

SBSS PCB clamps – single – £12, two – £20 all plus post (£2.80 UK & EU : DX – order direct from Rex please)

MeSquares & MePads – £6.50 each plus post (£2.80 UK & EU : DX – order direct from Rex please)

Limerick Sudden kits RX & TX both single band (160 through 20m); ATU (80 through 10m) £36.00 each plus post

UK – £2.80, EU – £5.20, DX – £7.80

Sprat-on-DVD – 1 to 148. Only £4 each to members plus postage, UK – £1.20, EU – £2.60, DX – £3.70

Sprat Binders – nylon string type – Black with club logo on spine -16 issues per binder – new stock – £5.00 each plus postage

(one: UK – £1.60, EU – 3.00, DX – £4.00. More - add £1.10, £1.50, £2.50 each)

Cheques (UK) and payable to G-QRP Club. Sorry, but cheques in other currencies are uneconomical to us due to bank exchange charges!

MINIMUM ORDER for cheque or PayPal payments is £5 For orders less than £5 – please use postage stamps

(any denomination) - any quantity of stamps is OK, or cash. I can accept cash in GBPpounds, or US\$/ euros (at the current

exchange rates) – but please send securely! You can order via e-mail and pay by PayPal - use g3mfj@gqr.co.uk – and pay us

in GBPounds and you **MUST** include your membership number and address please.

PayPal charge us about 4% so a contribution towards that is always welcome, or, send as a gift - thanks