



SPRAT

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DEVOTED TO LOW POWER COMMUNICATION

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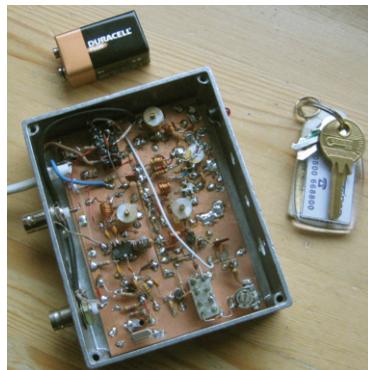


Dom Baines, M1KTA.
The new G QRP Club
Communications Manager
makes friends with locals
on his one man
DXpedition to C5.



**G3XBM 4m
transverter**

**VK3YE
“Bigger Toy”
Transceiver**

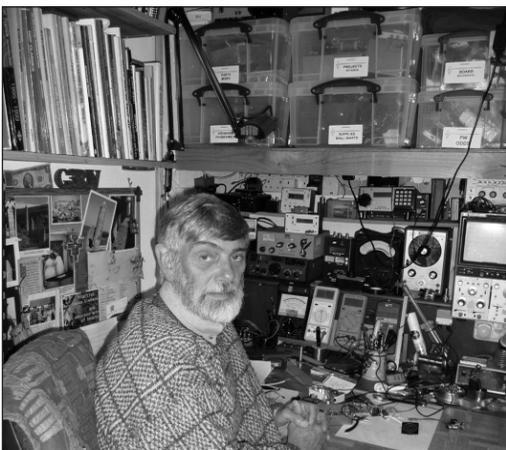


In this issue:

**G4GDR Junk Box Special ~ Ultimate Bipolar VFO ~ 40m WSPR TX
3560 Transceiver ~ CMOS Negative Resistance Oscillator
Test Old Valve Radios ~ Finger Bob Key ~ Bigger Toy Transceiver
QRP 4m Transverter ~ Tips ~ Antennas, Anecdotes, Awards
Communications and Contests ~ Member's News ~ Club Sales**

YOUR SUBSCRIPTION IS NOW DUE (See inside)

JOURNAL OF THE G QRP CLUB



Rev. George Dobbs G3RJV



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One of the gratifying features of the G QRP Club is the length of service of most club officers; they simply stay on, doing jobs they enjoy, for the benefit of others. Regular re-election of officers has never been considered (well... not for more than 2 or 3 minutes). Usually officers know when the time has come for a change or a rest. Peter Barville, G3XJS, has been the club Communications Officer for more years than I know and has served the club loyally and effectively. Peter decided it was time for him to step aside but thankfully Dom Baines, MITKA, has accepted the invitation to replace Peter. Many of you will know Dom from his lively QRP Blog and his one man DXpeditions. So our thanks go to Peter with a "welcome" to Dom and a Happy New year to everyone!

72/3

G3RJV



The W1FB Memorial Award 2011/2012

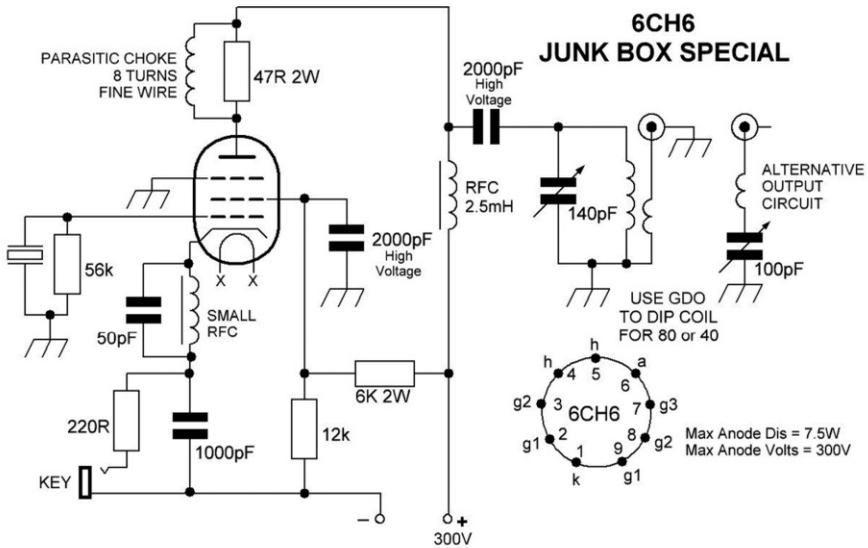
A simple theme : Beginner's Receiver. An amateur bands receiver for one band, capable of being built by a beginner. Please supply circuit diagram(s), full component values and brief notes. Entries before August 1st 2013. A SPRAT formatted page (MS Word) can be supplied on request but any format including hand written may be used. A special plaque is presented for the best design.

The G4GDR 6CH6 Junk Box Special

Described by Coin Turner, G3VTT. (g3vtt@aol.com)

Adrian G4GDR has always been a prolific valve QRP operator and has obtained good results with his single EL91 receiver. I asked Adrian if he could supply details of his matching transmitter using a 6CH6 video valve.

“Hi Colin! This little rig was built from the junk box using the 6CH6 as it was to hand. This valve was designed as a video amplifier power pentode. I’ve had a lot of fun with this little TX and have worked G, GW, GM, EI, PA, ON, OZ, LA, F, DJ, OK, and IK6 with the last station being the best DX. I load it into an atu although on occasions I worked straight into my inverted G5RV.’



‘I claim no originality for the circuit. Using my one valve receiver and this transmitter I’ve had hundreds of good QSO’s on 80m. The transmit note is very good and always gets T9 reports. Reports into G are usually 559 and from Europe at night I get 569 or 579. On tune there’s one dip point which corresponds with maximum power. I use a good quality 3560 crystal and get around 3 watts output.” *What more do you need? The anode dissipation is around 7.5 watts for the 6CH6 and the maximum anode voltage is 300 volts. Some experimentation may be needed for the tank coil but you could try 22 turns for the tank coil on a 1.5 inch former with a three turn link over the cold end. An 18 turn link could be used as shown as an alternative to couple to a long wire and counterpoise arrangement. The stabilised screen volts and oscillator capacitor values ensure a clean pure output, just like a little whistle. Our thanks go to Adrian for his circuit and to George RJV for the diagram. G3VTT*

The Ultimate Bipolar V.F.O.

Gerard Kelly, G4FQN, 15 Dartmouth Drive, Windle, St. Helens. WA10 6BP
gerardkelly429@googlemail.com

Ceramic devices have been successfully used in the v.c.o. stage/s of many superhet transceiver projects for some time, unfortunately, they are not available in an extensive range of frequencies. I have a circuit for a 7MHz direct conversion transceiver based on an F.E.T. oscillator and thought a bipolar replacement must be as frequency stable and I thought better suited. A review of many articles from different sources showed the colpitts circuit to be the most common and a circuit was constructed. I must have built it using the wrong components because this circuit drifted, so I built another. Surely all these articles must have used better performing circuits than this? In the end I built several circuits and found that they all drifted. Almost at the point of giving-up and after a complete re-think the final circuit was under test and from the first switch-on I knew I had a winner. Without adding a P.L.L. or putting it in an oven, I cannot see any cost effective way in which it could be made more stable! Since then a circuit has been running at 2.6MHz in a superhet receiver (narrow band) without issue and tested over long periods at 7MHz; comparisons with an F.E.T. have not been made as this will have to wait for some more free time in the future.

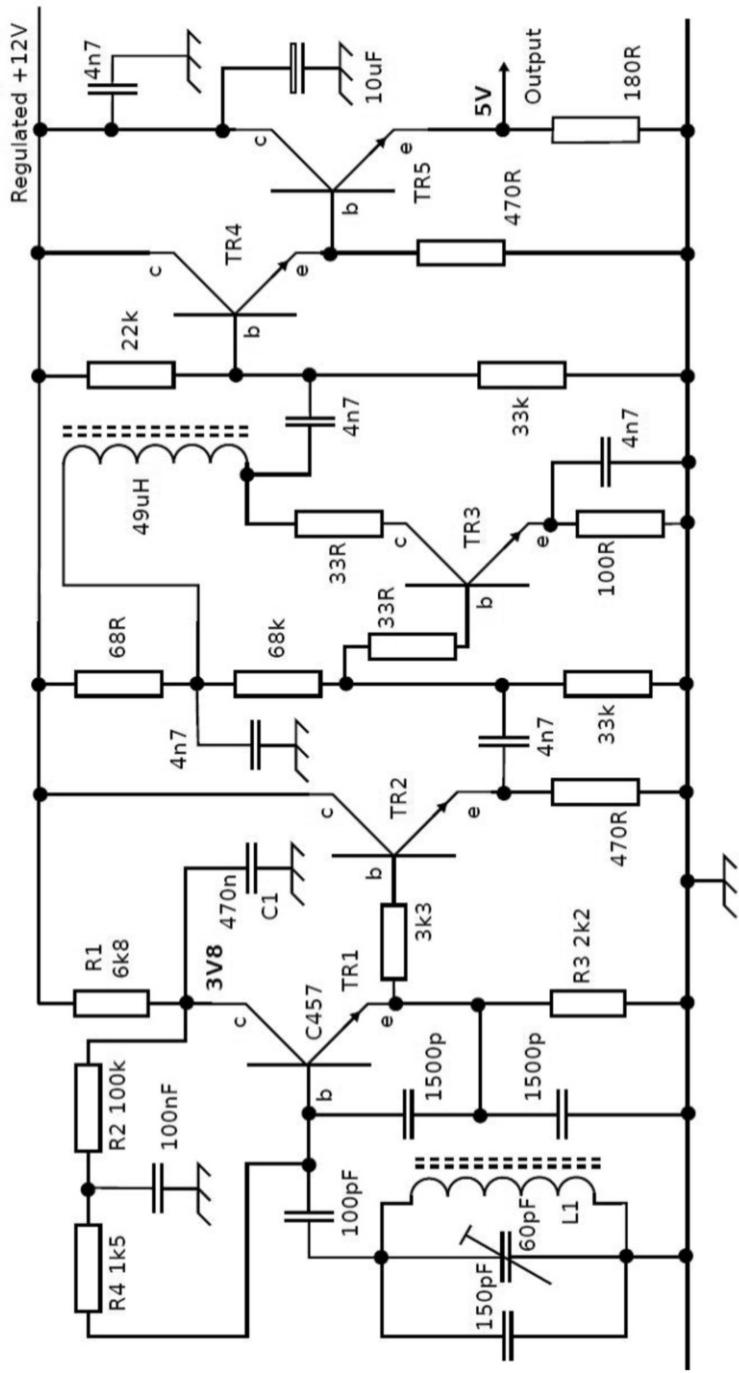
The circuit is multi-purpose as it provides sufficient v.f.o. output for any transceiver or related project requirements making TR5 optional. As the operating conditions for TR1 are tightly controlled, component values do not need to be too strictly adhered to. Put your own favourite circuit in place of TR3. All the circuits were constructed 'ugly-style' on the copper side of a printed circuit board. Coils can be wound with three lengths of fine wire first twisted together in a hand drill.

Notes:

R1	A current-limiting resistor which controls the collector supply current
R2	Forms a negative-feedback loop stabilising the base biasing current
R3	Value chosen to limit the oscillator amplitude
R4	The 1k-1k5 / 100nF are extra decoupling to prevent r.f. feedback at higher frequencies – with very unusual effects on the carrier if it occurs
TR1-TR5	General-purpose n.p.n. A TR1 collector voltage of 3V8 appears to be the optimum.
L1	All coils were wound on a suitable toroidal iron cores
RFC	10 turns on a T43-50 Ferrite core or equivalent.

I am going to put the problems I had with this circuit down to - having all the right components, but not necessarily in the right order!!!

Seriously, if you are building a bipolar vfo do use this modified version and save yourself a lot of time.



40 METRE WSPR TRANSMITTER

Chris Osborn G3XIZ, g3xiz@yahoo.co.uk

This is a simple circuit comprising some 30 easily obtainable components. It may be built in an evening or two and is simple to set up. The circuit was inspired by my ZL2BMI DSB transceiver (Ref 1) which required very little modification to make into this unit. Operating as a WSPR QRP beacon, it may be left unattended, bringing in reports from many parts of the world. With a little extra effort it could be made into a WSPR TRX.

WSPR

WSPR (Weak Signal Propagation Reporting) is a most useful and fascinating transmission system. Its use and principles have been described before in 'Sprat' (Ref 2) so a brief recap should suffice. WSPR is an automatic beacon-type mode, not a QSO mode and utilizes a PC to transmit and receive very weak signals. Transmissions last for periods of just under two minutes and the user selects the ratio (percentage) of transmit to receive time.

Signals are reported via the internet which identifies the reporting station, distance, azimuth and received signal strength. During the course of a single evening one may log hundreds of reports from dozens of stations. Needless to say, the system is most useful for transmitter and aerial tests and for gauging propagation conditions.

CIRCUIT DESCRIPTION

Although WSPR is used mainly with 'black-box' SSB transmitters this unit employs a simple double sideband (DSB) circuit.

The unwanted sideband should cause minimum QRM at the low power level used and the loss in radiated signal compared to an SSB signal (-3 dB) will be hardly noticeable under normal QSB conditions. The LM602 mixer IC generates the 'carrier' frequency via its associated crystal oscillator. The audio input is derived from the PC soundcard and the level is adjusted and fed to pin 1. A double sideband signal is taken from pin 4, and amplified by the buffer Q1 and the PA transistor Q2. With the DSB signal fed to the aerial via a suitable ATU the power output was found to be about 500 mW pep

CONSTRUCTION

The entire circuit was mounted on a small piece of veroboard, attached to a ground plane of copper clad board using stand off pillars. Finally the assembly was encased in a small aluminium box having 2mm sockets for the supply, a PL259 socket for the aerial connection and a 3.5mm jack socket for the PC input. An LED indicator was mounted on the front and is of course optional.

TESTING

Check the veroboard visually for any dry joints and short-circuited tracks, then connect the supply and turn on. The standing supply current should be about 45mA (35 mA if no LED is used)

Check that the circuit no-signal voltages correspond approximately to those shown. Ensure that the crystal oscillator is working and generating approximately 7038.75 kHz. If necessary adjust VC to pull the 7040 kHz crystal down to this frequency. Next connect a dummy load across the aerial socket and inject an audio signal, approx 1.5 kHz at 1V p-p into the jack socket. With an oscilloscope connected across the dummy load the displayed signal should be a close approximation to the classical double sideband waveform.

SOFTWARE

Review the WSPR website (Ref 3) and download the WSPR software. It is quite intuitive although I found it beneficial to experiment with receiving WSPR signals before attempting transmissions, noting that the 40m WSPR sub-band is between 7040.000 and 7040.200 kHz

ON AIR TESTING

Connect the transmitter to the aerial via the ATU and the front input jack to the PC sound card line output. Open the WSPR transmit/receive software and set the band for 40m. Now insert the details required in the 'Setup' drop-down box, including callsign, location and power which should be 23 dBm (0.2 watts)

In the 'Frequencies (MHz)' 'Dial' dialogue box on the WSPR transmit window type in your measured crystal oscillator frequency e.g. 7.038750 (or a good guess if a counter is unavailable)

Choose a transmit frequency in the WSPR sub-band, ideally clear of other stations and type this into the 'TX' dialogue box e.g. 7.040140

Transmissions occur in 2 minute sessions at the start of even minutes so it is important for the PC time to be accurately set. Although there are various methods of doing this, the internet clock, accessible from the 'Toolbar Time' in the 'Windows' system is probably the most convenient.

The facility to set the percentage of time that you will transmit, can be initially set to 100% to avoid a long wait while testing, then afterwards reducing it to a more sociable 25%

Once the software has initialized the bottom right hand dialogue box should change from 'Receiving' to 'Transmitting . .(with callsign information)'

At this point adjust your ATU for minimum SWR.

Finally revue the WSPR website for reports on your signal.

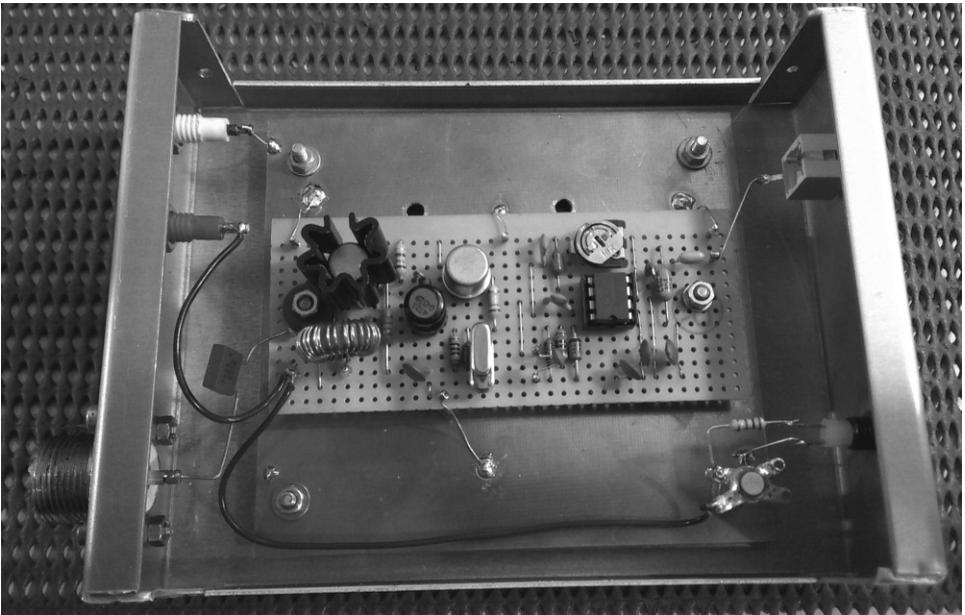
RESULTS

In the first 24 hours, transmitting with about a 25% duty cycle I received over 800 reports from some 30 stations. Conditions were not too good on 40m but my best report was from LA9JO at over 2000 km. On the second day I had a DX 'spot' from VK7BO at 17288 km so world coverage would seem possible.

I keep a log of these reports in an 'Excel' spreadsheet as a useful reference against any aerial and transmitter changes. There is no reason why this circuit should not be used on other bands provided suitable crystals may be pulled to the appropriate frequencies. As with so much that is QRP: experimentation is the key to self-tuition and also gets the results.

References

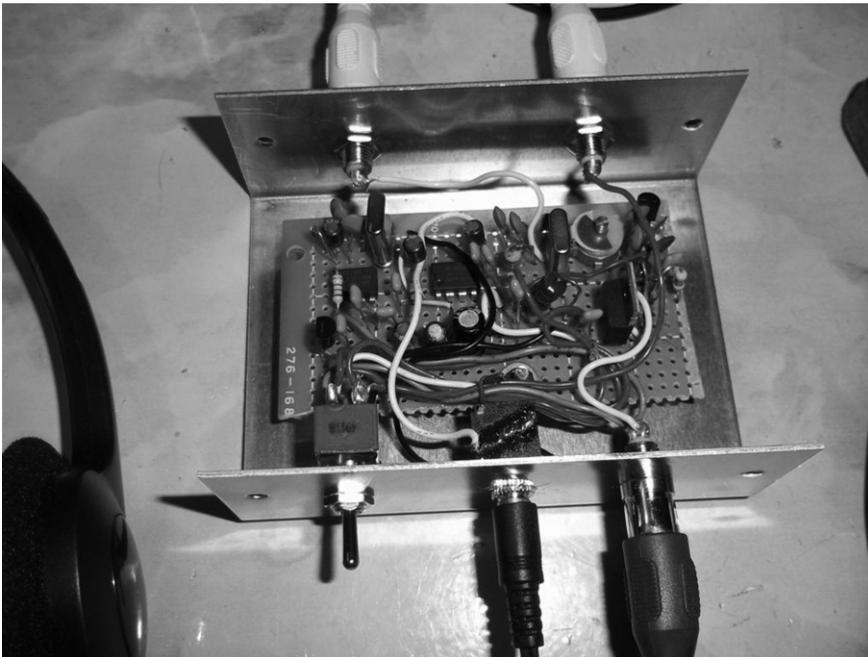
- 1 'Sprat' Spring 2011 "ZL2BMI extra simple DSB 80m Transceiver (ZL2BMI)
- 2 'Sprat' Autumn 2009 "WSPR- what is it and what it can do" (G3XBM)
- 3 www.physics.princeton.edu/pulsar/K1JT/wspr.html



The 3560 Transceiver

Peter Howard, G4UMB, 63 West Bradford Rd. Waddington, Lancs

This transceiver was made to fulfil two needs. 1. To make a 4 Watt transmitter to give a decent output to ensure I got some contacts. 2. To make a receiver to go with it which is simple yet sensitive enough. I tried to use the same value components whenever possible because my supplier will only often deal in packs of ten. The DPDT switch can be changed for a relay to make a break in change-over. In use the receiver is easily overloaded with night conditions and can be susceptible to continental broadcast interference. I made the LM386 ic AF stage very sensitive because you need good gain during the day; but at night it's too much and distortion happens. So there are plenty of improvements that can be done. It was made on strip board. Another disadvantage of such a simple transceiver is that it only works on one frequency of 3.560 MHz I chose this because the GQRP club sells the crystals at £2 each making them economical to buy 2 to save extra switching. Perhaps two people could get together and make two transceivers and work each other with them. The trimmer capacitor is adjusted to offset the transmitter frequency to produce the audio tone as it's a direct conversion receiver. I did the adjusting and setup using my main station rig. All the coils were bought as chokes. With such a simple Pi filter on the input/output you will need to adjust the values of the 820p caps a little to get a good match. I have not fitted a heatsink to my IRF510 yet; but it might be wise to do so because my rig has a current of 800ma at 20v on transmit.



Experiments with a CMOS Negative Resistance Oscillator

Mark C. Readman, G3YTZ, 365 M14 6AH, mark.readman@gmail.com

A negative resistance LC tank oscillator is based on a simple idea which has its origins in Armstrong's regenerative receiver of 1922. A parallel LC circuit is used as a frequency selective network, Figure 1, and a negative resistance is connected in parallel

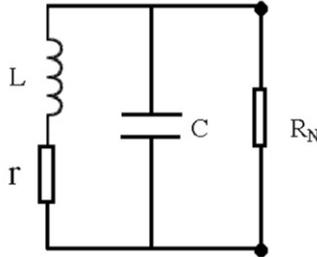


Figure 1. Negative resistance oscillator.

with this network.

The resistor R_N compensates for the damping effect of the inductor resistance r (and other losses) by adding energy to the system. For small r the system will oscillate at approximately,

$$f_o = \frac{1}{2\pi\sqrt{LC}} \text{ Hz.}$$

when

$$R_N = -\frac{L}{rC}$$

In practice R_N is made greater than $-L/(rC)$ so the oscillator is unstable however the amplitude is limited by transistor saturation. The waveform is approximately sinusoidal. Here the negative resistance R_N is constructed using a CMOS CD4007 or the identical HEF4007. This IC contains a dual complementary pair plus inverter as shown in Figure 2. The two inverters are cross coupled as shown in Figure 3 and then connected the LC network. This is a common topology used in fully integrated super-regenerative receivers. A nine volt battery is used as a power source. The negative resistance depends on supply voltage and is in the region of -1000Ω . This CMOS device may be damaged by static build up so the usual precautions apply. Also it is essential to keep the voltage at pin 14 more positive than pin 7. So here pin 14 is +9 volts and pin 7 is 0 volts. Having said that I have yet to destroy one of the chips so I think they are reasonably robust. The device is contained in the usual 14 pin DIP package and is easy to connect up, Figure 2.

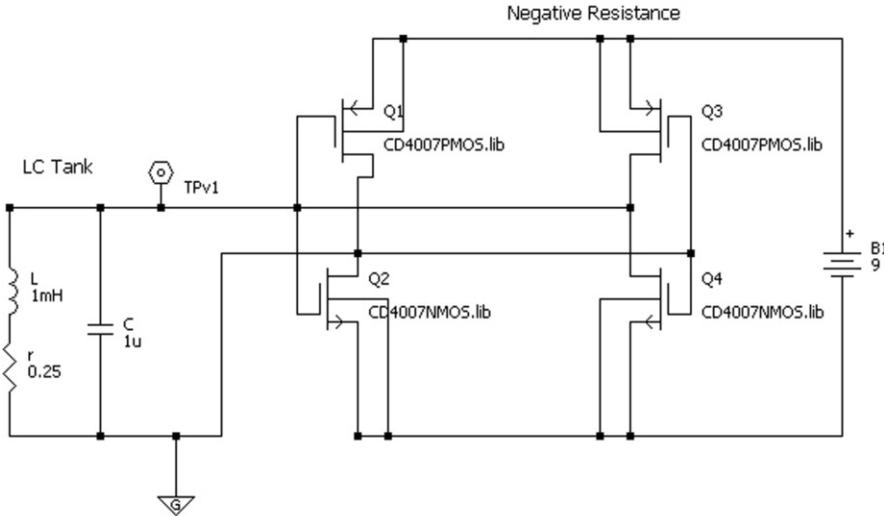


Figure 3. Negative resistance oscillator using the CD4007

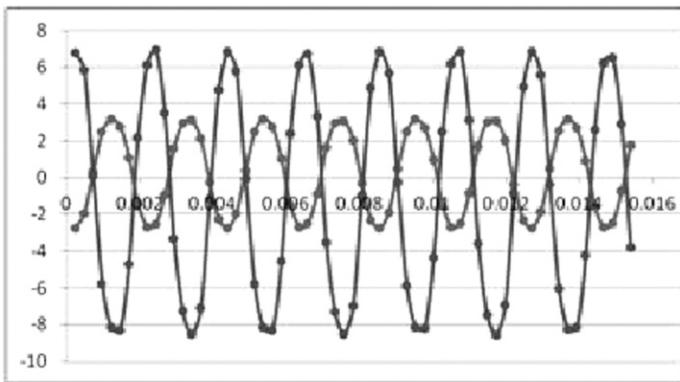
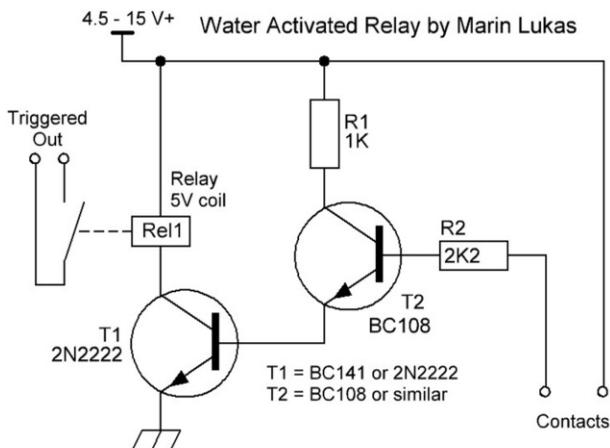


Figure 4. ~500 Hz Oscillator measurements.
 Larger waveform: Oscillator Voltage (Volts),
 Smaller waveform: Negative Resistor Current (mA)
 Time (Seconds)

The “Finger Bob” Touch Activated Straight Key

Andy Foad, G0FTD, andyfoad@rocketmail.com

Recently I enquired on the G QRP internet list about a capacity driven Morse Key and had an excellent response, but in the end I decided that what I really wanted was a one finger solution... just to simulate a straight key, instead of the usual paddle or bug style keyer circuits. I found and built the solution in the link



<http://www.zen22142.zen.co.uk/Circuits/Switching/waterrelay.htm>

The webpage circuit is actually a water activated relay by Marin Lukas in Croatia. I built the circuit but used a 2N2222 in place of the BC141 because I had them to hand. I wired the input to the FT817 key jack directly to the collector and emitter of Q1 instead of using the relay method. (I initially decided to put a blocking diode in line with the 12v line going to the key jack but couldn't get it to key, so I left it out. No harm appears to occur to the FT817 by having 12v on the key line). On the air it works a treat !

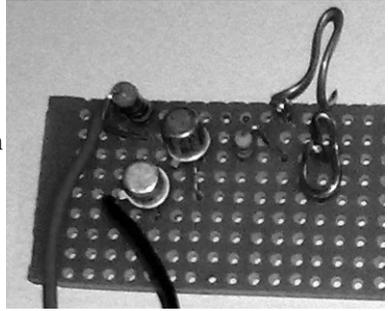
Note: I found on the FT817 that the centre pin from the key jack needs to be connected to collector and the earth to the earthy side of the circuit.

I presume this effect might vary depending on whatever keying arrangement is used in the rig in use, so it might pay to reverse the connections if it doesn't appear to work on the rig of your choice.

The moisture detector circuit works well as a touch CW key. Just tap your finger across two closely spaced terminal (a bit of copper clad board split in half or two brass screw heads mounted on a convenient space) and the moisture of the finger will allow the BC108 to turn on enough to drive and switch the 2N2222, thus creating a simple short to key the rig.

Tapping out Morse this way is a real pleasure. I can easily use it at 20WPM. It could be a winner for someone with arthritis, or in my intended application, a transistorised Paraset that I'm about to construct combining GM30XX's Junk Box Special tx, and a G0KJK

regen rx fitted in to two tobacco tins. (I intend to have two insulated brass screws mounted on the baccy tin so that I don't have to carry a key!). I nicknamed this keyer the Finger Bob, from the 70's TV show with finger puppets. They were playful and fun characters on the end of the users finger. Quite appropriate in this case. My 1st QSO with the key was on 14.060 with OE6GUG.



Test version of 'Finger Bob' Built on piece of scrap veroboard with two bits of tinned copper wire to simulate conductive pads

Valve QRP During Winter Sports 2012

My favourite time of the operating year is the GQRP Winter Sports, an operating event renowned for the heightened levels of activity in the QRP world taking place from December 26th until January 1st. One or two folks have written to me asking for more Valve QRP days and I suggest we allocate a day to these activities in this year's WS.

I propose **Sunday December 30th 2012** as a Valve/Tube QRP day and invite you to be active with whatever valve equipment you have be it a receiver or transmitter using these hallowed devices! Please send a report and pictures to encourage others to g3vtt@aol.com or the address shown at the top of the AAA column this issue. See you with a few watts and a glowing filament around the QRP frequencies during the WS. My only worry now is will you read this before the event? 72 Colin G3VTT



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WANTED: IC240 Manual covering the 1watt 10 watt version not the 1watt push button tone burst version. John G4VPU johnina@hotmail.co.uk

WANTED: Eddystone EC10, EB36, 870 or 870A. Any one of these in very good working condition. Wanted for general coverage and SW broadcast listening. Rev. A. Heath, G4GDR, 227 Windrush, Highworth, Swindon. SN6 7EB. Tel: 01793 762970.

The Bigger Toy QRP Transceiver

By Peter Parker VK3YE (first appeared in Lo-Key September 2012)

The 'Tiny Toy' featured in SPRAT 151 was a practical minimum parts pocket sized QRP station. It produced some good interstate contacts and was a great conversation piece.

However, as is the case with all simple rigs, a few more components will overcome many small-rig compromises. You'll span longer distances more often and get more readability 5 reports. And any extra cost involved is a bargain if it doubles the contacts made.

Featured here is the Tiny Toy's larger and more capable brother.

It has eight transistors versus the Tiny Toy's four. However there are no ICs and you don't need the dexterity of a jeweller to build it. All parts (except for the crystal) are available from Altronics or Jaycar. For these reasons plus the better performance, I'd recommend this over the 'Tiny Toy' if constructing a first or only QRP rig.

The rig started on 30 metres. Good reports were received but activity, especially from within VK is lower. The hint was taken and it was moved to 40 metres, which is recommended for a first QRP rig. 80 metres should also be possible but has not been tried.

Circuit description

Where are the extra parts?

The VXO has an extra tuning capacitor switched by relay. Two capacitors provide split frequency operation and any amount of transmit/receive frequency offset. It also allows QRM to be dodged, as unlike a fixed frequency offset, you can listen on either side of the local oscillator's frequency. It's as good as having two VFOs and I don't know why more QRP builders don't add this feature.

There's better buffering. That's why the transmitter has five transistors versus three. The buffer reduces loading on the oscillator when the rig is keyed. A fixed crystal oscillator can do without a buffer, but a VFO or VXO needs one to prevent chirp. The buffer's two dollars worth of parts is a small price to pay for better stability and tone.

Some extra output power comes in handy when your signal is often near others' noise levels. One watt as against 100 milliwatts makes a big difference. Doubling supply rail voltage from 6 to 12 – 15 volts was a big help and allowed use of common power and battery supplies.

The receiver also had a makeover. Discrete transistors (instead of the NE602) improved performance, lowered cost and made the project more 'junkbox friendly'. The double balanced diode mixer provides strong front-end performance and better resistance to AM broadcast station detection than the two diode single balanced mixers often seen. A high-gain two transistor amplifier capably drives a sensitive crystal earpiece. The receiver's only other transistor boosts the output of the VXO to drive the diode product detector. The receiver's performance is excellent and you'll find it free from the hum, microphonics

and overload that can plague other simple designs. Gain is sufficient not to require RF preamplification, at least up to 10 MHz and it would make a good 'bolt-on' module for CW or DSB transmitters.

This is not a high-speed break-in DX rig. For this reason I went with a simple DPDT transmit/receive switch. One section changes the antenna while the other switches between transmit and receive frequencies. The main improvement over the 'Tiny Toy' is that frequency offset is both automatic and infinitely variable.

Construction

The absence of ICs and the larger box allow less cramped construction than in the 'Tiny Toy'. All parts can be mounted dead bug style on blank circuit board material, without the need for a punched board for ICs. Extensive use is made of pre-wound RF chokes; with the only winding being around the broadband product detector and the transmitter PA stage.

I started with the VXO and buffer. This is easy to get oscillating but requires a lot of 'cut and try' to get the pulling range right. On the one hand coverage must be sufficient. If not, the station you wish to work will always be just outside it and won't hear your call. But on the other coverage below 7 MHz is wasted and reduces stability.

I suggest starting with a few microhenries in series with the crystals, measuring the pulling range and gradually increasing it by wiring another choke in series. Keep substituting until an adequate range is obtained. This can be as much as 30 kHz with two 7030 kHz crystals such as obtained from Expanded Spectrum Systems. Altronics sell RF chokes cheaply and leftovers will be useful for other projects.

The audio amplifier is easy to build. Testing is easy – apply power, connect earpiece and touch the input connection to hear a noise in the earpiece. I haven't tried magnetic phones with this circuit but if you do use a series coupling capacitor. An LM386 or similar stage could also be connected here to drive a speaker.

Though it's the simplest stage, the receiver product detector takes the longest due to the winding of its two bifilar transformers. Even this is fairly simple, with only a hand drill, pliers and a multimeter to test being required. Wire is about 0.3 mm diameter (not critical) and can come from old transformers. However diode and winding polarity is critical.

The driver and final amplifier stages need to stably amplify the buffer's output to approximately one watt. Hash and instability with the prototype was cured by adding the 47uF from the driver's emitter. The key shorts both driver and power amplifier to earth, meaning significant current goes through it. If this is a problem (eg if using a delicate microswitch as a key) it may be worth adding a keying transistor to handle the current.

Like in the receiver product detector, the PA collector inductor is wound on a 2 hole ferrite TV balun former, but with two windings instead of three. The pi network uses RF chokes for the coils. Polystyrene capacitors are preferred for its capacitors though disc ceramics can be used with some loss.

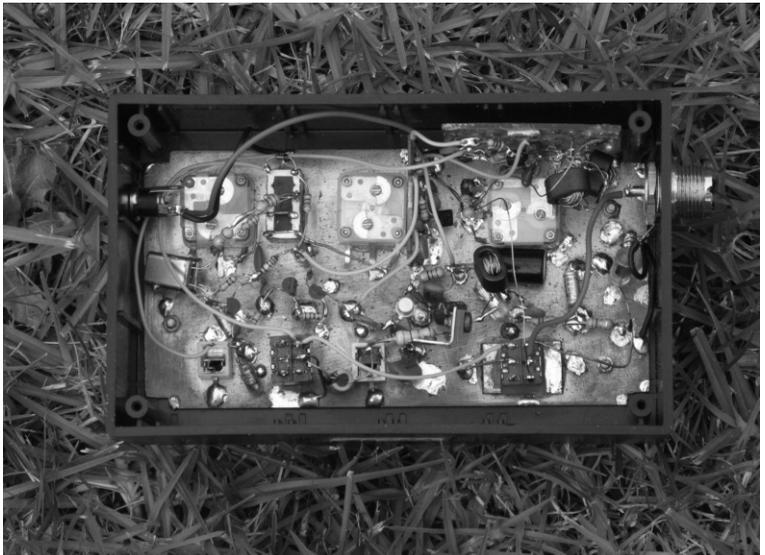
Afterthoughts

The rig has provided solid contacts around South-east Australia. Its one watt can be expected to occasionally reach to New Zealand, though for these distances five watts is much more reliable.

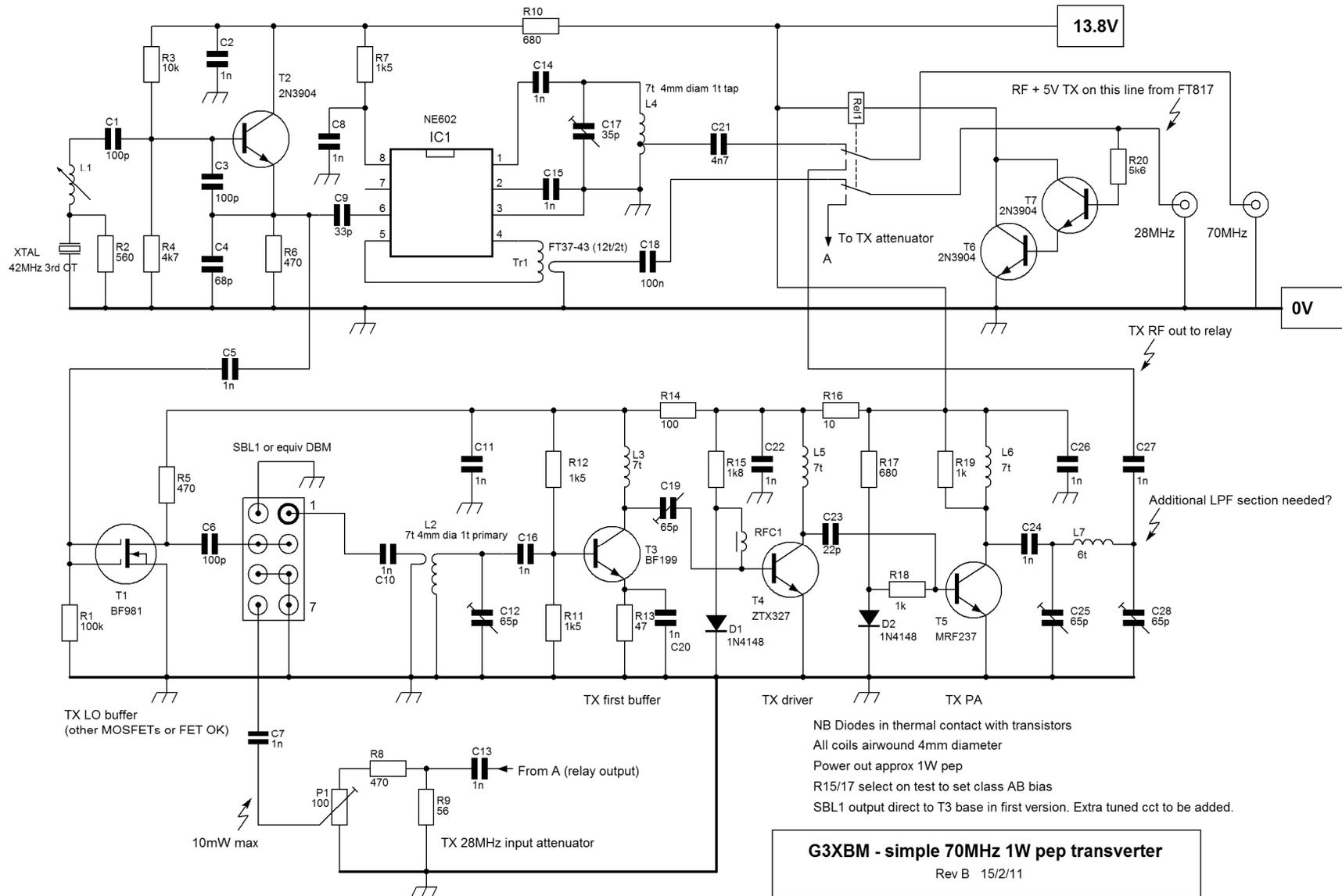
While its basic RF performance beats the 'Tiny Toy', it still omits a few operating niceties. These include automatic transmit/receive switching, sidetone and low keying current. Also where there is extraneous noise two earphones are better than one earpiece. Either try another in parallel or modify the audio stage for low impedance phones.



**Bigger Toy
Front View**



**Bigger Toy
Inside view**



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 2012”. 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 2013. 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 do 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, Euro or U.S. Dollars 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 Henk Smits PE1KFC our new DX representative in the Netherlands and who replaces Niels Moseley PA1DSP who has done such a splendid job.

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*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 2013 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.***

All cheques must be made payable to “G-QRP CLUB”

Please do not make cheques payable to individual club officers or use staples.



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, GQRP Club, PO Box 298, Dartford, Kent. DA1 9DQ

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Country & Representative	Amount
U.S.A Bill Kelsey, N8ET, 3521 Spring Lake Drive, Findlay, OH 45840. U.S.A.	\$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
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Denmark. Ole Rasmussen OZ1CJS: Fornylse af abonnement af GQRP: Venligst foretag en kontooverførelse af 90 Kr. senest d. 1. Januar til : Ole Rasmussen Danske Bank, Haslev Reg. nr. 0575 Konto nr. 3531127749 Venligst vedhæft følgende information: navn, call, medlemsnummer og email adresse. Efter at overførelsen er registreret, vil jeg tilsende dig en kvittering på email. Undgå venligst at fremsende konstanter og checks. Har du et problem mht. bankoverførelse, så kontakt mig så vi kan finde en løsning. Nyt abonnement af GQRP: Ønsker du at blive medlem af GQRP og modtage medlemsbladet SPRAT, så send mig venligst en email med dit navn, adresse og evt. kaldesignal. Så skal jeg med glæde sørge for at du bliver kontaktet.	90DKK
New Zealand , Phil Tarrant ZL2NJ, 7 Waitote Street, Castlecliff, Wanganui 4501, New Zealand. Ph 06 344 7182	NZ \$28.00
Australia Norm Lee VK5GI, 52 St Andrews Terrace, WILLUNGA, SA 5172, Australia. Account name: Norman Joseph Lee GQRP Club Account, Bank: ANZ Bank Willunga Branch. BSB number: 015 456, Account number: 1812 – 51764. Phone: (08) 8556 4661, Cell: 0404835071	AUD \$22
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) PostePay (al costo 1 Euro) - €12.00 versati su Carta n°4023 6004 7133 6653 intestata a : FABIO BONUCCI 2) Diretto (assegno o contanti). Rischio di smarrimento a carico del membro. 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. POSTEPAY E' LA SOLUZIONE CONSIGLIATA. Appena effettuato il pagamento, inviare email a Fabio - IK0IXI: gqrp-italy@ik0ixi.it oppure SMS 320-4839771	€12
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United Kingdom and any other overseas to Tony Fishpool G4WIF, GQRP Club, PO Box 298, Dartford, DA1 9DQ [UK £6, Europe: £10 GBP, DX: £12 GBP]	←

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Sprat

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

Membership

Membership queries, subscriptions (+ any QTH & call changes), Sprat address labels	G4WIF
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VHF matters	G8SEQ
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EUCW representative	M1KTA

SALES

General items & back issues of Sprat.	G3MFJ
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Internet QRP 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.

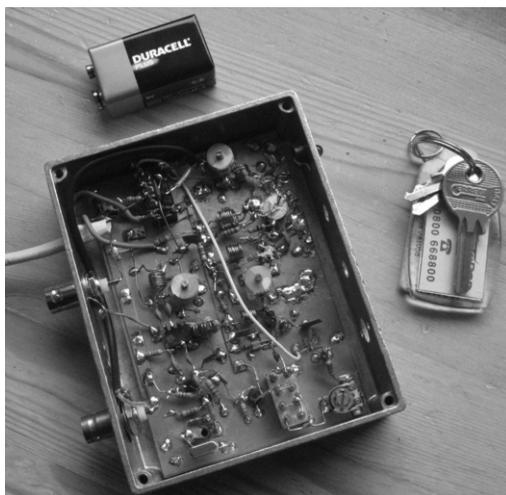
A Simple QRP 4m Transverter

Roger Laphorn, G3XBM, 37 Spring Close, Burwell, Cambridge, CB25 0HF

<http://www.g3xbm.co.uk> <http://g3xbm-qrp.blogspot.com/>

My homebrew rigs and FT817 allowed me to cover from VLF to 70cms but I had no way of getting on 4m (70MHz). With increasing activity and more countries appearing on the band each year there was a need to rectify this situation, so this transverter was the answer. The RX part is based on a circuit from a recent SPRAT and the TX part is an adaptation of a transverter design that I did some years ago for 6m. Several people have now copied the design and used it to get on 4m. Please feel free to do the same, but be prepared to optimise for your components and layout. Mine was done “dead bug” on a piece of copper laminate.

For the receiver, the NE602 is suitable as an RF preamp and mixer. These are cheap and pack a lot in a small DIL8 package. At switch-on it *immediately* worked copying the GB3BAA Tring beacon 89km away using my 10m halo as the (inefficient) antenna. Sensitivity on my generator looked fine. There is some out-of-band breakthrough as a result of the minimal selectivity in the front end and this may need to be addressed later with better input filtering, but has not been an operational issue yet.



For the transmitter side I used an SBL1 passive double balanced mixer but any similar DBM would be suitable. This is followed by a BF199 pre-driver (probably a 2N3904 will do here), a ZTX327 driver (a small Ferranti/Zetex device ex PMR) and an MRF237 TO39 RF PA (also ex-PMR). Similar RF devices should be fine. The TX strip was aligned initially using a 70MHz drive signal from a signal generator with trimmers between each stage. When optimised, some of the trimmers were measured with an LC meter and replaced by fixed value caps. This could also be done in the PA output PI filter too. Output is about 1W pep but with optimisation 2W pep should be possible. Adding the TX mixer and driving from the 28MHz source the power was the same with just a minor change of position of the tuned circuit in the pre-driver output. The TX strip is both stable and linear although the bias resistor values may need optimising. Keep the diodes used to bias the driver and PA in thermal contact with their respective transistors. A relay is used to switch RF paths between RX and TX and this is activated by a DC 5V available at the FT817 after a simple mod to the rig. This mod requires the addition of one wire

from the TX 5V line, a 10nF capacitor and a 10k resistor. It is described visually on this site <http://www.bergtag.de/download/ft817.pdf>. Alternatively one could use an RF sensed TX-RX switch.

Several people have asked me about L1. L1 was a small 2 pin 4mm diameter coil with around 10turns of 0.2mm wire with an F29 core. It came from a PMR portable made by Philips. Its purpose is to ensure the crystal oscillates at 3rd harmonic on the right frequency. A technique that can be used is to remove the crystal (short it out) and make an LC tuned circuit (L1 and C1) that makes the “free running” oscillator oscillate at 42MHz. Then reconnect the crystal back in circuit and adjust either the L or C to bring back to 42MHz. It should be very close.

There are certainly improvements that can be made to this simple circuit, so use this as a starting point and experiment.

The main use of the transverter is to work European stations by summer time sporadic-E. For such propagation, a simple vertical omni-directional antenna is ideal, although if you intend more serious inter-G operation a beam like an HB9CV or a Moxon 2-el would be a better choice. With just a simple wire dipole in the loft my best inter-G DX so far is G4RFR at 229km on CW.

My website 4m page at http://sites.google.com/site/g3xbmqrp/Home/4m_transverter gives more information and has some videos of versions made by Mark MI0BDZ.

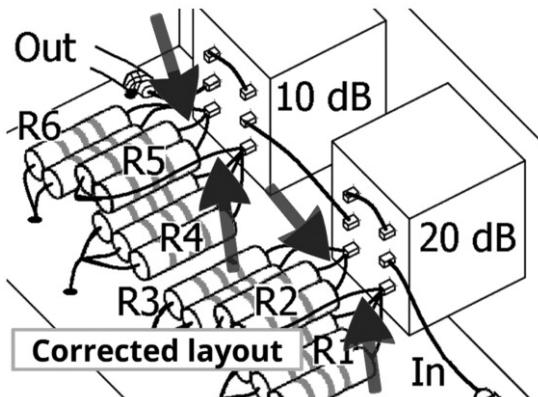
The circuit diagram is shown inside the centrefold page

**Corrected layout of the
Power Attenuators with E12-series resistors
Bert Kruyswijk PA1B Nieuwegein, The Netherlands**

In the drawing of the **layout** the resistor **R2** should be connected to R1 and R3.

The resistor **R5** should be connected to R4 and R6.
The arrows point to the right connections

More, interesting info on the use of attenuators, can be found on my website:
<http://a29.veron.nl/pa1b.htm>



G-QRP Club Sales

Graham Firth G3MFJ

2 new items this month – BS170 – 8p each – 10 for 80p. I have managed to get hold of a small quantity of BF981 dual gate MOSFETs, but they are 85p each I'm afraid.

It is getting harder to find some parts at “amateur” prices, so when I see them available, I buy large quantities. 2N3819 are now very difficult, but with help from Tim Walford, we have managed to get a good supply which should last a while. Of course, they were more expensive! I'm afraid this is something that will happen more and more, so be warned.

The SBSS clamps are selling well - despite their high price. Now George and I have used a pair for making our kit cases, we will not be making them any other way.

Also from Rex (W1REX), I stock his MePads and MeSquares – they are £6.50 each. If you build Manhattan, or ugly style – then these are for you. Postage £1 - UK, £2.20 - Eu.

The small axial inductors are very popular, so I have added to the range (see the back page). I get no orders for back issues of Sprat nowadays - they are obviously no longer in demand, and they are taking up more and more space. So, if you want any back issues, order them quickly, as I will be sending all the oldest of them to recycling early next year. I will, of course, keep a stock of the past few issues.

That's all for now except to remind you to quote your membership number with every order, and, to those who order via PayPal, thanks in advance for the 4% contribution you may have added towards their charges!



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WANTED: Radio Projects for the Amateur by Drew Diamond, Volume One. Pete, G1SFS. Tel: 075 708 255 88. Email: PeteC145@googlemail.com.

G3MFJ is having a clearout – all buyer collect (Leeds) – all worked when last used. 0113 267 1070. 2 x spectrum analysers – Marconi TF2370 –110MHz - free; HP 182T+8558 plug-in 0 to 1500MHz - £100. Tequipment D1015 scope – no leads – free; Gould Advance OS3000A scope – 70MHz – no leads - £100; Tektronics 308 data analyser – don't understand it! – free to good home.

2013 QRP CALENDAR

1st Jan	Last day of Winter Sports
1st Jan 0000z-2359z	FOC Pump Handle Party
7th Jan 2000z-2300z, 8th Jan 0400z-0700z	EUCW 160m Contest
1st Feb	Last Day for Winter Sports logs to M1KTA
10th Feb	Last Day for Chelmsley 2009 logs to M1KTA
22nd Feb 1600z to 24th Feb 2359z	CZEBRIS
9th to 10th Mar	RSGB BERU Contest (See RSGB Contest Website)
9th Mar	AGCW QRP Contest
8th 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
16th 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)
16th July(?)	RSGB Low Power Contest (See RSGB Contest Website)
27th to 28th July	RSGB IOTA Contest (See RSGB Contest Website)
14th Sept(?)	HTC QRP Sprint (2nd Sat Sept)
October TBA	Rishworth QRP Convention
17th 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 calendar for a couple of reasons. They all have QRP categories, I have worked other GQR members in them and they offer a real opportunity for QRP stations to work some DX.

FOR SALE: Yaesu FT-77 (QRP modified), Excellent condition, very stable, with neat replacement homebrew class-A QRP PA running 4Watts rms (3.5- 21 MHz) and >2 Watts 24-28MHz. Full documentation provided. £140 including carriage in UK.

MFJ Cub, 18MHz. Rarely used, works well, all documentation provided. £60 including UK postage. **PSK31 Homebrew rig for 14.070 MHz** with RS232 interface. Uses club SSB filter, elements of "PSK20" and other designs, built ugly bug style but very neat. Over 4 Watts PEP and ready to go. £35 including UK postage. Photographs available by e-mail on request. Ken Maxted, GM4JMU, 0141 639 5854, kmxted@gmx.com

G-QRP-DL-Treffen 2013

Das traditionelle G-QRP-DL-Treffen fuer Mitglieder des G-QRP-Clubs findet auch 2013 wieder am **letzten Wochenende im April (26/27/28) 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 2013 (26/27/28) 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>**

Lecture and article etc., please contact Bernd via DK3WX@DARC.DE

vy 72 es hpe cu Fred,DJ3KK - Bernd,DK3WX - Oliver,DF6MS - Manuela,DL2MGP

29th Yeovil QRP Convention

On the 28th of April 2013, the 29th Yeovil QRP Convention will take place at Digby Hall, Hound Street Sherborne Dorset. DT9 3AA Digby Hall adjoins the main central shopping car park (Sunday rates apply).

Talk in will be on S22 and the event will start at 9.30am.

Please contact Steve on 01803 666 407

or steve@g7ahp.co.uk for further information.

Amateur Radio in the Country 2013

July 21st 2013

Tim Walford G3PCJ is pleased to announce that, following the very successful QRPiC 2012 this year, next year's event will be held on Sunday July 21st 2013. The title has been changed to reflect the enlarged range of amateur radio topics that will be on show – the scope goes well beyond the QRP oriented earlier events. As before, it will be held at Upton Bridge Farm, Long Sutton, Somerset. The theme remains operation and home construction of relatively simple radio equipment with the added attraction of a country setting! The style is more akin to a traditional radio rally of yesteryear, with less emphasis on modern commercially made equipment and plenty of opportunity to meet old friends and discuss radio matters. If the weather allows, it will be outside; otherwise, it will be in the farm barns like this year. Watch out for more details later in the year!

If you wish to reserve an early place or would like to suggest some feature; just drop Tim a line at walfor@globalnet.co.uk

Antenna Anecdotes and Awards

Colin Turner G3VTT 17 Century Road Rainham KENT ME8 0DB

Contact g3vtt@aol.com

*Hopefully you all had a productive 'Summer Sizzler' and 'Valve QRP Day' since the last issue. Please note my **new address** above. We have moved to a house with a 140ft garden and less QRN from local TV's, Internet and battery charging devices. The world is surely filling up with electrical noise. Please use the same e-mail address for your notes and articles, preferably written in Word.*

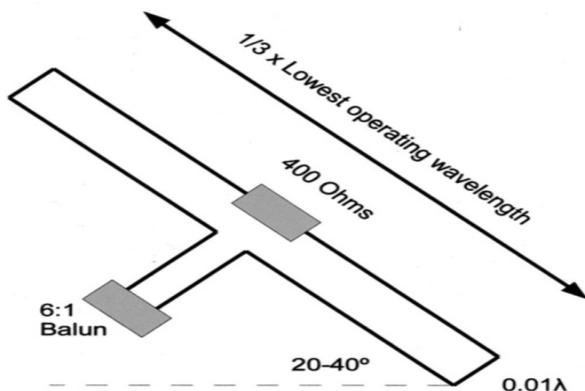
I had an e-mail from Neil G7AQQ who has been trying the old T2FD antenna which was first introduced just after the Second World War as an effective multiband antenna. The design is strange but it works well for some and I recall this antenna was used by G2HKU from a limited space location in Sheerness when I was a lad! Ted worked heaps of stations. Neil writes:

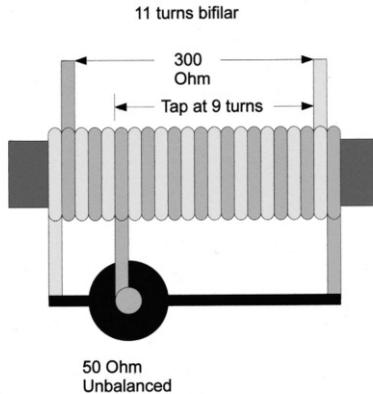
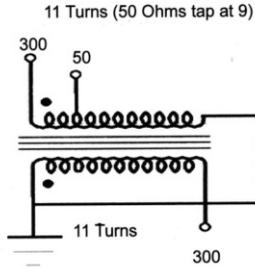
'Here are the details of my latest antenna project. It is a 'tilted and terminated folded dipole' also known as the 'T2FD'. The beauty of this antenna is its very wide bandwidth of up to 5 times its fundamental frequency. Here are the design requirements:

1. Length $1/3$ of the wavelength of the minimum operating frequency.
2. 300 Ohm balanced feeder.
3. Resistor should be about 400ohms and non inductive.
4. Resistor should be rated for at least $1/2$ the transmitter power.
5. Length of spreaders $0.01 \times$ wavelength of the minimum operating frequency.

The antenna can be mounted at any angle but produces the most omni -directional radiation pattern when mounted at an inclination of between 20 to 40 degrees from the vertical. In practice I created my 6:1 balun by winding it on a ferrite rod as shown in the attached diagram and created a version of the antenna to operate from 20m to 10m using the formulas shown above. Performance is very good on 18, 21, & 24MHz with near perfect VSWR but it does start to increase on 14 MHz and 28 MHz. It is still useable without an ATU on 10 and 20m although TX performance is not as good on the other bands. Bear in mind that the wide bandwidth of this design will quite happily radiate any

harmonics, so a good LPF is essential'. A little investigation and reference to the excellent book on Wire Antennas by John G3BDQ shows this antenna was originally designed for use on the Japanese islands by the US Navy and was tried from 5 – 30 MHz. If you want further information take a look at the





A trick for dual banding shortened verticals.

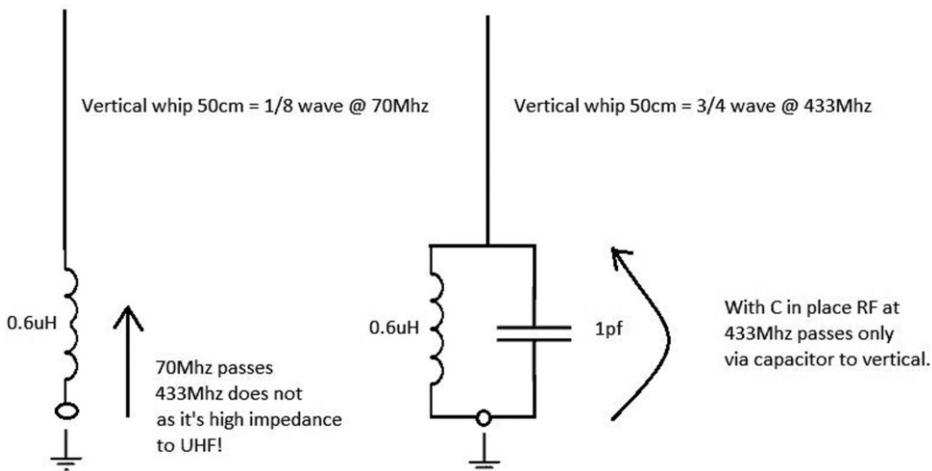
Andy Foad, G0FTD. GQRP 13690

From down Whitstable way amongst the cockles and whelks Andy has been experimenting for our benefit. Andy is a prolific portable operator who can be seen with his shopping trolley portable station making his way through the tourists in Whitstable High Street to find a shady spot for beach HF. He has submitted this interesting and practical approach to dual band operation.

This article is really two articles in one. How to modify a Sandpiper Aerials rubber duck for dual band operation and to show a simple technique that can be applied to other antenna designs. Recently I was lucky enough to get hold of a rather rare dual band handheld transceiver¹ that covered two bands, 66-88Mhz and 400-470Mhz. Perfect for my local chats on both bands but unfortunately the supplied antenna, although convenient, was not particularly efficient on 70Mhz. This led to me modifying a Sandpiper Aerials rubber duck that was single band for 4m only into a dual band 70Mhz-433Mhz antenna.

As a result I realised that the technique **could be used to produce short dual band verticals for HF too**, and may be of interest to GQRP Club members. I'll use my original

antenna to demonstrate the technique which should give sufficient insight into how to adapt the method for other bands. As you can see the original vertical whip was 50cm long loaded with 0.6uH at the base to allow it to work at 70Mhz. This works well, but at 433 MHz the inductance presents a very high impedance to 433Mhz so no RF at this frequency escapes! But by adding a 1pf bypass capacitor across the coil it presents a low impedance to 433Mhz, but a high impedance on 70Mhz.

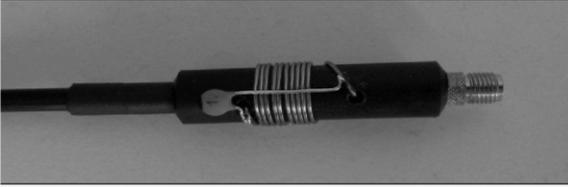


The RF path on either band now takes the lowest impedance path automatically. Since on 433 Mhz a 50cm whip is approx a $\frac{3}{4}$ wave and has a fairly low impedance in this mode (typically 75 ohms), the antenna has a good SWR and works fine on 433Mhz. On air results are superb!

The trick is to use the least amount of capacitance for the UHF bypass, (or whatever the highest required frequency is), which creates the best high/low impedance ratio for each band. I did try a 2p2 and a 3p3 capacitor which still worked perfectly for 433 Mhz but ruined the 70Mhz SWR because it lowered the resonance too much.

Taking it a step further, let's suppose you also had a short vertical for 160m/80m (these bands chosen for example only). Now let's choose a maximum length for a vertical, perhaps only 3m long, now we load the 3m vertical with enough inductance to get it to resonate on our favourite part of the band (the CW end of course!). So now we could add a capacitor from the base as before but the other end gets placed somewhere up the coil where it's at a point on the coil that has the lower amount of inductance to resonate at 80m. Choose a capacitance value that allows the lowest amount of reactance to be seen at 80m, but as much as possible at 160m. Now we can start experimenting with making short dual band verticals without switching, traps or multiple wires. Could this be useful for mobile HF whips or portable operations or ATU less operations? With regards to the original

Sandpiper Aerials product I did try just adding a simple $\frac{1}{4}$ wave vertical up the stem for 433Mhz but it ruined the 70Mhz resonance each time no matter what I did. Tests appear to indicate a 6-7db improvement on 70Mhz over the original rubber duck (shown alongside in photo). On 433Mhz there's no real difference as the gain between a $\frac{1}{4}$ wave and a $\frac{3}{4}$ wave is minimal and all that really changes is the elevation in the main lobe angle.



This was the Wouxun UV6D model covering these combination of bands is unavailable in the UK (and just about everywhere else) but I managed to import two direct from the manufacturer for about £45 ex works each. *73 Andy...and finally an anecdote.....*G3YVF and G3VTT decided to camp at St Mary's Bay in North Kent, opposite Canvey Island, at the usual spot for some valve QRP and the initial testing of the new G3YVF Elecraft K1. Unfortunately it was the last day of the Olympics and full security measures were in place. *'That's a nice little warship'* says G3VTT, *'probably on picket duty checking who's coming up river towards London'*. During the evening a Navy helicopter, complete with an infra red sensor hanging on the front, appeared which was duly waived at and a little later a fast rigid rubber boat appeared with three crew on board, one holding an automatic weapon. *'Here we go'* says G3YVF, *'I'll get my XYL Wendy to bail me out'*. G3VTT steps forward on the shore at the lingering slowly approaching boat and asks *'Are you lot coming ashore or what?'*. *'We can't'* said the officer in charge, *'We are frightened we might run aground'*. At which point both G3VTT and G3YVF breakdown in fits of laughter and offer the rubber boat a line. G3YVF suggests to the officer, who was trying to jump overboard, *'You don't want to do that, it's too muddy and the helicopter will have to come back and pull you out'*. After concluding they were from Kent Police, that we really were a pair of retired radio enthusiasts and we really did have the permission of the farmer, (all negotiations being carried out by shouting across many feet of water), the Police boat returned to its normal protection duties on the Thames and the operators got back to the traditional arguments about receiver performance, best wire antennas, why Elecraft are so good and precisely whose turn it was to brew the coffee.



'A little new house, a bigger garden, no QRN at last and sweeter dreams says Doris the cat'

May you all have a pleasant Christmas and a Peaceful and Healthy New Year. See you in the Winter Sports.

COMMUNICATIONS AND CONTESTS

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

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.

**These are : CW: 1843, 3560, 7030, 10116, 14060, 18096, 21060, 24906, 28060
SSB: 3690, 7090, 14285, 21285, 18130, 24950, 28360 kHz**

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

First may I take this opportunity of saying many thanks to Peter G3XJS who has been the GQRP communications manager many times longer than I have even held a licence. I am sure that every club member will join me in thinking him for the contribution he has made to the club. I am especially grateful to several members for their notes of support after George published that I had taken over the role from Peter in the December 2012 RadCom.

As we think back to a pretty good summer with all the interest that 2012 Olympics and the Queen's golden jubilee brought us I wonder how many other UK members have sent out their 'O' and 'Q' call qsl cards. I have a fair few to send remembering back to one of the early summer days I managed a little SSB pile up with 2.5W on 20m with the O call as I sat on a hill overlooking Cambridge. I hope several members have similar memories and also managed to get into the logs of 2012L or 2012W.

Summer Sizzler

As so many people these days use the internet and mobile phones for text messaging and tweeting it was a nice surprise to receive some hand written notes in the post on the activity of some members in the Summer Sizzler contest. As the GQRP communications manager I have to excuse myself from an entry however I am especially grateful for all entries. Several members sent in hand written logs which I will return to them. Jim GMONTR #5757 (originally wrote to Peter G3XJS) went on to say how on air he advised he was qrp and some DL stations turned down their own power levels as they obviously held the G-QRP in high regard. In all there were 14 entries and some 210 qrp qso SSB and CW reported and I counted 15 DXCC.

If I have to select a winner of the summer sizzler it has to be Eric G00TE #5793 who sent a very extensive hand written log covering 23 qrp qso including both SSB and CW contacts on 80m and 40m. Eric wins the new G4JFN Trophy in memory of Bob Hudson.

The nights are quickly drawing in and I am now writing this on the train commute home and that means getting home again to find the garden and the shack in total darkness. However, it is an ill wind that blows no good and I am finding that the lower bands are becoming more and more active in the evenings and I often manage a short spell on 40m or 80m before dinner. This is a good sign for the upcoming winter contest and I would urge as many members as possible to take part. I already plan to be active using my 500KHz NoV perhaps even /P from a beach in Cornwall. I hope several other members will join me on the bands.

RSGB Spectrum Meeting

Of interest for GQRP members is that I attended this in November and requested could the RSGB include an AM (or DSB with suppressed carrier) calling frequency in the band plans. The request was denied however I was greeted with the comment and approval from several that what we could do as a group is create/state what frequency we are going to use within the non-narrow band parts of the spectrum and then publicize it and create an AM centre of activity. There was a reminder that the use of AM should not interfere with the 2m satellite and space uplink frequencies. Perhaps those rig designer/builders amongst us could create a project that might allow a frequency multiplying setup to create a rig that could be used on several bands perhaps a future contest commeth?

There was an additional note that an expansion of 80m to 3.9MHz on a secondary basis might happen but that would probably be many years away.

Poll

In 2013 I'd like to conduct a poll of some kind to ask members a few brief questions so that I might be able to accommodate wishes. I will discuss the format with George G3RJV.

Peter Barville, G3XJS, writes,

“G-QRP is a wonderful organisation which promotes and supports the true values of Amateur Radio. It has been my honour and pleasure to be able to contribute in some small way and I would like to take this opportunity to thank all those members who have given me so much support over the years, submitting their comments and logs to the various Club events. I wish Dom every success in his new role and know that, with your support, he will bring a breath of fresh air to future Club events.”

MEMBERS' NEWS

by Chris Page, N4CJ (G4BUE)

312 Quail Avenue, Sebring, FL 33870, USA

E-mail: chris@g4bue.com



Reports on the G-QRP Reflector about DX members have been working recently suggests the HF bands have finally come alive. In August **G3YMC** QSO'd **VU3PAI** on 17m CW and says, "I often find if you catch stations just as they have come on the air, and before they get spotted on the dreaded Packet Cluster, you get in first call. I have also had great success in just leaving the rig on a totally random frequency while I have been working in the shack and suddenly some juicy DX comes on it and calls DX - I stop what I am doing and give a call and I am straight in before the mob descends!". **G0FTD** QRV from Whitestable beach on 1 September with his FT-817 at 5W CW/SSB and six feet high 25 feet 'piece of wire' by the water edge, worked EA8, TA and W3 on 10m, G, GW and ON on 40m, **TM50** on 30m, **M0HWM** on 4m FM with 5W and **2E0GTB** on 23cm FM with 1W. **M3KXZ** was feeling "on top of the world" on 5 September after being QRV from Newhaven Harbour with his 2.5W and 26 feet fishing pole vertical "lashed to the railings", Pete QSO'd **VU3DMP** on 17m SSB. **G5CL** worked three continents in five minutes the same day - **EK7DX**, **7T5OI** and **EG9SDC** on 20m and a couple of Europeans on 30m.

On 8 September, using between 500 and 800mW from his FT-817 and 33 feet long inverted vee through an ATU, **M6MBM** made SSB QSOs with V5 on 10m, W1 and 3, VE3, CT3 and PY on 15m, and 9K on 20m for 'first-time' QSOs with those countries. On 9 September **G5CL** QSO'd JA on 17m and **RIIANF** (South Shetlands) for a new DXCC. **G0UCP** QSO'd **OX/OZ/OJ** on 20m CW on 12 September using his 2W and indoor 33.5 inch diameter Magloop. After trying all evening on 15 September to QSO **NH8S** on 10 and 15m, **WB3AAL** finally got them in the log at 0150z 16 September on 15m. On 17 September **M3KXZ** QSO'd **9H5BZ** on Gozo on 15m SSB with his fishing pole. In answer to queries, Pete says, "The antenna is a 25.6 feet or so length of speaker wire, with one half cut off from 12.8 feet, so you end up with closed space parallel line going half-way up, and the remainder to the end is just single line. Fed at the base end via a current balun and tuner so it can be used on 20-6m or more. It's a bit like a J-pole or Zepp and was conceived a few years ago by **K9ESE**".

On 15 September **W1ZMB** QSO'd **V73NS** on 15m CW using 4W to a OCF dipole for CW QRP DXCC 160 with his K2 in the last 15 months. Tony's best DX is KH6 while running just 100mW, and his DXCC 159 was **NH8S** on 12m. On 30 September **M3KXZ** was at the Sussex beach again to QSO **ZD7FT** and his first-ever VK QSO with **VK7ROY** on 20m, and on 7 October with **VK4GH** on 20m, all with 2.5W SSB. On 16 October Pete found 10m open and QSO'd **CO6LT** and **5D7AT** (CN) and then, a little closer to home, with **G3ZAF/M** on 15m who was just a few miles along the coast driving home.

G0FTD says on 20 October that he knew, "Something was going on well up in the F layer because my 1W WSPR beacon on 10m was being heard in Chile last night, using just a piece of wire stuck to the bedroom wall! I've just been down the beach for a quick operating session with the FT-817 and had a great QSO with **K1IED**, using about 1W. I was stunned he could hear me. I made a quick video, see <<http://tinyurl.com/G0FTD29MHZ>>". Andy was using AM on 10m (29MHz). Referring to the QSO, **G3XBM** wrote, "**K1IED** was S9+ with me at times on the halo, but I could not stop on long enough to work him and there were a lot of stations calling, so Andy did well to get through. When 10m AM is good it is like a time warp: tune 29.0-29.1MHz, shut your eyes and you could be listening to how the bands sounded in the late 1950s and early 1960s. Many old timers (not quite me!) will tell you tales of working all over the world with a few watts to a dipole on 10m AM. Do others also believe that the ionosphere is somehow 'weaker' these days, even when the sunspot count is decent?". Roger QSO'd **K1IED** the following day using his FT-817 at 2W and his halo antenna, receiving a 54 QSB report.

G0KYA called CQ on 21060kHz on 21 October and was answered by **W1GUE** in NH who was running a TS-480 at 5W to a dipole. Steve was running 5W to an outdoor OCF dipole for 20-10m, but switched to his indoor dipole which is usually better. **M3KXZ** QSO'd **KK1KW** on 10m SSB the same day, and **W1KBN** on 23 October, from the Sussex beach using his 1W and fishing pole antenna. On 23 October **G3XJS**'s CQ on 28060kHz was answered by **8P6BX** who was running 4W from an IC-703 into a three element yagi. Pete used his Ten-Tec Omni V at 5W and his Hex beam. **G0KYA** QSO'd two new DXCC the same day: V3 on 12m with his Magloop and EA9 on 80m. **WB3AAL** was on holiday that week and made two-way QRP CW QSOs with **G0NIG** on 10m and with **G4GIY**, **M0BAU** and **G0ROT** on 15m.

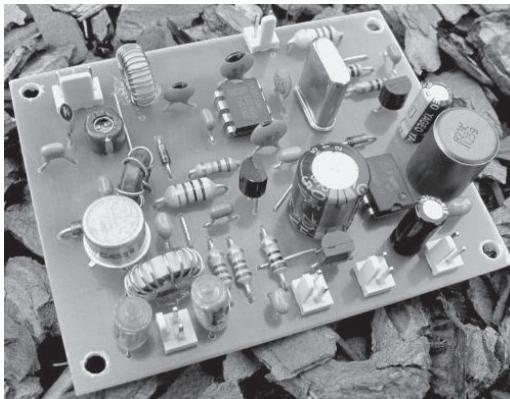
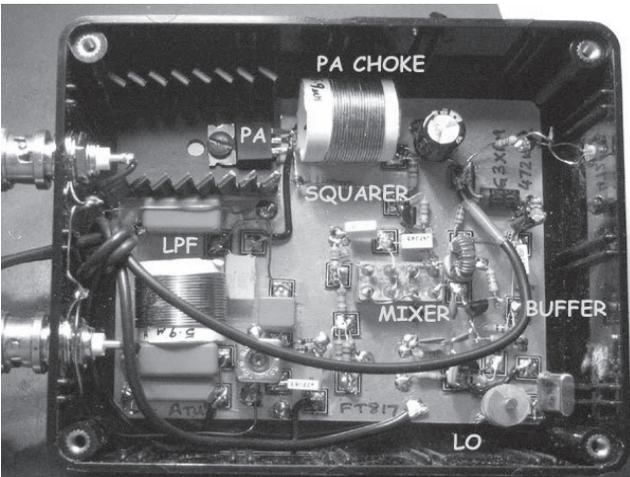
During October **GØEBQ** QSO'd ZD7, PY, 5N and JX on 12m with 1W SSB with his BITX, and **9H9MSG** who was just 11 years old. Then a bit of frustration! Nigel writes, "Tried my luck with the copy Cub on 20m with the recent Madeiran activity weekend, in the hope of winning a free air ticket. Managed four of the five required by midday Sunday and thought I had cracked it, only to find out the event had then finished! Still it was good practice at cracking pile-ups". **G5CL** QSO'd **TT8TT** in October on 10m with his 5W for DXCC 183, and in the LZ Contest on 17 November made his best DX on 80m with **UPØL** at 2977 miles. In 20 minutes of the CQWW SSB Contest from the Sussex beach, **M3KXZ** QSO'd PY, C5 and VE3 with his 2.5W. On 12 November **GM4XQJ** QSO'd **T6** and **HC** on 15m using his K2 at 5W and TH3 yagi.

The 'main thrust' at **G3XBM** lately is a new transverter ((about 10-15W RF, 50mW ERP) for 472 and 500kHz. Roger says the design has been copied by several others in the UK, Europe and the USA, and *QST* have accepted it for publication next year (but remember you heard about it here first!). The photograph right shows the inside of the transverter which Roger says, "is small, runs cool and works well on CW, WSPR and OPERA modes". He is now working on a new, simple AM TCVR (the Tenbox) for use on 10m when the band is quiet (at night or when poor DX conditions) across town. It is in the Fredbox/Sixbox tradition and the RX works well already. Playing with two FOXX 3 kits he bought from **GØHDG** earlier this year, **G5CL** QSO'd 13 European countries "with no real effort". Ryan has also been using a K1 at 2W on 30m.

The photograph right shows **DL2KI**'s Norcal 'Forty-9er', a small 40m TX with 250mW output power at 9V. Wolfgang redesigned the board (lower photograph) to include some small modifications. **SM5MEK** now has new mini TXs for 20 and 30m using a 2N222 to give 180mW and 150mW output. Jenny also has a Two Tinned Tunas (TTT) with 350mW output and says more info is on his web-page at <<http://sm5mek.se>> (click on QRP). **EA4DAT** mentions the ILER 40, a 40m SSB TCVR that is, "Very simple but works great", see <<http://www.qsl.net/ea3gcy/>>.

G3CWI writes, "Hot on the heels of the popular Band Hopper III, I have just introduced the Band Hopper IV. Covering 20, 30, 40 and 80m, this four-band linked dipole is sure to be a big hit, especially with KX1, and HB1B users, see <<http://www.sotabeams.co.uk/band-hopper-iv-four-band-linked-dipole/%3E>>.

Do you live in southeast England and need help putting up antennas? **M3KXZ** has very kindly offered to help you. Pete writes, "If anyone local to me ever needs help putting up wire antennas, then feel free to give me a shout.



I'm close to Brighton but happy to travel a bit. I like climbing trees and use proper climbing equipment to do so safely. I have all the necessary stuff to get lanyards up into trees so you can raise and lower wire antennas".

G3XBM and **G3TDZ**'s articles in *SPRAT* 150 and 151 caused **GÖRPH** to be 'bitten by the optical bug' and he has built a TCVR for 481THz (red light) using AM voice modulation operating about 0.5W DC input to the LED (photograph right). Richard says the similarity to Roger's rig is obvious! He built the TCVR from the excellent Finningley kit and it is mostly SMD components. The optical assembly is fully home-brewed and he has also built some accessories to aid operating and testing of the equipment. The longest distance QSO to date from his Lincolnshire QTH is 40 miles with **G8AGN** on the far side of Sheffield, with reports of 5/5 and 5/7. **G8AGN** was using a rig with considerably higher transmit power level and more antenna gain! Roger hopes more experimenters will be tempted onto the light waves.



G3XBM has been testing 10m WSPR with the **WISPY** 200mW beacon and getting world-wide spots with the halo antenna. The little 'Chirpy' has now become the 'Lesser Chirpy' transceiver with FSK keying to eliminate the chirp. Best results so far are a couple of RBN spots at 1865 miles with 80mW CW. Roger has recently rebuilt his 5W VLF beacon and improved the RX on 8.97kHz, managing to copy my QRSS3 earth-mode signal 3¼ miles away for the first time.

MÖNDE writes, "Over the past few months **MÖPKH** and I have been testing and sourcing components for a portable antenna which will come to market very soon. It is designed with QRP and portable operators in mind and will cover at least three bands". Nigel has recently constructed the Ultimate QRSS Beacon.

On a recent visit to his local amateur radio store in Oakland, California, **AA7EE** walked out with a five month-old stray kitten. One of the employees had found her one morning pressed up against the engine of his truck in the parking lot trying to keep warm and Dave, who was in the store that day, walked out as the happy owner of it. In honour of where he found her, and as a nod to his particular interest in QRP, Dave named her 'Sprat the QRP Cat'. He says, "She is an absolute joy to have around the shack and as you see from the photograph right, loves reading *SPRAT*. She likes to take the information in slowly, reading a bit at a time, and then sleeping on it, as can be seen in the photograph!". Dave's blog story is at <<http://tinyurl.com/b7z337s>>.



The G-QRP Club's VK Rep is **VK5GI** and he is usually QRV on 20 and 40m with the MFJ 94xx series SSB, or OHR-100 and Weber Tri-Band on CW, (OHR is on 40m, the tribander on 20, 30 and 17m). Norm's much modified MKARS 80 and G5RV antenna is used for the local Ex-G, Bottleshop and Boatanchor nets. He says, "I'm lucky as I live on the side of a hill overlooking the McLaren Vale wine region of South Australia".

MIKTA was QRV as **KH8/MIKTA** and **KH6/MIKTA** in October with his KX3 and verticals on the beach, see Dom's blog at <<http://m1kta-qrp.blogspot.co.uk/2012/11/qs1-cards.html>>. Despite the improved HF conditions, **M5AML** has been on 2m SSB with a TR-751E he bought at the Great Northern Hamfest in Barnsley in September (his first 2m rig). John took part in the October/November RSGB UK Activity Contests and his furthest QSO at 15 November was to the Isle of Wight from his QTH in Derby. He says the contest is, "More enjoyable than I thought because real signal reports are exchanged and the pace isn't as fast as the HF contests".

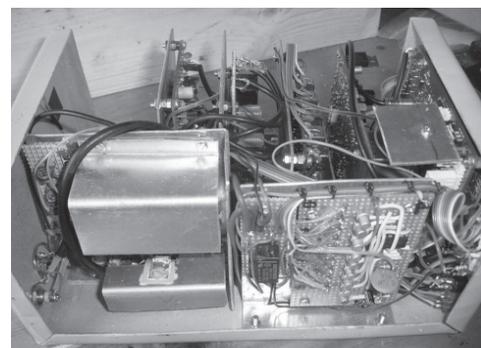
The main antenna at **N9YSQ** is a 20m quarter-wave vertical, slightly camouflaged against copper thieves, with hard drawn copper tubing made to the *ARRL Handbook* specs, and eight buried copper speaker wires. The Secondary antenna is a commercial **G5RV** type which Todd says is, “Nowhere near as good as the vertical”. The main rigs are a MFJ QRP Cub at 1.2W, a Heathkit DX40 at 30W and sometimes a Knight T50 at 25W, but mostly the Cub on 40 and 20m because of better antenna efficiency. The photograph right shows Todd’s portable FT-817 setup.



F5VJD/GØBCD saw on **AA7EE**’s blog that Dave was attempting to build a **G3WPO** 80m DSB TX/RX manhattan-style and very kindly offered him his, which had been ‘fried’ by connecting a PSU with reverse polarity, on condition he got it working and used it. The photograph right shows the re-housed rig in a custom PCB enclosure, retaining the cover from the original case, and adjusting a few circuit values to adjust coverage for USA 3.5-4MHz frequencies. Dave’s blog-posts about the DSB80 are at <<http://tinyurl.com/b7yklju>>.

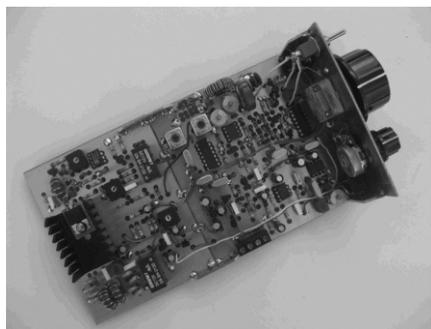


G4GHB’s original TCVR was built over 12 years ago using the **G4CLF** PCB with Plessey ICs (9MHz IF) and was originally just for 20 and 80m by simple mixing with the 5-5.5MHz VFO



(2N3819 with two more as buffers). Bill later added a crystal oscillator (2N3819) and mixer (SL6440) for all HF bands, put the speaker inside and re-positioned some boards. For the new version (see photographs above) he bought a synthesised VFO kit to get rid of the mixer/oscillator boards, give digital readout and the potential for any new bands as it should be able to go up to 250MHz. He remade the 17/15/12/10m BPFs smaller and intends using external LPFs to give the option of having space to build a new PA stage and extra BPFs for higher frequencies. The current PA runs 4W from two VN66AFs (but only 2W on 10m) and one VN66AF as a driver. Maplin supplied the CW filter and CW tone-generator kits and band switching is done electrically with a 4017B and NE555 to provide nice switching pulses. The speaker box also contains the mains PSU but Bill often uses a motorcycle battery and solar panel. He says the well known strange effect of ‘plopping’ due to AGC action on receive on this board was cured by the addition of an electrolytic capacitor from pin 2 of SL1621 to earth, and it only occurs rarely now.

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 2013. 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! Don’t forget to let me know if you intend operating from somewhere other than home during the spring and summer months, so I can let your fellow Club members know to listen out for you.



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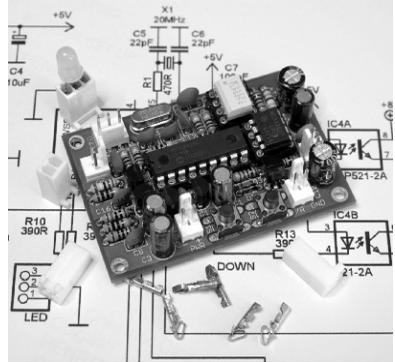
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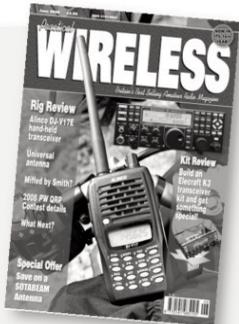
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Look at 'www.celticpilgrim.com' for Amateur Radio in a Lovely Place

G3RJV has a Wooden Lodge situated in the Dyfi Valley in central Wales close to the Irish Sea and in the Snowdonia National Park. It has been completely refurbished with a large living area, conservatory, double bedroom, twin bedroom and a double bed sofa in the living area. Naturally there is a small amateur radio station with a QRP HF transceiver and a 2m

multimode. An easy to use station in a quiet location.

Look on the webpage above or for leaflet write to G3RJV or email g3rjv@gqrp.co.uk

GQR Club Sales

Graham Firth, G3MFJ, 13 Wynmore Drive, Bramhope, LEEDS. LS16 9DQ

Antenna Handbook – 2nd edition – members £6.00, non-members £10.00 plus post } £1.60 (UK); or £4.50 EU
Radio Projects volumes 2, 3 & 4 – by Drew Diamond – members £5, non-members £10 } or £6.80 DX per book

6 pole 9MHz CW (500Hz) or SSB crystal filter (2.2kHz) £12 plus post (max of one of each) } £2.50 (UK); or
SBSS PCB clamps (Sprat 152) PCB clamps for making PCB boxes – £12 each or 2 for £20 }
Polyvaricon capacitors – 2 gang (A = 8 to 140pF, O = 6 to 60pF) c/w shaft ext & mtg screws – £1.40 each } £1.60p (EU); or
– 2 gang – (both 8 to 295pF) c/w shaft ext & mtg screws – £1.40 each } £2.20p (DX)

Pair LSB/USB carrier crystals HC49U wires - [9MHz ± 1.5kHz] **£4 pair** } **All components**
HC49U (wire) crystals for all CW calling freqs – 1.836, 3,560*, 7.015, } **plus postage**
7.028, 7,030*, 7.040, 7.0475, 7.122, 10.106, 10.116*, 14,060*, 18.086, 18.096, } **(ANY quantity)**

21.060, 24,906, & 28,060 all are **£2.00 each** (* = also available in low profile HC49/S) } £1 (UK), or
HC49U (wire) crystals- 1.8432, 3.500, 7.00, 7.159, 10.006, 10.111, 14.00MHz – 50p each } £2.20p EU, or
HC49U (wire) crystals – 2.00, 3.00, 3.20, 3.579, 3.5756, 3.5820, 3.6864, 4.0, 4.096MHz } £3.30p (DX)
4.1943MHz, 4.433, 5.0, 6.00, 7.20, 7.6. 8.0, 10.0, 11.0, 12.0, 13.50, 15.0, 16.0, 20.0, 24.0, }
25.0, 27.0, 28.0, 32.0, 35.50MHz – **all 35p each** (Some of these are low profile types) } **Post free**

Ceramic resonators – 455kHz, 2.0, 3.58, 3.68, 4.00, 14.32 & 20.00MHz – **50p each** } **if ordered**
Schottky signal diode – 1N5711 low fwd volts for up to vhf/uhf **20p each** } **with heavier**

General Purpose silicon diode - 1N4148 10 for 10p } **things like**

Varicap diodes – MVAM109 – 40pF @ 9v, 500pF @ 1v. **50p each** } max of 2 of
– **MV209** – 5pF @ 12V, 40pF @ 1V **35p each** } each per member } **toroids,**

SA602AN – £1.50 (note – I may supply NE or SA, 602 or 612 as available. All are fully interchangeable. } **polyvaricons**

MC1350 – £2.00 These are getting in short supply now so max of 2 per member } **or filters**

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

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**

TDA7052A - 4.5 to 18v, 1W 8pin **DIL** low noise & DC vol control – **£0.60 each** }

TA-7642 Radio IC – direct equivalent of **MK484** (& ZN414) – **75p each** } **if ordered**

2SC536 transistors (npn) fT - 100MHz, hFE-320, VCBO +40V - **5 for 50p** } **with books**

MPSH10 transistors (npn) fT - 650MHz, hFE 60, VCEO 25V - **8p each** } **or CDs**

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

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

FETs - IRF510 – 50p; 2N3819 - 17p; 2N7000 - 10p; BS170 – 8p - all each } **as books**

Pad cutters – 2mm shaft – 7mm o/s, 5mm i/s diam – 5mm pad with 1mm gap **£5.00 each** } **or CDs do not**

10K 10mm coils – 1u2H, 1u7L, 2u6L, 5u3L, 11u0L, 45u0L, 90u0L – all **80p each** } **travel well**

Magnet Wire – 18SWG – 2 metres – 60p, 20, 22 SWG – 3 metres - 60p; } **with parts.**

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

This is solderable enamel insulated max of 3 sizes per member } **Postage**

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 }
4.7, 6.8, 10, 15, 18, 22, 33, 39, 47, 56, 100, 150 and 220 – all uH and all 17p each. } **components**

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

£2.00; BN43-302 – £2.00; BN61-202 – £2.00. 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 = £1.00 (UK), £2.20 (EU), £3.30 (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)

NEW – ATU kits – £36 and SBSS PCB clamps – single – £12, two – £20 all plus post – See inside this Sprat

Limerick Sudden kits RX (80 through 20m); TX (40m only); ATU (80 through 10m) **£36.00 each plus post** UK - £2.50,

Eu - £4.00, DX - £7.00

Sprat-on-DVD – 1 to 148. Only £4 each to members plus postage, UK – £1, EU – £2.30, DX – £3.50

Sprat Binders – nylon string type – Black with club logo on spine -16 issues per binder – **new stock** - £4.50 each plus postage

(one: UK - £1.40, 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 £1 or less please) - any quantity of stamps is OK, or cash. I can accept cash in GBPounds, or US\$/ euros (at

the current exchange rates) – but please send securely! You can order via e-mail and pay by PayPal.

Use g3mfj@gqrp.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 - thanks