SPRAT

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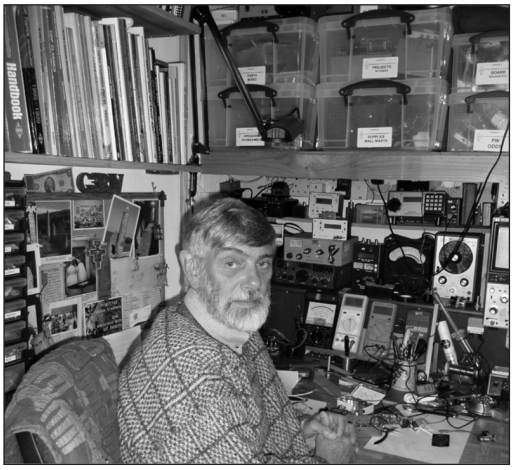
JOURNAL OF THE G QRP CLUB



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Rev. George Dobbs G3RJV

My annual call for entries, in the form of SPRAT articles, for the W1FB Award. The W1FB Memorial Award is open to applications by individual members – apply via G3RJV. The W1FB Trophy for 2016 is on the topic **"Useful items and tips for Test Equipment".** As with all items for SPRAT (almost) any format or medium may be used. Ideally I would prefer items in MS WORD and in the preferred SPRAT format but we attempt to use any articles we receive. Contact G3RJV for a SPRAT formatted page. SPRAT remains interesting because members with all levels of technical expertise share their ideas. We look forward to seeing your ideas. SPRAT has been called "the backbone of the club".

Please read carefully the item by G3MFJ about the future of the Rishworth Convention. We would like it to be special this year.

72/3

G3RJV

This could be your last SPRAT. Check your delivery label and please read the Membership Secretary's (G4WIF) page

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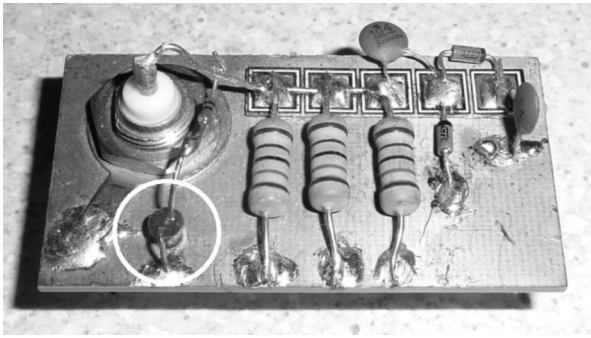
RF Indication by LED on the Sudden Tx

Paul Darlington - m0xpd - 8 Uplands Rd, Flixton, Manchester

The Sudden Transmitter, [1], includes a neat, simple RF indicator, which I have been using as an add-on for my QRP dummy loads for several years. The indicator uses a resistor and an LED, which serves as both detector and visual indicator. The LED lights to an expected level of brightness on key-down. I have even spotted a fault state in one of my rigs when the LED was shining at reduced brightness - it is useful!



One of my dummy loads including the LED RF indicator is seen, from the component side, in Figure 1. The LED is highlighted by the white circle. The system is otherwise as described in the Sudden Tx construction notes, [2], including the voltage-doubling peak detector circuit.

Figure 1 Dummy Load with LED RF Indication

Given my familiarity with this means of RF indication, I included the LED when I made an ugly version of (part of) the Sudden transmitter, according to the published schematic – the relevant section of which is shown as Figure 2.

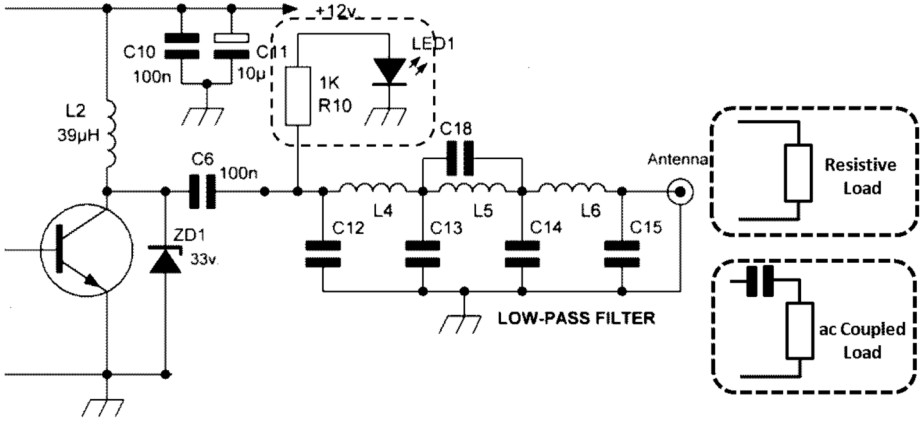


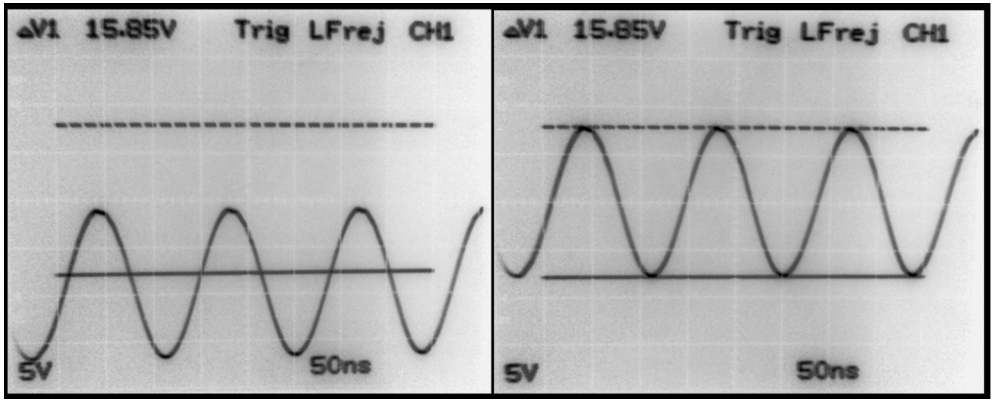
Figure 2 Elements of the Sudden 2 Tx Output Stage and its Load

The transmitter output stage is shown in Figure 2 with two loads. One is a simple resistive load, like the dummy load of Figure 1. The other is an a.c. coupled load, through which there is no conducting path for direct current. This would be the true, for example, in the important case of a simple dipole antenna, cut for the band of use, with which this class of transmitter might well be used.

My system included the keyed transmitter PA, but did not have the VXO – I could inject an external input. On testing my ugly prototype on the bench, with a dummy load, the LED illuminated perfectly, as expected. However, when I connected to a load with infinite d.c. impedance (*in my case, a g5rv via a tuner*) the LED did not illuminate at all – despite the presence of RF voltage. I checked the loading, confirmed it as equivalent to that offered by the dummy load at the (7MHz) operating frequency, and scratched my head.

The explanation is interesting...

Looking at the output voltages of the transmitter (after the output filter) with each of the loads shown in Figure 2 shows that the presence of the RF indicator and the a.c. coupled load will cause the output voltage to drift to a negative d.c. offset. The resistive load holds the transmitter output to a mean value of zero. This is seen in Figures 3, which suggest a dissipation of around 630mW into the 50 Ohm load.



Figures 3 Output Voltages with a.c. coupled (left) and resistive (right) loads

Obviously, once the output has drifted negative (*as in the trace at the left of Figures 3*), there is no voltage to forward-bias the LED and illuminate it. The system has found a lower-energy alternative to turning on the LED! Conversely, in the case of the resistive load (*as in the trace at the right of Figures 3*), the low d.c. resistance of the load holds the average voltage to zero and there is plenty of opportunity for a forward voltage over the LED to illuminate it.

You cannot simply switch around the 'polarity' of the LED, connecting anode to the node where cathode is shown in the schematic, etc. That would just prompt the output voltage to drift positive and you would still have no voltage to forward-bias the (now reversed) LED and illuminate it.

Note that it is the presence of the RF indicator sub-system which causes the voltage to drift when the load is a.c. coupled. If you remove the LED, there is no voltage drift. The very act of placing the diode detector in the output circuit prompts this shift in mean output voltage, unless trapped by the load or other means...

Fortunately, there is a very simple fix, which allows the RF indication to operate with any proper load.

Connecting a second LED in anti-parallel with the first, as shown in Figure 4, ensures that the LEDs will illuminate when the transmitter is keyed with a proper load, even when there is no d.c. path through the load.

The additional cost is negligible and only one of the LEDs need be mounted in a hole in the enclosure to provide the visual signal.

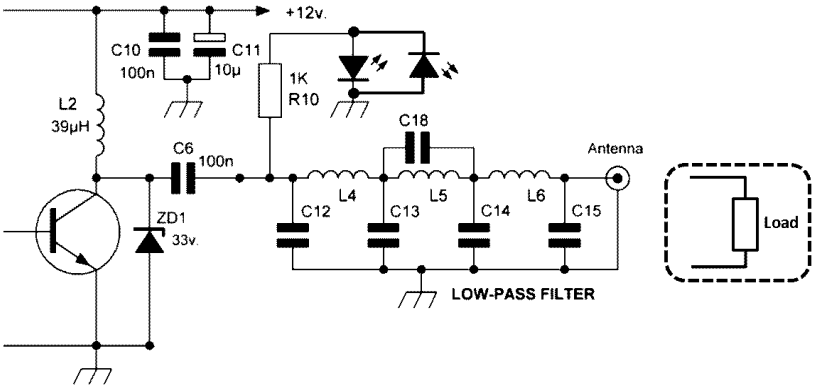


Figure 4 Revised LED RF Indication for the Sudden Tx

Not having a genuine Sudden Tx to experiment with, I contacted Graham, g3mfj, who kindly conducted some tests on 'The real McCoy'. Graham first confirmed that his Sudden, putting 2.5W into a dummy load on 80m, illuminated its diode to full brightness. He then found that the same unit, operating into a much-modified g5rv (matched via a Sudden ATU, which has infinite input impedance at d.c.) still illuminated the LED *but at reduced brightness*.

Graham tried the 'anti-parallel' LED fix proposed above and confirmed that this gives full illumination (*on both LEDs*) into the antenna load.

On hearing Graham's findings, I returned to my bench and found that I too could see partial illumination of an LED when working into into an a.c. coupled load - but only if I used a respectable, high-brightness LED, in place of the poor 3mm device I first experimented with. These superior LEDs are not the throw-away, anonymous items I purchased in bulk in a bag at some long-forgotten rally. Rather, they have significant, individual monetary value. Accordingly, it is no casual matter to add a second to a circuit to fix an issue (*in fact, Graham jokingly suggested that I should bear the cost of adding a second LED to the Sudden Tx kit's Bill of Materials*).

On reflection, it is obvious that the second diode in anti-parallel with the LED I have suggested as a fix doesn't need to be a matched LED. It doesn't even need to be a light emitting diode at all. A signal diode, like the humble 1N4148, will serve just as well.

These notes imply no criticism of my friends who designed the Sudden Transmitter, designed the PCB, produced the kit and wrote the manual. The RF indicator is elegant and I continue to use it. It is just interesting to see how simple systems sometimes trip over the simplest obstacles.

Acknowledgement

My thanks to Graham, g3mfj, for performing the validating tests described above.

References

[1] http://www.gqrp.com/sudden2.htm
[2] http://www.gqrp.com/Sudden_TX_Kit_manual_40m.pdf

Amateur Radio at its best CW with Style

G8RIW

5 in 1 Tester

Tests NPN - PNP - FET - XTL- LED

Peter Howard G4UMB 63 West Bradford Rd Waddington Lancs

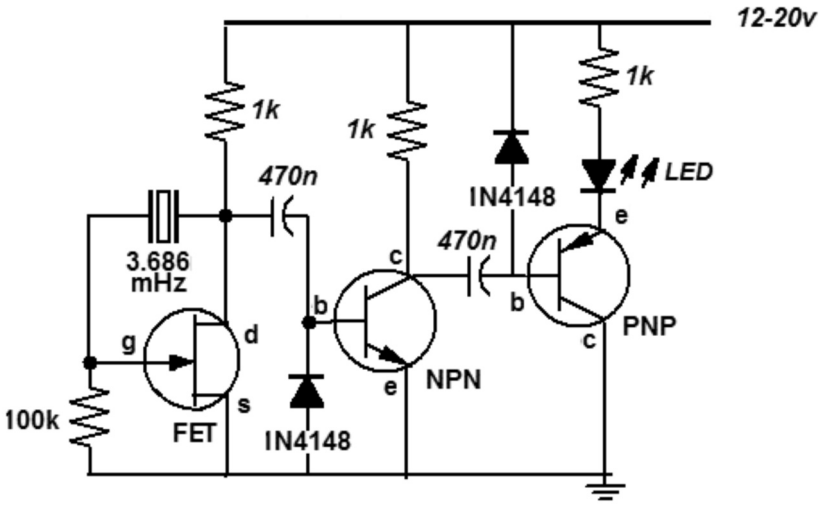
5 IN 1 TESTER

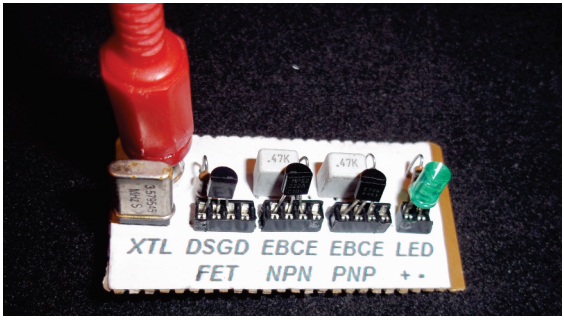
This is a basic 5 in one testing board to give an indication of whether a transistor is working. It is also useful to check that a crystal works on frequency in conjunction with a radio receiver and to check LED's and their polarity.

To begin ensure that all the transistors are good ones and the LED lights. Then exchange whichever the one is you are going to test. Finally remove the crystal to ensure that the LED goes out to prove that the transistors turn off and are not just shorted . The circuit works by the FET Pierce crystal oscillator oscillating and then this signal is rectified which is able to switch on the next transistors to light the LED. .

felt no need to put this in a box so it's a cheap test rig and only takes an hour or two to make. Purposely made with three different types of transistors it will work with JFET positive types. Such as 2N3819, BF245 , J113 etc. and small NPN transistors like 2N2222, BC108 etc and PNP types BC212, BC558 etc. The wire ended crystals which the club sell fit nicely into the IC socket It's better to use the turned pin type IC socket with the round holes which I have cut into sections. It's helpful to label the sockets which as you can see from the picture they are done in the sequence EBCE and DSGD to accommodate all transistor body connections.

This is an improved version of an older design because each stage is DC isolated . The unit is built on stripboard.





All Good Things Must Come To An End!

Graham Firth G3MFJ

I am writing on behalf of those of us who organise, set up and then run the annual Rishworth G-QRP Club Convention, and who have decided that after this year's convention, we are calling it a day. We are not planning to hold another convention in 2017, or after that. We felt that we ought to give plenty of notice to all those who have come to the previous events.

Like the majority of the people involved in amateur radio, we are all getting older (most of the organisers are now over 70!) and, as I wrote above; all good things must come to an end. The convention has been running since 1989, and at least two of us have been involved in all 28 of them!

So, we are going to go out with a bang in October this year. The exact date is not known yet as that is determined by the school, but we *think* it will be on the 22nd October (write that only in pencil!), and the convention this year will be exactly the same as last year, a buildathon, talks & traders etc.

Perhaps I should add that it is just the convention I am talking about – everything else regarding the club will, of course, continue as before.

So, what about the future?

Well, there are two, maybe even more options. Firstly, a number of younger members could come along and take over. Should that happen, then there is an admirable opportunity for them to help and to learn this year. The convention has always been near Rochdale – for obvious reasons – but there is really no reason why it should always be there. Secondly, the convention could be a part of a rally – again probably, but not necessarily in the north of England – and if anyone has any ideas, please let us know. Within limits of course, the current organisers will be delighted to help.

VFO and Signal Generators using the Si5351A chip

Hans Summers, G0UPL, http://qrp-labs.com, hans.summers@gmail.com

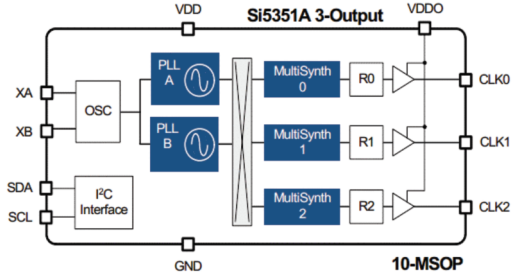
The SiLabs Si570 chip has been popular with homebrewers for a while. It comes in several variants and can synthesise an output frequency from 10MHz to 1.4GHz. Two issues with this IC are 1) frequency coverage limited to above 10MHz, and 2) it is rather expensive!

The relatively new Si5351 chip is a cousin of the famous Si570. It requires a crystal or oscillator as reference for the internal PLL, unlike the Si570. There are several types of Si5351, with VCXO input, External auxiliary clock input, and with 3 or 8 independent outputs. We'll just consider the smallest/simplest/cheapest type, the 10-pin MSOP package Si5351A. This chip costs not much more than $1 and has gained increasing popularity among amateur radio homebrewers in the last year. The low cost, good frequency stability and spectral purity, multiple outputs and wide frequency coverage make it a great alternative to other synthesisers such as Direct Digital Synthesis (DDS).

The Si5351A can produce three separate outputs, each of which can be configured to any frequency from 3.5kHz to 200MHz with very high precision (a fraction of a Hz). In fact, my tests show that even though the datasheet says 200MHz is the maximum, it actually will go up to around 300MHz! The reference crystal should be a fundamental mode crystal in the range 25-27MHz, connected straight to the chip's internal oscillator.

This diagram shows the internal blocks of the Si5351A chip. With only 10 pins, there's not much to go wrong! The chip requires a 3.3V supply at VDD and VDDO, with decoupling capacitors close to the chip. The crystal (25-27MHz) is connected across XA and XB pins. Although the datasheet recommends certain pricey crystals, in fact any old common inexpensive crystal should work fine.

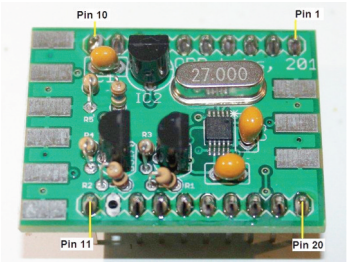
The chip's numerous internal registers configure its operation and output frequencies. They are programmed via the common I2C serial protocol (pins SDA, SCL), which is also known as Two Wire Interface (TWI) in Atmel microcontroller datasheets. Programming the registers using I2C is a job for a microcontroller. Many microcontrollers have built-in I2C peripheral; if not, it is not complex to implement a "bit-banged" I2C in software.



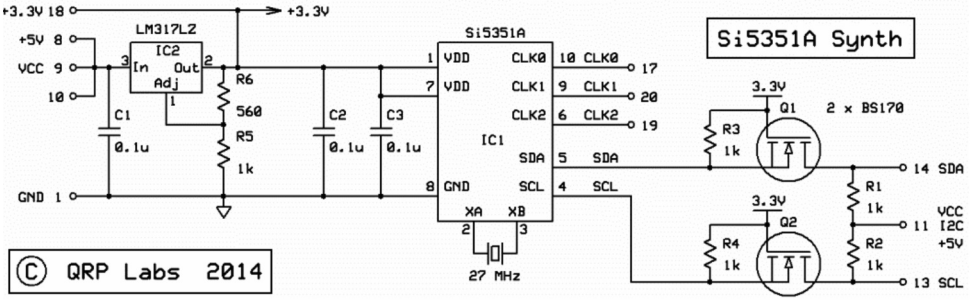
Conceptually, the chip consists of a reference oscillator (25-27MHz crystal), which is multiplied up by a Phase Locked Loop (PLL) to an internal Voltage Controlled Oscillator (VCO) frequency which is in the range 600-900MHz. That frequency is divided down by a "MutliSynth" divider. Each of the three outputs has its own Multisynth divider, and there are two PLLs. The outputs also have a further divider stage (labelled R0, R1, R2 in the diagram) that divides by a power-of-2 between 1 and 128. The PLL multiplication and the MultiSynth division are both fractional, which allows very high accuracy of the output frequencies. However the

datasheet recommends for lowest jitter (phase noise), the MultiSynth division ratios are restricted to even integer values. In the middle is a cross-switch that allows flexible routing of the PLLs to the MutliSynth dividers. The outputs are 3.3V pk-pk squarewaves with 50-ohm impedance.

The Si5351A chip is surface mount and really tiny, just 3 x 3mm. The 10 pins have a spacing of only 0.5mm! I have successfully "ugly" mounted these chips with tiny wires but it's not an easy job,. Avoid coffee or alcohol for at least the prior 24 hours! Fortunately, a number of vendors now produce "break-out" boards or kits, with the Si5351A chip already soldered to the PCB. This makes using the chip in your projects very easy! See for example QRP Labs http://qrp-labs.com/synth Si5351A Synth kit, $7.75; Adafruit Si5351A breakout board, $7.95 https://www.adafruit.com/products/2045

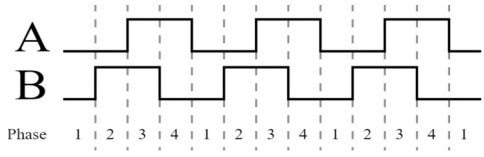


This photo shows the QRP Labs Si5351A Synth kit. It has onboard 3.3V regulator, and two BS170 transistors acting as I2C level converters, so it is suitable for interfacing with 5V microcontroller systems such as the popular Arduino. The circuit diagram is below.



QRP Labs also produce an Arduino Shield for the Si5351A Synth kit, with an onboard QRPp PA and sockets for a plug-in LPF. Example sketches demonstrate how to configure the Si5351A registers for a desired output frequency. These examples will be useful for anyone wishing to write their own code to control the Si5351A, see http://qrp-labs.com/synth/si5351ademo.html

A nice VFO/Signal Generator using the Si5351A Synthesiser can be made by the addition of a microcontroller, display, and rotary encoder. Rotary encoders are available in mechanical types with actual mechanical switch contacts, or much more expensive optical encoded types with more "clicks" per revolution of the knob. In both cases however, there are two outputs, which are offset by 90-degrees phase. For each "click" of the shaft rotation, the two outputs pass through all four phases. By detecting the order of the phases seen on the two output signals, a microcontroller can determine the direction and speed of rotation.



Almost all examples of published rotary encoder firmware I have seen, rely on either resistor/capacitor circuits for switch debounce, or timers in the microcontrollers. I tried numerous examples and was satisfied with none of them. They miss rotation clicks or still suffer false outputs due to switch bounce. All too often, the quality of the rotary encoder itself is wrongly blamed, particularly if it came from eBay or China! Cheap ones are fine.

The solution is elegant and simple. I wonder why it isn't done this way more often! The microcontroller need only look for a phase transition (see above diagram), and when it occurs, store it. The processor should then ignore any transition back and forth between those two phases, and only react to the adjacent phase transition, which will tell it which way the shaft has been rotated. For example suppose the processor sees the change between phase 1 and phase 2. It should then ignore any more changes 1->2 and 2->1 which could be due to switch bounce. When it sees 2->3 or 1->4, it will know whether the knob has been turned clockwise or anticlockwise. All with no switch bounce problems!

QRP Labs offer a VFO/Signal Generator kit including Si5351A Synth, 16 x 2 blue-backlit display, rotary encoder and programmed microcontroller. The kit produces a fixed (configurable) output that could be used as a BFO for example; and a rotary-encoder tuned variable output. Both cover the full available range of the Si5351A, i.e. 3.5kHz to over 200MHz. Connection of a GPS receiver with 1 pulse per second output permits calibration and continuous correction of the frequency. A very accurate VFO or Signal Generator for the shack! Please refer to http://qrp-labs.com/vfo for circuit diagrams and information.

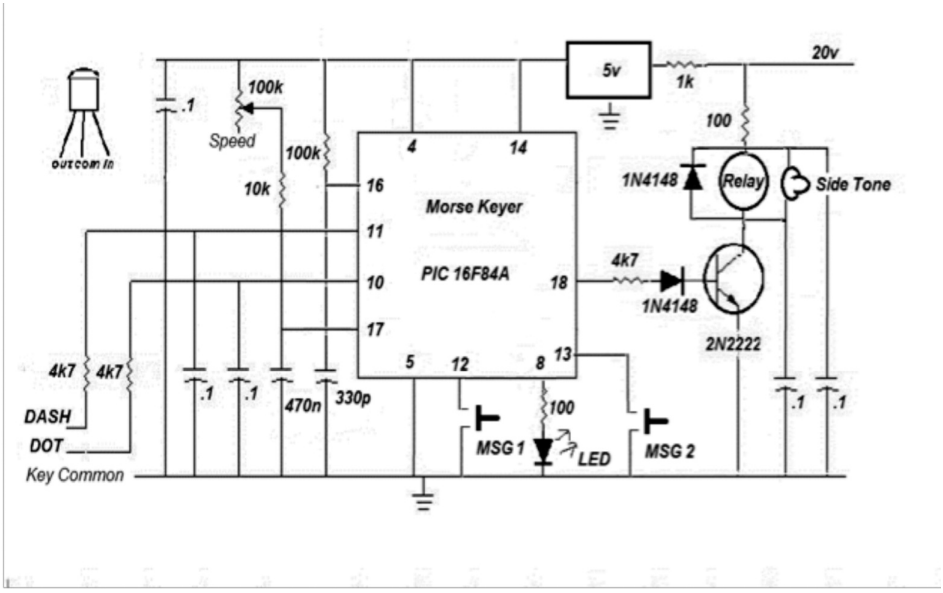
CQ Keyer

Peter Howard G4UMB 63 West Bradford Rd Waddington Lancs

If like me you make QRP transmitters that are mainly crystal controlled you will have experienced the long wait when calling CQ lots of times to get a contact. This simple Iambic type A or B keyer IC is controlled by software designed by Wolfgang DL4YHF, which can be downloaded free of charge from the internet .

The two push button switches allow you to input numerous commands so you can customise the keyer to your requirements. In a simple setup which is adequate for me I have only used one button on pin 12. Pressing this button for more than 2 seconds will command the software to flash the letter M on the LED. You then can record a short message using the paddles and after that press the button again for 2 seconds to store the message The LED flashes an S. This message will be stored even if the power is disconnected afterwards. Touching either paddle during the playback of a message will stop playback and return the keyer to normal.

I have drawn this circuit which is only a small part of what the keyer really is to show a typical application for a QRP transmitter using it to drive a relay and piezo sounder . A typical message to store would be a CQ CQ call Go to this website for ALL the info. http://www.qsl.net/dl4yhf/pic_key.html



Do You Trust Your Power Supply?

Michael Wainwright g0cwm@nlwarc.co.uk

Many years ago I bought a power supply from a local Rally. Having got it home and switched it on, it produced the required voltage and I pressed it into service powering the many projects I make.

One of the projects developed a fault resulting in a short circuit which had the undesired effect of blowing one of the tracks! I did some experiments using various devices and found that although the power supply stated it was protected it didn't actually cut the supply under fault conditions. I have replicated the experiments in a video that can be viewed on my website – http://www.g0cwm.co.uk/over-voltage-protection/ – component tracks, diodes, and thin strands of wire all ended in a puff of smoke!

So how do we solve the problem? The power supply is supposed to have short circuit protection but obviously doesn't. The circuit I have come up with is a simple one using a 741 a Zener diode and a couple of discrete components. See Fig 1.

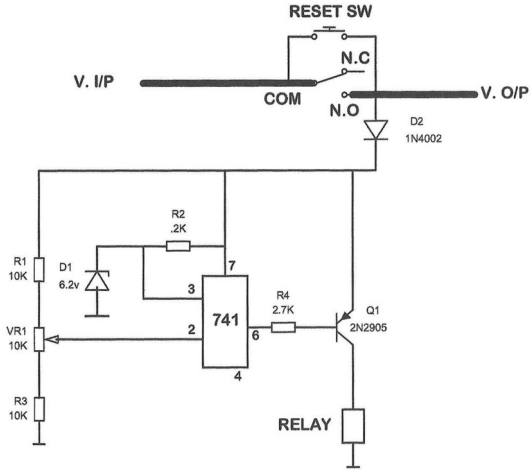


Fig 1 – The Circuit

The circuit is simply a comparator that compares the voltage across the 6.2V Zener diode with that on pin 2 which is derived from R1, R3, and VR1. Under 'normal' conditions, the circuit is active and the relay is turned on via Q1. If the voltage at pin 2 is more than that at pin three, then the circuit shuts down switching the transistor and therefore the relay off. The shutdown is almost instant - certainly fast enough to save a diode or a track.

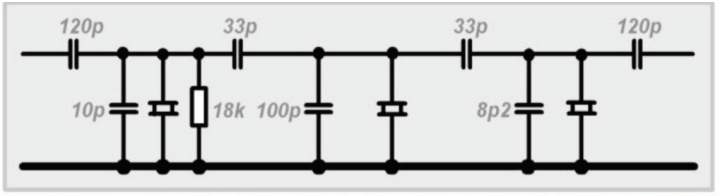
A limited number of fully assembled units on a professional PCB including an LED plus holder, and a suitable relay are available directly from g0cwm@nlwarc.co.uk at a cost of £10 + postage (£2.80 UK, €5 Europe) per unit. Payment via postal order, cheque, or paypal.

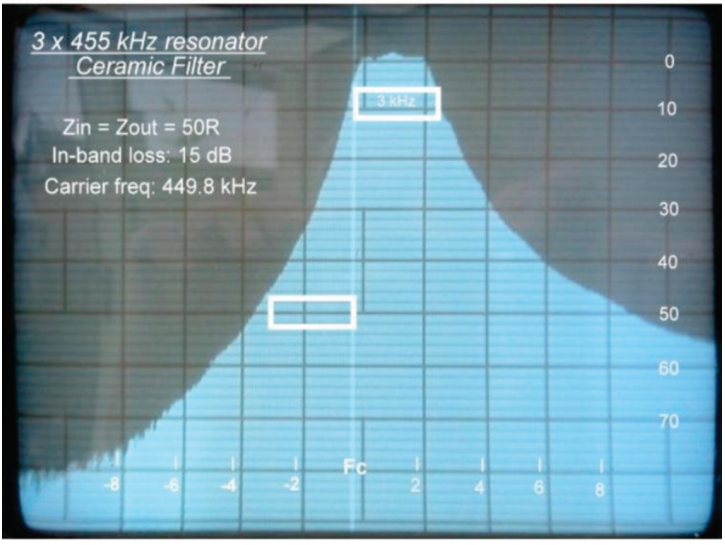
Using ceramic resonators in SSB filters

Bernie Wright, G4HJW , bernie@earf.co.uk

Ladder filters using low cost quartz resonators are well known in amateur circles, but what about ceramic resonators? Actually, they can be quite useful in lowish frequency SSB filters, despite their lower Q. The reason for this is that the lower impedance makes top coupled parallel resonant operation a suitable configuration and one which I think makes for an easier implementation. Associated network capacitors end up being convenient values, and 'suck it and see' filter development (ie, trimmers initially used in all capacitor positions) make the whole thing quite fascinating to experiment with. In the example shown, three 455 kHz resonators are used. The shunt capacitors allow some movement of resonator frequency, whilst the series capacitors control the coupling between stages and have a major effect on the filter shape. With this topology, it is also easy to arrange for 50 ohm input and output matching impedances. This particular filter was fitted into a small 80m monitoring receiver, the audio from which certainly sounds nice.

Other sideband filters have been built between 300 kHz and 1 MHz and with up to five resonators in the case of the 1 MHz filter. Sometimes, the loaded Q of one of the resonators may be found to be a little high. In these cases, damping resistance can usefully be added across the particular section to flatten the overall in-band response.





Resonators at 3.58, 3.68 and 14.32 MHz can be used in the same configuration to provide receiver front-end selectivity over about a 20 – 30 kHz bandwidth for a typical pair of resonators.

For more graphs and circuits, see http://www.earf.co.uk/cerfiltrs.htm

Bernie Wright
G4HJW

Annual Christmas Challenge

Jon Joyce, GM4JTJ (gm4jtj@yahoo.co.uk)

For several years now my 'building buddy', Dave G4FEV and I have embarked upon a little challenge each Christmas to try and focus our thoughts, and also distract us from the merriment of this festive period.

We used to be almost 'next door neighbours' and would collaborate on various projects from HF to microwave until my move to Scotland when the geography prevented such activities. This series of challenges over the Christmas period are almost a celebration of all the prior years of enjoying radio construction together.

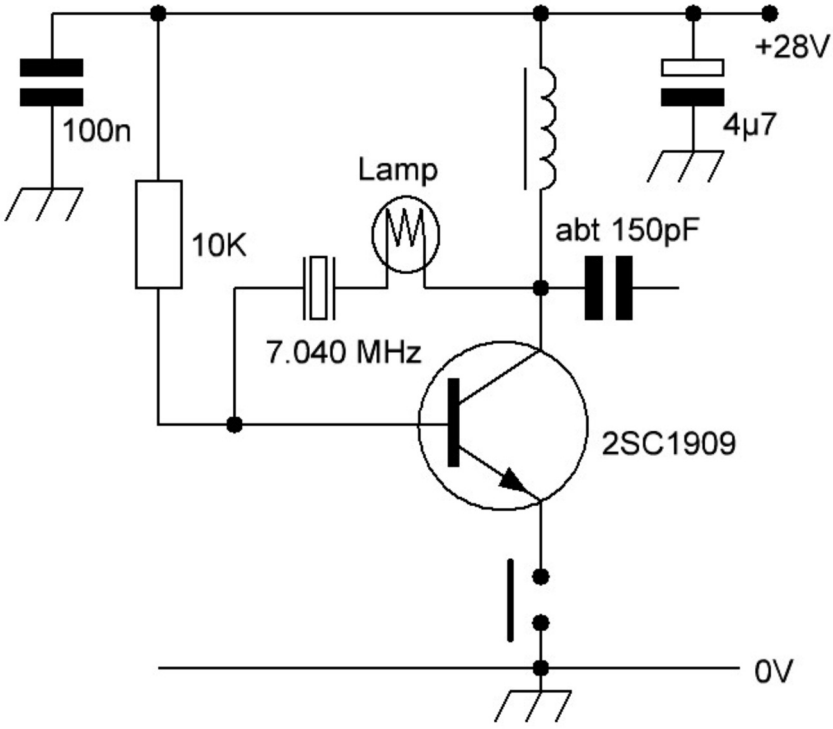
At Christmas 2014 we endeavoured to build a simple transmitter which would enable us to make contact with each other using the energy from one Christmas candle.
Clearly the 504km between us was not going to bridged by any form of modulated light transmission which was one possible avenue suggested by Stuart, G8CYW. Other ideas were to utilise some form of Peltier device to generate the necessary power or maybe by 'raising steam'. Ultimately this is what we both settled upon and it was also an excuse to don the overalls and break out the oilcans as we enthusiastically fired up steam engines which had been languishing in our attics since boyhood.
We didn't quite make it!.
We were however able to demonstrate via the on-line web sdr receiver at Hack Green that we 'half made it', each being able to see the others trace on this resource.
These online receivers are an extremely valuable resource clearly demonstrated by our last challenge and so could they be used more effectively this year?

The 2015 challenge was to build a 40 meter transmitter using just one active device!! (BC108?, IRF510?, 6V6 or maybe even a 4CX250B!!!.) Just one active device contained in a single package.
The objective was to put a signal into a selection of online SDR receivers across Europe. Namely - "See one's own signal on twelve receivers, one for each of the twelve days of Christmas."
Quite clearly a 2N2222 or 2N3904 was just not going to be man enough for the job as far as this challenge was concerned, more power would be needed!!!

This brief article describes the solution I finally settled upon, having first made many trial builds using various devices I had in the junk box, like BFY51s and even a basic 6V6 transmitter.

The circuit I arrived at is really a modification of earlier designs I found in Spratt or on the excellent CD (for those of us who have not been members for very long) and is shown below.
It is also a celebration of G3YUQ's very early design. Eric was my instructor on the Bedford RAE course many years ago who was a keen 'qrper' and who hated these 'new fangled 3 legged fuses'.

Unlike Eric I fully intend to add a low pass filter to this project and unless you wish to suffer the same fate as Eric, I suggest you do too!!?



Rather than describe in detail the construction of this circuit I will draw your attention to some of the difficulties I had making it work.

I made the decision that I would use an old 10Watt CB output device, the 2SC1909, which incidentally are still available via Chinese suppliers. I found one supplier offering a pack of 5 for about £6 postage free to the UK, for those who do not have such extensive junk boxes. For 'extensive junk boxes' please read 'shed-full of clutter' as my xyl describes it!!

My first prototype stubbornly refused to oscillate. At this time I had not added the bulb in series with the crystal. Thinking that maybe my choice of collector coil might be a bit on the mean side I upped it to a significantly higher value of 2.5mH and was rewarded with a circuit which now appeared to function.

I next encountered a problem with the board refusing to oscillate once connected to either a load or my qrp low pass filter.

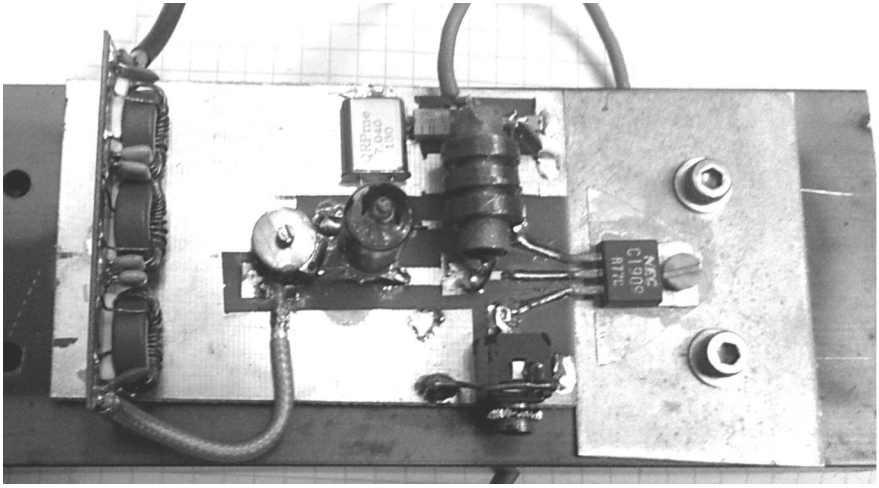
I determined by experimentation that the value of the coupling capacitor was fairly critical and I ended up using a 100pf and 60pf trimmer in parallel. Anything larger than this tended to damp the circuit out of oscillation.

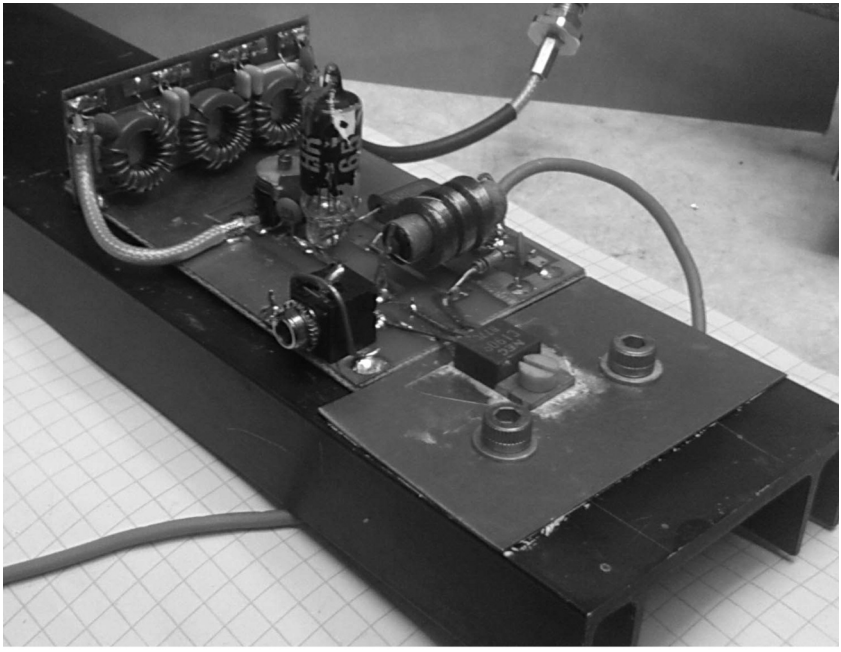
I then built my second prototype board using the time honoured technique of cutting bits of black tape with a scalpel to mask the copper-clad board prior to etching. I have used this technique successfully on projects up to 5.6GHz!!
I decided to leave a space for either an inductor or a trimmer in series with the crystal to allow some trimming of the final frequency. I was to become grateful for this forethought later on.

Once built and mounted on a suitable heatsink with a copper spreader beneath the transistor for improved heat conduction, it became clear from early tests that frequency stability upon key-down was a significant problem. Something was getting hot and causing drift. The transistor itself was remaining relatively cool so what was causing this drift?.
I had been speaking with another amateur some days earlier and was telling him about this project and that I had some concerns about the crystal currents using the smaller GQRP club crystals and he told me about an old-timers trick of putting a small bulb in series with the crystal.

I delved back into the junk box for something suitable and came up with the one shown in the photograph. I have no idea what it is or where it came from other than it is a low power12volt bulb. Maybe a Christmas fairy-light bulb would be an appropriate second choice here!
The incorporation of this bulb in series with the crystal has almost completely stabilised the drift, presumably originally due to overheating of the crystal and I would now appear to have a working 40meter cw transmitter to compete in this years challenge.
Approximately 5 watts output, QRO indeed. During keying there is the satisfaction of watching the bulb glow in synchronisation with my somewhat ‘iffy’ keying.

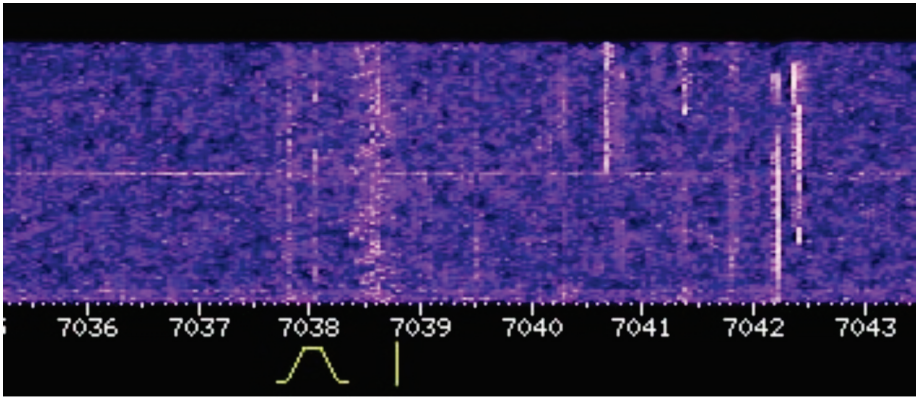
I have been unable to cure the small chirpy shift at key down but for the purpose of this challenge I felt this was acceptable and forgivable. I did try using a 100nF capacitor across the key contacts but this reduced significantly the output level.





Results to date have been quite encouraging and during the initial tests I have been able to ‘see myself’ on an assortment of web sdrs in Poland, Germany, Sweden, Holland and eventually Russia from my home QTH here on the east coast of Scotland.

My Antenna is just a long wire



Screen grab from the Russian SDR in KO89XC, 2373kms away. My signal is the intermittent one shown at 7.0381MHz

This challenge, although not yet fulfilled at the time of writing as it is still a few days before Christmas, has been thought provoking, and entertaining which I thoroughly commend. Not only has it been a joy to build and operate but it was also a good excuse to go and review / revisit old Spratt articles as well as motivating me enough to write this article.
So what of next year?. Dave has already suggested it might be fun to build the smallest tx possible and see who can work the greatest number of kilometres per square cm. of circuit board using surface mount devices. No vertical stacking allowed!
Anybody else out there up for a challenge next Christmas?? Jon Joyce GM4JTJ

Some observations on the Chinese 49-er

David Wright, G3VBQ

Some observations on the Chinese 49-er which I bought for around £8 recently on Ebay, and which may be useful to others:- Both the red and black power wires, and the rf output wires, to plugs J2 and J4 were reversed on my unit, and I blew the safety diode thoughtfully provided when the board was powered up. Beware! The transmitter output was only a few mW, and faded quickly (see article by G4AQS in Sprat 164). The driver transistor Q6 is an audio device, working near its gain limit, and replacing this with a good rf transistor will give more drive (and Q6 will run a lot cooler as well). The output transistor Q5 is also intended for audio use – hence the poor output, and fade in output as the transistor gain drops with junction temperature increase. I replaced this with an Eleflow 2SC1971 VHF power transistor. (Note that the Internet is awash with (usually Chinese) fakes of this device, so buy yours from a reputable source – I got mine from weazle66). This is not a pin-for-pin replacement, and you will need to sleeve and bend the transistor legs to get it to fit. With these two mods in place I am now getting around 4W output, with no fade in output.

Dealing with alkaline battery leakage

Mike G1RHV, g1rhv@fastmail.co.uk

It is an unfortunate fact that alkaline batteries sometimes leak, normally because they have become “exhausted”. In practice there is still sufficient alkali to leak and cause damage to metal contacts.

There are normally three courses of action:

- Repair or replace the battery holder if it is practical to do so.
- Dispose of the affected equipment.
- Pass the problem to someone else.

Before handling affected equipment or materials please remember that protective eye wear, rubber gloves and washing hands afterwards is always a good idea. Don’t attempt to investigate or handle corroded batteries or their residue in kitchens or near food or drinks.
There will typically be signs of corrosion and deposits of turquoise / green waxy residue. While it may be tempting to think that the waxy residue is a benign by product, this is far from the case and it is still very reactive. This means it can react with your repair tools as well!

It would be nice to neutralise this alkali before making any of the above decisions. This reduces risks to the environment, you and your tools. To do so, we require a mild acid. Acetic acid, otherwise known as vinegar, is ideal as it should not cause any further damage to the affected equipment, provided that it is removed afterwards. However be aware that given a few hours vinegar can disolve solder joints! Any corroded joints will need to be cleaned and remade in any case.

Remove the batteries, wrap them up and dispose of in one of the battery banks in various supermarkets for example. DO NOT ATTEMPT TO NEUTRALISE THE BATTERIES. Gas is liberated from the alkali on reaction with vinegar. Damaged batteries may react unpredictably and suddenly causing them to burst and / or eject corrosive material.

If possible, isolate the affected area and apply drops of vinegar to it. You will likely notice some fizzing and fine bubbles as the vinegar reacts with the alkali. Be patient as this process may take some time to complete. Use absorbent material to soak up excess liquid. Stiff paper can be used to probe any plastic slots from which affected terminals may have been removed. If necessary, apply fresh vinegar to neutralise any remaining reactive material. Mop up the waste and dispose of it normally.

If you are fortunate, you may be able to recover and repair battery terminals. These will likely need plating, tinning or the fabrication of a workable alternative.

Mike G1RHV

A simple add-on VFO for the MFJ Cub

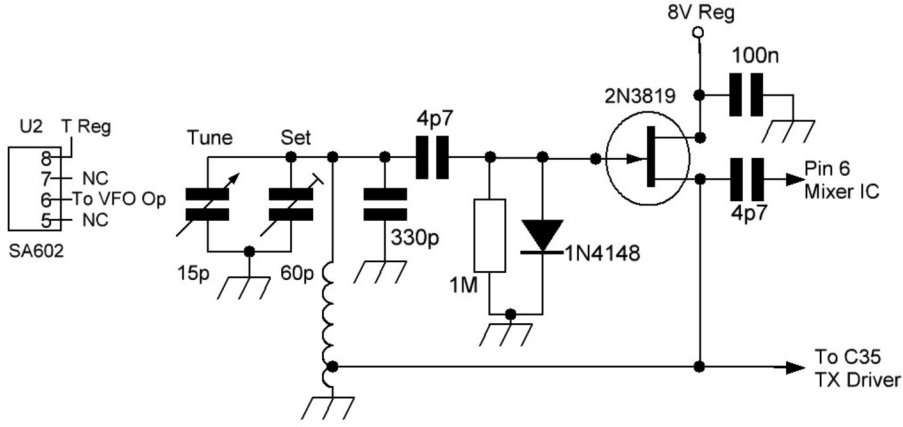
Nigel Flatman G0EBQ 3375 **nigel.flatman@yahoo.com**

It has been claimed that the MFJ Cub in its original form is prone to drift. I have used the following circuit, which is from the Emtech NW20, to replace the existing vfo. I omitted all the circuitry around pins 5 and 6 of the rx mixer U2 and took the vfo output to pin 6 and also to the tx driver via C35.

The coil was 29 turns on a T50/2 with a 3 turn tap. Use a polystyrene for the 330pf capacitor for best stability.

I have said "claimed drift" because I do not actually own a "proper" Cub. MFJ are kind enough to publish full constructional and alignment details on their website; it is a tried and tested design and by changing a few band specific parts it is possible to make a rig for any band from 15 to 80m.Using that information I made a version using plain perfboard; the attached photo gives you the rough idea. I definitely would recommend using IC sockets for ease of replacement.

Club Sales have most of the more expensive parts-you should be able to use 2N3919 for the tx driver and 1N4148 for the switching diodes. JAB have everything else including the coils; I used Toko 9449 for my 20m version but 9445 and 9449 should work for 40 and 80 respectively.
Mine has been in use for over 10 years and continues to give excellent and reliable service. The rig is cheap to build, easy to align and the break-in is especially nice to use.



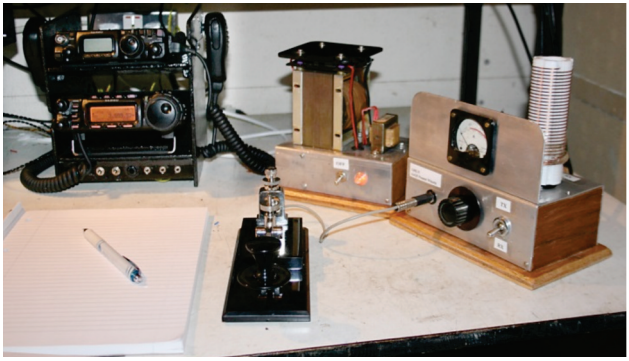
Valve QRP Day November 2015

Colin Turner, G3VTT, g3vtt@gqrp.co.uk

From the reports I've received there were a few stations on during the weekend but some of the regulars were missing. Perhaps they will show up in the April event! Chris **G3XIZ** said *'I had an enjoyable time over the Valve Activity Weekend and I did a few mods to the home made TRX beforehand as is my custom and managed to tidy up the wiring if not actually improve the performance. I had a total of 29 QSO's with 21 separate stations of whom 7 were also using valve QRP gear. I was QRV on 160, 80, 60 and 40m but as usual had trouble getting 40m contacts due to the incessant contest activity around the QRP calling channel. (*Usual trouble then Chris*). One exceptionally pleasant QSO was a 3-way on top band CW with G4GIR and M0FMT all of us using valve equipment. I was pleased to see increased activity on 60m this time, working GW3UEP, G4XRV, G3SCD and G3DXZ amongst others'*. Down the road in Sittingbourne John **G3TYB** made good use of some regenerative receivers. He writes, *'I managed a few more hours this time, partially because my PhD efforts are beginning to near completion! Using my two valve rigs, one VFO on 80m and the other crystal on 80/60/40, both just under 5w and regen receivers I made a total of 16 good contacts. Only one on 40 though because the band was just too busy, five on 60 and the remainder on 80m'*. From Italy Chris **IZ3CQI**, an avid valve fan, compliments the sweet sounds of the valve QRP rigs. He said, *'propagation was good. The OM Contest yesterday made the things very hard but today it seems our dx colleagues reserved a bit more of a free band which let our beloved valve rigs sing! Among other stations, curious about my 'VALVE DAY' call, I made QSO's with YU7AE, G4PRL and PA4BYW all participating to the event. The 7.030 kc/s QRG has never been so nicely full of so valve-sounding tones, as this afternoon. The use of valve gear is not merely a matter of an aesthetic and nostalgic approach. I prefer that kind of gear because it is cheap, easy to get working and simple to repair. I strongly believe that a true radio amateur should be capable of fully maintaining his own radio-stuff'*. Quite right Chris! Ian **G4GIR** used a Wireless Set 19 Mk III, hopefully at 3 watts and decided he needed a CW filter. He worked 60m, an ideal band for inter G working and is waiting for the next weekend in April.

To say I was all at sea is an understatement on day one! Drifting in 4 watt winds on 7.028MHz.I think the ops who contacted me were very brave and I thank them. Sunday was a lot better on 3.5595 MHz. and I managed 10 contacts not many G-QRP club but at least I did have some good contacts with my 3 to 4 Watts. My setup is a one valve home brew Peanut Whistle max 4 watts to G5RV (300 ohm ribbon

feeder to 102 foot top) via an MFJ 974B Balanced ATU. My straight key is a copy of a Marconi PS 213 Made by G0NVT. My receiver is an FT 857. Good fun and looking forward to the Christmas Sports. Richard **G0ILN** G-QRP 8596 Fists 398.



Stalwart **G3NKS** who always fully supports these activities told me *'40m was a dead-loss for much of the weekend – at least two contests spreading all over 7030 whenever I managed to get into the shack. 80m was better but lots of CQs on or around 3560 produce just six QSOs, with PA7RA, GM4EVS, G3TYB, G4GIR (using a 19 set at 3W), G4PRL and M0PBZ. I used my CO/PA using a couple of 6V6s running 4W into a G5RV at 15ft and a Drake 2C receiver. Good fun and many thanks to the organiser!'* You are very welcome Derek! Gerald **G3MCK** worked 4 stations with his famous co/pa from Rutland.

The "Museum"

Finally Michael **G4AQS** wrote and told me. '*I hooked up with a few folks over Valve Weekend but only G4GDR, G0ILN and G4GIR who were using valves. The equipment here was the same as last time, a KW77 Rx, 3 valve 40M home-brew TX with a permeability-tuned EF80 VXO, EF80 driver & 6BW6 P.A. (seen on left). I tried, without any success, on 80M with my Paraset replica in the evenings, although I did hear my call returned on one occasion but couldn't catch the sender's call-sign. Best comment was from Dave operating as G1FCW from the Essex CW Club when told of my equipment. 'Your station must be in a museum'*. I trust you sent him a suitable reply Michael. Well done all and see you for the next one on April 23rd/24th

A holiday home to combat stress – and help Combat Stress

John, F5VLF/G3PAI, 19 rte des etangs, Mare le Bas 58800 Cervon

G3PAI's cottage in rural Burgundy. No charge - just donate what you feel able to Combat Stress (www.combatstress.org.uk). See **www.charity-cottage.org.uk** for details.
tel +33 386 20 25 50. john.rabson07@gmail.com or rosemary.border@gmail.com

KD1JV Designs MTR-5B

Colin Evans, M1BUU colin.evans2@gmail.com

I discovered Steve Weber KD1JV's rigs a few years ago. I built the first version Mountain Topper CW rig (AKA 'MTR') in 2012, it was a two band model supplied without a case. I housed my kit in an Altoids tin and selected the 40m and 20m bands. I liked the rig so much, that, when the second version was released, I opted to buy another, this time building for 30m and 20m bands!

KD1JV's kit for 2015 was the fourth in the MTR series, called the MTR-5B. The rig now includes operation on five bands, a backlit four line LCD and optional rotary encoder.

The MTR-5B kit was a limited run of just under 100, all with a serial number. My kit has serial number 070. The kit was supplied as a board plus parts, including solder and connectors, but minus an enclosure. The components are almost entirely SMD, 0805 size for most resistors and capacitors. The hardest part of the build was probably mounting the processor and DDS chips as these are TSSOP devices (Thin-shrink small outline package).

The build went smoothly and the rig fired up first time without any troubleshooting. There had been a few issues with original firmware, so I knew, even before having the kit in my hands, that an update would be needed. Updating the firmware for the MTR series has been made very easy for us. The MTR series rigs use the TI MSP430 family of processors, the development tool / interface for these chips is called LaunchPad, and costs around £10 delivered to your door. To update the firmware, I simply had to connect three wires from the LaunchPad to the three programming pads provided on the MTR PCB, then it was a just a matter of double clicking the correct file downloaded in a .zip folder. Job Done!

I made my own enclosure from a piece of aluminium sheet ordered from EBay. I hadn't tried making my own cases before, I wish I had tried it sooner! Using a vice that I made at college, it was easy to bend the aluminium sheet into the shape I wanted. I copied the case style of previous versions of MTR but I sprayed my rig bright orange as it's my 3yr old son's favourite colour (might also prevent me leaving it behind after a SOTA activation!). I opted to leave off the optional rotary encoder to make the radio as small as possible, and I also saved around 10 grams in weight.

The MTR-5B is a pleasure to use, the receiver is very quiet, by that I mean that there is very little audio chain noise. There is no volume control, the AF level is simply limited above a certain point. The sidetone, although generated by the processor, is very smooth as it is injected before the final AF stage and is subsequently filtered. The band switching can take a bit of getting used to as it uses a combination of six slide switches, however previous versions of MTR have used this system and I don't have a problem with it. The most impressive feature of this rig, despite the permanently backlit display, is it's extremely low current consumption. Another feature which I really like is the real time clock, the clock is surprisingly accurate and I find it very useful for SOTA logging, it will be especially useful to keep set to UTC when summer time comes along. The clock is kept running by a small button cell when the rig is not connected to an external supply.

Some statistics for MTR-5B s/n#070

160g (5.6oz)
106mm x 82mm x 30mm (~4.25" x 3.25" x 1.25") excluding protrusions.
Built in Iambic (B) keyer with three 63 character programmable messages
Single conversion superhet, ~500Hz bandwidth
High efficiency transmitter using 3 off TO92 BS170
4 line backlit LCD with frequency, RIT, battery voltage, time display.
Full coverage of 40m/30m/20m/17m and 15m. (Option for 80m in any one of slots)
Operating voltage range 6 to 12 Volts, nominal 9V

BAND	RX mA 9V	RX mA 12V	TX mA 9V	TX mA 12V	Power W 9V	Power W 12V
40m	23.5	18.6	440	580	2.82	4.90
30m	23.7	18.8	490	660	3.06	5.33
20m	23.8	18.8	530	700	3.15	5.40
17m	23.9	18.9	530	690	3.06	5.26
15m	23.9	18.9	620	800	3.12	5.13

Notes -
RX current measured with no signal present so will be higher in actual use.
TX power measured using 4SQRP QRPometer, in turn compared with Nissei RX-203.
A supply voltage of 7.3V gives approximately 2 watts output on each band.
TX power output and efficiency is influenced by the spacing of turns (inductance) on the low pass filter toroids, I just spaced mine neatly and didn't mess around too much.

Thanks go to Steve KD1JV for designing and supplying such a great QRP kit!

Membership News

Tony G4WIF, PO Box 298, Dartford Kent. DA1 9DQ

For some members reading this, it will be your last Sprat - through either failure to renew or some other issue. All you have to do to put your mind at rest is find the wrapper it came in and check your membership expiry date. Please everyone, check the wrapper now.

If the date says “expires end of 2015” or “membership expired” then there will be no more Sprats unless you contact me or your overseas representative. (see the club website at www.gqrp.com for the latest information). If you have an email address then why not create an entry on QRZ.COM so that either your DX representative or I can reach you.

As with past years, this could be your last Sprat for UK members who believe they have paid by banking standing order. I have updated the records with every identifiable standing order payment. All standing order payments must have your membership number correctly quoted. Without your membership number you have made an anonymous donation.

A few members are still trying to add extra years that would cause their membership to expire after “end of 2016”. You may not exceed this one (current) year limit and I have written in previous Sprats that any such payments will not be accepted. You may request a refund (less any costs), otherwise the over payment will be regarded as a donation. You should consider cancelling your standing order payment (for a few years) until you catch up.

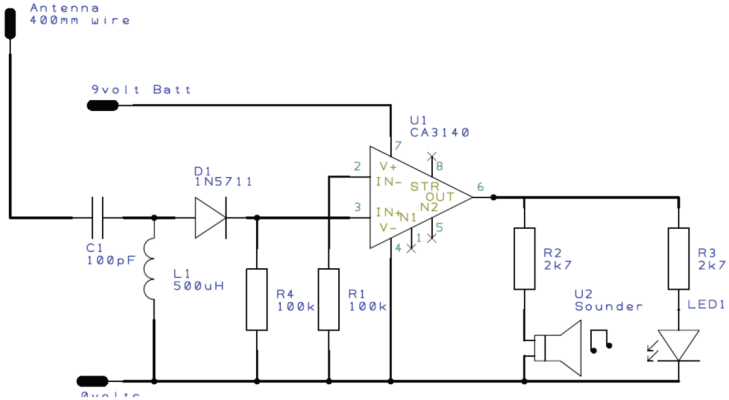
Members also need to check the wrapper for a message about under payment. In 2016 you will only receive this Spring Sprat with an underpayment warning on the label - and then there will be no further magazines until you send the balance.

If you have a DX representative you can pay them, otherwise you will need to pay me in pounds sterling – I cannot accept other currencies. If you send cash it is at your own risk and coins are inadvisable.

Finally, if you write by post to any club officer expecting a reply, please include return postage.

WIRELESS SIDETONE – CORRECTION

G0VXG has pointed out that I used the wrong drawing for this article (last issue page 20). The correct circuit is below. Sorry for any inconvenience to author or readers.

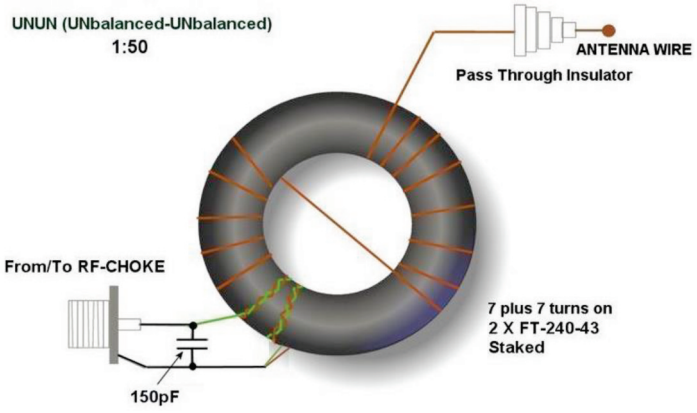


Antennas Valves and Vintage

Colin Turner G3VTT 182 Station Road
Rainham Gillingham Kent ME8 7PR
g3vtt@aol.com

AVV is shorter this period due to editorial constraints from the Editor. The next AVV will contain some information from G6NGR about an all band vertical amongst other things. Please keep sending your ideas in. Activity seemed lower during the 2015 Winter Sports but there has been some interest in the Monday evening QRP Meeting Point provided as a service for members. You can use it test your latest QRP creation, get a report on a new antenna, get some CW practice in or just keep in touch. Use 3560 KHz at 2000z local time. My thanks to all of you that have called in and made those long skip contacts so far. Some of the nearer stations have been inaudible due to band conditions but have been reported as making contacts and that is the name of the game – QRP activity.

The all band 'L'Olandesina' 80 – 10m aerial sent in by Fabio IK0IXI in the last issue provided some interesting feedback which requires the inclusion of the 50:1 balun details. Interestingly Radcom, the RSGB periodical, had an article at the same time about this aerial. Thanks again to Fabio who has provided other graphics in this issue of AVV.

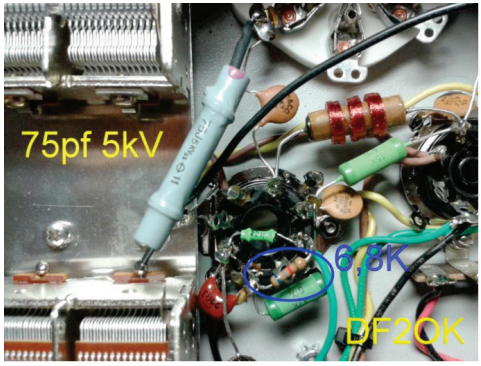


Valve and Vintage

A little bit of valve and vintage from DF2OK and his Ameco AC 1 transmitter kit! There was a transmitter kit produced in the USA many years ago in the 1950's by the Ameco Company primarily for the US Novice market. It was a single stage oscillator kit producing around 5 watts from a 6V6 and consisted of the chassis, valves, mains transformer and components plus instructions. It is indeed a rare item on E Bay or in flea markets and in recent years a copy of the kit was made by a German amateur, (regrettably no longer available), and a US QRP club There is also a users group providing parts and information for those wishing to build their own version of the transmitter. It would make an interesting transmitter for QRP Valve Activity Days. The original manual for this kit is shown on the following link:

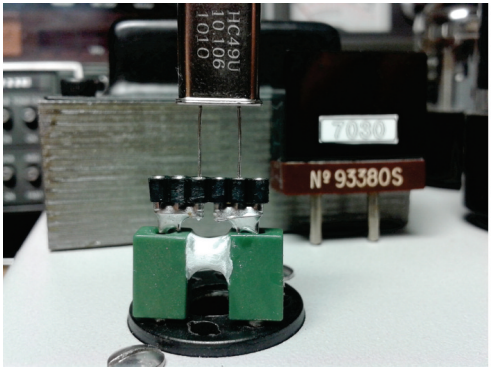
http://www.wa0itp.com/ac1manual.pdf
The users group is at:
https://groups.yahoo.com/neo/groups/amecoac1/info and the glowing, (pardon the pun), reviews can be found at:
http://www.eham.net/reviews/detail/2222?page=2
The kit ***was*** *available from*
http://www.tuberig.com/ and that site gives details of the various versions made in Europe with some fine photographs. Mike DF2OK originally submitted his notes following the Valve QRP Activity Day as a report which was too long for the main report but they are worth repeating here. The alternative valves shown in brackets are readily available on EBay and are Russian equivalents of the US valves.

Mike Reports. 'This year I've built my first tube only TX kit. It is a clone of the well-known AMECO AC-1 which is called a MOPA TX. It uses the 6X5 (6U5C) for the rectifier and the 6V6 (6P6C) for the HF stage. I've done some modifications to the original circuit. The main one which improved the signal in strength and quality was to solder a resistor of 6.8k in parallel to the quartz crystal and R3 of the original circuit.



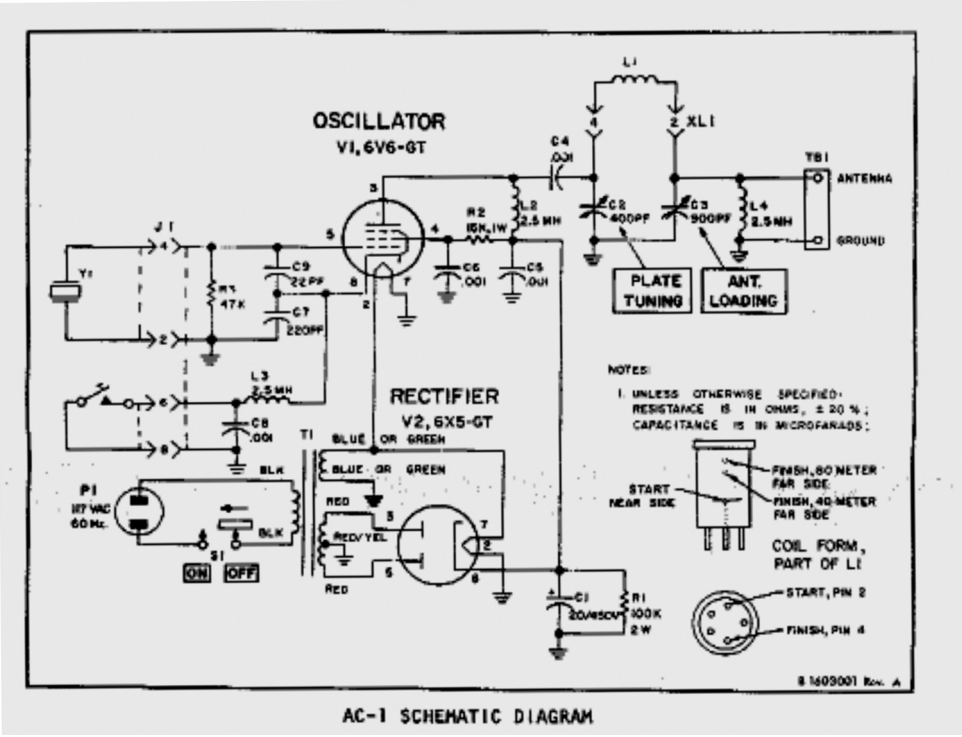
The plate tuning capacitor has a wide range from about 40 to 475 pfd I noticed I had to tune it mostly to the low end for resonance so I decided to reduce it for a more comfortable tuning range by soldering an old 5kV HT ceramic capacitor in series with it. The capacity is 75 pF and from the high voltage stage of an old colour TV set. The final step was to get a small meter to tune for the dip of the plate current. All now works fine. I've got some old crystal cases from a flea market and modified them to fit for some of my QRP crystals. Nine cases are now ready to use on 80, 40 and 30m. With the help of a homemade adapter made from model train electrical connectors from Märklin and a short IC-connector strip and some glue I could use 12 frequencies.

Now it was time to participate in the Valve Day too. My RX was my trusty Trio TS-520 which has 3 tubes in the transmitter section but now was used for receiving only. My good G5RV-Antenna is up in about 8m height above the house. The RX/TX switching of the Antenna relay was done by an alligator clip on a 12V power supply. Delay time: 2 seconds, hi!



This was my first participation and I was full of expectation of what will happen on those valve days. I've had a good time with my fixed crystals and the beloved smell of hot dust, HF and the key-sounds. You'll see on QRZ.COM that I've started with tubes in my regen RX and I know the nice smell and spirit of our hobby.

I've made 12 QSO with 6 countries including DL, HB9, OE, G, I and YU. Not much but these have been real QSO's. Nothing like "599 TU" in contest style and three QSO's were with two way QRP'. 73, Mike, DF2OK #9723 df2ok@web.de *Once again a simple circuit gives quite acceptable results for those wishing to walk the high voltage trail. The original circuit is shown below and should be easy to reproduce even in 2016.*



AC-1 SCHEMATIC DIAGRAM

GQRP Spring Valve QRP Day

Actually this activity period is more of a weekend than a day. The date this Spring is April 23rd and 24th.

Using your old style valve or tube equipment call ‘CQ QRP Valve’ or ‘CQV’ on the QRP frequencies. Most activity is around 3560 KHz and 7030 KHz but maybe we should try 5262 KHz? This should give good propagation around Europe although I welcome reports from further afield. Please send a photograph and brief notes to me at g3vtt@aol.com. I am also interested in receiving any notes you may have on aerials or nostalgic valve projects by e mail to the above address. 72 Colin G3VTT

COMMUNICATIONS AND CONTESTS

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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**

Well done everyone who took part. Thanks to all for all of the entries both online and postal especially some DX (Tom, DM4EA nice new QSL for that 'new' radio, 1949 R-104M, Val RW3AI #9429). I'll return them to you to you shortly, especially those that seemed to have sent me some of the station log book pages. I do not wish to keep any personal details here so I will return paper entries to you. Please let me know if you think I have missed you.

I note a few had my old friend Jacky 3B8CF in the log on 15m I expect he was not much above qrp levels as there are problems with RFI and local TV antennas if he operates with >100W on 15m

Activity seems a little varied this last year. Quite a few went for 30m and there were quite a few with JA 30m QSO in the log JA0INP appeared in 5 different logs. There were 31 DXCC worked by everyone which was not bad for a weeks part time operating. The total was just over 2,700 qso altogether and about 490 unique calls in all. Some said activity was down on last year on LF bands but there was more activity on the higher bands 30, 20, 17 and 15m. Nice to see some data mode entries. I didn't see any 4m qso, some 2m FM, no 2m SSB or CW but there was some 10m AM. Thanks to all who logged my feeble attempts at CW on 80m and 30m.

The bands were very busy especially on the 26th December, as usual it was nice to see so many qrp stations working each other during the OQRP contest. I looked at the 40m and 30m bands using SDR and once again the advise that if the qrp CoA frequency is busy please spread out a bit I know this is a "double edged sword" as some crystal bound operators are not as fortunate. Way too fast for me but there must have been a group reasonably local that had bought some of the ebay/chinese TRX as there they were on 7.023. Some 160m, and 17m qso in the logs this time. Most entrants managed qso on 3 or 4 bands, the most popular bands were 40m and 80m as always but 30m showed up much more this year. Anyone else manage to work Santa Claus this year? I noted that 27th December saw the most 10m activity and several QSO with stations in US appeared that day W3XB appeared in a few logs. 3B9FR was a new DXCC for some and appeared in a few logs as well.

Several logs mentioned the increase in QRM due to cheap ebay/garden centre "fairy lights" . Myself I suffered due to a a couple of blinking raindeer and a ladder climbing Santa that appeared on the roof next door. Bah humbug I hear some cry!

The antenna that seemed to be used most this year was the end fed half wave. Quite a few (self included) put up an inv V on 80m especially for WS.
Some logs said they were mostly 599 rubber stamp but a return to long contacts appeared. One member (sadly asked me not to say who) managed a 90 minute qso with an M6 whilst he helped him build a kit he RX for Xmas. Many said the majority of QSO were 'proper contacts' catching up with old friends.

Steve, G3ILO sent me a nice log from a holiday in Devon that included WS.
John, G3YPZ sent me quite a lot of detail about his home made 2el DJ4M quad (I will forward to Colin)
Val, RW3AI sent me an extensive log as usual
Victor, G3JNB worked into JA on 30m, not sure if was 2xqrp though
Gerald, G3MCK worked RA1M/MM who was in the Labrador Sea at the time.
Jim, GM0NTR Commented about some QRO stations not playing fair with QRP CoA
Richard, G0ILN ... at times the band would go quiet even when you knew stations were there and suddenly the whole of Europe appeared...
Dieter DL2BQD could hear stations in Jordon and Gabon but sadly no qso.
Chris G3XIZ, came on with his homebrew 80m DSB TRX
Dave G3YMC qrv on most bands and mentioned qso on 160m (1836khz)
Brian GM4XQJ was QRV on 60m
Andy G0FTD grabbed his FT817 and roach pole and was qrv from the beach

I could keep going on as many added lot of extra comments. Anyway this is a hard one to judge but the entrant that wins the G4DQP Trophy this year was Peter G3XFS "...I remember from my days of collating the Winter Sports logs that George GM3OXX always used to say that there is no point moaning about the conditions, about which we can do nothing, but rather we should simply get on the bands and make QSOs with QRP!..." well said Peter.

CHEMLESLY TROPHY
Wonderful range of entries after a slow start but this year head and shoulders above the chasing pack was Peter G3JFS #10890 with 102 DXCC. Peter followed on success in WS last year (he did rather very well this year too to be honest)
".. I feel qrp dxing is becoming more and more difficult. The steady decline in band conditions is not helping but another big problem is the increasing competition from very high power continental stations with poor operating procedures.

During 2015 I made around 2000 qrp CW and SSB contacts covering all bands 1.8 to 30 MHz, including 5.2MHz, but can not claim to have worked anything exotic. I had several VK stations in the log but it is the first time in many years that I did not work a ZL. Qrp

Stations were also hard to find. In all I had about 80 2-way qrp contacts and of these 22 were with 19 different club members.

Out of over 300 qrp SSB contacts only 2 were 2-way qrp; 1 with HA8QRP on 14MHz and the other with G4ARI #7809 on 3.5MHz. I also worked several members running high power because of the poor conditions.

Rigs used - Yaesu FT1000MP MK-V and ICOM 7100 with 5 watts maximum for CW, 10 watts for SSB.
Antenna - 20 metre long end fed wire with a remote SmarTuner.

DXCC worked - CW 102, SSB 77, CW+SSB 109.

RSGB Spectrum Forum
Those AM/DSB fans please see the band plan foot notes. You ARE allowed to use Am on the bands as long as you use the sections for wide band modes and you check you are not causing interference. The band plans will not have spot frequencies added so the suggestion is pick a frequency or frequencies (that is not being used elsewhere) and start to create activity.

30m & 80m there are some changes being suggested to the band plans due to the increased data usage that these bands are seeing. The original data segments were planned when RTTY was probably the primary data mode in use which is not the case now.

“30m & 80m there are some changes being suggested to the band plans due to the increased data usage that these bands are seeing. The original data segments were planned when RTTY data modes were the primary users which is not the case now. Newer amateurs and advances in amateur radio are creating greater demand for space for data modes.

Some comments were made that CW use is allowed (beacon frequencies aside) pretty much across every band which is unique.

There have been year on year surveys of frequency/mode use and the RSGB (as the UK representative at Vienna) will be the best source for details. CW usage above 10.130 was reported as almost non-existant so there are discussions to be had about lowering the bottom of the data segment and in 80m the region between 3.580 and 3.600 might be reviewed as there have been presentations for data modes to move below 3.580 (but still well above the QRP CoA).

5MHz/60m looks like it might see one continuous set of frequencies and not the spot or group frequencies in current and previous years.

Please refer to http://rsgb.org/main/blog/spectrum-forum-posts-overview/spectrum-forum-meeting-minutes/2015/11/09/spectrum-forum-meeting-2015/ for further information”

GQRP Spring Valve QRP Day

Colin Turner, G3VTT. G3VTT@aol.com

Actually its more of a weekend than a day. The date this Spring is **April 23rd and 24th.** Using your old style valve or tube equipment call 'CQ QRP Valve' or 'CQV' on the QRP frequencies. Most activity is around 3560 KHz and 7030 KHz but maybe we should try 5262 KHz? This should give good propagation around Europe although I welcome reports from further afield. Please send a photograph and brief notes to me at g3vtt@aol.com. I am also interested in receiving any notes you may have on aerials or nostalgic valve projects by e mail to the above address. 72 Colin G3VTT

20th RED ROSE QRP FESTIVAL.

Sunday 3rd July, 2016.

NEW VENUE The Rose Centre (Lowton Civic Hall) Hesketh, Meadow Lane, Lowton, Warrington. WA3 2AH

Times 11am to 3pm. Admission £2.00 Children under 14 free.
Easy access from all directions. M6, M61, M60, A580
Trade and individual stalls. Club stands, inc. RSGB, GQRP. Very low cost "Bring & Buy". Sales of new and surplus equipment /components.
Large spacious halls at ground level. free car park, disabled facilities. Delicious refreshments at QRP prices! Comfortable, well stocked lounge bar. Some tables available at £8 but please book early. Contact Les Jackson, G4HZJ g4hzj@ntlworld.com 01942 870634. Many thanks once again for your support. Les G4HZJ GQRP 3443

32nd QRP Yeovil Convention

Sunday 10th April 2016 at the Digby Hall, Sherborne Dorset DT9 3AA
Doors open 9.30 am to 3.00 pm Admission £3.00
Traders, Bring and buy, Club Stalls
Supported by RSGB, RAFARS & RSARS
Programme of Talks, details on web-site
http:yeovil-arc.com/QRPconvention
Contact Bob Harris email wjh069@gmail.com

MEMBERS' NEWS

by Chris Page, N4CJ (G4BUE)

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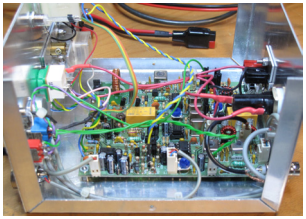
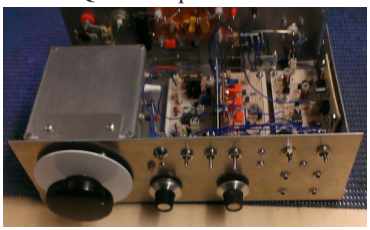
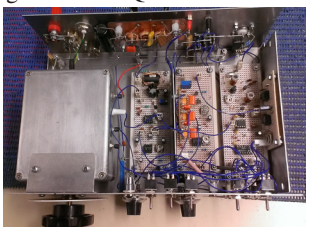
M1KTA is one of the four trustees of the RSGB's HF Expedition Fund and is hoping that by taking part he might encourage a few QRP groups to try DXpeditioning, even if they never apply for funding. Dom thinks it should be possible for a group of four operators dedicated to operating for about two weeks to satisfy the funding criteria, and as we are QRP ops, the extra costs some teams face transporting heavy equipment would not apply. He says that whilst the Fund is not just for the headline grabbing 100k QSO groups, it is not about subsiding a holiday to a far off location if just a few QSOs are planned, but *real* costs that might help a *real* trip that might not otherwise happen. The full criteria for funding is at <http://rsgb.org/main/operating/hf-dxpedition-fund/>.

G7ENA received the **EA3GCY** ILER-40 SSB TCVR kit (right) for Christmas from her husband, and despite it being cheaper than a KX3, she thinks it is as much fun. Daphne says, "The kit came well presented with instructions on CD-ROM that were easy to follow, and I have ended up with a nice radio that covers 70kHz of the 40m band. I have worked stations all over Europe and the UK with 4W and excellent signal and audio reports. The next step is to add a DDS VFO so I can cover the whole band". She attended the Horncastle Winter Rally at the end of January and says it was a good turnout and she had a lot of interest in the Club stand she managed, signing up two new members and a lapsed member re-joining. Her next rally is at Horncastle again on 31 July. **GM4VKI** will be taking the G-QRP stand to the following rallies this year all being well: Blackpool, Northern Ireland, Livingston, Crianlarich, Galashiels and of course Rishworth. Roy says they wiill carry the usual G-QRP stock plus a selection of Kanga and all the QRP-LABS kits.

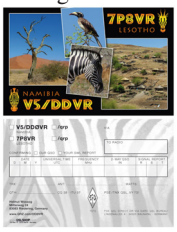






G3XIZ has now finished his 80m DSB TCVR (left) that he says puts out a half decent signal of 5W. Chris writes, "Several of us around the Biggleswade area: **G7NKS**, **MØJXM**, **MØFMT**, **G4GIR**, **G4FGJ**, and myself have built the little 'Pixie' QRP transceiver. Some units were Chinese kits via e-bay and others were completely home brewed, and we've all had various contacts and anticipate having a Pixie net in the near future". Chris tried using 80m CW in the evenings and joining **G3VTT**'s QRP net but his local noise level is very bad (often S9) and he is going to sort out an active loop for receiving and noise cancelling. He has had a few QSOs during daylight when the QRM was not bad and would welcome a sked or two using phone. Chris's current project is a 160m AM TX using pulse width modulation. It has a MOSFET PA and is pushing out 5W of RF but unfortunately he cannot get the modulation depth greater than about 50%, so it is still work in progress.

The QSL (right) for **DDØVR**'s operation as **V5/DDØVR** in December and **7P8JR** in January. The other pictures show Heli in the operating shack of **V5/DDØVR** at the Namibian Desert Lodge and the QTH and vertical outside. He was also QRV for two days as **ZS/DDØVR**. **G3YMC** compliments **G3TXF** for having good ears after hearing his 5W to a low long-wire antenna signal on 30m whilst QRV as **PJ6/G3TXF** on 10 December. **G4DBN** QSO'd Nigel the same day on 12m using his "fallen down 160m dipole with three lengths of TV coax, joined with chocbloc screw connectors and a twisted tape join to a cut-off PL259 patch lead" with 2.2W watts from his Elad FDM-DUO



into a horrible mismatch, and **G3JNB** QSO'd Nigel the following day on 30m with his 5W. **W2APF** will be QRV 2/16 April as **EA7/W2APF** from Sotogrande, Spain using a KX3 and a variety of wire antennas. Thaire says operation will be holiday style and mostly CW 80-10m. He will also be QRV 22 February/1 March as **V47JR**. Thaire has had the callsign since the early 1990s and has just learned they no longer charge for renewals.

G6UWK has a plasma cutter and managed to break the switch, so he ordered a pack of two new ones from e-bay (Switch Torch For TIG Welding Torch WP-26 WP-17 WP-20 WP- 9 Plasma Cutter). He used one for the cutter and the other as a key (right), all for 99p!

Welcome back to **GØNVF** after 25 years away from amateur radio. Dave decided homebrew is what he wants and purchased a Sudden 20m RX and matching TX and says, "What a brilliant experience building the RX with a few mistakes on the way (tuning cap wrong way round) it rang like a bell but it works. Next step is the TX, still staring at the list of bits! When this is on the way I will order the ATU then it's the full set. To stop getting bored I built a straight key out of my scrap box, and in the midst of this I am practicing CW. I recommend anyone to dabble in building, what a satisfying feeling when you hear that signal on something you built". **K8WPE** has just received **G3RJV**'s CD *Carrying on in the Practical Way* published by *Practical Wireless* and says, "It is a treasure trove of simple weekend circuits with explanation of why and how they work, and should be in every amateur's collection as a teaching tool and just good fun reading". Dave thanks George for his years of dedication and also the interesting sayings of old included in each issue. He says the CD should be printed in book form for easy reference and he will no doubt do that.

G3JNB made good use of his new 30m helical ground plane hidden in a small apple tree (left) in the Winter Sports with a pile-up busting QSO with **JA1INP**. Victor says, "It was a most welcome break from a log full of EUs! The pile-up was thick and his signal weak but then I heard that magical 'G3?' and was through!". The vertical is helically wound on an old fishing rod, has two 45 feet radials and the feed point about nine feet. **G3VTT** will probably mention this, but a reminder here of the new weekly QRP meeting Point on 3560kHz at 2000 UK local time every Monday. The net started on 4 January and Colin welcomes anybody who wants to join in with QRP, possibly to test new equipment they have built.

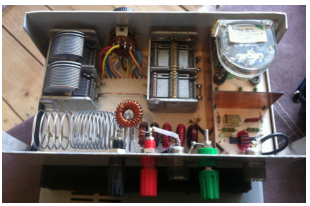
M5AML recently received a QSL card from **TRØA** but couldn't remember working the station, and then realised the QSO occurred in April 2002 when he ran 10W SSB into the old indoor inverted vee dipole! In November John installed a 30 feet loft inverted vee dipole and tweaking the ATU managed a few inter-G QSOs on 40m. In January he adjusted it for low SWR on 20m and added nested vees for 17m and 15m and made more 40m inter-G QSOs using the ATU. His best DX so far is **N4YDU** on 15m with 5W SSB. **W1REX** has again been tasked to host the Buildathon event at FDIM at the Dayton Hamvention in May and is looking for some *experienced* builders to help. Rex asks if you would like to volunteer about three hours of your time on Friday between 4pm and 7.30pm, then he would love to hear from you (w1rex@megalink.net).

For the last year **G3JFS** has been limited to using a 66 feet long inverted-L antenna with a Smartuner and that, together with deteriorating conditions, means he is finding QRP operating becoming more and more of a challenge. Peter says QRP activity seems to be declining and he has worked several members using high power because they said conditions were too poor for QRP. Much of Peter's activity has been taking part in G-QRP and other club's activities and enjoys casual contesting and makes perhaps 50 or more QSOs in the bigger contests (before he gets bored) which quickly boosts his annual QSO count. He doesn't chase annual DXCC scores so was pleased to find how many countries were in his 2015 QRP log; 2700 QRP contacts gave him 114 DXCC all modes (102 on CW, 77 on SSB, and 81 on data modes). Peter says, "As conditions get worse, data modes JT9 and JT65 are becoming more popular. I prefer to work CW but often the only activity on the higher bands is the JT modes. Used in conjunction with *PSK Reporter* it is interesting and surprising to see where a 5W signal from a poor antenna gets to on a nearly dead band. Anyone interested should search for WSJT-X or see <http://physics.princeton.edu/pulsar/k1jt/>".

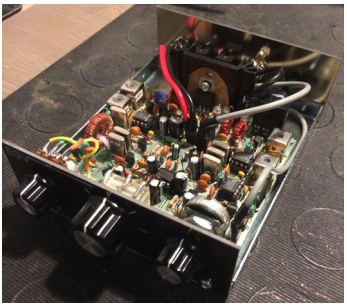
After moving to a sheltered housing complex with a small garden, **GM3MXN** has been experimenting with mag loops. He has a four feet diameter loop in his loft made from heliax coax and a three feet diameter loop made from 15 mm copper pipe in his bedroom, both run 3W RF. Tom bought two 2 RPM motors on e-bay, slowed down with receiver slow motion drives using a switched variable PSU to slow down the motor, until a friend suggested using a drill variable speed regulator, which is a small unit made by MFA Como Drills (part number 919D2P) and ideal for slowing the motor for resonance. The picture left shows the control box with the rocker switch DTDP and the speed regulator control. The other picture shows the top of the three feet diameter loop with the e-bay motor held on with Terry Clips and a large capacitor. The loop is gamma matched as Tom found that inductive coupling is not so easy to get a low SWR. He says the three feet loop has worked DL and G on 80m and G and GM on 60m, and he will be swapping the

large capacitor over to the larger loop. Tom adds, "The credit for the loop goes to a GM station, I just built my own version and thought it might encourage members to try a loop. I cannot get over how it manages to work on 80 and 60m, the efficiency must be low".

GØEBQ's Sierra now finished and working on 17m with band modules for 12 and 15m coming soon. Nigel says, "Not very good timing with the HF bands so bad!". He gave it its 'first airing' on 20 January and worked YO, OH and ER so was pretty pleased. It has been a real labour of love, he says, taking over two years on and off, and there were many times when he nearly threw it in the bin! Nigel also got his old Silver Tern regen RX from *SPRAT* 15 out of moth balls and found it still works perfectly with wall to wall sigs on 40m using just a few feet of wire. As **G3VTT** so rightly said last month, "You do have to drive it". On 26 December **G3CWI** (SOTA Beams) introduced a new QRP ATU kit. Richard says, "It's a bit specialised but might be useful to someone", see <http://www.sotabeams.co.uk/pico-tuner-end-fed-half-wave-tuner-kit>.



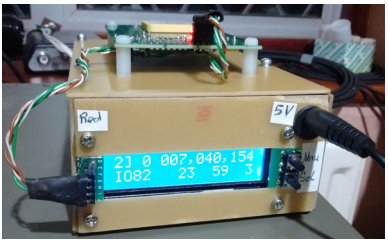
G4FBC (above) says it has been a very rough winter in Cumbria, with seemingly endless storms causing much flooding and structural damage. Many roads and bridges have been severely damaged, or collapsed altogether, and only the hardiest (some say foolhardy!) venture out into the Lakeland Fells, so no portable radio for Ron. Instead he has given the shack a complete 'makeover' to make it look more organised (second picture). Losing all outdoor antennas in the gales, he opted for homebrew 'make and mend': an old Mizuho DC-7X 40m TCVR, he bought at a rally for £5 for parts or repair, was tackled (above right) and work done to repair a deaf receiver. To match this rig, he made a Micron ATU from an article in an old *Ham Radio Today* magazine (right). The loss of all his antennas turned his attention to 'emergency' antennas with the 'Rybakov' type drawing particular attention; construction and tests are ongoing.



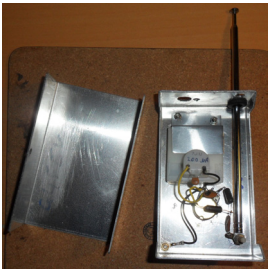
MØJGH and his partner enjoyed a pre-Christmas break walking in the hills above Frascati, Italy and took a compact CW station to accompany them (far left). Jonathan said the excellent EGV-40 TCVR kit by **EA3GCY** proved ideal for the mission, together with a resonant end-fed half-wave antenna, a compact Li-ion battery and an ex-German Army miniature morse key in a £15 padded foam case from e-bay for protection. His first contact as **I/MØJGH/P** was a sked with friends operating **GB2RN** at *HMS Belfast* whilst he was in the grounds of Villa Adriana, near Tivoli (above). He was extremely honoured to have won the construction contest at Sutton & Cheam Radio Society, his local club, during the process (picture below).

F5VLF lost nearly all his antennas in the autumn storms and says, "Even though they were all made from wire and supported by trees and other structures, they have to be replaced. I have got myself a suitable catapult and hope in the next week or two to sling some wires". In October, **MØHDF** enjoyed building the Regen RX at Buildathon and testing it when he got home in the CQ WW SSB Contest, that he says was an eye opening experience! New QRP DXCCs in the autumn for Angel were 5R and MJ.

The QRP Labs' Ultimate 3S QRSS/WSPR TX kit purchased by **G6PSZ** at Rishworth in October. Building the kit between Christmas and New Year Trevor found it almost essential to add GPS lock to get the timing accuracy. He says the little TX develops about 250mW and with the right filter can go on any band up to VHF. The QLG1 GPS module works very well picking up a good GPS lock inside providing frequency lock and accurate time. Using a loft mounted fan inverted-vee dipoles he has been very impressed with some of the signal reports received using WSPR, especially from USA east coast on 20, 17 and 15m with the 250mW.



G4ICP says in this ever increasing digital age he has been trying to keep things simple by building a field strength meter (right) as part of his core test equipment. Richard says it is untuned so is as simple as it gets, yet extremely useful for seeing literally what is coming from the antenna. Most recently it has been invaluable for tuning HF mobile whips to resonance (before feed matching). Everyone should have one! **N2CQR** has been building a phasing receiver based on **KK7B**A's R2 design and is amazed how nice it sounds. Bill has also been active on 160m AM and CW this winter and fired up an old DX-100 on New Year's Eve to make some CW contacts on that band for the ARRL Straight Key Night. He was not QRP, but asks for special dispensation from **G3RJV** because (1) he was using a straight key and (2) he had only the key-down hum of the transmitter's power transformer for sidetone.



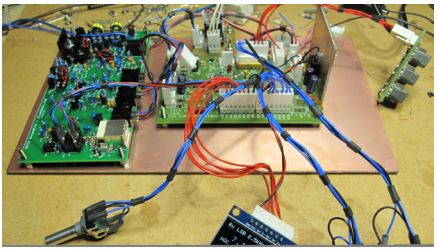
Left is the RockMite-20 DC TCVR that **YU7EO** bought at Friedrichshafen in 2015 and has working well producing about 400mW on 20m. Kare says the RX is quiet and sensitive, has two TX frequencies with one crystal, side-tone and el-key and in one word, is fantastic! In a day of testing it with a windom antenna in below average conditions, he made two-way QRP QSOs with **UR7VT** (2W) and **PA3DEU** (5W).

I7SWX tells us the Italian QRP Club (IQRPCLUB) are promoting the IQRP Quarterly Marathon in 2016, to be held on the first full week of each quarter (4/10 January, 4/10 April, 4/10 July and 3/9 October) CW/SSB/RTTY/PSK31 on the HF, VHF and UHF bands. Maximum power is 5W and scoring is one point for each QSO times the multiplier, which is the distance in kms/100 of the greatest distance QSO. Scores will be posted on the IQRPCLUB website <http://www.arimontebelluna.it/>. **GØIAX** has been playing with 100mW/500mW and 5W PSK31and is amazed how many QSOs he can have with 100mW. Richard obtained 1000 miles per watt on a few occasions and is using the SOTA Beam power reducer, a brilliant piece of hardware he says.

The two portable locations (right) used by **G6XDI** for his New Year trips to Wales with his FT-817 at 5W and Spiderbeam dipole. Chris took an ATU but it was not needed as the SWR on the Spiderbeam was very good on 40, 20, 15 and 10m. There was a contest on and he worked quite a few east Europeans on 20m with ease and good reports. He also logged into the WAB net on 40m but caused chaos as the net controller couldn't hear him with his 5W, despite all the GM stations hearing him and wanting a QSO! Chris says, "From this initial operation, the Spiderbeam dipole seems very good. It weighs nothing and with the addition of a 33 feet pole makes a nice inverted vee using bushes to anchor the ends". His ATU is a little ZM2 from QRP Project.de. The yellow box at the bottom of the fence post supporting the rig and ATU (far right picture) is a Maplin leisure battery which Chris uses to power the station, and says works incredibly well, lasting forever with the FT-817 running 5W. It also trickle charges the FT-817 when plugged in.

During the Christmas break **MØHDF** was QRV from the mountains of EA5 Castellon and found a local summit near his holiday QTH at 1443 feet ASL overlooking the Mediterranean Sea where he enjoyed QSOs with **K5XK** and **AE5X** in Texas on 15m. Angel also activated five new and rarely activated SOTA references in this beautiful region with large pile-ups. He is finishing a doublet antenna at home - with some detailed simulations made with

4NEC2 and **G4FGQ** software to optimise the open wire lengths for multiband operation, and adding coils for operation on 80m due to restricted space. Future projects include building a signal generator with arduino uc, DDS chip and shields he got at the Conference.



G4GXO has been developing a DSP SSB/CW 'back end' for the SoftRock Ensemble TRX, or any similar RX or TCVR with an Si570 local oscillator. The aim is to build a compact 5W SDR TCVR suitable for portable operation. The picture right shows the development unit undergoing receiver tests on 40m, in the background is the SoftRock Ensemble (left) and Eden dsP card (centre). The software incorporates many features including all HF band coverage, switched bandwidths, variable rate tuning, denoiser, autonotch etc. Ron is also working on a series of modifications to the Softrock Ensemble which, with an external filter unit, will allow it to take advantage of the full HF coverage offered by the software. The project will be published on the Eden dsP Yahoo Group site at <https://uk.groups.yahoo.com/neo/groups/eden_dsp/info>.

GW4JUN recently asked on the G-QRP Club Mailing List for suggestions for making open-wire ladder line from easily obtainable materials, and the following is a summary of the replies. **M1KTA** says you need to wrap the wire to them to work, "The Works, or similar hobby craft shops, often do kids packs of lolly pop sticks or tongue depressers and you can use the spreader to hold the wire too (under tension). Big cable ties, about half inch across, drill two small holes for the wire and feed it though one hole either edge and second set of holes 2-6 inches or so away and trim off the excess. The wire under tension will keep the spacer in place and you end up with old style looking wide feeder. If you connect, say three cable ties in a ring and use eight wires, you can make a cage dipole even! Perspex 2mm thick (or cheap thin tescoasdaetal chopping board) cut to make spreaders, same method, under tension spreaders held in place". **G3OOU** says you can see what he uses at <http://www.qsl.net/g3oou/aerialsandfeedersforhf.html> and a past version used 18SWG wire and that lasted some 30 years. However, Bob says, "You need to consider wire losses as you reduce the wire size. I originally used polythene from water logged UR67 coax for the insulators but this goes brittle after exposure to the UV in sunlight, so I now use 8mm diameter acrylic rod which is more tolerant of UV. The HF antenna and narrow spaced feeders as shown will work from 160m to 2m with a suitable AMU and could be scaled down to half or quarter size to suit smaller plots". **F4VQE**'s ladder-lines are all made from ice cream/lolly sticks, enamelled copper wire and a hot glue gun. Derek says the lolly sticks usually last about ten years if there's no winter storms around. **G3YMC** says several years ago he made spreaders from electrical conduit, just cut into suitable lengths, drill a couple of holes at the ends and there you have it; certainly cheap, 95p or so for 20 spacers. **G4BJG** says plastic garden plant markers are a possibility, you find them in a couple of different lengths. **G8NXD** says, "Cut to length wall plugs will hold securely when cut to required length and a slit cut across the ends for the wire. I have also used plastic plant pot labels that are very uv resistant, lightweight and easily drilled or glued. Mike's website at <http://www.pencoys.org.uk/atu/atu.htm> shows the detail of these. Finally, as several pointed out, you can buy ready made spacers from DX-Wire (http://www.dx-wire.de/) and SOTA Beams (http://www.sotabeams.co.uk/open-wire-line-spacers-pack-of-10/).

On 1 September, after working for 25 years on a MW AM transmitter, **YU7EO** moved to a new position at Fruska Gora mountain, 1693 feet ASL where the tower is 574 feet (far right). Kare says this new position is enabling him to try new forms of amateur radio activity: WFF, SOTA and VHF. He is still active with QRP on the WFF HF frequencies, mostly with his proven QRP-99 rig by KNE (above). Using various wire antennas, currently a FD-4 windom, he plans to try some end-fed multiband wire antennas which could drop down from the tower. He also plans to purchase a small QRP TCVR like a HB-1, PFR-3 or MFJ-9200.

Finally a plea - I often pick up news and information for this column from the G-QRP Club Mailing List but am frequently frustrated by those members who do not add their callsign to their posting. Sometimes the callsign is obvious from the email address (like mine) but often it isn't, so if this applies to you, please include your call in your postings - *thanks*. Thanks also to the contributors to this column. Please let me know how your spring goes for the Summer edition of *SPRAT*, what you have been building, who you have been working, and any other information about QRP, by 10 May. Also, interesting photographs please (there are 30 in this column!), 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 and your equipment look like. Let me know if you intend operating from somewhere other than home during the summer and autumn months so I can let members know to listen out for you.

QSL Cards from Nasko - LZ1 YE

LZ1YE has sent me details of some attractive QSL cards including the Club Log.
Members can make their orders by sending samples, explaining what they want to print, and sending the materials: photos, files...etc via e-mail: qsl@qslprint.com or qsl@kz.orbitel.bg or if no internet access via the postal address: Atanas Kolev, P.O.Box 49, 6100 Kazanlak, Bulgaria. Examples of cards and prices can be seen at **www.qslprint.com**
For people need QSL cards urgently LZ1YE dispatches three days after the payment is made. UK Members can pay via a UK address: Please send your cheque / cash via recorded delivery to: LZ1YE QSP Print service, c/o Melanie Rowe, St. Leonards House, 35 St. Leonards Road, Exeter, EX2 – 4LR, Devon. e-mail: m0mja@aol.com (make cheques payable to : Melanie Rowe)

The Mountains, the Sea and Miles of unspoiled Beach . . plus amateur radio

G3RJV has a Wooden Lodge situated in the Dyfi Valley in central Wales close to the Irish Sea and in the Snowdonia National Park. Well maintained with a large living area, conservatory, double bedroom, twin bedroom plus 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 with lots of local places to visit and a vast open sandy beach only 3 miles away all set in wonderful walking country.

Enquire via G3RJV or email g3rjv@gqrp.co.uk
Google "***acelticlodgeforrent"*** to find pictures and further information.

GQRP 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 } £2.00 (UK) or £5.50 EU
Radio Projects volumes 1, 2, 3 & 4 – by Drew Diamond – members £6, non-members £12 } or £8.00 DX per book

6 pole 9MHz SSB crystal filter (2.2kHz) £12 plus post (max of one) } £3.50 (UK); or
Polyvaricon capacitors – 2 gang (A = 8 to 140pF, O = 6 to 60pF) c/w shaft extension & mtg screws - **£1.50 each** } £3.50p (EU); or
– 2 gang – (both 8 to 285pF) c/w shaft extension & mounting screws - **£1.50 each** } £4.50p (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, } **(ANY quantity)**
21.060, 24,906, & 28,060 all are **£2.00 each** (* = also available in low profile HC49/S) } £1.20 (UK), or
HC49U crystals- 1.8432, 3.500, 5.262, 7.00, 10.006, 10.111, 14.00MHz – **50p each** } £3.50p EU, or
HC49U crystals – 2.00, 3.00, 3.20, 3.579, 3.5820, 3.6864, 4.0, 4.096, 4.1943, 4.433MHz } £4.50p (DX)
4.5, 5.0, 6.0, 7.2, 7.6. 8.0, 9.0, 10.0, 11.0, 12.0, 13.50, 15.0, 16.0, 18.0, 20.0, 24.0, 25.0MHz }
26.0, 27.0, 28.0, 28.224, 30.0, 32.0, 33MHz – **all 35p each** (Some of these are low profile) } Post free
Ceramic resonators – 455, 480kHz, 2.0, 3.58, 3.68, 4.00, 14.32 & 20.00MHz **– 50p each** } if ordered with
Diodes - Schottky signal diode – 1N5711- 20p each; 1N4148 GP Si – 10 for 10p } with heavier
Varicap diodes - MVAM109 – 40pF @ 9v, 500pF @ 1v. **50p each** } things
- BB204 – twin diodes, common cathode, 15pF @ 20v, 50pF @ 1v **50p** } like binders,
SA602AN - £1.50 (note – I may supply NE or SA, 602 or 612 as available. All are fully interchangeable. } toroids
MC1350 - £2.00 These are getting in short supply now so max of 2 per member } polyvaricons
LM386N-1 - 4 to 15v, 300mW, 8pin **DIL - £0.40, LM386M-1 SMD – 35p** } or filters
TDA7052A - 4.5 to 18v, 1W 8pin **DIL** low noise & DC vol control – **£0.60 each** } Use just
TDA2003 - 10w Audio amp 5pin – **£0.25 each** } that postage
TA-7642 Radio IC – direct equivalent of **MK484** (& ZN414) – **75p each** }
2SC536 transistors (npn) fT - 100MHz, hFE-320, VCBO +40V **- 5 for 50p** } If ordered
MPSH10 transistors (npn) fT - 650MHz, hFE 60, VCEO 25V **- 8p each** } with books
2N3904 transistors (npn) fT - 300MHz, hFE-150, VCBO +40V **- 10 for 50p** } or CDs
2N3906 transistors (pnp) fT - 250MHz, hFE-150, VCBO -40V **- 10 for 50p** } add this
BC517 Darlington (npn) fT - 200MHz, hFE-30,000, VCBO +40V **- 13p each** } postage
FETs - IRF510 – 50p; 2N3819 - 22p; 2N7000 - 10p; BS170 – 8p - all each } as books
BF981 – dual gate MOSFET – 40p each (special deal - 10 for £3.50) } or DVDs
Pad cutter - 2mm shaft: 7mm o/s, 5mm i/s diam, gives a 5mm pad with 1mm gap **£6.00** } do not
10K 10mm coils – 0.6uH, 1u2H, 1u7L, 2u6L, 5u3L, 11u0L, 45u0L, 90u0L, 125uL – 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 per order }
QRP heatsinks - TO92 – 30p; TO39/TO5 – 40p; TO18/TO72 – 60p (pics in Sprat 148) }
Axial lead inductors (they look like fat ¼W resistors) these are low current }
3.3, 4.7, 6.8, 10, 15, 18, 22, 33, 39, 47, 56, 100, 150, 220 and 1000 - all uH, 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; T130-6** - £2.00ea. FT37-43 – 90p ; FT50-43 - £1.20 ; FT37-61 - £1.20 ; FT50-61 - £1.60; 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), £3.50 (EU), £4.50 (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 (£3.50 UK & EU : DX – order direct from Rex please)
MeSquares & MePads - £6.50 each plus post (£1.50 UK, £3.50 EU : DX – order direct from Rex please)
Limerick Sudden kits RX & **TX** both single band (160 through 20m); **ATU** (80 through 10m) **£38.00 each plus post**
UK - £3.50, EU - £5.40, DX - £8.00
Sprat-on-DVD – 1 to 160. Only £5 each to members plus postage, UK - £1.20, EU - £3.50, DX - £5.00
Sprat Binders – nylon string type – Black with club logo on spine -16 issues per binder – **new stock** - £6.00 each plus postage
(one: UK - £2.00, 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 **I can accept cash in GBPounds, or US$/ €uros (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, or, send as a gift to friends/family - thanks