



# SPRAT

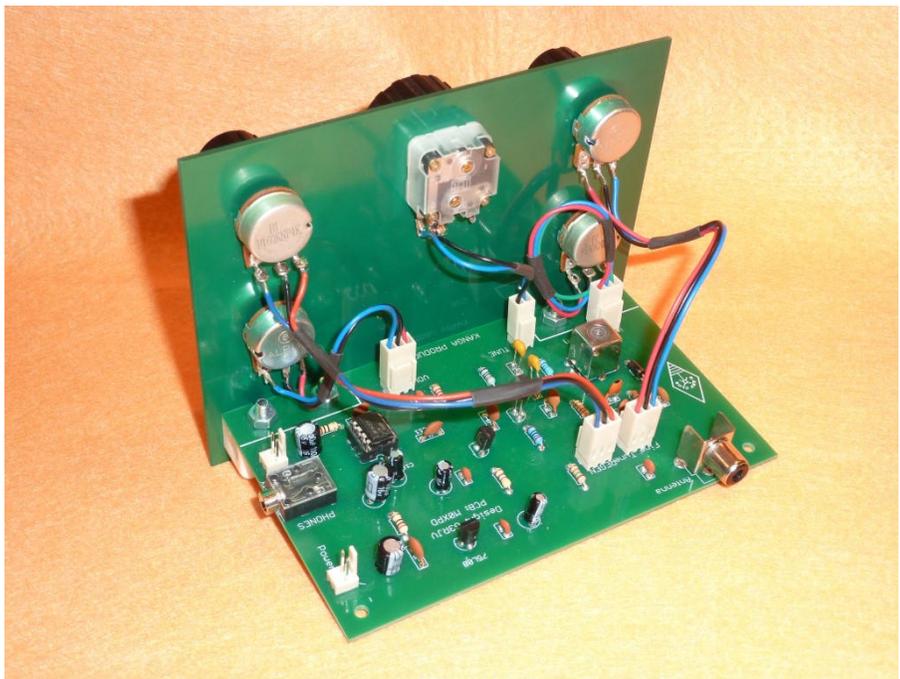
THE JOURNAL OF THE G QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

ISSUE Nr. 165

© G-QRP-CLUB

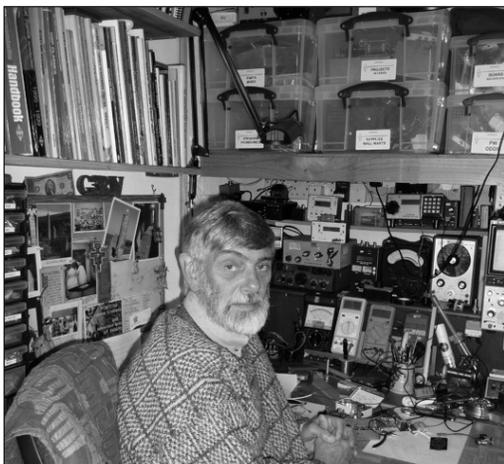
WINTER 2015/16



Rishworth Buildathon Project 2015

Award Winners ~ Switchable Crystal Oscillator ~ DMM Voltage Calibration  
2015 Buildathon ~ PA Circuit follow-up ~ Modular 80m RX ~ KR80 TX follow-up  
SOTA pole Top-box ~ Wireless Side Tone ~ F5LVG Regen RX~ Italian Radio Fair  
LM386 Audio Oscillator ~ Economy Iambic Keyer  
Antennas, Valves and Vintage ~ Communications and Contests ~ Members News

# JOURNAL OF THE G QRP CLUB



© G QRP

**9 Highlands  
Smithy Bridge  
Littleborough, Lancs.  
OL15 0DS. U.K.**

**Tel: 01706 - 377688  
(overseas tel: +44 1706 377688)  
Email : g3rjv@gqrp.co.uk  
Homepage : www.gqrp.com**

## **Rev. George Dobbs G3RJV**

As readers can see from the following page, the **Gordon Bennett Trophy** and the **W1FB Memorial Award** were presented at the Rishworth QRP Convention. Both are linked with articles for SPRAT and both are suitable to members with a wide variety of ability. Both invoke the true amateur radio spirit. We do not require the professional standards of research and development. Some of our best material comes from “men in sheds”

Please supply circuit diagram(s), full component values and brief notes. A SPRAT formatted page (MS Word) can be supplied on request but any format including hand written may be used. I can supply simple CAD (Computer Aided Design) software available for use in SPRAT. For further detail see the opposite page.

The **Gordon Bennett Trophy** is awarded each year to the member thought to have submitted the best practical article to SPRAT. This is awarded on merit. Members have to apply for the **W1FB Memorial Award**. This may not necessarily be the most complex article. A keepsake plaque is awarded and the winner is named in the autumn issue. Do not forget our annual award for SPRAT authors. Details of the **W1FB Memorial Award** are opposite. The closing date is in the summer – moveable to the time I have the most entries.

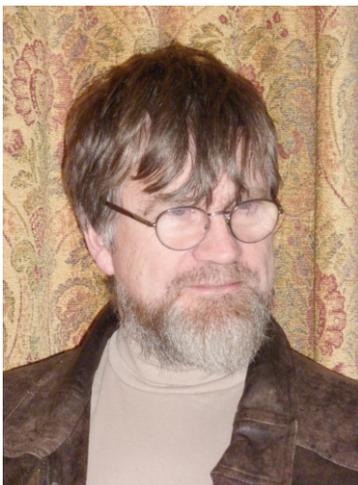
Come on .... This could be your year



72/3

G3RJV

## AWARDS PRESENTED AT RISHWORTH QRP CONVENTION



Paul Darlington, m0xpd



Peter Howard, G4UMB

At the G QRP Convention last October, two members were presented with trophy plaques for practical awards.

Paul Darlington (m0xpd) was the recipient of the Gordon Bennett trophy for 2015. Gordon, G3DNF, was a founder member, being chairman since the beginning. The award is presented for the best contribution(s) to SPRAT over the preceding year. It was given to Paul for his introductory articles on Micro-controlled QRP systems.

Peter Howard (G4UMB) is a dedicated constructor and shares his own workbench projects with SPRAT readers. He was awarded the W1FB trophy in memory of Doug DeMaw, legendary constructor and author. Peter has produced many week-end and one-night projects that remind many of us of the “kitchen table technology” popular in the 1980’s.

Both recipients were at the convention and their wives enjoyed joining in with the social and Constructors Evening on the Friday before the main event.

### **CAN I JOIN IN?**

Both of the above awards are for the “fruits of the workbench”; projects and practical ideas from and for members. Members cannot enter for the Gordon Bennett Award as this is conferred upon the winner, based upon articles in SPRAT. So no need to apply – it just happens. The W1FB 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. 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 your ideas.

# A Switchable Crystal Oscillator

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

I returned home from my first foray into FDIM and realised that the bench needed to be cleared as a matter of urgency. Tidying the bench at m0xpd is something of an archaeological project, in which layers of dirt are removed, artefacts are recovered and a journey back through time is undertaken. During the dig, I unearthed a little circuit that could easily have been tossed into the trash can – but I decided instead that it might be worthy of description in these pages, for several reasons.

Firstly, there was a direct lineage between the circuit and the demonstration hardware I took to Dayton. Second, the circuit is an example of a module – of which I am an enthusiastic user and advocate. Thirdly, the circuit was built on stripboard, which attracted significant interest and comment at Dayton. Last – and most important of all – the circuit, which is an electronically switchable crystal oscillator, has some interest both in itself and in application.

Of these points, the link between the oscillator and the hardware I used at Dayton to illustrate my presentation might be of only passing interest to readers of this article if they were not participants at FDIM. Accordingly, this lineage is addressed indirectly throughout these notes. However, the remaining points are of general interest and are considered explicitly in the following sections.

## Modularity

I like modular construction. I find that a modular approach helps with design, building and troubleshooting. Particularly, I believe that a modular approach is helpful in an experimental context – so I like to make “building blocks”, from which I can assemble larger systems in the pursuit of my RF games (I won't dignify my activities by calling them experiments). Building Blocks remind me of children's play things. They are simple and inexpensive. They can be built up into large structures and then broken down when the child is bored or the structure collapses. The blocks are ready to be pressed into service to build the next project.

I make lots of building blocks – most of which operate on a 12 V supply. They have pins to plug into solderless breadboards, which I use to distribute the power and any control signals and, when there's no other choice, the RF signals themselves. There are RF buffers, RF amps, bi-directional RF amps, small PAs, filters, mixers, AF amps and there are lots of connectors arranged as plug-in modules. You can see them on my blog [1].

The circuit which is subject of these notes was built as a module.

## Stripboard or Veroboard™

My preference to build modules which plug into solderless breadboards via a series of pins generates a requirement for pins on a 0.1 inch pitch. This makes the construction of modules on stripboard a particular convenience, as it is available with both the required

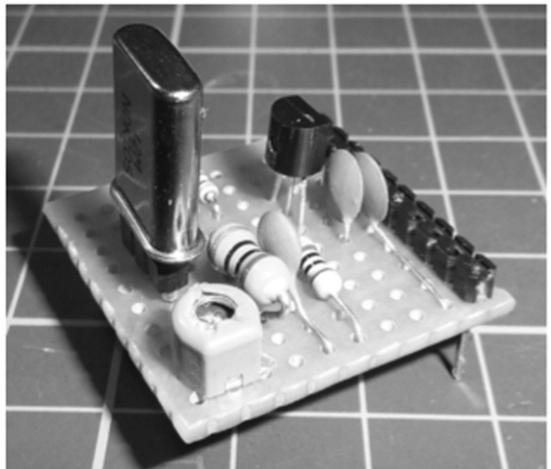
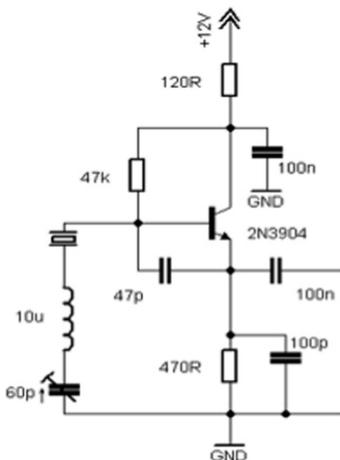
matrix of holes on the correct pitch and some copper strips from these holes from which to begin the construction of an electronic circuit.

In the UK, such stripboard is produced and sold under the name Veroboard, by Vero Technologies Limited. This prototyping technology was developed in the early 1960s and has been a mainstay of the UK electronics scene – particularly in the “hobby” sector – for as long as I can remember. Judging by the responses and comments the hardware I showed at Dayton received, it is not familiar in the United States.

If you listen to the experts, you will hear that Veroboard and the like is not ideally suited to RF design, given that it is little more than a series of uncommitted capacitors. However, I am much more interested in the practicalities and pragmatism of what works than in what the pessimists and naysayers tell me won’t work – so I get on and use what is offered until I find something going wrong and deal with any ugly consequences when they occur. They haven’t occurred yet. Of course, that is due in no small part to the fact that I pay some intelligent attention to what some of the “plates” of these uncommitted capacitors are doing!

### The Original Oscillator

I had need of a simple VXO circuit to build as a module to run as the local oscillator in a superhet receiver I was developing. A candidate circuit was fresh in my mind - the front end of George, g3rjv’s “Sudden” transmitter – and I simply stole that [1]. Here is the schematic and a photo of the first implementation of that simple oscillator as a module.

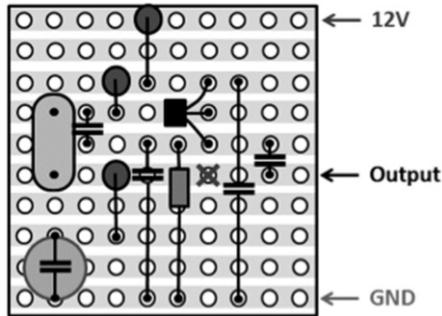


**Figure 1 The Original Oscillator’s Schematic and Implementation as a plug-in Module**

The trimmer and the inductor in series with the crystal allow it to be pulled quite a way from its original resonant frequency, to impart the “VXO” function.

In order to assist in the layout of a circuit on stripboard, a number of software packages are available, similar to PCB design packages. One example (*usual disclaimer – I have*

*NO experience of this or any other stripboard layout software*) is VeeCAD [2]. These design tools may suit some people's tastes – but not mine. I am interested only in planning how I am going to make best use of a piece of board and documenting – so I have made some graphical representations of common components and an area of the stripboard – to a common “scale” – which I move around in an ordinary drawing package: PowerPoint. The results serve me well. Here is the layout I have used for the oscillator module in the photo above, seen from above...



**Figure 2 Suggested Stripboard Layout for the Original Oscillator**

The hole overlaid with an “x” indicates a break in the copper strip below. Such breaks are made with a special “spot face cutter” tool – the tip of an eight inch twist drill works nearly as well.

The simple oscillator above served well as local oscillator for a superhet [3], but when I wanted to switch the local oscillator frequency in my Parallel IF Scheme [4], it became redundant and I switched to LO generation by digital means.

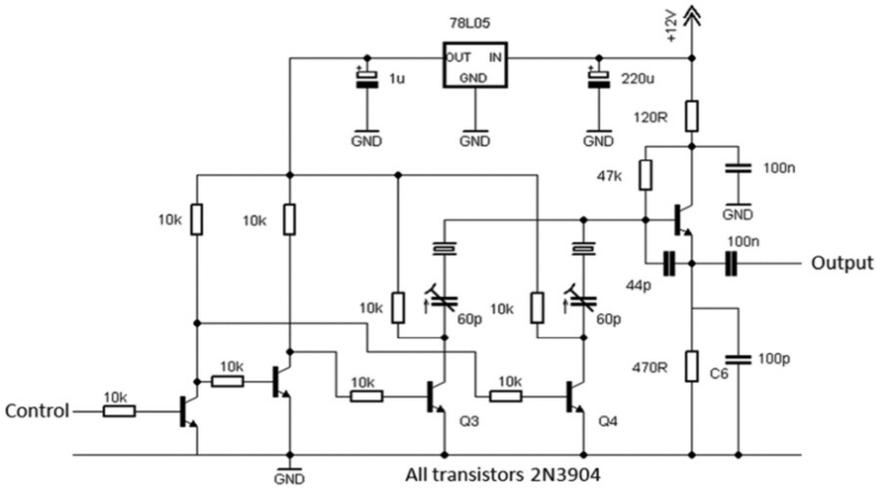
Before I abandoned the crystal oscillator, I wondered if there might be a way to save this simple technology...

### **The Switchable Oscillator**

We are used to switching a crystal oscillator to introduce a frequency offset between transmit and receive [5]. I was interested to generate a much wider offset than could be achieved by pulling a single crystal - I wanted to switch between two separate crystals. First I tried doing this with FET switches, but enjoyed little success. Then I replaced the FETs with simple BJT devices, and the system of Figure 3 rewarded my efforts.

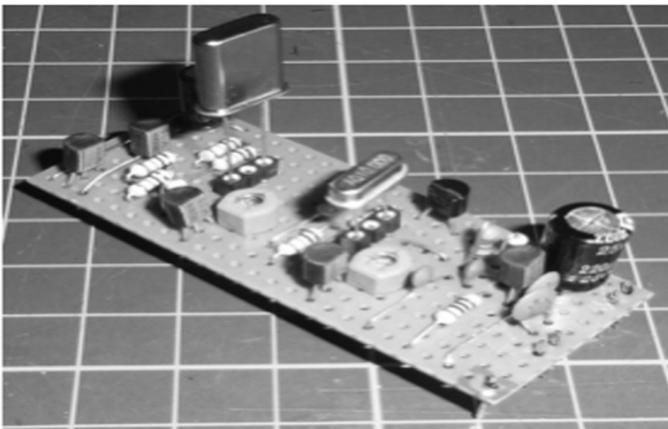
The base of the same amplifier stage is coupled to two crystals. The other side of these crystals is held at high impedance until one of the transistors Q3 or Q4 is switched on, at which point a low impedance path to ground is established, allowing one of the crystals to resonate.

The control input to the system is a digital input. When it is at 0V, Q4 is conducting and the oscillator will produce output at the frequency dictated by the crystal connected to Q4's collector. When the control input is taken high (to a 3V3 or 5V logic level), Q3 will conduct and the oscillator will produce output at the frequency dictated by the crystal connected to Q3's collector. By this means, a single digital input line, derived from either a microcontroller or a mechanical switch, can switch the oscillator between two distinct frequencies.



**Figure 3 Schematic of the Switchable Oscillator**

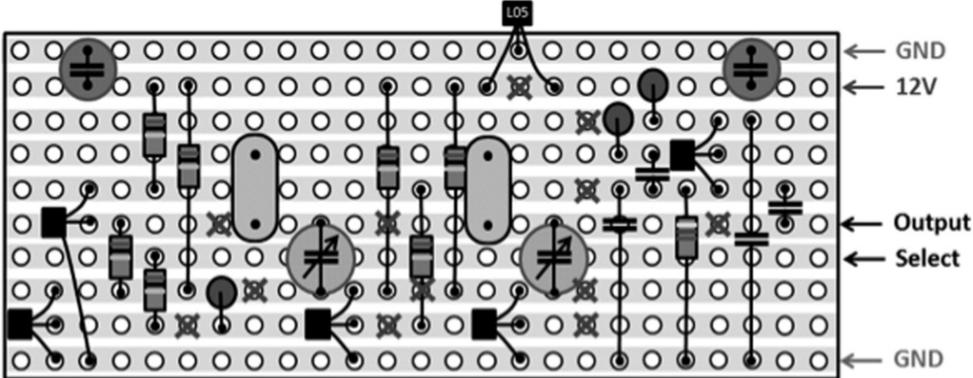
My implementation of this switchable oscillator as a plug-in module is shown in Figure 4.



**Figure 4 The Switchable Oscillator Implemented as a plug-in Module**

Both the fixed and the switchable oscillator modules used sockets to allow the crystals to plug in, as you see from the photos in Figure 2 and 4.

The particular layout I used for the switchable oscillator is shown in Figure 5.



**Figure 5** Suggested Stripboard Layout for the Switchable Oscillator

I did not include the series inductor in the switchable oscillator – there wasn't space either in the schematic or in the build on the little piece of stripboard. The inductor is valuable for, as has already been mentioned, it increases the range over which the resonant frequency can be adjusted. If you want to add an inductor, place one between each crystal and its trimmer capacitor, NOT between the crystal and the base of the final stage transistor.

**Application**

The switchable oscillator was developed with the idea that it could serve in my parallel IF superhet scheme, avoiding the apparent extravagance of a second DDS generator. This would have been a worthy application, but for two limitations, which diluted the original motivation – even for a cheapskate like me...

Firstly, although the Parallel IF scheme uses two LO frequencies to change between narrow and wide receiving bandwidth in LSB, which the switchable crystal oscillator described here could deliver, it uses four LO frequencies to handle narrow and wide receiving bandwidths in LSB and USB. The switchable crystal oscillator could be extended to have four crystals, supporting four frequencies of oscillation. But by then it really would be more practical to use a DDS.

Second, whilst the use of a second DDS module seemed extravagant back in the day when we were all using the AD9850 for RF Generation [6], multiple channels of independent RF generation suddenly became easy with the advent of the Si5351 device, particularly on platforms like my Si5351 Shield for the Arduino, available through Kanga UK.

Forgive me – I'm biased.

In the face of such competition, the switchable oscillator described here is of little interest for the Parallel IF system – but perhaps it still has use for sideband switching in an ordinary superhet. Or perhaps it is only of archaeological interest!

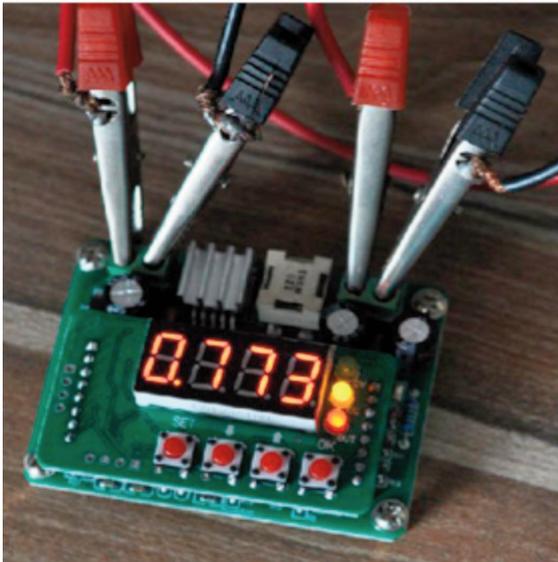
See you at FDIW 2016.

## References

- [1] <http://m0xpd.blogspot.co.uk/2014/08/ocm.html>
- [2] <http://veecad.com/index.html>
- [3] <http://m0xpd.blogspot.co.uk/2014/08/breadboard-bitx.html>
- [4] Darlington, P. (2015). A parallel filter architecture for flexible IF processing. RadCom. 91 (1), p78-83.
- [5] Hayward, W, Campbell, R & Larkin, B (2003). Experimental Methods in RF Design. USA: ARRL. p 6.65.
- [6] Darlington, P & Juliano, P. (2014). RF Generation for Superhets. SPRAT. 158, p4-11.

## Low Cost Adjustable PSU

Mike Bowthorpe, G0CVZ. [mike@czechmorsekeys.co.uk](mailto:mike@czechmorsekeys.co.uk)



I have just built a low cost adjustable PSU using an eBay item see 261268313276

I attach a photo, all I have done is boxed and fitted sockets, but the input socket can take a laptop plug, so when you need the PSU just borrow it, adjust to suit and away you go ~ cheap, accurate, with power source that has more than 1 purpose :-)

The PSU is 0 to 40V and 0 to 2A out depending on what you feed into it. It says it can provide 3A, but I have not added any additional heat sinking

The item is still listed on ebay

# DMM Voltage Calibration Checker

Colin McEwen G3VKQ <colin@the-mcewens.co.uk>

Digital Multimeters (DMM) are readily available at very reasonable prices. A typical budget instrument has 3 1/2 digits and thus can resolve to 1 part in 2000 (0.05%).

What about the accuracy? My cheap general purpose DMM claims 0.5% +/- 2 digits, which on the 2 volt range translates to 10 +/- 2 digits at full scale. I wanted a voltage reference to confirm this accuracy claim.

I noticed that CPC stock a precision voltage reference by Analog Devices - the AD1580 BRTZ (CPC stock number SC10487, £1.09 in February 2014). This device is capable of 0.1% error maximum at 1.225 volts - this is +/- 1.225 mV.

The AD1580 is a shunt voltage reference - effectively a precision Zener diode - capable of operating at up to 10 mA current. I chose 1 mA nominal operating current when using a 9 volt PP3 battery as power source. This is to ensure enough current to operate several meters in parallel even if the 9 volt battery is very old. See Figure 1 for the circuit diagram.

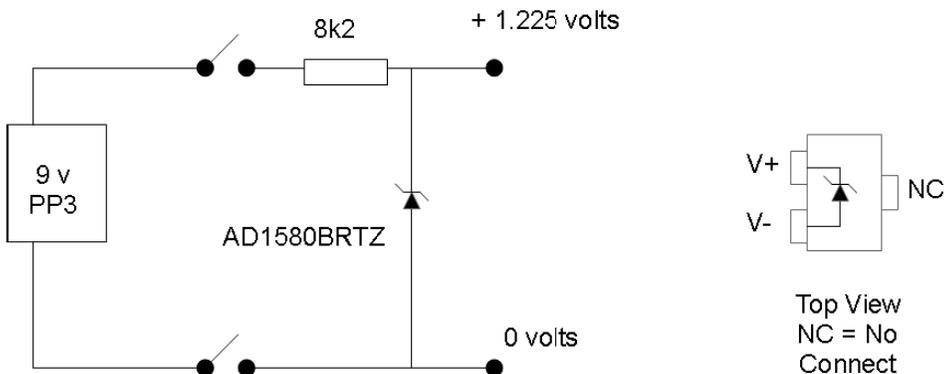
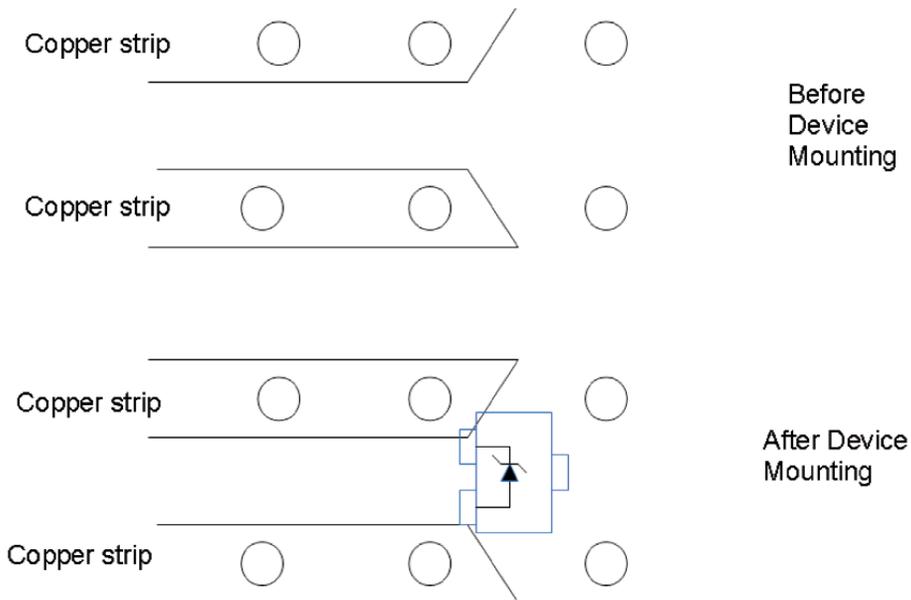


Figure 1.

The AD1580 BRTZ comes in a SOT-23 surface mount package. I mounted it on the copper strip side of a small piece of Veroboard, having shaped the strips with a scalpel - see Figure 2.



The complete unit is fitted into a plastic box salvaged from a previous project. See Figure 3 (photo).

Figure 4 shows the unit connected to my cheap DMM. Note that the DMM reads 1229 mV which is an error of 4 mV or 0.3 %. Well within the specification claimed.



Figure 1.

Calibration Checker circuit diagram

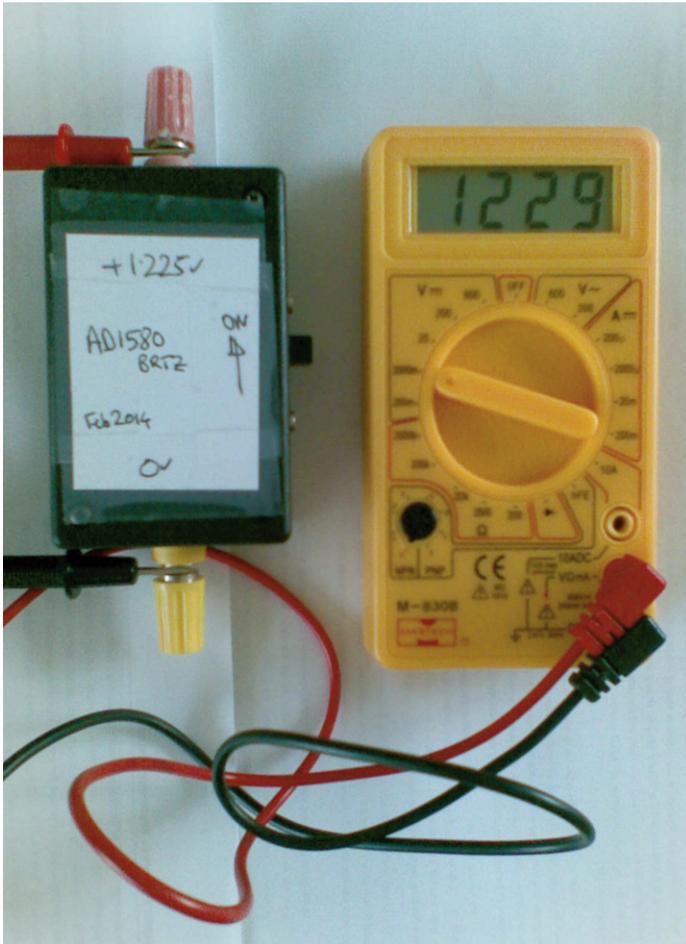
Figure 2.

Mounting the device on Veroboard

Figure 3.

Complete unit [in case]

Figure 4. Calibration Checker in use.

An advertisement for EA3GCY Ham Radio Kits. The background is a black and white illustration of hands using a soldering iron on a circuit board. The text is as follows:

**EA3GCY**  
**HAM RADIO KITS**

enjoy building your transceiver

[www.qsl.net/ea3gcy](http://www.qsl.net/ea3gcy)

## The 2015 Convention Buildathon Graham Firth G3MFJ

We decided to build a regen receiver for this year's Buildathon. George looked through his various circuits and came up with a simpler Nicky receiver. Some of you may remember the Nicky – it first appeared in Sprat 70 and since then has reappeared in a few different forms. It uses separate detector and oscillator and audio amplifier. The detector is an infinite impedance detector using a 2N3819, a 2N3904 as the regen oscillator, followed by an LM386 audio amplifier.

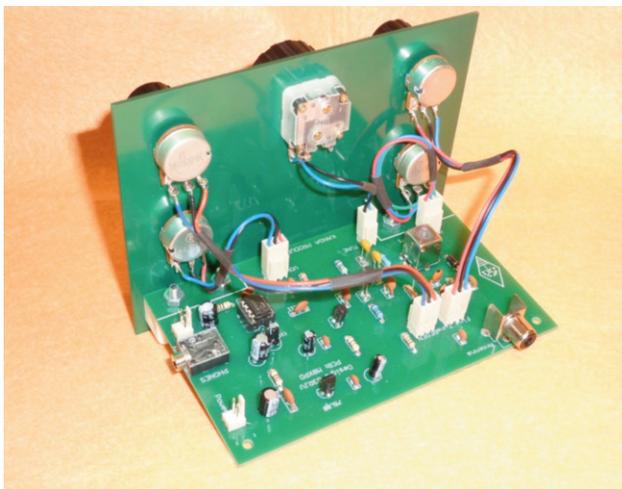
The original article had an RF and AF preamp, the simpler circuit doesn't, but despite its simplicity, it is a very lively receiver with headphones and a short antenna (a few feet long). Indeed, if you present it with a proper antenna, it fails miserably!

Having decided on the circuit, Paul, M0XPD, offered to move out of his digital world to design the printed circuit board, and then Dennis at Kanga expressed an interest in taking it over and adding it to his range of kits.

This made the supply of kits for the Buildathon easier. Colin G3VTT wrote a short piece for the participants as driving a regen is a totally different experience to operating a normal receiver.

Here are a couple of pictures of the finished rx – these were taken by Paul of his test rig which he built when the PCBs arrived. The kit is now available from Kanga.

The circuit diagram we used is on the next page, and Colin's operating notes follow.



Thanks from the club to everyone that helped with this project. Thanks also to the Bath Buildathon team, Steve, Lewis and Mike who oversaw the builders – as well as those who finished them on the night, we have since had quite a few “mine works fine” notes from some of the participants.

So, how do we follow that . . . ?



## Operating the Nicky TRF Receiver - Rishworth 2015

Welcome to the world of real radio! Your TRF 'Nicky' receiver works on principles developed during the last century that took radio from the Stone Age into more modern times. Those same principles apply even today and your receiver should produce excellent results but you will need to *drive* the receiver. A large number of these kits were built at the Rishworth Convention and the kit is an excellent starter radio, (or even a fun radio for grey beards like me). The Buildathon team did a great job again this year. Take care of the following tips about using it. The controls are Volume, Main Tuning, Fine Tuning, Regeneration and, most important of all, the Attenuator.

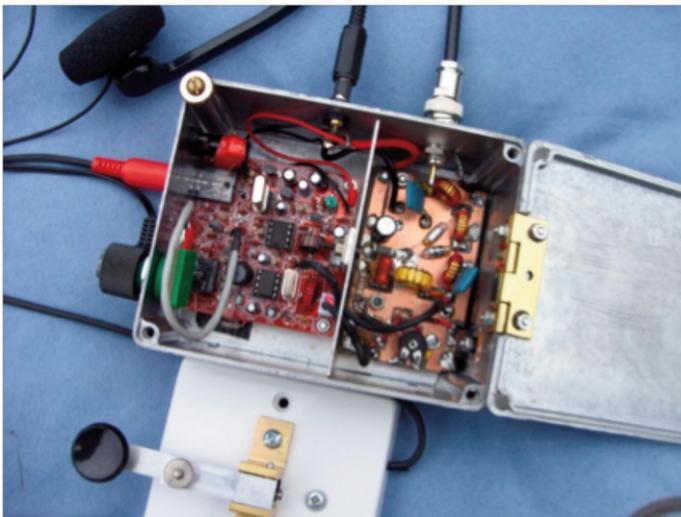
- First try and get your receiver to go in and out of regeneration. This should be a soft rushing noise as the control is increased. Set the control just below the point of regeneration for AM and just above for SSB and CW. If you increase it too far the selectivity decreases and the gain of the receiver drops.
- Keep the Attenuator setting as low as possible and rely on the Volume control to give gain adjustment.
- Note: TRF receivers are EASILY OVERLOADED. You just need a short wire or whip antenna. Connecting your main station aerial will overload the poor thing. When in doubt turn the attenuator towards the minimum setting.
- Set the main tuning control (VC1) to the portion of the band you wish to listen to and then use Fine Tuning to tune around.
- Note: All controls interact, and it is at least a two handed operation. You will have one hand on the tuning control, and the other on the regeneration control. You will also have to adjust the attenuator and volume controls frequently as well – but this is half the fun of such a simple receiver.
- Modifications? Sure there are a couple. Solder a piece of copper braid from the front panel to the circuit board. You will need to scrape away the green solder resist to expose the copper. This will reduce hand capacity effect even further and make the receiver more stable. This, of course, applies to the current PCB – the modification will be added to future PCBs. The 60m band can be covered by adding a 100pF fixed silver mica capacitor across the main tuning coil. Beneath the circuit board on the coil pins is just fine. Other bands such as 80m will require a different coil of larger inductance. Another modification is to glue the black and white leads to the tuning capacitor from the main PCB to the front panel to further aid stability.

When you have mastered using this little receiver you will have a nice little device for monitoring the band and brushing up your CW. You can then call yourself a *real* amateur radio *operator*.

Colin, G3VTT

## Follow up on the simple add-on 4W 7 Mhz P.A. (SPRAT 164) Michael Bliss G4AQS.

Unfortunately, when the circuit diagram was transcribed (tidied-up) for publication, the type of toroid cores used in the low-pass filter was missed off. L1, L2 & L3 were wound on T37-6 (yellow) cores using 0.4 mm wire. This came to light when Ian, G4GIR, was constructing one. He tells me that it is now working well, although he did have to use a higher bias voltage; his doesn't fade in power even after 2 minutes key down.



Add-on 4W PA on right  
and Chinese  
Forty9er on left.

### Rishworth Book Sales Report by Richard, G3UGF

A big thank you to all those who donated books, all those who bought books and those that helped to sell books at the GQRP convention. One or two real gems appeared – as they always do – we sold plenty and there are some left over for next year – Takings didn't quite reach last year's record high but £290.00 is a pretty good result and many of you enjoyed picking up a bargain – Thanks again to all and here's to next year ... Kind regards, Richard G3UGF. Our thanks to Richard for this wonderful result (again!) G3RJV

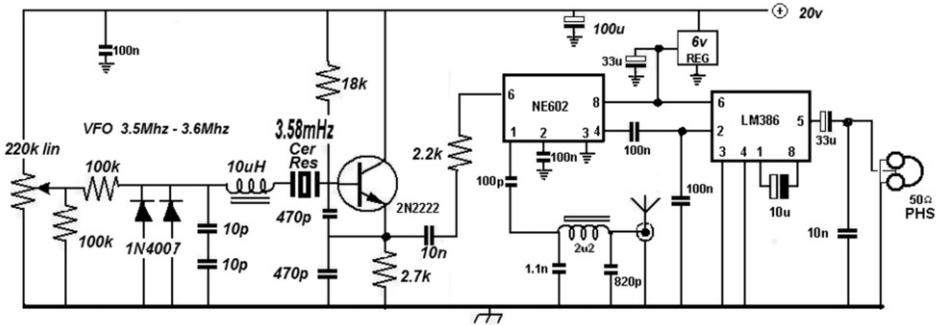
*MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS*

WANTED: R103 Receiver, preference is for a working set with psu. Would consider a nice condition non worker. please contact G4GDR, on 01793-762970 or by post Rev A Heath, 227 Windrush, Highworth, nr Swindon Wilts, SN6 7EB.

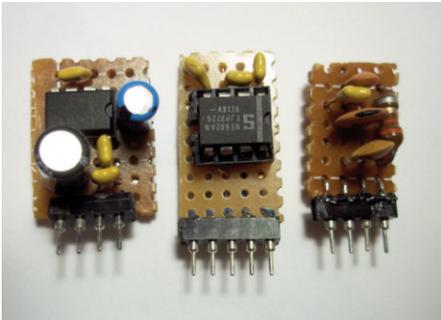
WANTED: Comershal or HM Forces RF Signal Generator, must be mint condition, Please contact John on 001255 553980

# Simple 80m Modular Receiver

Peter Howard G4UMB 33 West Bradford Rd. Clitheroe Lancs



Here is a simple direct conversion receiver for tuning from 3.5 – 3.6 Mhz covering the CW section of the 80m band. In order to get that range of tuning I have used a 3.58 Mhz ceramic resonator with a 10 micro Henry coil in series with two 1N4007 rectifier diodes in parallel to act as varicaps. You must use a 20v supply to get the full frequency range.



Having built this VFO (VXO) part first I then made the other stages of the receiver on separate plug-in boards so that each piece could be tested separately and removed from the small box to work on them in case a fault develops later. The circuits are built on strip board and the plugs and sockets are made from turned pin IC sockets.

The circuit is based on the receiver in a FOXX trx I had already built which has proved successful but lacked a VFO. It works best with an ATU because as you can see the tuned input circuit is far from ideal and this will greatly improve its performance.



# THE KR80 TRANSMITTER – ERRATA and ADDENDA

Keith Ranger G0KJK

<keithcath@ranger144.fsnet/co.uk>

As a result of enquiries received since the publication of the circuit and accompanying text describing this 20 metre QRP transmitter, I would like to clarify several points:-

1. The second transistor in the circuit diagram is not a 2N3953, it is as several members have correctly deduced a 2N3053. Because the emitter resistor is only 33 ohms, it should be given a crown heat-sink if you operate the transmitter from a higher power source than 12 volts. It works well with 15 or 18 volts and of course the RF power output is thereby enhanced. If instability is encountered at any power input level, fit a small ferrite bead on the BD139 base lead-out and a 100 ohm half watt resistor between the BD139 base and ground. RF power output should remain unaffected.
2. No value is given in the SPRAT no. 164 circuit diagram of the KR80 for the variable cap in the ATU. This can be any value up to, say, 100pf with the vanes fully meshed. The resonance point for 20 metres is quite sharp and will probably be encountered by you with the vanes only slightly enmeshed.
3. The circuit as printed should have had an 0.1 capacitor across the key for shaping and a further 0.1 capacitor from the emitter of the 2N3053 transistor to ground will slightly enhance inter-stage power transfer, up to 1.9 watts out may then become possible (270ma with the key down). However, the transmitter may yield from 1.3 to 1.9 watts depending especially on the particular BD139 device used.
4. I have been asked, can the KR80 be used on other bands? The answer is Yes, but only 20m does well with a short indoor aerial. I am finding that the length of choice for 20m is actually a precise 8ft3ins, which represents an eighth of a wavelength on 20, performing slightly better than either 10 or 11ft. 17 and 30m require an end-fed outdoor aerial of around 33ft and you'll need to put out some 45-66ft for reasonable results on 40 and 60. Also, add some extra inductors to your VXO rotary switch for better LF band coverage. The little 10 or 22 Micro-Henry axial chokes sold by Graham G3MFJ at Club Sales would be ideal.

Finally – persist! Conditions on 20 have not been good recently but I have still had some good QSOs, albeit with slightly poorer reports at times.

Good hunting to you all

## SOTA POLE TOP-BOX

Anthony Langton GM4HTU  
71 Gray Street, Aberdeen, AB10 6JD

This box was made as part of a project to develop a portable antenna system. The basic antenna is an inverted V for 7 MHz, used as a no tune, single band device. The top box is ABS plastic and contains a current balun/ common mode choke wound with 50 Ohm parallel line. The thin whip top section of the pole is not used, so a wooden block with an 8mm hole is glued to the box and this slips over the next section down of the pole. An SO 239 socket connects to the co-ax feeder.

The connections to the aerial wires are by M5 studs which secure a piece of PCB material. The wires are threaded through holes as strain relief and soldered to copper pads. The board slides onto the studs and is secured by wing nuts. End stops are thread-locked to the ends of the studs to stop the wing nuts taking flight and ending up in the sea, sand, mud, snow, etc.

For working other bands, a second top box is used. This has the same aerial wire fixings but is fed with 300 Ohm ladder line. The box is otherwise empty. An ATU is used, along with an SWR meter. The photo shows the boxes side by side.

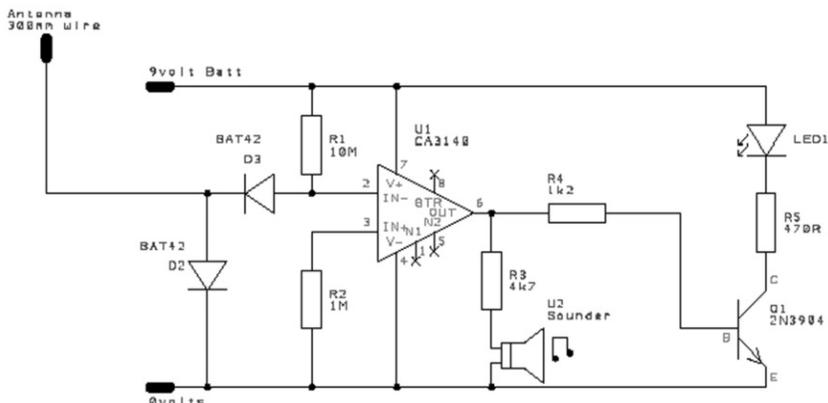


A kit of guy parts has been assembled, along with a layout line for marking the positions of the pickets when used in a field, but recently some success has been had by securing the base of the pole to the railings at a beach promenade, using the aerial wires only as guys.

# The Wireless Side Tone

Richard Wilkinson G0VXG richardwilkinson@aol.com

I was asked to make up a 40m Pixie transceiver kit that a friend bought off the internet for £3.00. The kit worked as well as could be expected but I found it very difficult to send CW without a side tone.



I considered just adding a piezo sounder to the board, but after some thought decided that it would be useful to have one that could be used with various QRP transmitters.

There are lots of circuits on the net (Ref1 ) for RF sniffers but I found that most suffered from mains hum being induced into the circuit. In the end I had to add a simple filter C1 L1 which is well above 50Hz and its harmonics. The CA3140 is a very useful IC having a high input impedance and operates from a single rail 9volt supply.

The power consumption when idle is about 1mA and goes up to 5mA when the sounder and ultra-bright LED are on, so a PP3 battery is fine. If a visual signal is not required then the LED circuitry can be omitted. The 2k7 resistor works well with my 3volt sounder but can be changed if other sounders are used.

For testing, the Pixie was powered with 12volts and connected to a 40m dipole and by just placing the coiled 400mm antenna wire next to PA the transistor, the side tone could be heard clearly. For more tests I used the MFJ antenna analyser which only outputs a low level RF signal. The frequency goes from 1.8MHz to over 400MHz and the side tone worked across this range. I am sure this will be a useful aid when at Rallys and junk sales to give some confidence that a Handy or RC device is at least outputting some signal! The piezo sounder that I used does not have the best tone in the world, so maybe a sinewave oscillator could be added if required.

Please note that the op amp is cmos and the usual precautions should be taken.

Ref1 <http://www.circuitdiagram.org/long-range-cell-phone-detector.html>

## New High Performance Regenerative Receiver

Olivier Ernst, F5LVG, 2 rue de la Philanthropie, 59700 Marcq en Baroeul, France

I made this regenerative receiver for 5 amateur bands : 80 40 20 17 15m. With this Rx and a home-made transmitter, I made several SSB QSO between North America and France. It is possible to listen, without noticeable detuning, SSB QSO on 15m during 15 minutes. There is no hand effect, no common hum and no mains hum.

I will focus on the following points:

- 1 RF attenuator, mandatory for all regenerative receiver.
- 2 Very small coupling capacitor between the antenna, the RF transistor and the tuned circuit to avoid overloading (I use my transmitting antenna).
- 3 Plug-in coils without coil forms to obtain very high Q. The coils are easy to make : only one coil without tap for each band. I use 4 pins DIN connectors.
- 4 High C "oscillator" with NP0 capacitors to obtain a high frequency stability.
- 5 Band spreading with small capacitors in series with the variable capacitor.
- 6 High capacitor value between the tuned circuit and the detector to avoid mains hum.
- 7 Very short connection for the dot and dash lines.
- 8 Fine tuning with a 1N4007 diode.
- 9 1N4148 : transistor protection during transmission.

Diameter for the coils : 22mm

80m, L=11 turns, Ct=470pF, Cp=122pF

40m, L=5 turns, Ct=552pF, Cp=55pF

20m, L=3 turns, Ct=320pF, Cp=25pF

17m, L=2 turns, Ct=440pF, Cp=16pF

15m, L=2 turns, Ct=253pF, Cp=16pF

Wire for 80 40m : diameter 0.5mm.

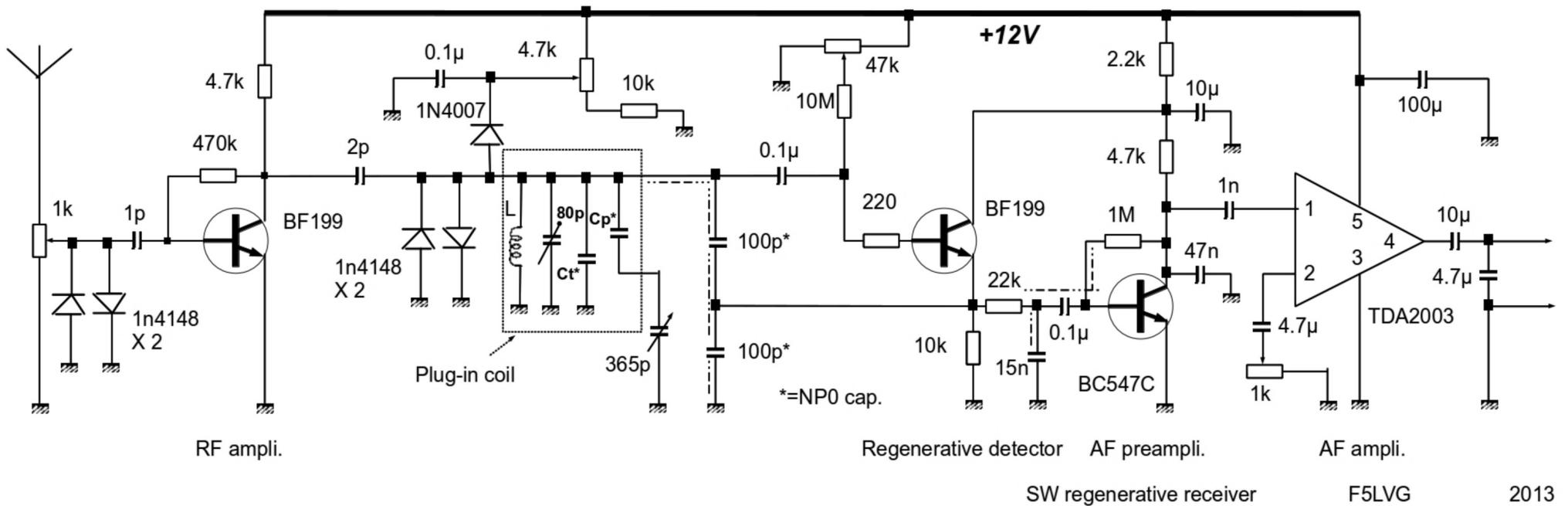
Wire for 20 17 and 15m : 2.5mm<sup>2</sup> installation cable.

The layout follows the circuit diagram. The size is 15x20 cm. I used 10M ohm resistors for the connection points isolated from ground !!! 10M ohm is nearly infinite....

Good DX, 72/3

# New high performance regenerative receiver

Olivier Ernst, F5LVG, 2 rue de la Philanthropie. 59700 Marcq en Baroeul. France



# Membership Secretary News

## Tony G4WIF

This is the issue of Sprat that reminds you it is time to renew your subscription. Please go find that label on the Sprat packaging and see if it says “expires end of 2015”.

In the UK you pay me - not Graham in Club Sales or George, the Club Secretary – it is probably no surprise how much extra work members cause when they do not contact the correct club officer, but each year people do just that. If you write by post please always include a stamp (or an email address) if you expect a reply.

EU and DX members should remember that your subscription was increased last year. If you send insufficient funds you will receive only one Sprat in 2016 with an underpayment notice on the label. You will receive nothing more until you make up the shortfall.

All members should be aware that the club will not accept payments that take your subscription beyond 2016. Paypal will be returned less charges, cheques will be destroyed and excess standing order payments will be assumed to be donations - but will be returned on request (at your cost).

UK Members: All cheque payments should be to “GGRP club” and not in the name of any club officer. For UK members who wish to switch to automated payment there was a UK bank standing order form in the Autumn issue of Sprat to send to your bank (and not me) in time for your payment which must execute on the 15<sup>th</sup> January 2016. As well as ensuring the continuity of receiving SPRAT you also help reduce the thousands of letters which I will otherwise have to open in the new year.

UK members with existing standing order arrangement with their banks need do nothing until your Spring Sprat arrives. If your expiry date (on the label) hasn't incremented by then, assume something has gone wrong and contact me. Your standing order mandate must quote your membership number or we won't know who has paid.

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

Overseas members: Please refer elsewhere in this issue to the list of DX representatives to whom you can pay in your local currency. For the remainder of the world without PayPal access you can pay by international bankers draft (in UK Pounds) or cash in UK Pounds (to me). Only local currency to your local rep – I can't use Euro or U.S. Dollars. Cash is sent at your own risk.

You can save me much work if you pay using PayPal. Please see [www.ggrp.com/paypal](http://www.ggrp.com/paypal) for more details. Only the use of special form on the club website will be accepted. Any other method will be rejected. We do automatically add a little to cover PayPal administration charges – but only what it would have otherwise cost you to buy a stamp to post your subscription.

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

# SUBSCRIPTIONS FOR 2016 ARE NOW DUE

Your SPRAT label tells you your current status. Your receipt is the updating of your status code on your Spring 2016 SPRAT address label. The labels for your SPRAT are printed 4/5 weeks ahead of publication so if you pay promptly your Spring Sprat label will be correct.

**SUBSCRIPTIONS FOR 2016 – please see options below.**

UNITED KINGDOM	EUROPE	DX
<ul style="list-style-type: none"> <li>• £6.00 Cheque / Postal Order sent to G4WIF (payable to "GQRP")</li> <li>• £6.00 - Standing order</li> <li>• Paypal</li> </ul>	<ul style="list-style-type: none"> <li>• £12 sent to G4WIF (Cash in GBP [ no Euro or Dollars ] *2, Cheque or money order*1)</li> <li>• €15 (to Euro rep.)</li> <li>• Paypal</li> </ul>	<ul style="list-style-type: none"> <li>• £13 to G4WIF (Cash in GBP [ no Euro or Dollars ] *2, Cheque or money order*1)</li> <li>• Send to DX rep. (see list)</li> <li>• Paypal</li> </ul>
Paypal- ( <b>Mandatory</b> ) - only use <a href="http://www.gqrp.com/paypal">www.gqrp.com/paypal</a> Notes: (* <sup>1</sup> Payable to "GQRP"- drawn on a UK bank). (* <sup>2</sup> At own risk)		

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

## UK

*members can use the form provided in the Autumn Sprat if they would like to pay by standing order or to amend their existing standing order to the 2016 subscription rate of £6.00. This payment must be in place with your bank to execute on the 15th January. **If your standing order does not quote your membership number then your payment can only be treated as an anonymous donation and your membership will expire.***

**All UK cheques must be made payable to "G-QRP CLUB"**  
 EU & DX cheques – see "Overseas Subscription" page.



## Please

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

Membership Number \_\_\_\_\_ Callsign \_\_\_\_\_

Name \_\_\_\_\_

Number and road \_\_\_\_\_ Name used on air \_\_\_\_\_

Town \_\_\_\_\_ Post code \_\_\_\_\_

Country \_\_\_\_\_ Email \_\_\_\_\_

Changes or additions

.....  
 .....

Checklist for UK Cheques:

- Did you make your cheque out to the GQRP club?
- Did you date it correctly?
- Did you sign it?

# OVERSEAS SUBSCRIPTIONS FOR 2016

Please send your subscriptions to the following overseas representatives:-  
 (for representative email addresses see [www.ggrp.com](http://www.ggrp.com) – membership renewals page).  
 Please provide your email address and club number to overseas representative with payment.  
 Also check the GGRP website for updated information on renewals/subscriptions.

Country & Representative	Amount
<b>U.S.A</b> Dave Yarnes W7AQK, 12630 E. Cape Horn Drive TUCSON, AZ 85749 USA. <b>Cheques to be made to "David Yarnes"</b> .	\$22.00
<b>Germany</b> : Dieter Klaschka, DL2BQD, Kuelzviertel 20, D-16303 Schwedt, Germany. Überweisen Sie bitte den Klubbeitrag von 15 Euro bis Ende Januar auf das Konto Deutsche Bank, Klaschka, Karl Dieter und Rosmarie IBAN DE47120700240260705963 BIC(SWIFT) DEUTDEDB	€15
<b>The Netherlands</b> Henk Smits, PE1KFC, Storm Buysingstraat 30, 2332 VX Leiden, Nederland Maak voor 1 Januari 15 Euro over op rekening ABN NL62 ABNA 0450 4063 34 t.n.v. H.W.Smits te Leiden. Vergeet uw call en uw G-QRP nummer niet te vermelden! Een email ter bevestiging wordt op prijs gesteld.	€15
<b>Belgium</b> Jos Warnier ON6WJ, Kalendijk 28, B-9200 Dendermonde, Belgium. Tel. 052 220996. Vergeet niet Uw call en clubnummer te vermelden! N'oubliez pas d'indiquer votre indicatif et votre numero de membre! Contributie/cotisation: 15 Euros voor/avant le: 1 Jan op nummer/ au numero: BE21 9796 3930 7403. BIC: ARSPBE22	€15
<b>Austria</b> Johann Auerbaeck, OE6JAD, Kirschenhofersdlg. 120, Bitte den Beitrag bis Ende Jänner A-8241, DECHANTSKIRCHEN, Tel: 3339-23335 IBAN: AT82 3804 1000 0001 5156 BIC: RZSTAT2G041 In der Zeile Verwendungszweck	€15
<b>France</b> . Richard Sayer, F5VJD, Vignouse, 35380, Paimpont, France (cheque perso [SAYER Richard] avec votre indicatif, numéro de membre et adresse E-mail indiqué au verso).	€15
<b>Denmark</b> . Ole Rasmussen OZ1CJS: Fornyelse af abonnement af GGRP: Venligst foretag en kontooverførelse af 115 Kr. senest d. 1. Januar til : Ole Rasmussen Danske Bank, Haslev Reg. nr. 0575 Konto nr. 3531127749 Venligst vedhæft følgende information: navn, call, medlemsnummer Undgå venligst at fremsende kontanter og checks. Har du et problem mht. bankoverførelse, så kontakt mig så vi kan finde en løsning. Nyt abonnement af GGRP: Ønsker du at blive medlem af GGRP og modtage medlemsbladet SPRAT, så send mig venligst en email med dit navn, adresse og evt. kaldesignal. Så skal jeg med glæde sørge for at du bliver kontakttet.	115DKK
<b>New Zealand</b> , Phil Tarrant ZL2NJ, 7 Waitote Street, Castlecliff, Wanganui 4501, New Zealand. Ph 06 344 7182	NZ \$28.00
<b>Australia</b> Norm Lee VK5GL, The Vineyard, 28/170 Main Road, MCLAREN VALE, South Australia 5171. Account name: Norman Joseph Lee GGRP Club Account, Bank: ANZ Bank McLaren Vale. BSB number: 015 627, Account number: 1812 – 51764. Cell Phone: 0402 446 453	AUD \$24
<b>Italy</b> . Fabio Bonucci - IK0IXI. Via delle Sterlizie, 10 I-00053 Civitavecchia Italy. "La quota annuale per l'iscrizione al GGRP Club dall'Italia è di 15 Euro. I pagamenti possono essere effettuati tramite: 1) Direttamente sul sito GGRP tramite PayPal. 2) PostePay - € 15.00 3) Diretto (contanti € 15.00 ). Rischio di smarrimento a carico del socio. Si può effettuare la ricarica PostePay in ogni Ufficio Postale al costo di 1 Euro, oppure tramite le ricevitorie Lottomatica al costo di 2 Euro. Per informazioni inviare email a Fabio oppure SMS 320-4839771	€15
<b>España</b> , Jon Iza, EA2SN, A. Gasteiz 48-7 izq, 01008 Vitoria-Gasteiz. Cuota: 15 Euros. Envía un correo electrónico si quieres hacer una transferencia bancaria.	€15

Any other overseas to Tony Fishpool G4WIF, GGRP Club, PO Box 298, Dartford, Kent. DA1 9DQ [Europe: £12 GBP / DX: £13 GBP]

## Club Information – Who Does What

(addresses are on the club website)

<b>SPRAT</b>	Articles & Editorial Members news for news column Communications news SSB news VHF news Delivery and Sprat Index	G3RJV G4BUE M1KTA M0NJP G8SEQ G4WIF
<b>MEMBERSHIP</b>	Membership queries, subscriptions (+ any QTH & call changes), Sprat address labels	G4WIF
<b>GENERAL</b>	Secretarial Treasurer VHF matters SSB / Data matters EUCW representative	G3RJV G3MFJ G8SEQ M0NJP M1KTA
<b>SALES</b>	General items & back issues of Sprat.	G3MFJ
<b>SERVICES</b>	QSL Bureau - in, out & sorting Antenna advice Awards Circuit & construction advice Internet GQRP club reflector & web site	GM3VTH G3VTT G5CL G3ROO G4WIF

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

## A Small Local Italian Amateur Radio Fair

DORIANO ROSSELLO, IW1PAG. d\_rossello@hotmail.com

*This is a letter from IW1PAG reproduced as sent to show that amateur radio events are the same the world over.*



Hello Friends.

I read often on SPRAT about the radio community fairs that are held on behalf of radio and electronics enthusiasts. Many and interesting fairs, great or limited in size, are also held in regions of Italy, and I desire to give a very little description about this activity growing locally in my land, near to town in which I live and have easy access without long travelling and to share some photos, in the hope that they may be of some interest.

From many years I visit the main exhibition of radio electronics fair in our region of the north Italy. It has considerable size and number of exhibitors. Over the years I found that, from a varied and large range of radio equipment for OM, new or used and military surplus, accessories, spare radio parts, etc. placed on display until a few years ago, slowly but surely it has moved towards consumer electronics with large supply of p.c. and cell phone but less radio, antennas, radio parts etc. for our common interest; radio communication.



On the other hand, fortunately, in recent years the number of small radio fair, held in small villages outside of the big cities, has increased; exposing equipment and materials for OM. In this (hot) summer just passed, I visited one of these small exhibitions held in the small town of Cosseria, in the countryside not far from my town, Savona, and I finally saw more radio transmitters, receivers, also surplus military radio, radio accessories and antennas: wonderful!

It was a very pleasant visit and I bought some VHF radios in a very good deal. I therefore wish to share with GQRP Club friends the photos I made and which show the various

equipment on display and sale. Please, excuse the photos quality that is not good because they were made with a not recent mobile phone and not smartphone.



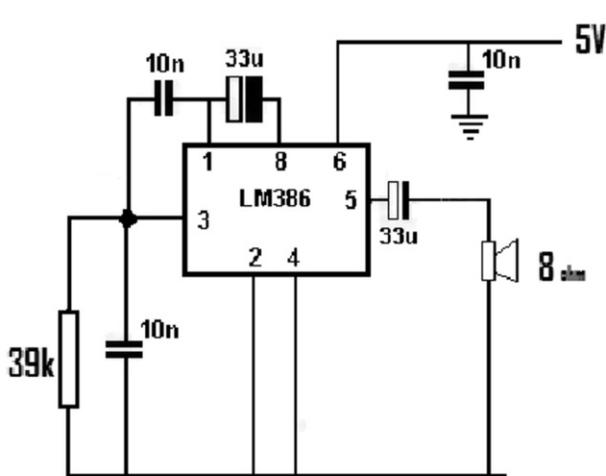
A small historical note: the town of Cosseria was the scene of a Napoleonic battle in the late eighteenth century and in the stand of the organization of the fair was offered a brochure describing the battle. I include it because, beyond the narrative in Italian, there is the English translation for visitors.

73 from Dorianò IW1PAG  
G-QRP Club 12779

*Good to see an HW7 in decent condition and the unmistakable Geloso dial and drive.*

## LM386 Audio Oscillator

Peter Howard G4UMB 33 West Bradford Rd. Clitheroe Lancs



I was experimenting with a LM386 Audio amplifier and found that it can be wired up to make a simple Audio oscillator. Its output is a square wave under no load. Its frequency is governed by the supply voltage. I found it worked OK between 3v -10V and also you can change the frequency by the value of the resistor. So it could be

used as a Morse practice tone generator or perhaps added to your QRP transmitter to act as a Sidetone

## Economy iambic keyer – Andrew Keir, G4KZO, keirfamily20@gmail.com

I like sending iambic morse but the cost of 'bought' keys is frightening. I wanted something cheap, easy to make and simple to operate. This is my mod of a standard 'sideswiper' pcb key, with 2 double-throw microswitches and offcuts of glass fibre pcb material (preferably double-sided). It doesn't have 'tension' or 'swing' control but do I actually need them?

The 2 x spdt microswitches are wired to the 'normally on' terminals, with the twin long strips of pcb material holding them 'off' (depressed) until sideways movement of the strip allows either microswitch to return to 'on'. I used a base of pcb material about 70 x 85 mm with the two levers 100 mm long and about 10 mm apart; you may wish to vary this.

The supports are best made from double-sided pcb material, and soldered on, but of course could be glued. I had solder available, and it can be reworked, so I used that. It is important that the levers do not 'brush' the base, so I put a sheet of paper between them while lining up and soldering the levers. This guarantees about 0.5 mm space between levers and base, when the paper is removed, after the solder has set.

Once the supports and levers were right, I put the microswitches roughly in place and 'spotted through' one of the mounting holes on each microswitch, drilling a hole in the base to suit the pivot bolts (I used 3 mm but 6 BA would do). A nut holds this 'support' bolt tightly to the base, and the microswitch pivots freely on it. It should not be necessary to use a second nut to clamp the microswitch down, as it does not move in normal use. A second bolt, through the other mounting hole, holds the switch level.

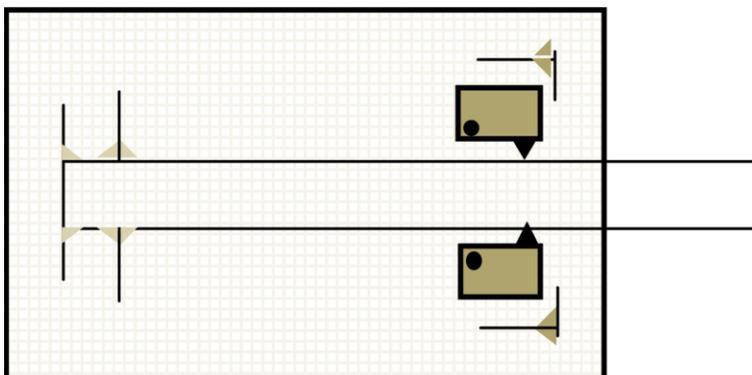
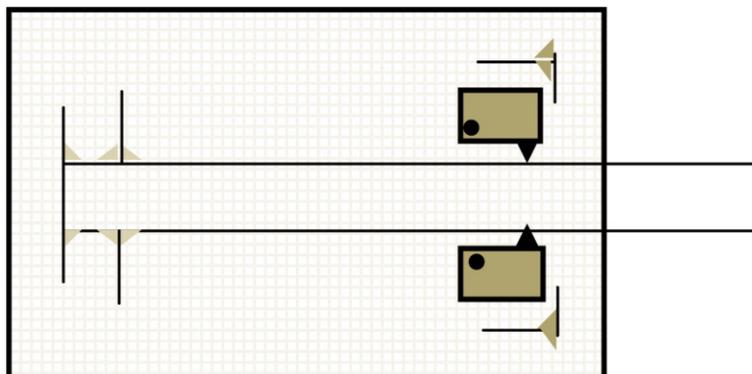
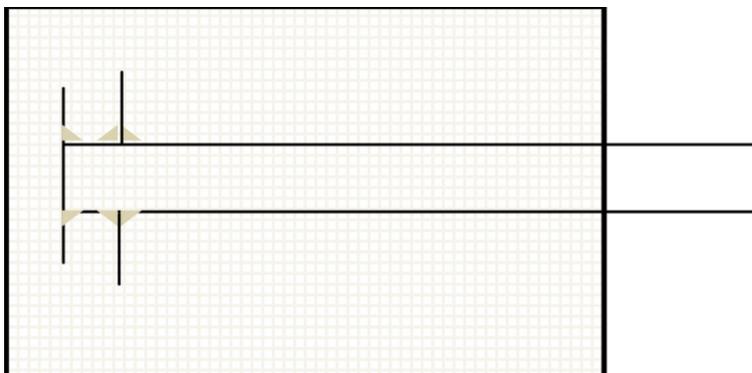
Now solder on 4 pieces of scrap, to hold the side adjusting bolts for the microswitches. Drill (and, I suggest, tap) the outer supports for the bolts; fit the bolts (with nuts outside and inside) and adjust, until they hold the microswitches against the levers, 'clicked' but only just.

Moving either lever inwards 'un-clicks' the microswitch, switching it 'on' from its forced 'off' position. I managed to get an operating movement of just less than 1 mm, which suits my sending style. I hope it suits yours.

You will need –

- 6 x 3 mm dia x 20 mm long bolts, and at least 6 nuts to fit them
- 6 x doublesided pcb material scraps, about 15 mm x 10 mm
- 1 x pcb material scrap, about 30 mm x 10 mm
- 2 x pcb material levers, about 100 mm long and 10 mm wide
- one pcb material base, about 70 mm x 85 mm
- a heavy chunk of something to bolt/glue the base to, to avoid 'wandering key' syndrome
- 2 double-throw micro-switches; the ones I used had a base about 25 mm x 15

# G4KZO Key



## Antennas Valves and Vintage

Colin Turner G3VTT  
182 Station Road  
Rainham, Gillingham,  
Kent ME8 7PR

*It was so nice to see you all at Rishworth and thank you for your positive comments about Sprat and AVV. I hope you enjoyed the Valve QRP event on November 14th.*

*Please send me a short description of equipment, aerials and activities after these events. Please note the change of QTH above, (more antenna experimentation coming up!) but I will also be active from Wales from time to time. Following on from the interest shown for nostalgic QRP circuits I have received details of another QRP transmitter, this time based on a 'spy' transmitter from Ron G4FBC.*

Hello Colin, I thought you might be interested in an offering for a future issue of SPRAT. I think I maybe too late for including it in the next issue due in September but I offer it anyway. I was introduced via a group on the web to a fellow ham, Mirko, whose call sign is S52PC. He is also a military radio collector and he sent me details of a valve small transmitter which he and his friend are building a replica of. This is a single valve (6L6) TX set which I thought was a Polish spy TX when I saw it in pictures Mirko sent me but he clarified this in an email to me as follows:-

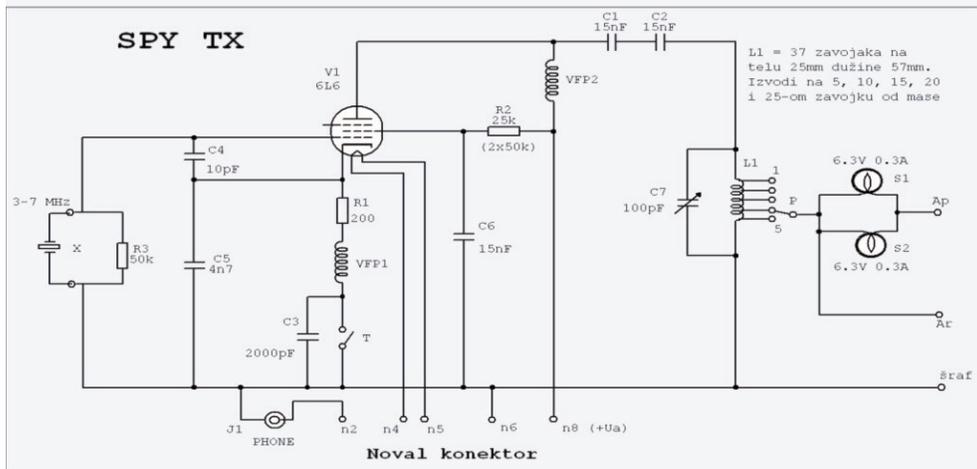
*"Maybe there is a small misunderstanding. The transmitter is not Polish but the Yugoslavian version. The power cable is plugged into a commercial broadcast radio in place of the output tube, in my case an EL84.*

*The transmitter was not designed for agents who would go into foreign territory but was aimed at military personnel who remained in the occupied territory feeding back information. After 1948 there was a high probability of an invasion by the Soviet Army into Yugoslavia however these types of transmitters were never used because there was no need. I bought it from a gentleman who was involved in the training of operators of the transmitter. He is 87 years old and you can still find him on the amateur frequencies mostly working CW."*

Mirko says he will try to get more information on the set and the circumstances in which it would have been used. I think this in itself could make an interesting article for SPRAT, or VMARS. You might like to take a look at Mirko's collection of vintage radios so see the link below. Many thanks for the AVV articles in Sprat Colin, always an enjoyable read. 73 de Ron G4FBC. See: <http://lea.hamradio.si/~s52pc/> Thanks Ron. A screen shot is shown below of the transmitter circuit and a couple of photos.



Spy TX2-3 - Windows Picture and Fax Viewer



### Remote Tuning for a Magnetic Loop Aerial

Mike G0CVZ has written to me about a remote control system that may be suitable for a magnetic loop aerial. The use of the motor couple to the tuning capacitor in the loop permits fine adjustment from the comfort of your shack and therefore removes the necessity to have separate control cables or a DC feed system through the coax feeder using RF chokes. The original use was for volume adjustment on audio Hi Fi systems. Take a look at the link. Any members want to try this arrangement? Wonderful thing the internet you know.

Hi Colin I read your article with interest and offer an alternative knob twiddler. Some modifications would be needed and I am unsure of the range but interesting. Take a look at: <http://www.aliexpress.com/item/Digital-led-2-channel-Remote-Motor-ALPS-Volume-Potentiometer-Control-50KA-Free-shipping-tracking-number/32338500752.html> 73 Mike G0CVZ

### What is an ATU really doing?

*KF4YJQ* asked a question a couple of issues back about what we were actually tuning up when we set our ATU controls. *Gerald G3MCK* has offered a few ideas. ‘Walt *KF4YJQ* raises a good point by asking ‘what are we really tuning up with an ATU?’. The late *G5RV* had the right idea when he called the ATU ‘an aerial system matching unit’ because that is what it was doing. We are presenting the PA to whatever load the aerial system presents. ATU is a term from the early days of radio and I think we are stuck with it. ‘AMU’ - aerial matching unit - is better but does not fully describe its function. By the way, if your aerial system matching unit does not give 1:1 SWR on its input it is not working properly.

### The ‘Olandesina’ 80 -10m Antenna by *IK0IXI*

*Fabio IK0IXI* has been searching on the web and found this multiband aerial which looks like a useful project to me giving good results from 80 to 10m. *Fabio* explains, ‘The antenna, the so-called “Olandesina” (little Dutch girl), is a project that I found on the web made by different Dutch OMs. In Holland this antenna is very common and there are some commercial versions too. This is not the familiar End Fed powered by a 9: 1 transformer and tuner. It is a resonant antenna fed at one end by an impedance transformer having a ratio of 1:50. A half-wave dipole at resonance frequency shows the maximum current at its physical centre and its maximum voltage at the ends. Normally we feed our dipole “in current” by a coaxial cable of low impedance finding the right length to reach the minimum SWR. In this way, however, we get only a “dual band” antenna working as a half wave dipole on the fundamental and as a 3/2 lambda dipole (1.5 times the wavelength or three half-waves) on the third harmonic. In fact if you build a half-wave dipole for 7 MHz you got resonance on 21 MHz also. The Olandesina, thanks to the harmonic relationship between our bands, a half-wave wire will show high impedance at both ends on the fundamental and on all the harmonics. At these two end points there will always be a maximum voltage. In other words if the dipole is 20m long it shows high impedance at both ends on the range 7 MHz (half wave), 14 MHz (Wave Length), 21 MHz (the third harmonic - 3/2 wave - 1.5 lambda) and 28 MHz (two whole waves). In this case we built a resonant antenna on 4 bands that must only be fed in a certain way. To operate on 80m, we add a coil which acts as a load for this band. With only 23 meters total, a little bit more of a simple 40m dipole, we have an antenna that will allow operation on ranges 80-40-20-15- and 10m without a transmatch. The antenna has been built using a common copper wire for garden purposes.

### **Impedance transformer**

In our “coaxial world” we are used to relating everything to the classic 50 Ohms. To feed this antenna by coaxial cable we must connect our low impedance cable to the high impedance of the Olandesina at its end. To do this we need a “step-up” impedance transformer which transforms the 50 ohm of coaxial cable to the high impedance of the antenna wire, say 2500 Ohm or more. We need a transformer with 1:50 ratio. Sometimes a 1:64 ratio transformer can be used. The UNUN transformer is closed in a plastic box being a waterproof type made by Teko. The input is a common coaxial socket SO-239 and the output is a porcelain insulator made by Johnson specifically for HF transmitters. The capacitor of 150 pF - 3 kV and is used to improve the impedance match on the 10m band.

In fact on 28 MHz it seems to remove a certain inductive component on the transformer primary winding and the added capacitor improves the SWR. Removing the capacitor the SWR increases slightly, rising from 1 to 1.6 on 40 / 20m, while on 10m it rises to 3.0. The use of two ferrite core FT-240-43 allows to feed the antenna to the maximum legal power of 500W. I made many QSOs at the maximum power allowed by our legislation without problems.

### **Loading coil**

The coil is made by winding 125 turns of enamelled copper wire, 1mm on a grey PVC pipe diameter of 32mm. The coil has an inductance of about 100uH.

### **RF Choke**

To prevent any influence between the primary winding of the transformer and the cable shield is highly recommended that an RF choke is included just before the impedance transformer. It's made by using a toroid model FT-240-43 with 9 + 9 turns of coax like RG-58 and is enclosed in the same box containing the impedance transformer.

The antenna, with the measurements provided had no need for adjustment on the CW portions of the bands. However you can make small adjustments to SWR by adjusting the wire length. With a tuner, now built-in on all amateur radio transceivers, you can bring the SWR down to 1: 1.1 easily without compromising the antenna performance.

### **Performance**

I work exclusively on CW with some output AM on 40m and 80m and the antenna performs well. I made many domestic and European QSO also DX is working well. On 80m it works but a 23 meters antenna is relatively small thing so the performance on this band is just usable. On 40m there is excellent performance with good reports and strong signals from all over the country again Europe and some DX QSOs. The SWR is 1: 1.3 on 20m, very good, tested for several months in the weekly sked I have with David VK3DBD. Both the regular HF bands and the WARC bands are usable with a tuner. Enjoy wire antennas as they are cheap and easy to build. Fabio IK0IXI

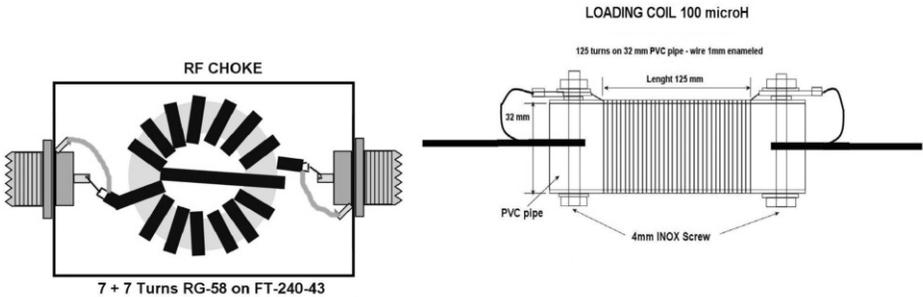
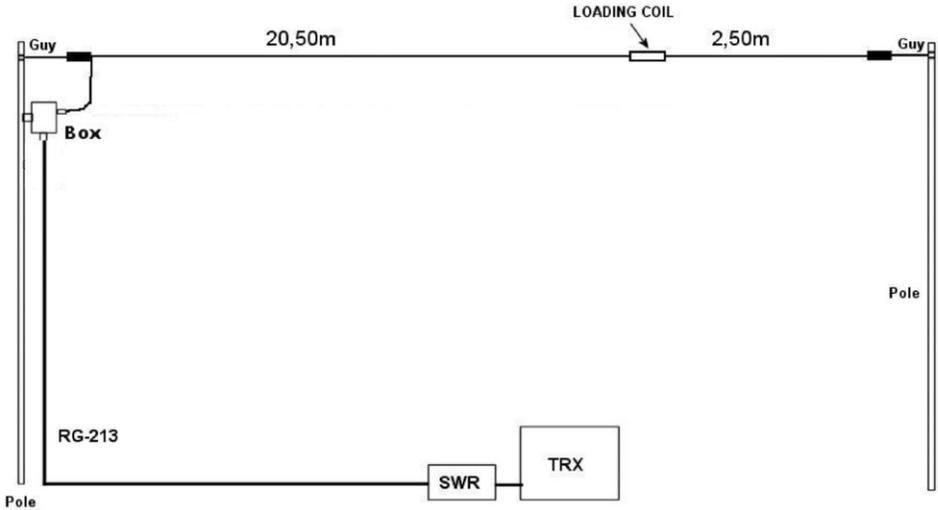
### **Into the New Year**

Each time I sit down at the computer to write these notes I seem to be saying Merry Christmas and a Happy New Year. I guess it's all part of getting older. May I take this opportunity to wish all of you a Happy Christmas and a Healthy New Year and don't forget the Winter Sports between Boxing Day and New Year's Day which is the best operating

# END FED Antenna 80-10m

## L'Olandesina

by IK0IXI



time of the year in my opinion. Finally, you will have noted a black cat at the ends of my piece each season. I'm sorry to report Doris is no longer with us having passed away in early November. It will be difficult operating without my feet having a warm cat laying on them or Doris walking across the operating desk in mid QSO. No more cats I'm afraid – (unless a *really* good one comes along).

## COMMUNICATIONS AND CONTESTS

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

Hi I hope everyone has had an interesting time on the air this Autumn and are looking forward to the Christmas holiday period. I hope you also had fun in some of the other contest QRP categories this year.

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

### **G QRP Club Winter Sports**

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

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

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

**CW: 1836, 3560, 5262, 7030, 10116, 14060, 18086, 21060, 24906, 28060**

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

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

Please take part if able and join Jos ON6WJ, and friends as they keep QRP enthusiasts active all through the winter. He has organised his so-called EU FOXHUNT twice weekly, from **November – February 2016**. Is well worth taking part as they will love to have members from GQRP take part. There is a website [http://www.on5ex.be/foxhunt/foxhunt\\_view\\_unreg.php](http://www.on5ex.be/foxhunt/foxhunt_view_unreg.php)

### **Monday QRP Meeting point**

A great suggestion has surfaced from Colin G3VTT at the Rishworth meeting. There are many QRP constructors who make a piece of equipment and then want to try it out or just want to keep in touch and are unable to make a contact due to low activity. Colin is going to start a weekly 'meeting point' on 3560 every Monday at 2000 local time for a period of an hour or so and welcome anybody who wants to join in with QRP. It could well become a net and Colin is quite happy to be Net Control for an hour or so. If there is a take up in

activity I might expand it to other bands but in the meantime we will see what happens on 80m. Listen and call in with any QRP rig for a report and any CW speed you fancy. The starting date is January 4th 2016 and I hope to meet you then. **G3VTT (& M1KTA)**

### **G-QRP-DL-Treffen 2016**

Das tradutiuelle G-GRP-DL-Treffen fuer Mitgkueder des G-QRP-/clubs findet auch 2016 wieder im April (**22/23/24**) statt – in **Waldsassen**, in der Nahe vonn Cheb/OK – unsere QRP-Freunde aus OK sind herzkich willkommen.

Wetiere Infos gibt es auf der Homepage: <https://www.g-qrp-dl.de>

Zu Vortragsthemen und Beitrage usw, bitte Bernd via [DK3WX@DARC.DE](mailto:DK3WX@DARC.DE) kontaktieren

– vy 72 es awds Bernd, DK3WX – Oliver, DF6MS – Manuela, DL2MGP

The traditional G-QRP-DL-meeting for members of the G-QRP-Club will be held late in April (**22/23/24**) in **Waldsassen near Cheb/OK** - our QRP Friends from OK are welcome.

Further infos on our homepage: <https://www.g-qrp-dl.de>

For lectures and articles etc., please contact Bernd via [DK3WX@DARC.DE](mailto:DK3WX@DARC.DE) vy 72 es hpe cu Bernd, DK3WX - Oliver, DF6MS – Manuela, DL2MGP

## **Getting the best out of Veroboard circuits.**

**Andy Foad, G0FTD. GQRP 13690**

Here's a tip when using Veroboard. Use it copper side up! This has several advantages.

- (1) It's easier to see the circuit layout when building on the fly and reduces mistakes.
- (2) By soldering leaded components as if they were surface mount it makes it easier to unsolder them or make repairs, as opposed to trying to unsolder bent leads underneath, and sometimes damaging the copper track.
- (3) You can add components easier. Ever wish you had left another hole or two where components join ? The space left between the holes can now easily accommodate extra components being soldered to them, especially if they are SMD parts too, like 1602 size resistors or capacitors.
- (4) Articles and photography. When you use Veroboard copper side up you can just take a photo of the layout. Other builders of the circuit can easily see the component layout and the track cuts in a simple photograph. No need for error prone drawings / sketches of the design.

# MEMBERS' NEWS

## by Chris Page, N4CJ (G4BUE)

312 Quail Avenue, Sebring  
FL 33870, USA  
E-mail: [chris@g4bue.com](mailto:chris@g4bue.com)



First my apologies to **DDØVR**, **DE3BWR**, **F5VLF**, **GØUCP**, **G3XIZ**, **G4FBC**, **G4YVM**, **GM4VKI**, **IKØIXI**, **M1KTA**, **M6FKR** and **N2CQR**, plus any others I may have missed, who sent me items for *Members' News* for *SPRAT* 164 that weren't published! I did use them in my copy to the printer but somehow the first three pages of my *SPRAT* 164 *Members's News* got substituted with the first three pages from *SPRAT* 162 *Members' News*! Depending on space I will use some of the 'lost' items that are not time sensitive in this issue.

**GØAYD** recently bought two **G3WPO** radios on *eBay* for less than £140. One is called the *Omega*, (upper right) a nine-band all mode 10W that Dave had to resolder all the connections before it burst into life and which he has now worked 36 DXCC with 4W. The other is a *Micron*, a five-band 10W CW TCVR that is now also fully functional. Dave also has a Youkits 4W TCVR and is amazed how well it works. It has DDS VFO digital signal meter power out, etc and is tiny, just larger than a 50gms tobacco tin. His local club (Andover) current project is the BITX 20m radio with a mod to enable CW, which works very well. Last year's project was a 23ft roach pole that enabled Dave to work the 36 DXCC on the *Omega*.



Congratulations to **2EØOFM** who entered his Limerick Sudden 40m line-up in the Constructors' Championship at the 2015 RSGB Convention. Although Pete's was the only entry in the Beginners' Class (he only gained his Foundation call at the 2014 Convention and was keen to move onto the Intermediate exam), the judges said the exceptional construction standard deserved a prize and he was awarded 1st place in the Beginners' Category (licensed less than three years). His father-in-law **GØLAD** recommended the Limerick kits as, not only do they give a good basis in construction, but the design and layout help gain a good grounding in radio construction, circuits and understanding of how the various parts of a modern transceiver work. Pete hopes this will inspire others to have a go.



TRF first featured in *SPRAT* 70. For bandwidth selection, there are six individually designed active audio filters providing a range of AF bandwidths between 700Hz and about 10kHz. Dave says the narrow filters really make a difference on SSB and CW and the main tuning control is a National HRO dial and gear drive, which is a joy to tune. He continues, "It has the size, looks, and feel of an old boat anchor, but has the low current consumption of a simple solid state receiver - the best of both worlds!". More information at <https://aa7ee.wordpress.com/2015/09/14/the-sproutie-mk-ii-hf-regen-receiver/>. **G3CWI** has written an article which has many hints and tips about batteries. It can be downloaded from Richard's blog at <http://www.sotabeams.co.uk/blog/what-is-the-best-battery-for-portable-operating/>.

The last regen that **AA7EE** built, *The Sproutie*, worked so well that he wanted to build a new one based on the same basic design, but with more advanced AF filtering, and the result is the *Sproutie Mk II* (left). As with the last one, it is also a general coverage regen with plug-in coils for the different bands and, like its predecessor, also employs the front end from Nicky's

**AE5X** made a 2000 mile off-road trip from Tennessee to Colorado on a motorcycle in September carrying QRP gear, riding 200 miles a day, camping often and operating QRP in the evenings with his MTR(V2) from **KD1JV** and PAR End-Fed antenna on 20, 30 and 40m. More information at <<https://tatqrp.wordpress.com/>>. **IK0IXI/P** was QRV in September for six days while camping at Lake Trasimeno with his homemade 'Mountain Topper' 20m TRX (1W) and FT-857D 5W on 40m, with a resonant end-fed wire antenna. Fabio made 20 two-way QRP QSOs, his best being with your scribe on 40m. **G0HUZ** plans to be /MM again 6 January/19 March while cruising to CU, various Caribbean islands, Panama Canal and circumnavigating South America including VP8F, and finally CT3 before returning to the UK. Tony says, "Mainly 20-10m CW from the open deck using a new KX3 (in lieu of our FT817) and a G-whip centre loaded mobile antenna. Occasional forays into SSB will be made, more so in rough seas that make CW difficult due to vibration! As before we rely entirely on gaining written permission from the 'Master' of the ship once underway, however, having sailed with the Captain before we cannot foresee a problem".

**G0KYA** is lucky to do some business travelling every autumn and this year he was in Portland, Oregon, USA where he was even more lucky to be QRV as **W7SUB** from the submarine *USS Blueback* at the Oregon Museum of Science and Industry (OMSI) on 27 September, thanks to Joe, **KF7UOQ**. Steve operated CW and SSB on 17, 20 and 40m and worked a few stations, including as far afield as Wisconsin (17m CW) and a SOTA station **W7TAO** using 5-10W CW on 40m - conditions were not brilliant. They organised a sked with **KG7MZ** in Washington State via 2m (after a fire alarm went off!), and worked him on 40m CW too. Steve thought the fire alarm was part of the submarine's sound effects and stayed put - duh! Steve used QRP to stop interference to Joe who was QRV on 20m. He says his CW was a little jerky at first until he got used to the sub's straight key. The antennas are a vertical for 20m and a dipole for 6-50MHz (from memory). **W7SUB** is obviously at river level and surrounded by buildings so isn't the best location for HF. The picture shows *USS Blueback* which is a Barbel-class submarine formerly in the US Navy. Steve says he was amazed to see it actually has three decks and was nowhere near as claustrophobic as he thought it would be. The submarine appeared in the 1990 movie *The Hunt for Red October*. More info at <<http://g0kya.blogspot.co.uk/2015/09/amateur-radio-from-submarine-w7sub.html>>. On previous trips to the US west coast Steve has been lucky enough to operate on the *Queen Mary*, *USS Midway* and at **K6KPH** at Point Reyes/Bolinas north of California.



HA01TU	HA150ITU	HA5BPITU	HG150ITU	HA41TU
HA21TU	The Hungarian Radio Amateur Society certify that amateur radio station			HA31TU
HA41TU	<b>G3YMC</b>			HA61TU
HA71TU	reached the			HA81TU
HA91TU	GOLD			HG01TU
HG21TU	level as per rules governing the award			HG11TU
HG41TU	ITU Telecom World			HG31TU
HG61TU	Budapest			HG71TU
HG81TU	12-15.10.2015			HG01TU

**G3YMC** has spent the last few weeks chasing the HA/HG ITU award - see <<http://www.mrasz.org/index.php/award-rules>> and eventually QSO'd all 28 of the special prefixes (certificate left). Dave says, "Some of them seemed pretty active but a few were quite elusive - it was easy to get the Bronze level for working just 10 of them but the Silver and Gold took longer". He also QSO'd **E66G** and **KH2/KU0Q** on 26 September for two new ones. Your scribe also QSO'd **E6GG** on 20m CW with 5W. **DD0VR** may be QRV as either **XY0VR** or



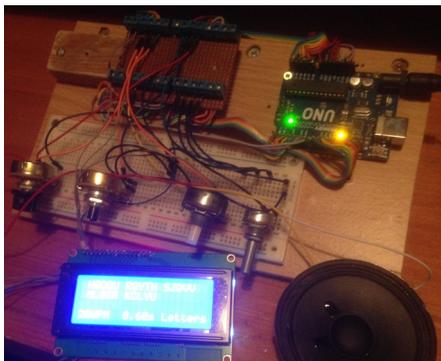
**XZ0VR** in December while on a four-week holiday trip.

**G3XIZ** has built the little KR80 20m TX from *SPRAT* 164 (right) and has had some success with it. He hasn't tried it with the proposed indoor antenna yet but has been using a very low dipole to work around Europe with an average 559 report. Chris has improved it by adding a break-in delay circuit which eliminates the strong heterodyne from the XO whilst receiving. He is still experimenting with the little TX as are another couple of local amateurs. **G0EBQ** retired in November and has three or four rigs to finish or fix, but first needs to rebuild his ancient Lindsey-Hood kit amp and then, "Get out some of that vinyl that I haven't had the chance to listen to for ages". Nigel says the Pixie is working fine after fixing a silly mistake and he now has it working on

80m with 250mw out from the 2N3904 PA. **M5AML** QSO'd **GW8XYJ/P** twice (on two different hills) on 20 September on two-way QRP. HF highlights for John on his gutter dipole and 5W SSB have been **S19AM**, **TK/PB8DX**, **C37NL**, **ZB2JK** and **7W6A** on 17m, and **WX3B** and **KA4TLC** on 15m.

A brief but violent storm in the area (covering a radius of just a few miles) caused **F5VLF** to lose a tall pine tree and several fruit trees. The picture right shows what was left of John's LF receiving system, which started life as a 6.5ft x 6.5ft eight turn loop. He hasn't yet started to repair it as the insurers wish to look at it first. John says, "I doubt it is covered but the loss adjuster is coming anyway for other things". **G3XIZ** has been experimenting with balloon supported antennas with a view to getting 200-230 feet of vertical wire up in the sky for LF and MF operations. Chris is making his own hydrogen gas and filling four 12 inch party balloons which are enough to support the thin copper wire at that height. He says, "Initial results are very encouraging and received signals show up to 15dB improvement over my usual 40m end-fed inverted L antenna". **DDØVR** hopes to be QRV 10/30 December as **V5/DDØVR** and 4/7 January from 7P8.

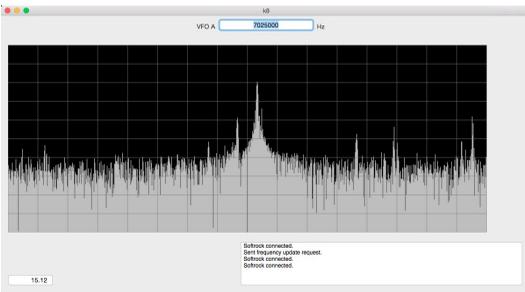
On the **MØNDE** bench are two CW tutors, one by **GØPJO** that featured in *RadCom* (above), albeit with two errors in the circuit, and an Arduino version with display by **MØTGN** (right) that he has added a tone control to. These will be the Burnham ARC's winter projects. On Nigel's repair list is a 100MHz unit for his spectrum analyser purchased in Belgium on spec, which sadly has some missing parts, but is hoping **G3ROO** can work some magic on it when they visit Dover nearer Christmas. He continues to 'play' with WSPR mode and says the Paraset should see some action over the winter with his new switched crystal holder, which should appear in this issue of *SPRAT*. Nigel has installed a doublet replacing the **G7FEK** off-set marconi antenna.



A part-shack picture at **GØAYD** (left) with the **G3GMN** designed homemade six-band CW/SSB TCVR with auto-ATU and PSU in the centre. **G4BJG** mentions a "really useful" website at <http://www.w5dor.com/w5dor-links.html>, **GØFTD** mentions <http://www.qsl.net/on7eq/projects/coaxtraps.htm> for making coax traps and **G1KQH** mentions a new QRP e-book from **VK3YE** at <http://home.alphalink.com.au/~parkerp/miniqrp.htm>.

**G3JFS** gave his new IC-7100 a "good workout" in the Summer Sizzler activity at the end of August but major sun disturbances caused atrocious conditions with the bands completely dead for long periods. Peter says, "It was often difficult to make any contacts at all and more than once I looked out the window to make sure the antenna hadn't fallen down, but with patience and persistence I made 115 QSOs on 160-15m including 60m, with 43 DXCC during the week. The IC-7100 could not be faulted for CW and data mode operation however, as I mentioned in the last *Members' News*, there are concerns about its SSB performance which I found leaves much to be desired. I also

used the IC-7100 in an NAQCC Challenge (to make 10 CW QSOs with 1W or less during September). The minimum output level of the 7100 is 2W so I put a 3dB attenuator in the antenna lead to drop the power to 1W. Considering conditions were still very bad I was surprised to complete the Challenge on the first day of the month, all my contacts being well over 1000 miles and the best with **K1RM** at 3200 miles". Since 2001 Pete has 207 DXCC with QRP - 190 CW, 144 SSB, 110 RTTY and 79 on other data modes.



The screenshot right is of **MØVVC**'s Mac spectrum analyser app, named 'K8'. Matt is very pleased to release the first version of K8, a Mac based spectrum analyser that supports Softrock hardware. He says there is much more to do on it and is looking for member feedback and coding volunteers. Members can download the app from <<https://github.com/zardozy/k8>>. **K9JWV** in Utah started using a **W8DIZ** 1W 160m TCVR to a top loaded 30ft vertical with 16 elevated radials (see his [QRZ.com](http://QRZ.com) site) on 5 November and in two weeks had three DXCC (VE, W and XE) and nine WAS. Your scribe QSO'd Jim on 40m with his 1W on 20 November and gave him Florida (I was **N4CJ**) for his 20th state for his QRPP WAS. Jim has QRP WAS on 160, 80 and 40m but says QRPP is a different story!

**G4BEE** spent the first week of September in Manikata as **9H3BR**, mainly operating for a couple of hours in the morning and night before having to be a 'tourist' on **XYL**'s orders! Using his trusty old FT817 and Buddistick, Ray made 32 QSOs in 16 DXCC, mainly on CW, which produced his best DX with **VK4DHF**. A brief dabble on SSB in the All Asia Contest yielded HZ, 9K, and 4X and best SSB DX was **FK4QK**. He says, "I'm sure the 9H call helps a bit but I never cease to be amazed with what the FT817 and Buddistick achieves, and without doubt two of my better purchases, although the Buddistick can be a pain to set up initially. Sure it's hard going but you certainly gain a sense of achievement. This was all operated from a 'Chinese' eBay special Lithium Ion battery, quoted at 6800mAh but is actually less than that (about half), but I get a good two or three hours out of it".



The picture above shows the balcony shack: FT-817, Bulldog mini-key, LDG Z-817 (in case the Buddistick didn't tune!), DYZ-8x7c speech compressor and Fujitsu M532 Android tablet for logging. The antenna picture shows the Buddistick on a ten feet telescopic mast bungi-cord fixed to the apartment railing.



**G3XIZ** made a LF WSPR TX (above left) that is now fully operational and worked virtually straight away. It uses an up-converter requiring a stable 544kHz input which is generated from mixing two crystal oscillators. The PA uses a pair of IRF510 FETs in push-pull and the output power is adjusted using an old 'variac' auto-transformer on the unregulated DC supply. Chris was surprised that with only 5W of RF his signals were being picked up by **PA7EY** at a distance of 216 miles.



Recent activity at **GØUCP** has been with (increasingly small) loops, the idea being that QRPP is becoming too easy! The picture left shows one of two 18 inch diameter portable loops for 15-20m, fed from the homebrew TX LPF, either directly or via a current balun (no difference detected), that John uses indoors. The mini loop just visible at 3 o'clock has a bright white LED in series as a tuning indicator that lights with as little as 100mW. He says using power levels of under 1W is difficult on 20m but relatively easy on 15m and above. Contest QSOs have been made with European stations

plus some pleasant surprises like **3V8SS** and **J42T** using 1W. Outside of contests John received a 599 report from **UA1CE** in St Petersburg on 20m and WSPR made it to the USA with 200mW but, he says, these are not DX antennas and depend entirely on a robust ionosphere.

My apologies to **EA2SN** for the typo in *SPRAT* 163 *Members' News* (page 35) of the URL of Jon's notes about the ILER-40 Buildathon - it should have read <<http://iza.gandi.ws/>>. He writes, "The information has not been updated yet for the MkII version, which now includes the AGC and some refinements on board. If you plan to build it, the buildathon\_2013\_iler40 document, as well as the annexes, may be a good reading. Time allowing I will try to prepare an updated version by the end of the Summer". My thanks to **F5VLF (G3PAI)** who points out my reference to **G3RJV** being awarded the Calcutta Cup in *SPRAT* 163 *Members' News* (page 35) should have read Calcutta Key. John correctly says the Calcutta Cup is for rugby, not amateur radio! I obviously didn't have a very good day when I wrote page 35!

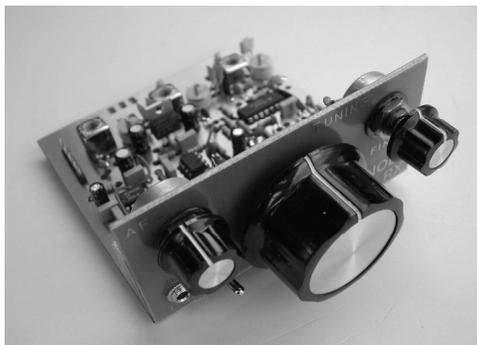


**M6FKR**, a relatively new member, has not long obtained his first callsign but at 58 years old is more interested in building and operating CW at low power levels than black boxes! To hone his Morse skills, Guy obtained a Kent Morse Practice Oscillator and the picture left shows how he hooked it up to an ex-army Morse key being advertised in *SPRAT*. The key has an odd two-pin connector but is a beautiful relic of the cold war that weighs a ton and will not budge during use! He found a banana-style binding post fits neatly over each pin of the key connector and used the solder tags on these to connect the plug from an old crystal earpiece skulking in his component box. This plugs in to an adaptor that converts it to a standard headphone type plug resulting in a rather nice Morse practice setup.

After many years of wanting a valve TX but really never having the time to tackle one, **G4YVM** gave in and bought one on 14 July (pictures right). David does build a lot of stuff, all 12V, and gets a huge buzz from it, his last project being an OXO made from parts gifted to him by **G4LQF** that he says works fabulously, but he managed to get **G4XWD** to part with this old TX that he made 25 years ago. It has a pair of 6BW6s to give about 5W CW on 40, 60 and 80m but as David only has two crystals (7010 and 3519kHz) he is asking if any members have a spare crystal or two, particularly for 3560, 3558, 7030 and 7028kHz in 10XJ or 10XJA styles for the valve set, that he can buy? He says the TX works a treat and that as Jim is essentially QRT these days, his old radio is now having a new lease of life in his shack where Morse is a daily event! David now has a shack that is almost all home-brewed, the exception being a TS-590 and an old Yaesu FT101ZD that he also fixed.



Thanks to the contributors to this column. Please let me know how your winter goes for the spring 2016 edition of *SPRAT*, what you have been building, who you have been working, and any other information about QRP, by 10 February. Also, interesting photographs please, don't be shy in letting members see what you have been building and/or where you have been operating from, your antennas, who you have been meeting and even a shack photograph to let other members know what you and your equipment look like. Let me know if you intend operating from somewhere other than home during the spring and summer months so I can let members know to listen out for you.



## Wide range of analogue kits

Low cost, adaptable, & simple style

Regen TRFs for beginners and simplicity

Direct Conv RXs, Xtal/VFO CW & DSB TXs

Superhet RX and TCVRs, phone or CW

High Spec Multiband superhet TCVRs

Accessories – Counters, AMU, AGC, etc

# Walford Electronics Ltd

Upton Bridge Farm, Long Sutton, Langport, Somerset TA10 9PZ

Visit [www.electronics.walfords.net](http://www.electronics.walfords.net)



### **NEW Fused 25A DC Distribution Panel**

- 6 Powerpole connectors
- Reverse polarity indicator
- From £22.50 + p&p



### **PICO Traps**

- Smallest, lightest antenna traps
- Clever design
- 10 Watt rated
- Easy to align
- From £8.25 + p&p

**[www.sotabeams.co.uk](http://www.sotabeams.co.uk)**  
**07976-688359**

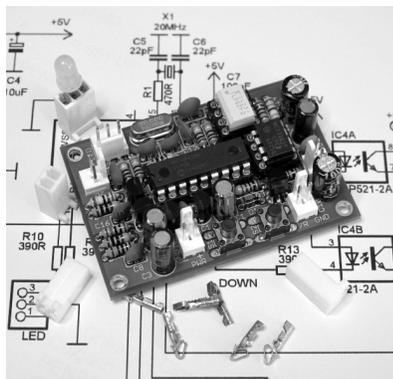
## THE "X-LOCK 3" VFO STABILISER KIT

**Wandering VFO? Give it crystal referenced stability with the latest version of the X-Lock kit!**

Measuring only 36mm x 61mm, the X-Lock continuously monitors the VFO frequency and computes a correction signal to compensate for drift. Improved software and hardware now offers;

- push buttons controls for in-situ configuration,
- adjustable correction rate,
- choice of external or automatic RIT control,
- adjustable post tuning delay,
- automatic unlock during tuning,
- dual colour LED indicates programming and operational states,
- compact design allows easy installation inside most equipment.

Hundreds in use around the world. Visit our website for more information and example installations. The X-Lock kit comprises double sided, high quality silk screened PCB, pre-programmed processor, all components, connectors, IC sockets and a comprehensive step by step 14 page instruction manual. Just add 12v and a VFO!



**X-Lock 3 VFO Stabiliser kit; £27.75 plus P&P and VAT at 20% (UK and EU)**

Order on line at [www.cumbriadesigns.co.uk](http://www.cumbriadesigns.co.uk), email: [sales@cumbriadesigns.co.uk](mailto:sales@cumbriadesigns.co.uk)

## Bowood Electronics Ltd

### Suppliers of electronic components

Batteries, Buzzers, Capacitors, Connectors, Diodes, Cases, Ferrites, Fuses, Heatshrink, IC's, Inverters, LED's, PCB, Potentiometers, Power Supplies, Presets, Rectifiers, Relays, Resistors, Soldering Equipment, Stripboard, Switches, Test Meters, Thermistors, Thyristors, Tools, Transistors, Triacs, ...

**Catalogue available NOW Please send 60p stamp or visit our website.**

**Website: <http://www.bowood-electronics.co.uk>**

**email: [sales@bowood-electronics.co.uk](mailto:sales@bowood-electronics.co.uk)**



**Mail order only - NOTE NEW ADDRESS**  
**Unit 10, Boythorpe Business Park, Dock Walk,**  
**Chesterfield, Derbys, S40 2QR**  
**UK Telephone/Fax: 01246 200222**

## **www.SDR-Kits.net - Visit our Webshop!**

**New – in stock! – KN-Q7A 40M QRP SSB TRANSCEIVER KIT**

**Fun to build** – complete kit all leaded components except 1 SMD part

**Fun to Operate:** 0.5uV Sensitivity and 10W RF Out - 12V- 13.8V DC

20 kHz VXO coverage 2 Xtals supplied 7080-7100 & 7110-7130 kHz

Special intro- Price **£99 incl VAT, Speaker Mike £19.50 UK Carr £4**



**Famous KB9YIG SDR Lite II SDR RX Kit** builds either 160m, 80m,

40m, 30m or 14 MHz version. requires computer soundcard - 2<sup>nd</sup> Xtal supplied **£21.00**

**PA0KLT Low Noise Synthesized VFO kit with LCD display** uses high performance **Si570 ICs** covers **3.5 MHz up to 1417 MHz**. Suitable for homebrew VFO or LO Projects - Signal Gen etc

**DG8SAQ USB-controlled Vector Network Analyser VNWA covers 1 kHz to 1.3GHz - In stock**

**Assembled and tested as reviewed Radcom Nov 2011 - Calibration Kits - Details on Webshop**

**Si570 ICs - Si570CMOS only £10.80, Si570DBA 1.417 MHz, Si571CFC with FM Modulation etc**

**Mitsubishi RF FETs stocked: 175 MHz RD16HHF1 £4.44 RD06HHF1 £3.30 RD00HHS1 £1.14**

**SDR-Kits 129 Devizes Road Trowbridge Wilts BA14 7SZ UK - email orders@SDR-Kits.net**

Rig Broken or needs alignment?

Commercial/Homebrew equipment repaired & aligned

Ten-Tec repair specialist, spare parts ordering service available

## **Adur Communications**

13 Dawn Crescent, Upper Beeding, Steyning, West Sussex. 01903 879526

Unadilla baluns & traps - Outbacker Antennas

**www.adurcoms.co.uk**

## **AMTOOLS UK**

**www.amtoolsuk.com** Virtual Amateur Radio Emporium!

Web site recently updated.

Bargains in tools, components and antenna hardware

Favourites include fibre glass poles, Springy (Slinky element),

FAST-TRACK instant PCB tape, popular QRP devices such as ADE-1 and SA602A.

variable capacitors, magnifiers, PCB drills and lots more.

Low prices and low postal charges worldwide.

email enquiries welcome. (amtools@ntlworld.com)

72, Les. G4HZJ Tel. 01942 870634

1 Belvedere Avenue, Atherton, MANCHESTER, M46 9LQ

## **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](mailto:qsl@qslprint.com) or [qsl@kz.orbitel.bg](mailto: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](http://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](mailto:m0mja@aol.com) (make cheques payable to : Melanie Rowe)

# KANGA PRODUCTS



## Radio Kits and Electronic Components for the Radio Amateur

**\*\* DX 40m DC Receiver incl LCD Read Out\*\***  
**CW Transceiver Kits - Rockmite ][ & Foxx-3 Kits**  
**Arduino Mega & Due also Arduino Shields**  
**SDR Receivers – SMD Kits – LCD Modules**

**See website for Special Offers and other Kits**

**P&P (UK) £4.00 Euro Zone and DX Email for details**

[www.kanga-products.co.uk](http://www.kanga-products.co.uk)

[sales@kanga-products.co.uk](mailto:sales@kanga-products.co.uk)

**Telephone: +44(0)1942 887155 Mobile: +44(0)7715748493**

**Kanga Products, 142 Tyldesley Road, Atherton, Manchester M46 9AB**



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.



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

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@ggrp.co.uk](mailto:g3rjv@ggrp.co.uk)

Google "***acelticlodgeforrent***" to find pictures and further information.

# GQRP Club Sales

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

<b>Antenna Handbook – 2<sup>nd</sup> edition – members £6.00, non-members £10.00 plus post</b>	<b>} £2.00 (UK) or £5.50 EU</b>
<b>Radio Projects volumes 1, 2, 3 &amp; 4 – by Drew Diamond – members £6, non-members £12</b>	<b>} or £8.00 DX per book</b>
<b>6 pole 9MHz SSB crystal filter (2.2kHz) £12 plus post (max of one)</b>	<b>} £3.50 (UK); or</b>
<b>Polyvaricon capacitors – 2 gang (A = 8 to 140pF, O = 6 to 60pF) c/w shaft extension &amp; mtg screws - £1.50 each</b>	<b>} £3.50p (EU); or</b>
<b>– 2 gang – (both 8 to 285pF) c/w shaft extension &amp; mounting screws - £1.50 each</b>	<b>} £4.50p (DX)</b>
<b>Pair LSB/USB carrier crystals HC49U wires - [9MHz ± 1.5kHz] £4 pair</b>	<b>} All components</b>
<b>HC49U (wire) crystals for all CW calling freqs – 1.836, 3,560*, 7.015,</b>	<b>} plus postage</b>
<b>7.028, 7,030*, 7.040, 7.0475, 7.122, 10.106, 10.116*, 14,060*, 18.086, 18.096,</b>	<b>} (ANY quantity)</b>
<b>21.060, 24,906, &amp; 28,060 all are £2.00 each (* = also available in low profile HC49/S)</b>	<b>} £1.20 (UK), or</b>
<b>HC49U crystals- 1.8432, 3.500, 5.262, 7.00, 10.006, 10.111, 14.00MHz – 50p each</b>	<b>} £3.50p EU, or</b>
<b>HC49U crystals – 2.00, 3.00, 3.20, 3.579, 3.5820, 3.6864, 4.0, 4.096, 4.1943, 4.433MHz</b>	<b>} £4.50p (DX)</b>
<b>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</b>	<b>} £4.50p (DX)</b>
<b>26.0, 27.0, 28.0, 28.224, 30.0, 32.0, 33MHz – all 35p each (Some of these are low profile)</b>	<b>} Post free</b>
<b>Ceramic resonators – 455, 480kHz, 2.0, 3.58, 3.68, 4.00, 14.32 &amp; 20.00MHz – 50p each</b>	<b>} if ordered with</b>
<b>Diodes - Schottky signal diode – 1N5711- 20p each; 1N4148 GP Si – 10 for 10p</b>	<b>} with heavier</b>
<b>Varicap diode – MVAM109 – 40pF @ 9v, 500pF @ 1v. 50p each</b>	<b>} things</b>
<b>SA602AN – £1.50 (note – I may supply NE or SA, 602 or 612 as available. All are fully interchangeable.)</b>	<b>} like binders, toroids</b>
<b>MC1350 – £2.00 These are getting in short supply now so max of 2 per member</b>	<b>} polyvaricons</b>
<b>LM386N-1 - 4 to 15v, 300mW, 8pin DIL – £0.40, LM386M-1 SMD – 35p</b>	<b>} or filters</b>
<b>TDA7052A - 4.5 to 18v, 1W 8pin DIL low noise &amp; DC vol control – £0.60 each</b>	<b>} Use just</b>
<b>TDA2003 - 10w Audio amp 5pin – £0.25 each</b>	<b>} that postage</b>
<b>TA-7642 Radio IC – direct equivalent of MK484 (&amp; ZN414) – 75p each</b>	<b>}</b>
<b>2SC536 transistors (npn) fT – 100MHz, hFE-320, VCBO +40V - 5 for 50p</b>	<b>} If ordered</b>
<b>MPSH10 transistors (npn) fT – 650MHz, hFE 60, VCBO 25V - 8p each</b>	<b>} with books</b>
<b>2N3904 transistors (npn) fT – 300MHz, hFE-150, VCBO +40V - 10 for 50p</b>	<b>} or CDs</b>
<b>2N3906 transistors (pnp) fT – 250MHz, hFE-150, VCBO -40V - 10 for 50p</b>	<b>} add this</b>
<b>BC517 Darlington (npn) fT – 200MHz, hFE-30,000, VCBO +40V - 13p each</b>	<b>} postage</b>
<b>FETs - IRF510 – 50p; 2N3819 - 22p; 2N7000 - 10p; BS170 – 8p - all each</b>	<b>} as books</b>
<b>BF981 – dual gate MOSFET – 40p each</b>	<b>} or DVDs</b>
<b>Pad cutter - 2mm shaft: 7mm o/s, 5mm i/s diam, gives a 5mm pad with 1mm gap £6.00</b>	<b>} do not</b>
<b>10K 10mm coils – 0.6uH, 1u2H, 1u7L, 2u6L, 5u3L, 11u0L, 45u0L, 90u0L, 125uL – all 80p each</b>	<b>} travel well</b>
<b>Magnet Wire – 18SWG – 2 metres – 60p; 20 &amp; 22 SWG – 3 metres – 60p;</b>	<b>} with parts.</b>
<b>24, 25 &amp; 27SWG – 4 metres - 40p; 30, 33 &amp; 35SWG – 5 metres - 30p.</b>	<b>}</b>
<b>This is solderable enamel insulated. Max of 3 sizes per member per order</b>	<b>}</b>
<b>QRP heatsinks - TO92 – 30p; TO39/TO5 – 40p; TO18/TO72 – 60p (pics in Sprat 148)</b>	<b>}</b>
<b>Axial lead inductors (they look like fat ¼W resistors) these are low current</b>	<b>}</b>
<b>4.7, 6.8, 10, 15, 18, 22, 33, 39, 47, 56, 100, 150, 220 and 1000 - all uH and all 18p each.</b>	<b>}</b>
<b>Toroid Cores – priced per pack of 5 – max of 2 packs of each per member</b>	<b>}</b>
<b>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;</b>	<b>}</b>
<b>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 ;</b>	<b>}</b>
<b>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</b>	<b>}</b>
<b>101 (3.5mm dia x 3.2mm long, 1.2mm dia hole) – 40p for 5</b>	<b>}</b>
<b>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%</b>	<b>}</b>
<b>** Except ** items – they are heavy and each counts as 2 packs (ask for quote if you want more than 2 of the large toroids)</b>	<b>}</b>
<b>SBSS PCB clamps – single - £12, two - £20 all plus post (£3.50 UK &amp; EU : DX – order direct from Rex please)</b>	<b>}</b>
<b>MeSquares &amp; MePads - £6.50 each plus post (£1.50 UK, £3.50 EU : DX – order direct from Rex please)</b>	<b>}</b>
<b>Limerick Sudden kits RX &amp; TX both single band (160 through 20m); ATU (80 through 10m) £38.00 each plus post</b>	<b>}</b>
<b>UK - £3.50, EU - £5.40, DX - £8.00</b>	<b>}</b>
<b>Sprat-on-DVD – 1 to 160. Only £5 each to members plus postage, UK - £1.20, EU - £3.50, DX - £5.00</b>	<b>}</b>
<b>Sprat Binders – nylon string type – Black with club logo on spine -16 issues per binder – new stock - £6.00 each plus postage</b>	<b>}</b>
<b>(one: UK - £2.00, EU – 3.00, DX - £4.00. More - add £1.10, £1.50, £2.50 each)</b>	<b>}</b>
<b>Cheques (UK) and payable to G-QRP Club. Sorry, but cheques in other currencies are uneconomical to us due to bank exchange charges!</b>	<b>}</b>
<b>MINIMUM ORDER for cheque or PayPal payments is £5 I can accept cash in GBPounds, or US\$ / euros (at the current exchange rates) – but please send securely! You can order via e-mail and pay by PayPal - use g3mfj@gqrp.co.uk – and pay us in GBPounds and you MUST include your membership number and address please.</b>	<b>}</b>
<b>PayPal charge us about 4% so a contribution towards that is always welcome, or, send as a gift to friends/family - thanks</b>	<b>}</b>