



SPRAT

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DEVOTED TO LOW POWER COMMUNICATION

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M0DGQ 40m CW Receiver



Latatun Tuna Transmitter

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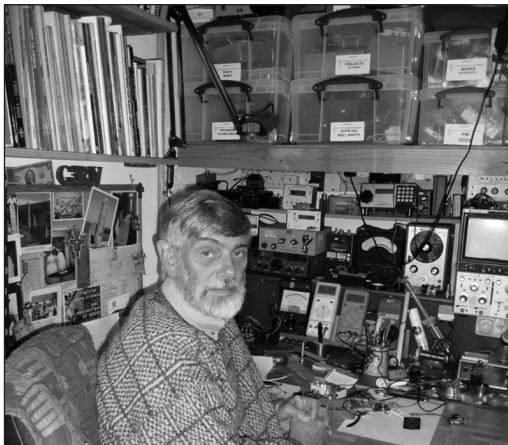
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JOURNAL OF THE G QRP CLUB



Rev. George Dobbs G3RJV



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Welcome to SPRAT 152. You will notice a centre pull-out with this issue. This includes a Standing Order form for those who wish to pay their subscription using this method. Those who already use a standing order have no need to fill in this form. It also includes the club officers listing and a list of our services and awards. These are usually part of the annual Handbook which is now discontinued to maintain the existing subscription price. There will be more club information, including UK and overseas subscription payments, in the next issue. Please read the "Membership News" section by Tony, G4WIF.

72/3

G3RJV



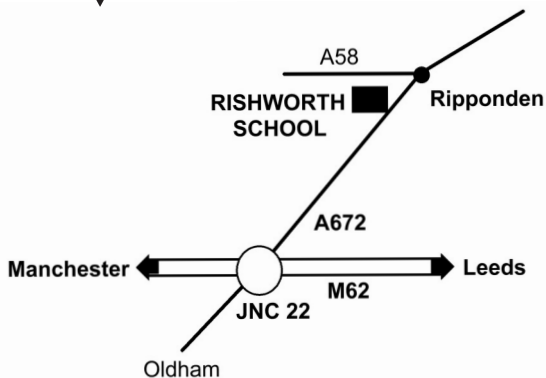
The W1FB Memorial Award 2011/2012

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



THE G QRP CLUB MINI-CONVENTION

(in conjunction with the Halifax Radio Society)
Saturday 20th October 2012
The Rishworth School, Ripponden



OPENS AT 10.00am
ADMISSION £2
DOORS OPEN 10am
TALK-IN S22
LARGE SOCIAL AREA
LECTURES ON
QRP SUBJECTS
BRING & BUY - SURPLUS
JUNK - COMPONENTS
KIT TRADERS
FOOD & DRINK ALL DAY
WITH THE FAMOUS PIE AND PEAS

**The Rishworth School is on
the A672 (Ripponden) road
from Junction 22 on the
M62. [Postcode: HX6 4QA]**

**Look for the G QRP Sign
on the left after
you have passed all the sheep!**

CONSTRUCTORS EVENING (Friday Evening before the convention)
Including a Buildathon ("Stockton" Power/SWR Bridge) to be held at
Premier Inn, Salterhebble Hill, Halifax, HX3 0QT. (Tel: 0871 527 8486)
www.premierinn.com/en/hotel/HALPTI/halifax-south

Other suggestions for local accommodation:

The Premier Inn, Milnrow. Junc 21 on the M62 (Tel: 0871 527 8936)
www.premierinn.com/en/hotel/ROCTHE/rochdale

The Malthouse, Rishworth. Almost next door to the school – only 5 rooms
(Tel: 01422 822382) www.malthouserishworth.co.uk

The Turnpike Inn, Rishworth, excellent but quite expensive. (01422 822789)
www.turnpikeinn.com



Radio Constructor's Evening
Friday 19th October from 7.30pm
(The evening before the Rishworth Convention)
Premier Inn, Salterhebble Hill, Huddersfield Road,
Halifax, West Yorkshire HX3 0QT

• **Buildathon**

Build a “Stockton” Bi-directional Power/SWR Bridge. The kit, including two 100uA meters, will cost £15. Book your place with G3RJV or G3MFJ as below.

• **QRP Show and Tell**

Bring along your favourite QRP projects – show them off and tell us about them.

• **A Free Buffet Supper.**

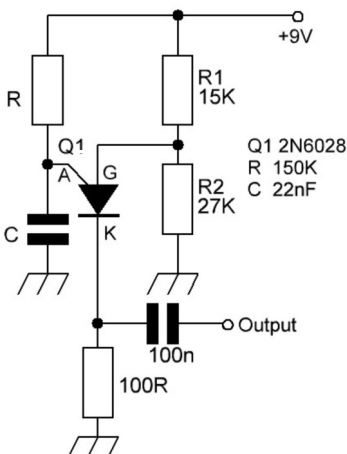
• **Large Meeting Area with free tea and coffee (Bar in Hotel)**

Meet up and chat with fellow QRP Fans

If you are interested in being part of the Constructor's Evening let George, G3RJV, (g3rjv@gqrp.co.uk) or Graham, G3MFJ, (g3mfj@gqrp.com) know (postal addresses are also in SPRAT).

Minimalist Sidetone using PUT

Martin Barfield, G7MRV. barfield673@btinternet.com



This simple sidetone oscillator needs only 7 components, and is the result of a junkbox foray. It uses a 2N6028 Programmable Unijunction Transistor as relaxation oscillator. Output is low into loudspeaker but ideal to feed AF amp. R and C set frequency. R must be between about 150k and 470k or the device won't oscillate. I used 150k and 22nF which gave about 800Hz. R1 and R2 'program' the device, setting its characteristics. Produces a pulsed output (not sine wave) which does sound a little rough at lower frequencies.

If you have a true Unijunction transistor (UJT), change R1 to 470, and omit R2 for even fewer parts! (you may need to play with R and C)

Power Attenuators with carbon resistors from the E12-series for the FT-817

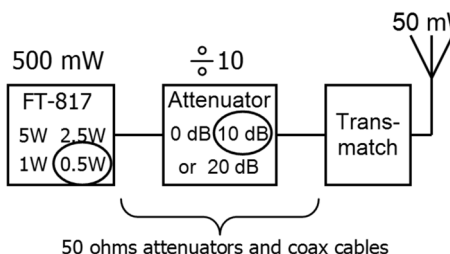
Bert Kruyswijk PA1B Nieuwegein, The Netherlands

When you participate in contests, you probably noticed, that when the propagation is very good to extremely good, signals can be very strong. Signals can peak to S9+10 dB or even S9+20 dB. When signals are S9, I can answer with 1 watt (in CW). When signals are 10 dB stronger than S9, my signal will also be 10 dB stronger, so I can reduce my power by 10 dB and still be heard. To go below the lowest power of 500 mW of the Yaesu FT-817, I built two accurate pi attenuators for 50 ohm in cascade. One of 10 dB and one of 20 dB.

Attenuators

The power of the FT-817 is 5W, 2.5 W, 1W or 500 mW. By using one of the two attenuators and the adjustable power of the FT-817, the power to the antenna can be adjusted from 5 W down to 5 milliwatt, in steps of 3 or 4 dB, as shown in the table.

Power of FT-817	Attenuator (dB)	Output to antenna
500 mW	0	500 mW
2.5 W	10	250 mW
1 W	10	100 mW
500 mW	10	50 mW
2.5 W	20	25 mW
1 W	20	10 mW
500 mW	20	5 m



A 10 dB attenuator reduces the power to 1/10th. For instance, 500 mW will be reduced to 50 mW. A 20 dB attenuator will reduce the power to 1/100th. Calculating the power behind the attenuator, is very simple. Just move the decimal point one place to the left for 10 dB and 2 places for 20 dB. This simple calculation, allows me to immediately note the power after each QSO.

Please note that the tuner (transmatch) is placed behind the attenuator. I tune carefully, with the attenuator is on bypass (0 dB), to get a SWR of exactly 1:1 on the SWR-meter of the FT-817, so the input of the tuner shows 50 ohms. So when I later use the attenuator, the attenuator is terminated with 50 ohms and will give the right attenuation.

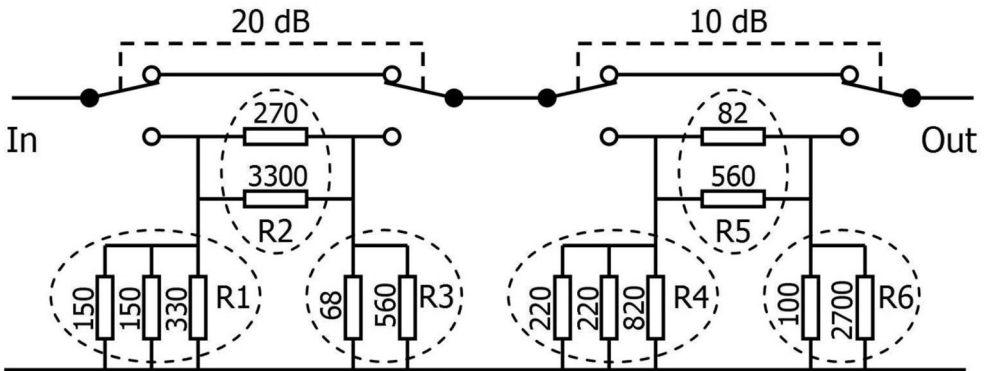
Working with very low power

When I use an attenuator, I always answer a CQ. Before I answer, I quickly adjust the power. When the S-meter goes up, the power goes down. In CW QSO's with the lowest possible power, I increase my power with a step of 3 or 4 dB, when I am sure that my call is not heard. When I use the attenuator, I always listen and transmit through the attenuator. In my log I always note my power in each QSO.

Power Attenuators for CW with the FT-817

The attenuators shown here, can be built with good available carbon, or other induction free resistors, from the E12-series. The resistors R1 to R6 have a value, that is not available in the E12-series. But by placing two resistors from the E12-series in parallel, we can make any value we want. I use 3 resistors in parallel, to form the compound resistors R1 and R4. In R1 and R4, the power is distributed over the two resistors with the lowest value. The resistor with the highest value is added to arrive on required value.

The maximum power to the attenuators is 2.5 W, to make 250 mW, using the 10 dB attenuator or to make 25 mW, using the 20 dB attenuator, as shown in the table. I use the attenuators exclusively for CW. Since the average power of a CW signal is about half of the continuous power, the attenuators must be able to dissipate a power of at least 1.25 W. In order to use a not to many resistors, I chose for resistors of $\frac{1}{2}$ watt, in stead of $\frac{1}{4}$ watt.



The continuous maximum input power of the 20 dB attenuator is 1.5 W and 1.7 W for the 10 dB attenuator, with resistors or $\frac{1}{2}$ watt. This power will be doubled with 1 W resistors.

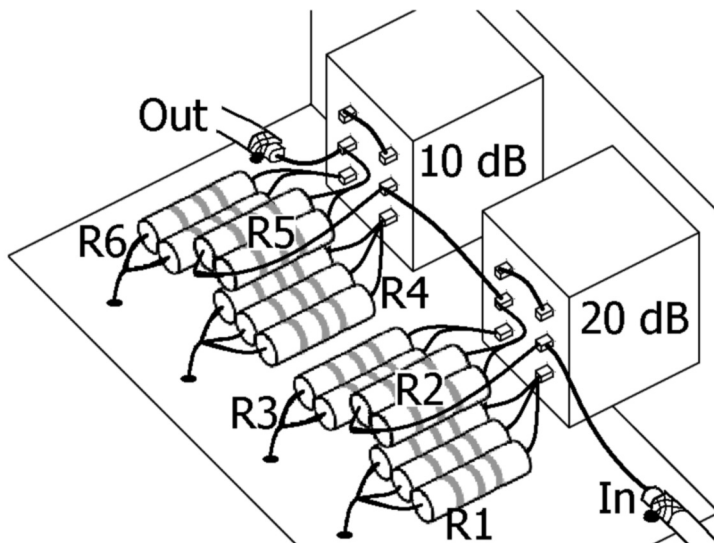
Because the attenuator of 10 dB and 20 dB can be switched independently, they are both designed for about the same maximum input power. Each attenuator must have a switch, so the attenuators can be switched "on" or "off" at any moment, for instance for tuning.

The power attenuators are asymmetrical. The input of the attenuator is connected to the set and the output to the tuner. Input and output of asymmetrical attenuators, should not be reversed. This will destroy the attenuator, since R3 and R6 can not dissipate more than about $\frac{1}{2}$ watt. The attenuators will be accurate, since the resistors are more accurate than 5%, when built with resistors of 5%.

The use of the attenuators is not restricted to CW. You can also use SSB, PSK or WSPR. With a power of 1W from the FT-817 in WSPR, you can make 100 mW or 10 mW, using the 10 dB or 20 dB attenuator. You can even make 1 mW by using both attenuators. QRSS and QRpp is an excellent combination. Just see how low you can go.

Building the attenuators

The leads of the compound resistors can be twisted together before soldering. The resistors R1 and R3 are connected between a point on the switch and the ground. The resistor R2 is connected between two points of the switch. The same goes for R4, R6 and for R5. By placing the resistors, forming the compound resistors R1 to R6 in parallel, the layout of the attenuators is very simple. By this unique feature, it is not necessary to use a printed circuit board.



After construction

It is great fun to make QSO's with 50 mW or less. An attenuator of 10 dB and an attenuator of 20 dB between the set and the tuner, will give you a lot of fun. When a signal is S9 + 10 dB, or higher, QSO's can be made with 50 mW or sometimes even 25 mW. The propagation must be very good to extremely good to use the attenuators. When the S-meter goes up, just try a lower power. From my own experience I know that in each contest, QSO's can be made with very low power.

Power Attenuator Calculator

If you want to design your own Power Attenuator, for 20 dB, 10 dB or 3 dB, for a higher maximum input power or built with smaller $\frac{1}{4}$ W resistors, please feel free to download and use the excellent PA1B *Power Attenuator Calculator*.

This spreadsheet in Excel can be found on my website and on my page on QRZ.com.

More, interesting info on the use of attenuators, can be found on my website:

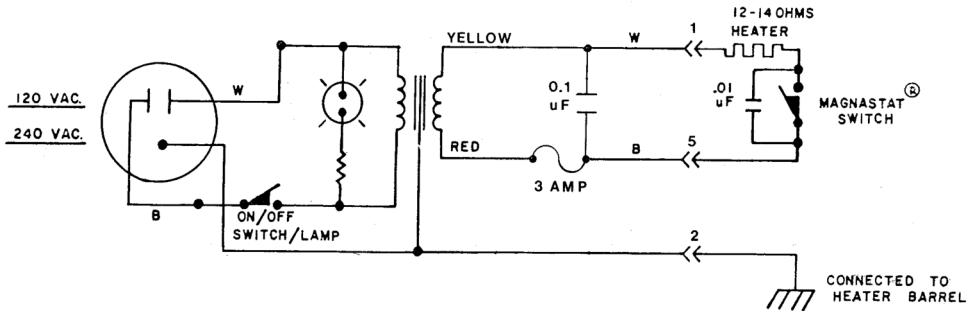
<http://a29.veron.nl/pa1b.htm>

Repair your Weller TCP soldering iron

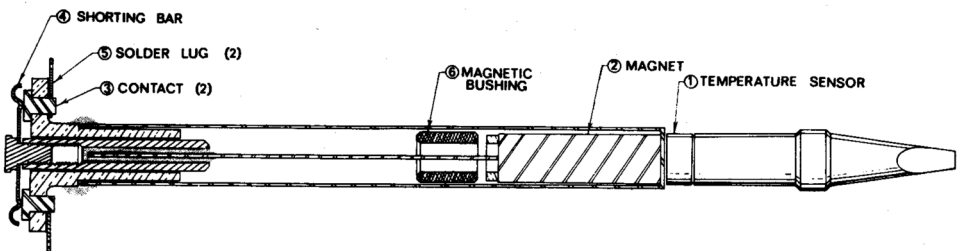
Eric Vink PA3ECN, 9 Eastbury Ave, 2 The Limes, Northwood. HA6 3LB

Your trusted Weller soldering Iron suddenly red glowing hot or staying stone cold? Chances are that the magnastat switch has failed. This is an expensive repair if you have to replace it but most of the time it can be repaired easily. In the last few months I repaired three Weller soldering Irons and I will tell you how!

I found the schematic of a Weller TCPS soldering Iron on a Weller Tech Sheet on Internet. The schematic diagram as shown below is straight forward.



The principle of operation of the Iron itself is rather ingenious. When the soldering tip is cold, a ferromagnetic temperature sensor attached to the tip attracts a permanent magnet. The magnet movement causes a shorting bar to make contact with a set of isolated electrical contacts thereby supplying power to the heating element. When the tip reaches its Idle temperature, the sensor becomes non-magnetic and no longer attracts the magnet. Then a magnetic bushing attracts the magnet causing the shorting bar to break the circuit. In this manner, power to the heating element is turned on and off automatically. The figure below shows all components.



The defective Weller Irons I repaired all had problems with the shorting bar/switch. One did not work because the shorting bar did not make contact with a burned away contact point. Because the shorting bar has two contact points it was repaired by soldering the burned away contact point to the shorting bar. The switch/shorting bar now operates on the remaining contact point.

The other two repairs were done with some super glue. The shorting bar - simply a small piece of copper - was loose on the plastic lever operating it. A careful drop of super glue fixated the shorting bar to the operating lever. The switch now operates again as new.

The repairs made were very straight forward and I was a bit surprised that I could not find information on the Internet on repairing defective Weller soldering Irons. I therefore decided to write some lines on the repairs. So, if your Weller soldering iron suddenly turns red hot or stone cold. Do not despair! Just dismantle it and try to repair it! It could turn out to be an easy repair! Happy Soldering!

Chassis Project Idea

Peter Howard G4UMB 63 West Bradford Rd Waddington Lancs

Here's an idea which may be of interest to some readers. I noticed that most bench instruments have an inclined front panel. This improves the viewing angle for the operator.

As a quick and easy method of adding some feet on my project which is just made from a Maplins Chassis box I bought a bag of six "Calendar Hooks" from Wilkinson's. As you can see from the photo. I have put a spare one to show you the type. They come with a peel off glued base and do the job without any need to drill the box Adding two feet at the front inclined the box by 20mm



LATATUN – Spanish Tuna Tin Transmitter

Lluís Terres Salto EA3WX, Apartado de Correos 149, S-25080 Lleida, Spain

One of the great masters of QRP, Doug DeMaw, W1FB, designed and published in QST magazine this transmitter assembled inside a small can of tuna and called it TUNA TIN and has become widely known within the world community of QRP. That was as far as 1976 and since then there has been multiple versions and modifications.

In the wake of the TUNA TIN American, we wanted to make a Spanish version of similar characteristics, but going to the assembly with SMD components. The circuit is not original at all but was set up initially by Rev. George Dobbs, G3RJV in 1998 (see SPRAT 96)

DESCRIPTION OF THE CIRCUIT

The circuit consists of a crystal oscillator with the transistor T1. The key is responsible for giving ground to the transistor so that the oscillator starts to operate.

In order to have a slightly variation of frequency, the crystal is mounted in series with a coil L1, 3.3 mH followed by a variable capacitor of 50 pF. If you do not wish any change can remove these components, bypassing the corresponding ground pin of the crystal quartz.

The coupling to the final step is performed by means of L2-L3.

The final step consists of T2 and the circuitry attached. T2 is PZT2222A type that it is still the classic 2N2222 in SMD format but with a power dissipation of 1 W.

It can be seen that the collector of this transistor is soldered to a wide copper surface; this is so in order to have a cooler surface to avoid the classic cooler bigger.

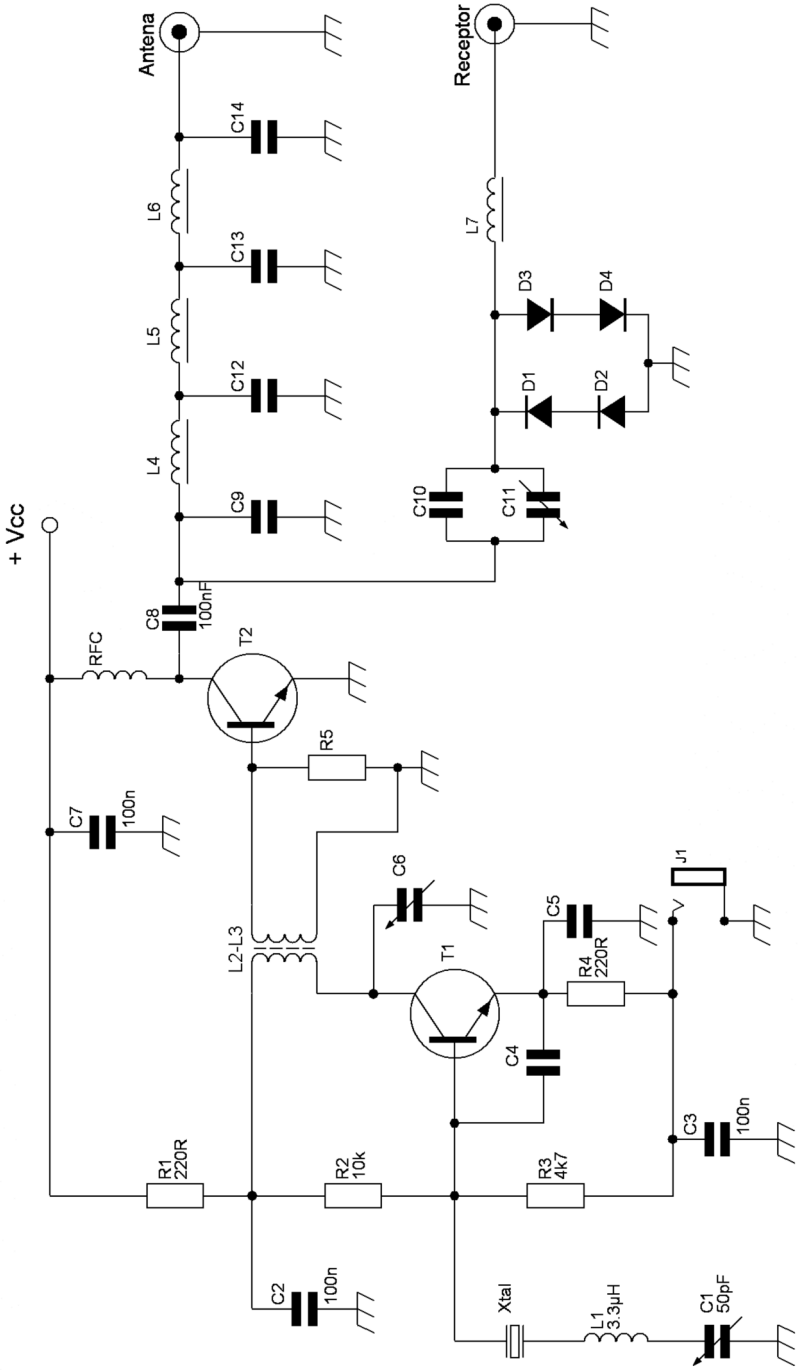
At the far end of the PI filter, which is not connected to the antenna, we have the capacitors C10, C11 and L7 coil forming a resonant circuit in series to carry the signal from the antenna to the receiver input, being tuned to operating band. The diodes D1 to D4 cut the excess signal that may be introduced to the receiver during transmission. However, it is still good that the receiver will get something of the transmitted signal as it will help us monitor our transmission as if we had a side tone oscillator.

ASSEMBLY

Although the assembly of SMD components may seem difficult and complicated, actually is not quite true. You just have to have patience, a bit of order to avoid mixing components (and not lose them!), a good magnifying glass and a fine tip soldering iron.

Another advantage of SMD components is its low price that can buy it in quantity without the costs are excessive.

The printed circuit board is attached to the can by means of a spacer and two screws that secure it to the bottom.



TRANSMITTER TEST



Once the transmitter assembled, prepare the equipment for their operation and adjustment, i.e. load resistance of 50 ohms, power supply or battery, a wattmeter and the key. If there is no short circuit between positive and negative of power supply line, connect power and control current with an ammeter. If all these cautions are taken and all is OK, just push the key down and observe what happens. If we pass what I call SMOKE TEST, i.e., NO SMOKE has come from

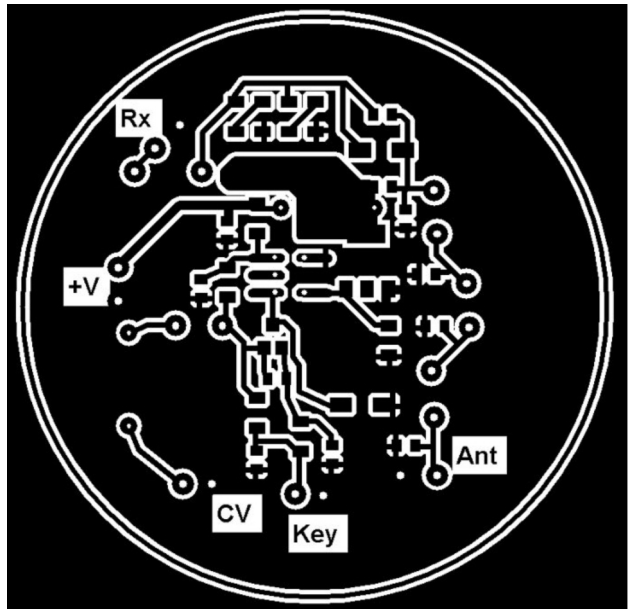
nowhere, we should adjust the transmitter.

One can say that the only major adjustment to do is tweak the C6 variable capacitor until the oscillator start-up; achieved this, just have to fine-tune both C6 and L2 to get maximum power output.

Connecting a receiver of the right band, in our case 14 MHz, to the output connector of reception, you must adjust the variable capacitor C11 to achieve the highest level of receiving signal. This capacitor may interact with the transmitter circuit, will have to compromise between the maximum received signal and the maximum output power.

In our case, and for a supply of 13 V, the output power is 700 mW. We note that with a supply of 12 V the power output is 500 mW.

It was possible to measure the signal level of the second harmonic (at 28 MHz) being 54 dB below the fundamental signal of 14 MHz



EPILOGUE

With this setup I want to pay tribute to Doug DEMAW, W1FB who was the creator of this lineage of the TUNA TIN and died in 1997.

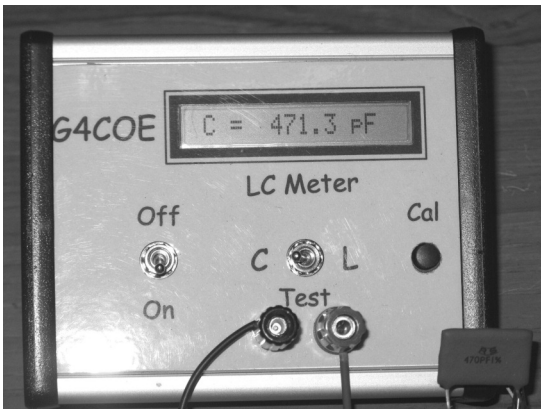


Doug began as a farmer in Michigan and managed to become an engineer, founder of several companies engaged in the manufacture of radio equipment for the aviation industry. He was a prolific writer of books and articles for the ARRL, which was also the manager.

Home made panel tip

David Smith G4COE, 54 Warrington Road, Leigh, Lancs.

Using thin coloured card of your choice, print the designed and laminate for this I use Proteus Labcentre pcb layout cad for this, there are plenty free electronic panel design programs on the web, there's even programs for making your own meter scales!



After printing trim the card to suit, then laminate the card and again trim the lamination to suit the card size.

For LCD display's and such, cut the card slot as per requirement then laminate so that you laminate over the cut out, leaving a protective window, this hides all the scratches and marks and gives the item a professional look far, far better than using stickers.

Modifying the MFJ 30m Cub for VXO operation.

Ken Maxted GM4JMU, kmaxted@gmx.com,
Victor Brand, G3JNB, victor@g3jnb.freeserve.co.uk

In Sprat 112 a Cub VXO mod was published and several members were successful in building it.

In March of this year, Victor G3JNB mailed to enquire if there was any chance of an error in the circuit as he just could not make his conversion work. “No, at least not that I’m aware of” I replied. Victor had had his problem since first he tried the circuit all those years ago. His Cub had been sitting on the bench, with a reproachful air, ever since and, so, it was time to try again..HI!

After seeking advice from Richard, G3NII, at his local Shefford club, he tried a little C across the 16Mhz crystal in case it was just ‘lazy’. The Cub burst in to life! The OK QRP beacon was booming on a small speaker. BUT...but the VXO would not tune. “Send it up to me and I’ll fix it for you” I said. One glance and I was mortified: I had not mentioned removing C9 in the article and Victor’s one was still on the board and was shunting the crystal and inductor and preventing VXO operation.

A little soldering-iron work and this delightful and sensitive little rig was, in Victor’s words “singing its heart out from 10,108 to 10,118 Mhz and absolutely rock steady”. Job done and back to G3JNB where it is now earning its living with a nice tidy 2 watts into his doublet.

The correct modification.

You need a fundamental crystal about 3-5 kHz higher in frequency than your upper tuning limit. 16.125 MHz should give tuning up to 10.120 MHz in the finished rig (subtract the I.F. of 6.000 MHz). An HC25U wire-end crystal specified for VXO operation in a Colpitts oscillator will help the crystal manufacturer.

Removal of components.

To make the modification, first remove the PCB from the case. The removal of **L2**, the VFO coil is the most difficult part, usually requiring the coil to be broken away in pieces so that the individual leads can be desoldered leaving intact solder pads.

You will need a desoldering pump or good quality desolder wick. Try not to overheat the board and burn it but also do not be too nervous and have to keep repeating the operation.

Next remove **C6, C7 and C9**. (It was C9 that was overlooked and if left in it may stop the VXO from working or at least having any range of tuning).

Replacement with new components.

Replace C7 with a 68pF or 22pF in parallel with 47pF. (NPO ceramic or polystyrene)

Replace C6 with 22pF (NPO ceramic)

Keep C9 position empty, you will next use the pad closest to the varicap diode.

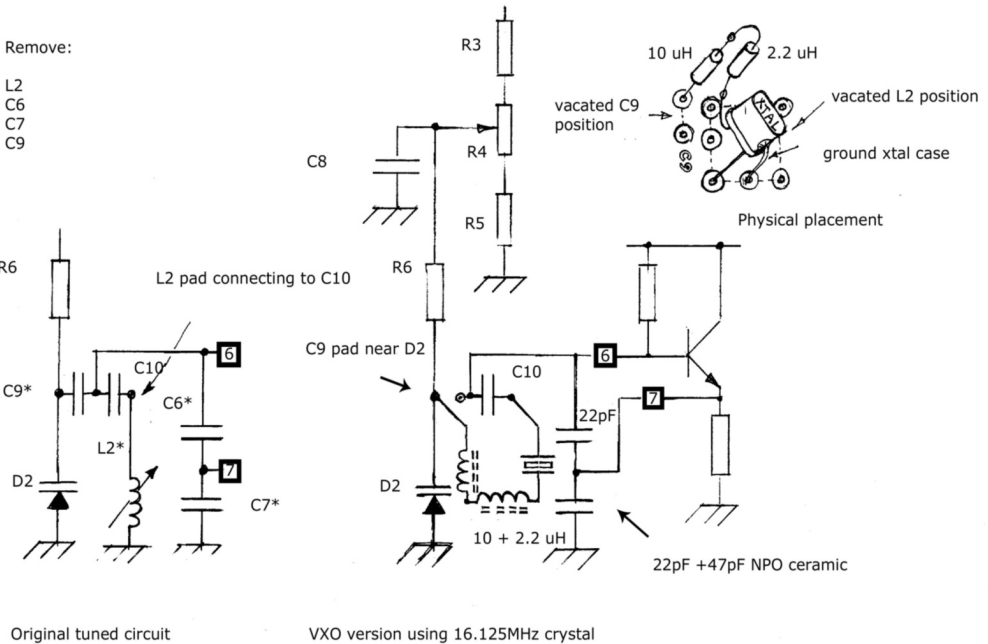
Solder the two chokes (2.2uH and 10 uH in series and bend to form an upside-down letter “U”. Solder one end to the shortened wire end of the crystal. Solder the free end of the crystal into the coil pad at the corner nearest C10 (chip capacitor). Solder the free choke end into the C9 pad closest to the varicap.

The crystal can be best soldered to a ground point, use the position for the L2 coil screen. Do not get the crystal too hot.

Reassemble the pcb into the case and test. You should get full power and a VXO swing of 10kHz or more. Please note that the varicap, crystal and chokes form a series combination connecting into the base of the transistor in the NE602 (C10 is a DC block but is not an essential component- just leave it in to use the coil pad as a suitable solder point.)

You may find that shorting out or shunting R3 and/or R5 will increase pulling range. For most purposes the 10-12kHz range is more than adequate.

30m Cub VXO modification



BANDSPREAD VALUES

A useful webpage suggested by Peter Thornton, G6NGR

I've always struggled trying to work out what value inductor, padder capacitor and trimmer capacitor to cover a desired frequency span. The maths is 'orrible and rarely hits standard values. Well, take a look at: <http://electronbunker.ca/BandspreadCalc.html> You feed in the appropriate values, frequencies and so on, click! And there you go - capacitors - variable, padder and trimmer, and parallel inductance. You can play with the values to get the components a reasonable size for home brewing.

SMD Oscillators on Veroboard

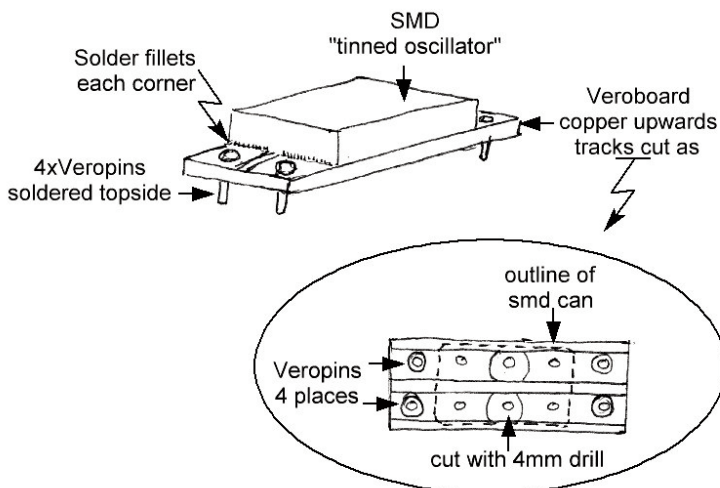
Peter Thornton, G6NGR, 99 Hollingworth Rd. Littleborough, OL15 0AZ

As my job demands prototype designs and upgrades, I'm always looking for simple novel ways to use components to their best. As you've probably noticed, through hole style "tinned oscillators" are getting hard to come by; SMD "tinned oscillators" are much more common and cheaper too. But how to mount them for prototyping (and, of course, QRP'ing)?

This idea works fine and is repeatable. It gives pins on a 0.1" grid which don't drop off when soldered!

This is how I did it: I took an offcut of Vero, and cut two tracks next to each other, with a few holes either side, to make four little copper "islands". I glued down the tinned oscillator with the tiniest dab of super glue so the pads sat nicely on the four "islands" of copper, then with the smallest bit on my iron, applied the thinnest solder - made by stretching 0.4mm solder wire till it breaks - to each corner, taking care not to touch the test pads on the body of the device. Don't over apply solder, just enough is plenty. A dose of flux applied first makes the job easier and reduces the chances of excess solder - I use PowerFlow plumbing flux paste from Q&B - then wash it thoroughly after if you don't want corrosion!

Push Vero pins in, solder up as normal and trim the Veroboard nicely all round for a professional job - a through hole "tinned oscillator".

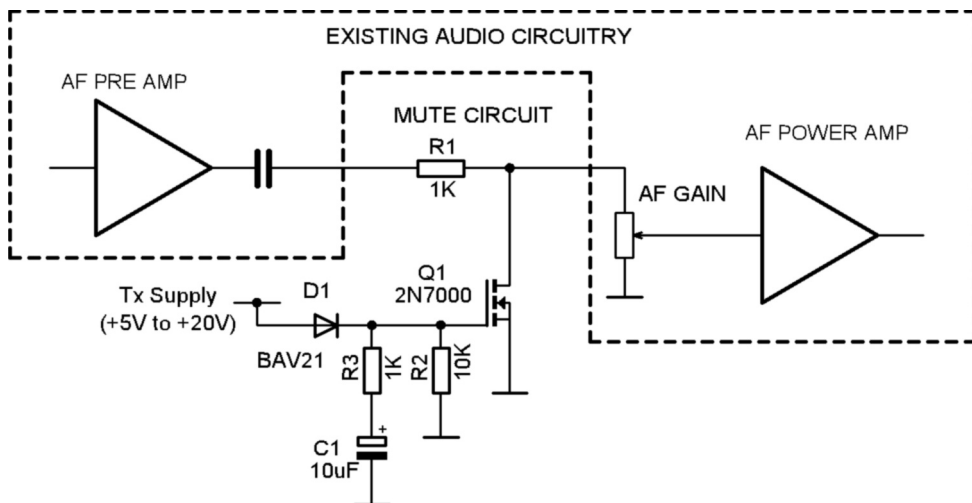


Taking the “Thump” out of T -> R

(A simple audio muting circuit)

Ron Taylor G4GXO, Cumbria Designs

Many simple transceiver designs suffer from audio disturbances during transmit to receive transitions. This is generally introduced by basic (or non-existent!) power sequencing, enabling the audio stages before the preceding RF/IF circuitry has completed switch over and settled. This simple circuit is easily applied to most transceiver audio systems and introduces audio muting for a brief period following a Tx to Rx changeover. The effect is to mask any transient AF signals to produce a “clean” sounding transition.



Circuit Description

FET Q1 serves as a shunt switch across the AF gain pot. During receive Q1 is off, its drain offers a high impedance to the audio path allowing audio from the pre-amp to pass via R1 to the AF Gain Pot. During transmit, C1 quickly charges from the Tx supply via D1 and R3, Q1 switches on forming a potential divider with R1, muting the audio path. On return to the receive state, the transmit supply voltage is removed but Q1 remains switched while the charge on C1 discharges via R3 and R2. D1 prevents unwanted discharge via back-feed into the Tx supply circuitry.

Once C1 is discharged, Q1 turns off and the audio path is restored. With the values shown this introduces a typical muting period of around 100mSec by which time Tx/Rx changeover should have completed. To adjust the mute period, increase or decrease the value R2, taking care not to exceed its rated dissipation with the Tx supply voltage.

Membership News

Tony Fishpool G4WIF (Membership Secretary)

- Niels Moseley PA1DSP retires as our DX representative in the Netherlands
- 2012 subs held despite massive postal increases.

Due to a new Job, Niels will be stepping down as our much valued DX representative in the Netherlands. This is effective immediately and all NL members should contact me direct and send me your renewal subscriptions in January (unless advised differently in the Winter Sprat). This means that you will either have to pay using Paypal or send cash in the post (at your own risk and not advised). The club cannot accept Euro coins. If there is a member in NL with a reasonable command of English who would like to volunteer as our NL rep, then please contact me (g4wif@gqrp.co.uk).

In the Summer Sprat our treasurer Graham G3MFJ announced that we wouldn't have to increase subs this year but we would need to drop the Members Handbook in order to cut costs. He also stated that we were now limiting advance membership payments to a maximum of two years ahead. This has resulted in a small flurry of two year subscriptions - possibly to avoid future rises – some just misunderstood. Nearly all have been returned.

- If you are a new member in 2012 you may pay for two years membership making your expiry date the end of 2013.
- If you are an existing member and your current expiry date is “end of 2012”, you may add one more year - once again making your expiry date the end of 2013.
- If you are an existing member and your current expiry date is “end of 2013” (or beyond) then you will not be able to renew/extend your subscription until you have one year or less remaining. The maximum will be “two years ahead” (even two and a half is too much).

In January 2013 all this will be incremented. So for instance, a newly expired member will be able to pay two years. A member that still has one year's subscription remaining will be able to add another year making their subscription valid until the end of 2014. Members with two years or more remaining may not add further years.

This specifically includes UK members who pay by banking standing order. By paying extra years in addition to the automated payment, some have memberships expiring in the distant future. If this is you (check your Sprat label) then you will need to cancel your standing order and resume when you have less than one year membership remaining.

If you ignore this then we may assume that you are donating funds to the club rather than extending your membership. We will naturally reimburse when requested (less costs if we have to post cheques back). Hopefully, this clarifies matters - if in doubt, contact me. Tony G4WIF (g4wif@gqrp.co.uk)

Standing Order Forms.

You will notice that we have bought forward to the Autumn issue the inclusion of the form that allows UK members to automate their payment - due to feedback that the Winter issue didn't give much time for UK members to change the way that they pay.

Obviously, all UK members who pay by Standing Order will need to act promptly and contact their bank if we need to raise subscriptions in the future.

Members who underpay will receive less than four Sprats a year until they correct their payments.

Sales News

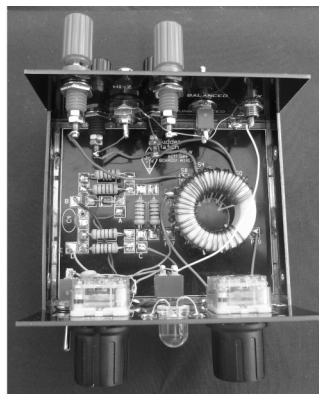
Graham Firth G3MFJ

Another new kit!

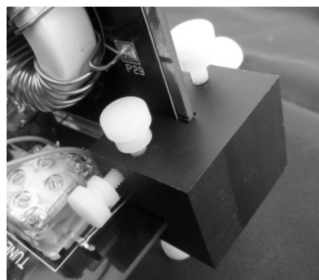
We are pleased to announce that the next kit is available. It is, as promised, a Z-Match ATU, and it matches the other kits in the Limerick Sudden range. It is a version of the Sprat circuit by G3WQW that has been copied many times. It uses just one coil – a tapped toroid – and two polyvaricon capacitors. It is available now and will cost £36 plus postage. I'm afraid that due to rising prices of the boards, and exchange rate changes, I have had to raise the price of the other two kits – RX & TX to £36 as well. Sorry about this.



The assembly manual is available, as usual, on the sales pages of the club website.



Another new item is a PCB clamp used for fixing panels of PCB to the main board exactly at a right angle. These are ideal for constructing club kits, or PCB boxes etc. This picture shows the PCB clamp (called the SBSS by its inventor – Rex – WIREX) being used to assemble the prototype of the new kit. These are available from the club shop for £12 for one, and £18 for a pair. They are precision made from very hard plastic (Ertlyon) by an engineer in his workshop in Maine. More info and more pictures are on the club website. Postage on these for up to two is £2.50 UK & EU. DX & US members should buy these direct from Rex (www.qrpme.com)



40m CW Receiver

Barry Zaruki M0DGQ, 26 Heathfield Rd, BIRMINGHAM. B14 7DB

Here is a 40m CW receiver for use with the 40m CW QRP transmitter (SPRAT 151). Again cheap, easy to obtain components are used throughout the design. Performance is good, signals below 2uV at the antenna socket are easily copied and selectivity is excellent due to the use of a 9MHz CW crystal filter (G-QRP club). The set also has RF derived AGC although this can be omitted if desired reducing the component count slightly. Local oscillator signal injection is provided by a VXO using a 2MHz ceramic resonator giving coverage of most of the CW portion of the 40m band. Good quality VFO's can sometimes be difficult to achieve for those not experienced in building these, so a VXO is used here. The performance of the VXO very good, after ten minutes "warm up" it is absolutely solid, no tuning adjustments need be made for half an hour or so, I was pleasantly surprised by this considering a cheap polyvaricon tuning capacitor is used.

Circuit description

The antenna signal enters the set via a two pole bandpass filter L1, L2 feeding Tr1 a FET common source RF preamp. Tr1 provides little loading on L2 as its gate is high impedance thus maintaining the Q of the filter. The FET preamp is used to overcome the insertion loss of the mixer and crystal filter. The drain load for Tr1 is T1 which along with D1, D2 form a single balanced mixer.

Local oscillator from the VXO is injected at the centre tap of T1. From here the mixing products pass through T2, 9:1 impedance ratio transformer in order to provide a good match to the 50 Ohm impedance crystal filter. The wanted IF signal leaves the crystal filter via a 1:9 step up transformer, this provides a good match to following cascode IF amplifier. Two cascode IF amplifiers are used giving a gain of roughly 70dB in total. The IF transformers used are standard 10.7 MHz interstage IFT's with an additional 10pF connected across the primary. The second IF amp feeds a diode product detector D3, D4. and also feeds the AGC amplifier.

A crystal oscillator, Tr8, is used as a BFO for carrier re-insertion at the product detector. A 9.0015 MHz or 9.000 MHz xtal is used here as the CW filter has a centre frequency of 9.0008 MHz, this is probably so a 9.0015 MHz USB Xtal could be used for carrier reinsertion in the set it was intended to be used in thus saving the cost of a separate CW carrier Xtal. (several of these filters were sweep tested and they all had a centre frequency of 9.0008 MHz). Recovered audio from the detector passes to common emitter preamp Tr9 via the volume control and then to the audio power amp. A LM386 can be used here (you will still need the preamp Tr9) if you wish, indeed it is probably cheaper to do so. I used the discrete audio amp as a design exercise and to keep the set "chip free".

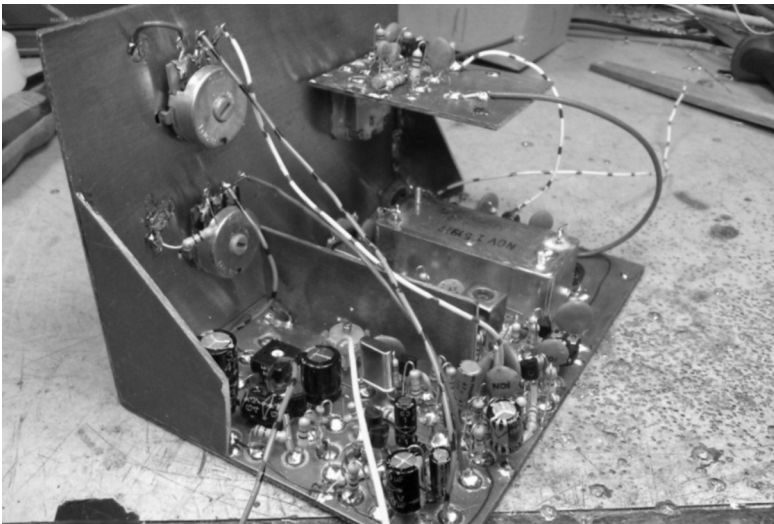
VXO

The circuit for the VXO is straight forward. A Colpitts variable oscillator is used. A zener diode is used to stabilise the DC supply to VXO Tr6. A buffer Tr7 follows the oscillator

which reduces oscillator loading and pulling by the mixer. A cheap polyvaricon variable capacitor (G-QRP) is used for the tuning control, no reduction gearing is required - tuning is smooth and easy providing a large control knob is used. Approximately 40 kHz of swing is given by this VXO, resulting in a band coverage of 7.00 MHz to 7.045 MHz thus matching the range of crystals used in the transmitter. Experimentation with the feedback capacitors in the VXO may give a greater tuning range. Polystyrene feedback capacitors are to be recommended for use in the VXO, I used a mixture of polystyrene and ceramic disc as I did not have correct values available. If you are an experienced VFO builder then you could build a VFO giving coverage of the whole of the 40m band if desired.

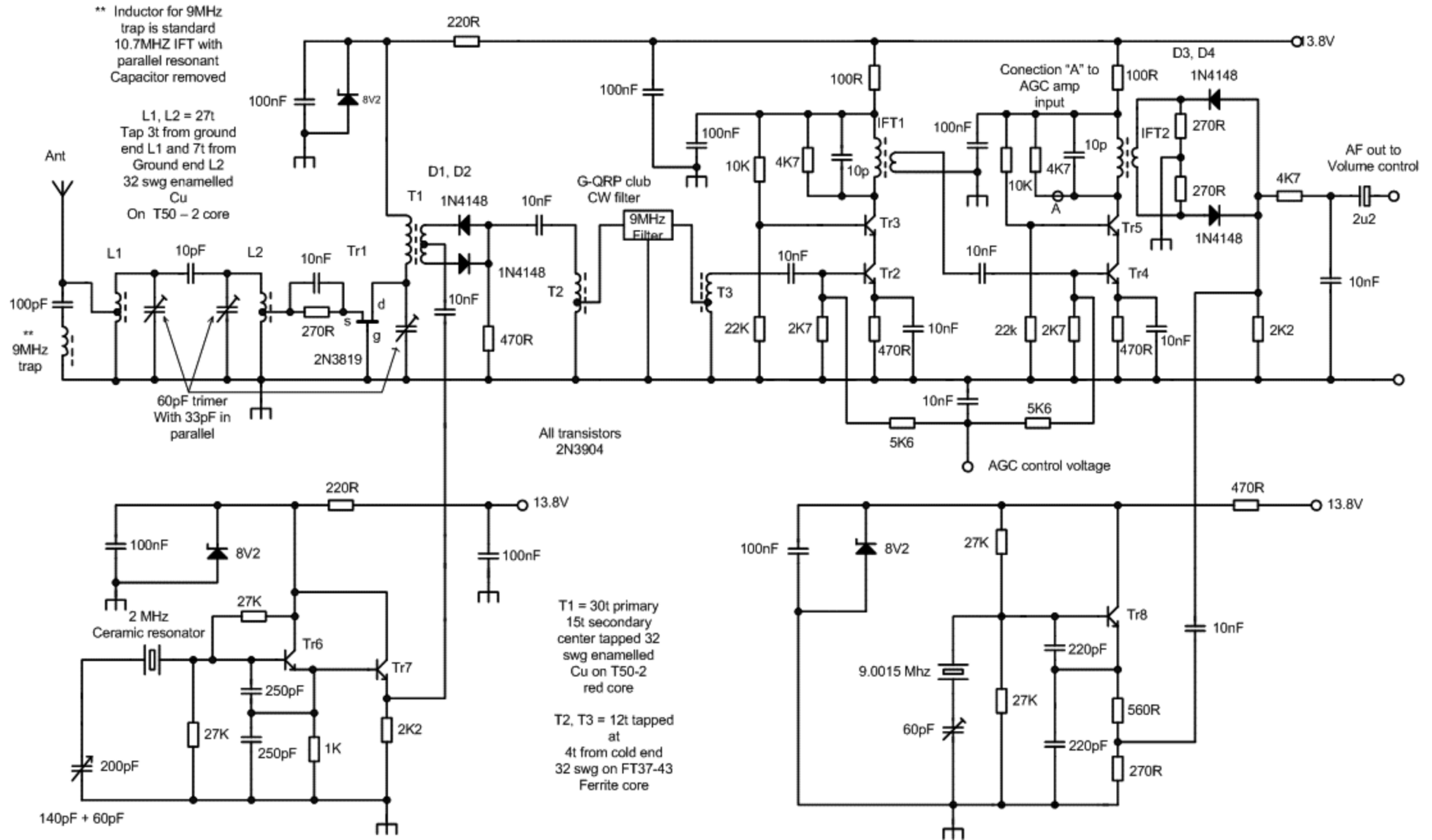
AGC amplifier

RF derived AGC is used in this set. A small proportion of the IF signal is tapped off from Tr5 collector via C1 a 3.3pF capacitor to feed an emitter follower buffer Tr10, therefore very little loading is presented to Tr5 collector. A low gain preamplifier Tr11 follows the buffer via the AGC threshold control P1. Tr11 collector load R7 feeds a rectifier / voltage doubler D1, D2. The result is a DC voltage proportional to the received signal strength present at the cathode of D2. This is used to control Tr12, the stronger the received signal the harder Tr13 conducts thereby reducing the voltage on the AGC control line. During TX the AGC voltage is grounded by Tr13 allowing P2 control of the IF gain for correct sidetone level. It is important to keep any BFO signal out of the IF amplifier (apart from the IFT2) as this will upset the AGC action, screening should be used between the BFO and IF amp. The main purpose of this AGC circuit is to stop strong stations from deafening you when the IF gain control is at maximum. If you do not require AGC then it is a simple matter to use a pot as a manual gain control, details are shown for this in the AGC amp circuit diagram. No side tone oscillator is required as the receiver will pick up the TX due to proximity; P2 is adjusted for a suitable sidetone level whilst holding the key down.



Front Panel showing Main board and VXO board

MODGQ



UK MEMBERS: PAY BY STANDING ORDER
FORGET ABOUT YOUR RENEWAL BY USING THIS FORM

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- Write in the Name and Branch where it says (1) & (2)
- Go to the bottom of the form and add:
- Name of your account in the box marked (3)
- Number of your bank account in the box marked (4)
- Add the date and sign (5 and 6)

MOST IMPORTANT :-

Put your club number in the box marked (7)

Now please take or send the form to your bank. **Do not** send it to the club.

To  National Westminster Bank

Bank (1)

Standing Order Mandate

(2) Branch

	Bank	Branch Title (not address)	Sorting Code							
Please pay	National Westminster Bank	ROCHDALE	01 - 07 - 44							
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For the credit of	GGRP CLUB NUMBER 1 ACCOUNT		0	4	1	0	9	5	4	6
The sum of	Amount in figures	Amount in words								
	£6.00	SIX POUNDS								
Commencing	Date and amount of first payment		Due Date and Frequency							
	15-1-2013	£6.00	and thereafter every					ANNUALLY ON		
			JANUARY 15th							
*until Quoting the reference	Date and amount of last payment		Until you receive further notice from me/us in writing							
	-----		And debit my / our account accordingly							
	(7)		← Note to bank – if there is no membership number here then please reject this mandate.							
		GGRP #								

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- (ii) advise payors address to beneficiary
- (iii) advise beneficiary of inability to pay
- (iv) request beneficiary's banker to advise beneficiary or receipt

Do not send to the club.

Do not send to the club.

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Dover. Kent. CT16 3HZ
g3roo@gqrp.co.uk

Club Information – Services and Awards

Club Awards: Our Awards Manager is Colin Turner – G3VTT, 30 Marsh Crescent, High Halstow, Rochester, ME3 8TJ.

We have a number of Awards and Trophies which are described on the club website. If you don't have internet access and you would like to find out more, then please write to Colin enclosing return postage.

QSL Bureau: Managed by - Mr D S Coutts GM3VTH, 29 Barons Hill Avenue, Linlithgow, EH49 7JU

QSL cards are sent out at regular intervals, in February, May, August, and November, in stamped addressed envelopes, paid for by the club. We no longer need to receive envelopes or stamps from members.

All cards for the bureau should be sent to GM3VTH at the address above. Please help to speed up the service by following the following dispatch procedure:-

1. Put the receiving stations membership number on the top right of the card.
2. Sort cards in ascending number order.
3. Do not include cards with no number, or for non-members.

Unclaimed cards and those of ex members will be destroyed after 6 months.

North American members can send cards to:-

David Gauding, NFØR, 14220 Tullytown Court, Chesterfield, MO 63017, USA
David will send these in bulk to the UK bureau for distribution.

Technical Advice:

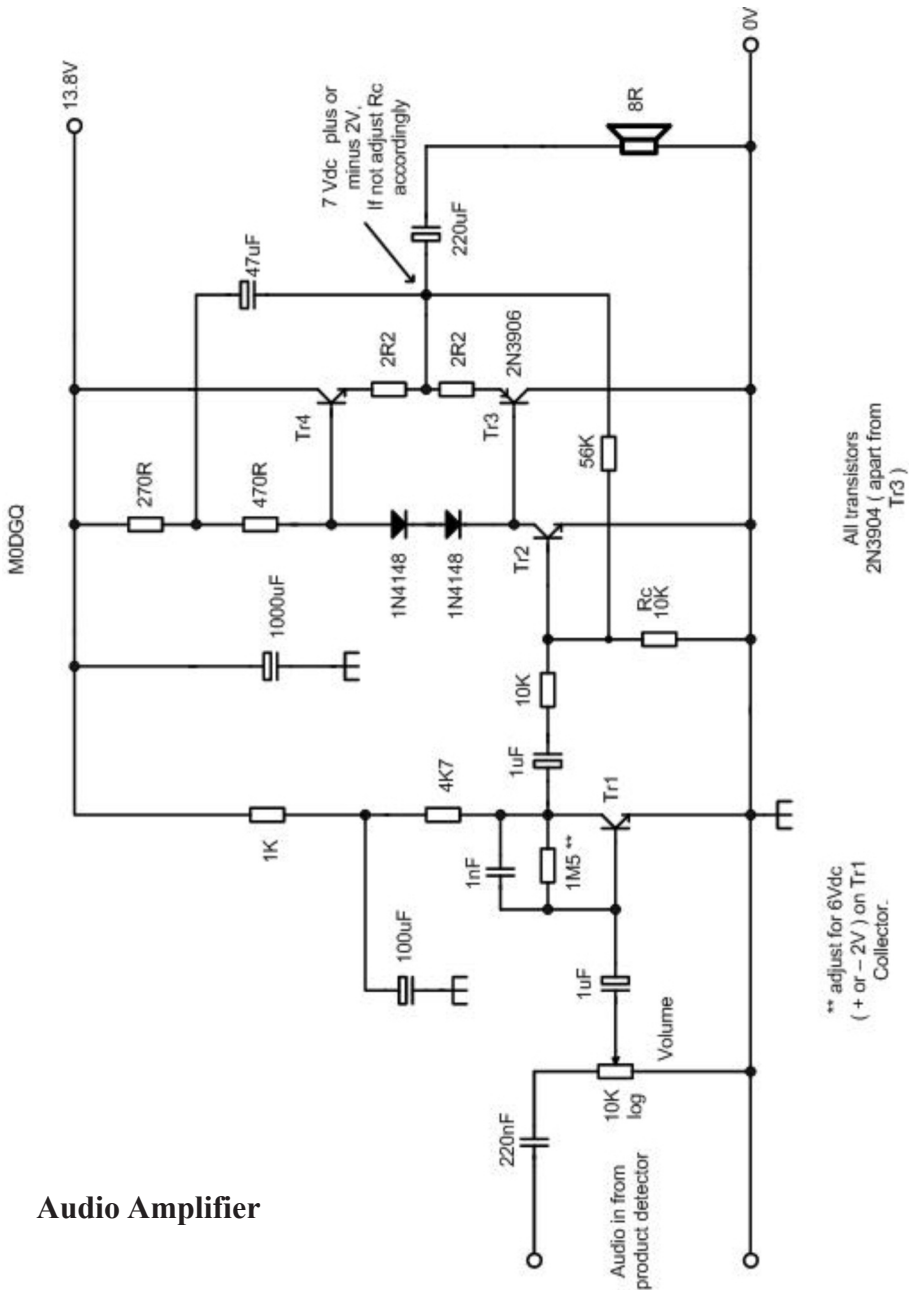
Antennas.

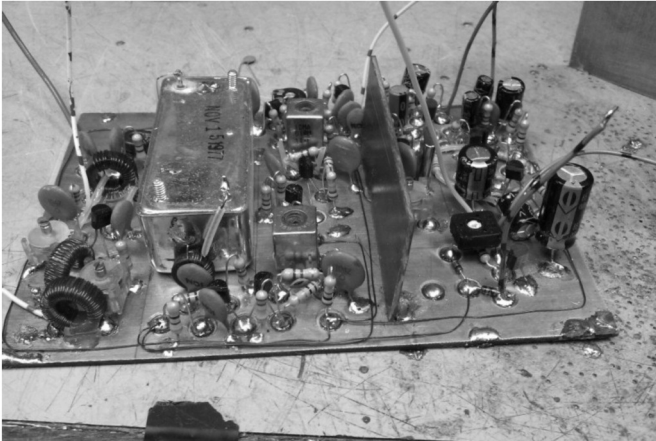
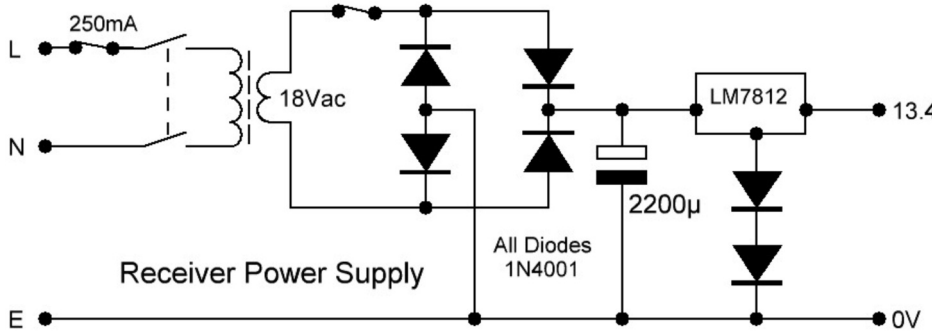
Colin Turner G3VTT (address above) will advise members on antennas to fit their location. Please send a plan, with dimensions, of your site and required bands, type of equipment and location of shack.

Technical Problems.

Ian Keyser G3ROO will give advice to members on circuit and construction problems. Please provide the fullest information possible. Write to Rosemount, Church Witfield Dover. CT16 3HZ

Audio Amplifier





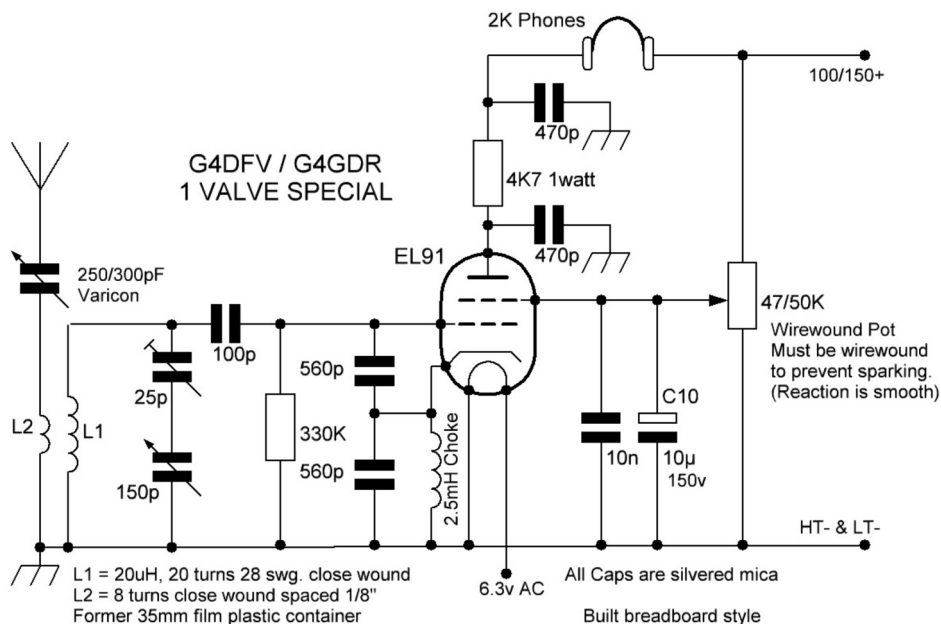
Complete Board

Inside view



The G4DFV / G4GDR 80m One Valver

Rev. A. Heath, G4GDR, 227 Windrush, Highworth, Swindon, SN6 7EB



I claim no originality for this simple 80m receiver built as a “together project” with Duncan, G4DFV. It has been my desire for some time to put together a simple one valve receiver and a one valve transmitter; emulating a 1920’s station. The receiver is rock steady once tuned onto a station. Switching off the HT to transmit and then on again after transmission shows no drift. This is unlike most regen receivers. The secret is the EL91 audio valve which is far better for regen receivers than RF valves.

The HT is 150 volts run from a stabilised line with the output to high resistance phones. However, I use a small transistor amplifier which switches speaker or phones and gives a greater audio output. It is really a great little receiver that receives SSB and CW very well. Using the components shown, mine covers the whole 80m band. I use a velvet vernier drive from a TU5B and no band-spread is required.

The polyvaricon capacitor in the antenna input could be a fixed value of around 150-200pF (experiment). Adrian is building a 40m version and Duncan has made coils for 160, 80 and 40m and used a second EL91 as an audio output stage.

This little receiver and a simple valve transmitter have worked all around Europe.

Antennas Anecdotes and Awards

Colin Turner G3VTT 30 Marsh Crescent, High Halstow, Rochester,
Kent ME3 8TJ
G3VTT@aol.com

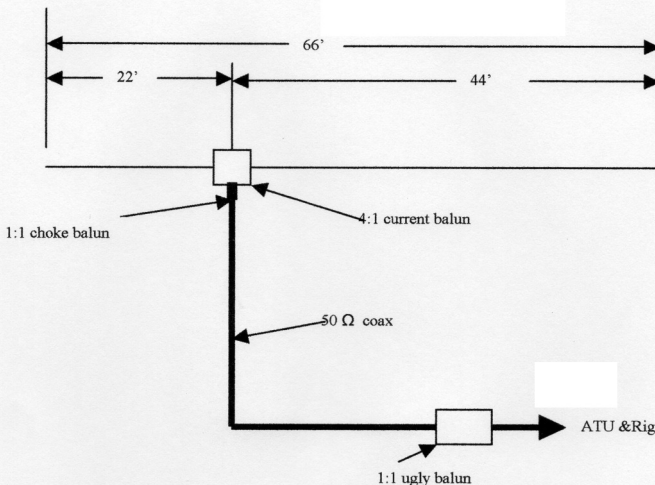
Welcome to the Autumn issue of AAA. I must say a big thank you to all of you who have dropped me a line about their antenna experiments this Spring. Certainly one of those is Dan Reynolds KB9JLO who has had lots of success with his version of the evergreen W3EDP antenna. He's tried it with and without counterpoises and compared with his earlier trapped 80/40m dipole has found the EDP far superior. If you search on the web for the 'best length of a wire antenna' prominently 84 feet comes up as one of the more effective lengths. You can try the website 'www.hamuniverse.com' for the preferred lengths for antenna lengths up to 500 feet. In the meantime thanks to Dan for an enthusiastic report.

A 66' Top OCFD for 40 – 6 metres by Chris Baker G4LDS

Chris is one of my regular writers and he has been out again with wire, pliers and a soldering iron and he sent me extensive notes on an Off Centre Fed Dipole.

Unfortunately due to space considerations I have had to edit some of the graphs but the basic information is below. Over to Chris.

66' top OCFD for 40 – 6 metres.



This aerial is a simple wire type based on the once popular multiband Windom which was first published in 1929 by Loren Windom W8GZ. This was a horizontal half wave on the lowest frequency of operation. This was fed via a single wire at a point approx 14% from the centre to the ATU. This point was chosen as a point of 600 ohms impedance. The

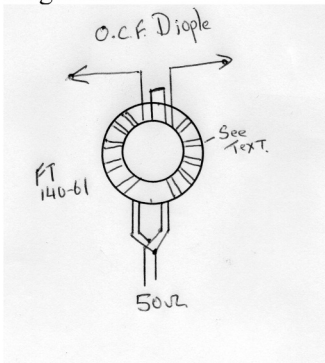
theory being the centre of a dipole is approx 70 ohms and at the ends 2-3000 ohms so at a certain point it will be around 600 ohms impedance and this can be used to multiband the aerial by virtue of a fixed impedance point on harmonically related bands. The version I wanted was to operate from 40 – 10m and on the Internet there are several variants of this aerial called the ‘off centre fed dipole’ with a top of around 66 feet. Some are 66 feet others are 69 feet I notice. Due to its location, which will mean the feeder running down the house outer wall and the feed point just under the eaves of the house, I tried out the 66 feet top, not the Carolina Windom type, with legs of 44 and 22 feet.

Figure 1 (above) gives the basic design of the aerial and to get the match to allow multi band use the balun used was a 4:1 type. A 6:1 may be better but is a little more complex to build and heavier! Figure 2 shows the 4:1 balun The 4:1 current balun uses either two cores or one core with two windings on it. My first version used a single FT140-61 core with two separate windings each of around 200 ohms. I used enamelled copper wire of around 1mm diameter (0.8 – 1.2mm should be ok),

- Ensure the wire is straight and “kink free” by putting free end of wire in vice or around door handle and gently pull to remove any kinks but without stretching it!
- Cut off around 2 meters of wire and fold it in half to make a short length of 100-ohm transmission line.
- Using finger & thumb, carefully wind around 10-12 turns onto the core.
- Keep the wires flat don’t let them twist or overlap
- Wind over about half the core
- I find that finding the half waypoint of the wire using a cable tie fix it to the core then wind half the turns one way anchor it using another cable tie then repeat on the other end of the winding. Thus making a 1:1 balun.

Repeat for the other winding. Then “buzz” using a multimeter through the windings to get the separate turns. Now comes the wiring up, on one side the two windings are parallel connected to give a impedance of 50ohms, the other side are wired up in series to give an impedance of 200ohms. This is where most problems occur. To check it, use an aerial analyser, connect a 200 ohm resistor at the high Z side and, check it should be around 1:1 from 3 – 60 Mhz. if its more than say 1.5 check the balun windings wiring.

Single core



Two core

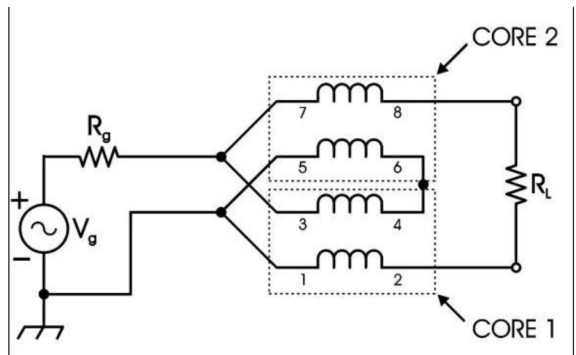


Figure 2 – the bare balun

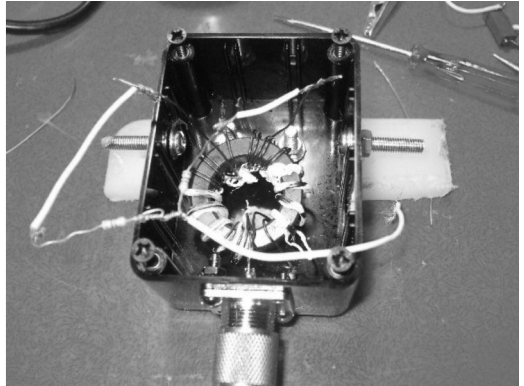
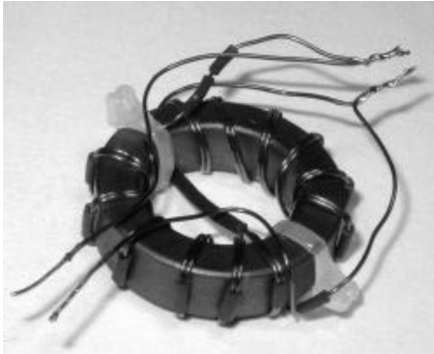


Figure 3 Balun in box.

Figure 3 gives some idea of how I weatherproofed the balun. I used the standard SO239 style connector for the coax feed and the output of the balun was connected to two bolts to enable the antenna wires to be connected to it. I used part of an ex chopping/cutting board trimmed to fit as the support for taking the strain of the aerial wire and anchoring. When connected to the wire I waterproofed the balun and SO239 coax connector with PVC then amalgamating tape. I then put modelling clay around two wire connectors! The set up is now a 1:1 balun at the aerial feed point consisting of around 10-12 turns of RG58 coax around 12" diameter then at the ATU and transmitter I made a 1:1 ugly current balun of a 40mm pipe with 30 turns of RG-58. I found that this aerial gave good matching on 14/28/50 MHz and an acceptable SWR on 40/10/18/21/24 with an ATU, *Chris included some excellent SWR charts which regrettably we do not have space to include.* A Mk II balun, *Fig 5* was also tried as a back balun using 2 type FT114-43 cores wound with 14 turns of 22Swg enamelled wire as in above notes. Each core was mounted above the other with a piece of paper between them using a couple of cable ties. I used different colour cable ties to show the start and finish of the winding. The wiring was as per figure 2 above. Both baluns gave a flat response of 1:1 from 2 – 60 Mhz.



Figure 4. The twin FT114-43 cores wound with 14 turns

Two cores mounted and cable tied together ready for mounting into box.

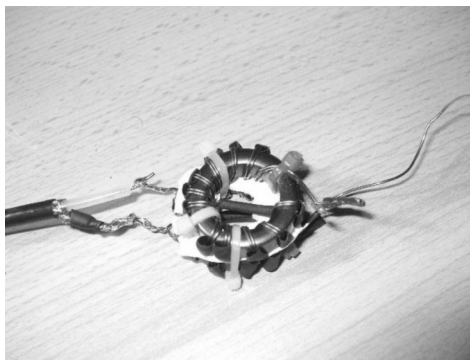


Figure 5 – the two cores ready to wire into a balun box.

The ‘Rutland’ Dipole

Gerald G3MCK reminded me a few weeks ago that a dipole using a total top length of 88 feet fed using open wire line of 23 feet, that’s 67 feet each side including the feeder length, gives a good match on most bands and is particularly easy to tune on 80m and 30m being low impedance on those bands. You will need a balanced tuner of course but it will give reasonable results from restricted spaces.

Awards Congratulations to **Fabio IK0IXI**, our G QRP Italian representative, for his ‘Worked 25 Counties with 2 way QRP’ Award.

Anecdote Not much to do with antennas but if you get a chance take a look at the excellent book ‘Surviving Technology’ by Bruce Vaughan NR5Q. Yes it’s about valves but also the life experiences in amateur radio of Bruce and a sizable part of the book is about the design and construction of TRF receivers and reflects a lifetime of work on the subject. He writes of an ‘ultimate’ design already reproduced by G3MCK over here in the Rutland workshop. The book brings back the flavour of the good old days with homebrew and valves, days which were once great....and could be again.....which brings me nicely on to.....Finally - a reminder about the **Autumn Valve QRP Day** which will be on **Sunday November 18th 2012**. This is your chance to put your valve (tube) equipment on the on the QRP frequencies from early until late. Transmitter, receiver or transceiver it’s your choice. Activity is on all QRP frequencies from early until late with 80m mostly in use here in the UK. Please send me pictures and reports as soon as possible after the event.



The Next QRP Valve Day

Colin Turner G3VTT G3vtt@aol.com

The next GQRV Valve QRP day will be on Sunday November 18th throughout the day on all bands. There are still plenty of valves and transformers out there so this is your chance to put your latest valve (tube) equipment on the air. It is not a competition just a celebration of the mystic warmth of glowing filaments! The idea is to contact whoever you can on whatever bands you are equipped for using old time valve equipment preferably homebrew. Please send a note about your station and maybe a photo to g3vtt@aol.com for inclusion in the report. A log is not required. Remember your photo or story could encourage others to build something.

ATTENTION: "John from Windsor" a request from GM3OXX

John from Windsor who sent me a package without his home address (Hi) please contact me at my home address. GM3OXX Clunie Lodge, Netherdale by Turriff, Aberdeenshire AB53 4GN or gm3oxx@btinternet.com

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

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

FOR SALE Flex Radio 1500 transceiver, HF and 6 metres. 5w output. Included is the Yaesu MH31 microphone and if operation on digital modes is required I will supply a registered copy of VAC software but the buyer will need to transfer the licence. £450 including postage. Contact morrice.m5adz@blueyonder.co.uk “

WANTED: 3 gang tuning capacitor for Eddystone 1004 Receiver. The RF & mixer section 12-358 pf each with 10 rotor plates & oscillator section 18-364 pf with 16 rotor plates. The assembly size is approx. 2.5 x 1.5 x 1.5 inches (not including shaft).

Contact: Bob McKew VK2AVQ member 12475. email elabob@tpg.com.au

COMMUNICATIONS AND CONTESTS

**Peter Barville G3XJS, Felucca, Pinesfield Lane, Trottscliffe,
West Malling, Kent ME19 5EN. Email: g3xjs@ggrp.co.uk**

I think it fair to say that not only have HF conditions been ‘variable’ this summer, but so has the UK weather. Enough said!

INTERNATIONAL QRP DAY

Ryan **G5CL** pointed out that June 17th was Fathers’ Day and that his family dragged him out (“not quite kicking and screaming”) for a Sunday roast and a pint of beer, thereby reducing his available shack time. It’s a hard choice, a free lunch or a spell of QRPing, but I’m guessing Ryan had a good day because he was still able to submit a small log – for which many thanks.

Valery **RW3AI** sent a slightly larger log, along with logs from other members of the RU-QRP Club. Unfortunately only Valery is a member of the GQRP Club and therefore eligible for entry to our event. How sad it is that I have received far more logs from non-GQRP members that I have from members. What does that say about the support we receive from the UK and non-UK members of our Club?

Not for the first time, Valery **RW3AI** wins the International QRP Day plaque. Our congratulations go to him, along with our thanks for his efforts in collating the information from other members of the RU QRP Club.

SUMMER SIZZLER

Last year saw our first Summer Sizzler, which proved to be very popular and well supported. I’m hoping this year’s event (25th-31st August) will have been at least as successful, so please make sure you have submitted your log.

QRP ARCI

Although it is impossible, because of space, to publish details of contests etc organised by other QRP organisations, I am reminded by John **G3SAO** that our colleagues in the USA welcome participation from overseas in their various events. More details can be found at <http://www.qrparci.org/> but (for example) this year’s Fall QSO Party runs from 1200z on 13 Oct 2012 to 2400z on 14 Oct 2012, with a maximum of 24 hours participation.

17m QRP COA

Because 18.096MHz does not fall within the CW section of the 17m band plan we cannot promote that frequency as the QRP CW centre of activity. As a result, GQRP suggests we adopt 18.086MHz, for which Graham **G3MFJ** now has xtals available from stock.

The deadline for inclusion in the next issue is the end of October, so let’s hope the Autumn Equinox produces a much needed improvement in HF conditions.

72 de QRPeter

VHF Managers Report

**John E. Beech, G8SEQ 124Belgrave Road, Wyken, Coventry CV2 5BH
e-mail: john@g8seq.com Tel.: 07958 777363 Loc.: IO91gk**

No doubt I have been conspicuous by my absence from SPRAT in recent months, so I'd thought I'd rectify that this quarter. I've done very little in the way of construction at VHF/UHF apart from making a GDO and most VHF operating has been local chats, mainly with ex-pupils to get them started after they passed their Foundation Licence Exams. The rest of my "radio time" seems to be taken up with special event stations, teaching and CARS Club matters. After some discussion on one of the Yahoo reflectors, I've come up with this request of the RSGB. (See below). In order for this to carry any weight we need more activity, so if you have a multimode, or HF + converter or any other receiver, at least listen for activity on 2m, 4m, 6m AM frequencies mentioned below. Join in if you have transmit capability - we don't mind if you didn't build it yourself!

Open letter to the RSGB.

We, as members of the VHF AM & QRP fraternity would like the following frequencies allocated to AM use in the RSGB Band Plans.

2m 144.550MHz, 4m 70.260 MHz & 6m 50.550 MHz for AM calling/working.

In support of this please read this note: (European HF band plan)

"Amplitude modulation (AM) may be used in the telephony sub-bands providing consideration is given to adjacent channel users. (NRRL Davos 05)."

(From: http://www.hflink.com/bandplans/europe_bandplan.pdf,)

Surely, if the rest of Europe recognizes AM as a valid mode then the RSGB should also and include references to it in their Band Plans. This could be used as an argument to include AM in the RSGB band plans in general. However this request is for VHF and above frequencies.

As far as I can see, the only place in the Band Plans where AM is specifically mentioned is the 4m Plan ie 70.260 MHz. Why isn't AM mentioned in the 2m & 6m plans? At the risk of clouding the issue, I'll mention 70 cms. The 70 cm band poses something of a problem in that all the available frequencies in the all mode section seemed to have been allocated to equally if not more obscure modes than AM.

432.550 MHz seems to be the obvious choice to follow the pattern in use for 2m & 6m but there is a snag; this is in the middle of a range of frequencies listed for "linear transponder inputs". I can't find exactly what this means. (Note 11 is of no use here.) Is this section for satellite transponders? If so, why isn't this in the 435-438 MHz band, listed for satellites?

What about 433.550? I know this is currently in the NBFM section but we have a precedent in the 4m band ie 70.260 , which is listed as AM/FM calling and curiously the ONLY place where AM gets a mention (as far as I can see) in RSGB band plans.

So why do we want AM to be specifically mentioned in the Band Plans? Well there is a growing minority of us that enjoy constructing and experimenting and for phone use DSB,

full carrier AM is the easiest to implement in both transmit and receive configurations. FM comes a close second but the receivers are necessarily more complex, after all you can receive AM on a crystal set! Simplicity is the attraction. Primarily we need a frequency where we can find each other, the same as any other specialized mode (not that AM is that specialized). At VHF to make the signals stable enough, the obvious choice for a simple Tx is to use a crystal oscillator. These can be expensive, so we don't want to be chopping and changing frequency because the frequency we have chosen to use has been usurped by the RSGB and designated for use by some equally obscure modulation mode.

END OF AN ERA

Ian & Marilyn Kenyon (G4VAP Components)

I have been attending rallies for some 33 years on and off and recently my wife Marilyn offered to help on the stand. This came as a complete surprise to me but she was a great help. About this time we specialise in components as less and less component suppliers were attending the rallies.

However the rally scene has changed over the last few years as I'm sure you will have noticed, and had a marked effect on venues and attendances. As this was only a hobby for us, we managed 6 rallies a year but with the loss of the Magnum Rally in Irvine, and Llandudno going into one day things have affected us greatly. Venues are becoming more expensive and it increases the cost of tables which means a narrower profit margin from the sale of components and because of these facts, family and work commitments it is with regret we have decided not to continue with the components.

We will continue with the rallies for the next year up to the end of 2013 and put our remaining stock back into circulation for the benefit of all you constructors out there. We will be at the QRP Convention in Rishworth with stock for sale, (at greatly reduced prices) but when they are gone.... they are gone. I'm sure there will be something for everyone. Many thanks for your support over the past years and hope to see you at the Convention.

IAN (G4VAP)



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MEMBERS' NEWS

by Chris Page, G4BUE

Highcroft Farmhouse, Gay Street,
Pulborough, West Sussex RH20 2HJ
E-mail: chris@g4bue.com



The next time you complain your garden isn't big enough for antennas, spare a thought for **G3SQU**! Chris retired in 2003 and recently became **QRV** again from his tiny flat in Newcastle which has a small balcony about 75ft high. In April he used two 40m mobile whips combined into a dipole and a 12 inches crossed-field loop antenna from **GM3HAT** with a MFJ-9020 5W transceiver purchased on *eBay*. With an EM-2 Z-match kit from Emtech connected to the loop sitting on the balcony, results were surprisingly good and included two QSOs with **KZ1H** and two-way QRP QSOs with **EW7BW** and **IZ4KBS**. Thoughts turned to 40m and a Ten-Tec 1340 (bought on *eBay*) was used with **G4LDS's** *Pelowany spiral* radial antenna (*SPRAT* 151, *Antennas, Anecdotes and Awards*) using the 40m whip poking through the pigeon netting on his balcony at 45 degrees facing south (photo left). A quarter-wave spiral radial at the antenna's base with the EM-2 Z-match and Chris's calls, "Were being

answered at an unprecedented rate, I was getting some respectable reports from QRO stations around Europe, and I didn't have to endlessly repeat my callsign at 6WPM to be intelligible!". Chris made nine QSOs in an hour of the IARU HF Championship with this set-up and then decided to go back to 20m with a 20m whip (*eBay* again) by cutting the quarter-wave spiral down for 20m and matching it with the Z-match again. Within minutes Chris was getting responses to his calls, including **KZ1H** again, who now gave him 559 instead of the two feeble reports with the 12 inch loop. The final proof the antenna was working came at 0655z on 13 August when he called **VK2DFU/6** on 14058kHz and received 559 for his first-ever VK QSO.



Chris found the MFJ Antenna Analyser (generously loaned on several occasions by the Tyneside ARS) to be really invaluable and so his next project is the SuperMAAN (Miser's Antenna Analyser) updated by **G3YTN** in *SPRAT* 148, to be followed by more antenna experimentation. The photo above right shows the view to the west from Chris's balcony of the seven bridges across the River Tyne, and the photo below shows the MFJ-9020 (20m) and above it the Ten-Tec 1340 (40m). On top is a digital frequency meter (a module found on *eBay*) with a whip antenna to provide an accurate transmission frequency readout. To the left is a CW audio filter and to the right is the 12v 6800mAh Lithium-ion battery to power the rigs.



G5VZ has recreated the Antenna Experimenters Group on Yahoo! Chris says it is, "Focusing on radiating RF and the design of systems to do just that; plus modelling, construction and evaluation of the results. As QRPers perhaps our interest in better radiators is more acute and there always seems to be something more to share among us". The joining link is <antexp-subscribe@yahoo.com> by email or <<http://groups.yahoo.com/group/antexp/join>> on the Yahoo! Groups web site. While searching for information on small loop antennas on the Internet, **G0NSL** came across **VK3YE's** amateur radio website at <www.vk3ye.com>, which Brian says is well worth a look.

On the right is the front of **DL2BQD**'s special QSL for his /P QRP operation at Buckow for three weeks in July for the Original QRP Contest (OQRP) and the IARU HF Championship the following weekend, when Dieter QSO'd your scribe on 20m CW with his K1 at 4W and **W3EDP** and 'Up and Outer' antennas. **G3YMC** also entered the IARU HF Championship and in a 'not too serious attempt' made 241 QSOs, mainly with Europe but with a few USA stations on 40 and 15m.

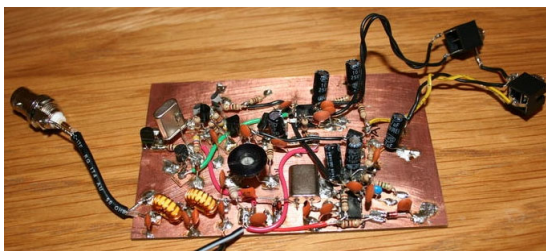
New member **GØFCU** wrote, "I am sitting here on holiday in southern Switzerland close to the Italian border listening to three Italian stations rag-chewing on 80m on the **ZL2BMI** radio in *SPRAT* a few issues ago. I haven't built the transmit part yet but hope to get that sorted when I get home. I have the Club to thank for getting me back into construction, and hence, for bringing this receiver on holiday, the first time I have done that. Next year I hope to be able to transmit, preferably on 20m where a smaller antenna will suffice".

MMØGYX recently built an ugly construction Rockmite 30 (photo right) getting some of the components from the G-QRP Club sales service. Ian had never built from a circuit before and was a little unsure how to lay the components out, but says, "Either through luck or judgement I worked it out. I tried this build because I have a Rockmite 40 which had a spare pic chip after an upgrade to a pic supplied from Ham Gadgets". Writing in June, Ian had had 10 QSOs from his QTH in North Scotland with it to DL, EI, G, ON, PA and SM all on 10116kHz with about 400mW to a dipole. He says when the rig is boxed up it will be pressed into SOTA service. Congratulations to **M6BYR** on passing the Intermediate Exam to become **2EØRFU**. Jon built a Pixie II for 30m on vero-board for the construction part of the exam and, after a little pre power-up fault, found the rig successfully put out about 200mW. He thanks the North Cheshire Radio Club, especially **GØVIE** for the training he gave, and the hospitality shown by the rest of the Club.

GM4VKI attended the Central Scottish Convention on 2 June with the Club stand where 34 members signed in. Roy said sales were brisk with MPSA-10 in batches of 50 and T130s and 140s for balloons being the main sellers. With **GM3WIL** he took the stand to the Crianlarich Rally in August where 32 members signed in and said 'Toroids and Chips' were the 'meal of the day', both selling very fast.

M1GRY attended *QRP in the Country* for the first time in July and gave it the 'thumbs up'. Gary says it was, "A friendly low key event with the added bonus of adding to my junk box". **G3ROO** also attended the event where there was a challenge of a RX with 10 components or less which he won with a 0V1 RX so using wire ended valves on 40m. Ian was so impressed with it that he rebuilt it and a 1V1 and a 3D6 as a single valve TX giving 200mW for some, "Easy QSOs over EU". **GØFUW** also confirms *QRP in the Country* was, "An excellent day out".

AA7EE has used 4SQRP Group's **NMØS** designed Hi-Per-Mite CW audio filter with an NE602-based Sudden-type receiver, with a free-running VFO tuned by a 1N4001 diode, tuning 7000-7050kHz with a 10-turn pot which, he says, sounds pretty good (photo right), see <<http://aa7ee.wordpress.com/2012/07/27/using-the-nm0s-hi-per-mite-filter-from-4sqrp-to-make-a-simple-40m-dc-cw-rx/>> for more info. Dave has also been 'fiddling around' with a **ZL2BMI** DSB rig and the DSB80 designed by **G4JST** and **G3WPO** in the early 1980s. **GØUPL** and **GØXAR** announced a new stand-alone QRSS/WSPR kit in June that supports WSPR, QRSS, DFCW, FSK/CW, CW, Hell (full



speed and half-speed), Slow Hell, and customisable FSK patterns, see<<http://www.hanssummers.com/qrsskitmm>>. In July **WA0ITP** announced the Four State's 'Magic Box' by **K8IQY** is for sale again, see <<http://www.wa0itp.com/mbmagicbox.html>>. **ZL2GX** reports a new DDS controlled SSB transceiver is available as a short-form kit from **VK2DOB**, <<http://www.ozqrp.com>>. Giovanni says the DDS VFO is available separately and there is a fairly detailed review of it on Youtube at <<http://www.youtube.com/watch?v=310NxlkqYU>>.

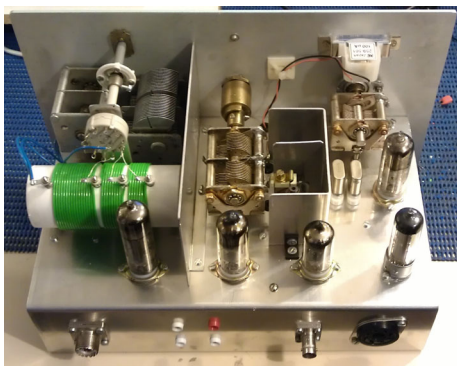
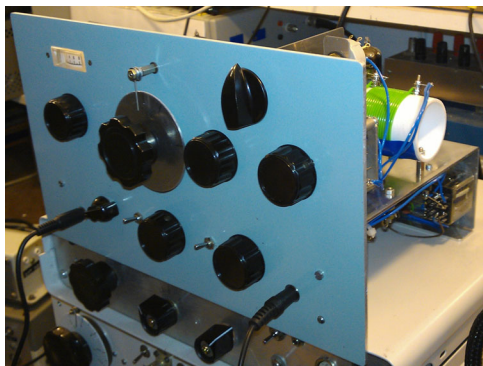
HB9DRV is returning to England as **G4ELI** and is, "Keeping a close eye on houses in Cornwall where there are strategically placed trees and the neighbours are out of RFI range". Simon has ordered the QRP Hermes transceivers from the OpenHPSDR team, <<http://openhpsdr.org/hermes.php>>, and says although QRP with just 500mW output, it's a very interesting design and should be ideal for driving VHF and UHF transverters. He is writing new software for a new SDR console ready for the Hermes, <<http://www.sdr-radio.com/News/tabid/490/post/v2-screenshot/language/en-GB/Default.aspx>> and although he says it doesn't look very exciting yet, it will feature transceiver support, full remote support (get away from the plasma) and integrated digital mode interface (PSK, RTTY etc). **M0NJP** moved to Donobate, just north of Dublin, where he is QRV as **EI/M0NJP** with an 80m dipole. Nick is building a Raspberry-Pi controlled QRSS TX and trying to improve two homebrew valve RXs.

On 24 June **G0FTD** went to the beach at Whitstable Harbour with his FT-817, Gel-Cel and 26 feet of wire strung along the groyne about eight feet high and no earth (photo right). Andy had QSOs with **ED5KB** on 10m SSB, **I5KAP** on 10m AM, two-way QRP with **OH3GE** on 20m CW and **OK3PDY** on 30m CW. He was then called by Club member **SM5DGA** and finally a 60m SSB QSO with **G3YPZ** running. Andy says, "As an aside, whenever I play radio I always find the friendliest QRP band, and friendliest operators, all seem to be on 30m. Must be the CW aspect I suppose?". Another beach operator is **M3KXZ** who went to the Saltdean, Sussex beach on 23 August with his FT-817 at 2.5W and Ele T1 tuner. Using a 26 feet fishing pole, Pete secured 25 feet of wire to the top and the railings on a groyne, and QSO'd **MM0LGRP** at Ardnamurchan Lighthouse, 40 miles west of Fort William.



On 7 July **F5NZY** made a two-way QRP QSO with **VK4TJ**, and on 12 July **W1PNS** QSO'd a ZL1 on 20m with his 5W and indoor dipole. In 2011 **GW4EVX** entered the IOTA Contest for the first time in the 12 hour QRP SSB section and made 95 QSOs with two antennas (a vertical for 40 and 15m and 90ft end-fed for the other bands) for second place in the section (behind **CM8AKD**). This year Ron added a half-wave vertical for 10m and made 116 QSOs in the same section.

The photos below show **G3XIZ**'s home-brewed valve TX-RX which he built especially for the last G-QRP Valve Day. Chris says it is working well on 80m but will eventually be a multi-bander with plug in coils, switched crystals and a VXO. He also made several models of the 'Chirpy' 10m TRX in *SPRAT*, but apart from very local QSOs, didn't have any luck with it. But it did inspire him to build a more complex 10m crystal controlled TRX with which he made a few QSOs, including a 559 from **OY4M** which he says is, "Quite acceptable for my 1W of RF and low dipole". **G3ROO** has been 'playing' with spy gear as **GB2SPY** with 200mW-10W power levels, and in mid-August was waiting for his KX3 to arrive from Elecraft.



GØAYD writes, "I've been left a Ten Tec Paragon which has sustained 24 volts onto the logic board and am after a non-working Paragon, or a logic board, so I can get mine running". **G4CCQ** is using a low 66 feet centre-fed antenna on 40-10m, with one leg laying on the house roof tiles and the other drooping down and around to fit his garden, fed with 300 ohm ribbon and an ATU. Despite Mervyn's only clear direction being South America, he has 128 DXCC so far, including **706T**, **A5A**, **1A0C** and **CY9M**. Congratulations to **IKØIXI** on being awarded the G-QRP Two-Way QRP Award for 25 DXCC and for a QSO with **HC1HC** to complete his QRP WAC. **M5AML** is using 5W SSB with an Alinco DX70TH and inverted vee (resonant on 19500kHz) in his loft, and has QSO'd HK, PY, TA, UA9, W2, W5 with on 15m and **2MØONW** and A6 on 17m.

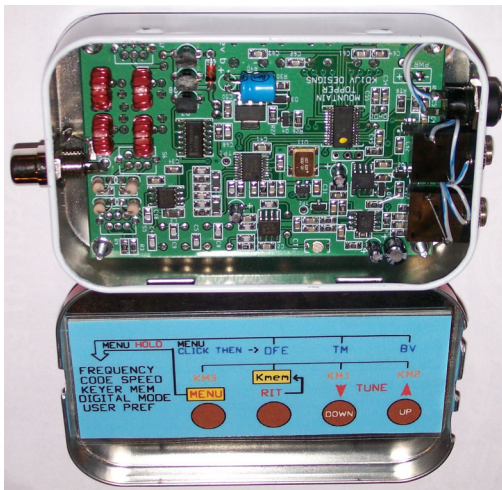
GM4UBJ was QRV for two weeks in July as **F/GM4UBJ/P** near St Valery en Caux in northern France with his K1, FT-817 and Buddipole that he always takes on holiday, and this year a 33ft fishing pole as a vertical. Bill made QSOs with EA, DJ, 9A, YU, EI, OH, LA, I, MC, G, OM, CT, E7 and **RA9KY** for the best DX on 20m 5W CW, and with **GM3MXN** on 40m. He says, "It always amazes me how far QRP will reach even with restricted antennas". Bill prefers to use the K1 most of the time because of its very low power usage and excellent filtering and the Buddipole, which although expensive, has never let him down in the last eight years. **M1KTA** was QRV 15/22 August as **6W/M1KTA** and 22/29 August as **C5/M1KTA** on SSB, RTTY, PSK and CW. Dom made 1400 QSOs from 6W and another 150 from AF-045 (75% on SSB) with 57 DXCC. He made 200 QSOs from C5 (75% on CW) with 43 DXCC and only went QRT five minutes before he had to leave! He was QRT for four nights from C5 because of bad weather and apart from about 20 QSOs, all were made with QRP. He said he had decent antennas in 6W but only a G5RV in C5 and one QSO with a vertical on the Beach. Dom says he will be taking a YP3 6-20m yagi on his next trip. He will load blog images and video to <blog at <http://m1kta-qrp.blogspot.co.uk/> when he gets home (he recorded about 80% of his operating time).

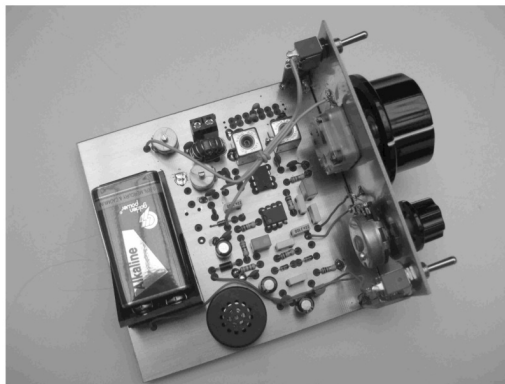
Your scribe QSO'd Dom at **C5/M1KTA** on 29 August with my 5W on 20m CW as I was writing this column, and **G3JFS** QSO'd him as **6W/M1KTA** on 20m SSB. Peter considers RTTY an excellent mode for QRP but had to use QRO to QSO **6W/M1KTA** in the SARTG RTTY Contest.

G4GXL attended the RU QRP Rally on 2/5 August on the banks of the River Ugra, about 200 miles southeast of Moscow, and was QRV as **RA/G4GXL/P** on PSK31, RTTY, CW and SSB with his AlexLoop for the first time and a 30m Par End-Fedz. Steve was QSO'd by **G4AKC**'s mobile station on 3 August on 20m SSB. Two days later between 04 and 0800z, operating from Blackpool promenade, Dave QSO'd W1, 5, 6, 7, 9, VE6 & 7, VK2, 3, 4, 5, 6 & 7, ZL1, 3 & 4, KH6 and CO. He says many of the stations were worked with 5W although he had 100W capability, and were received 59 or better.

MØCGH's birthday present this summer was a 'Mountain Topper' (MTR) kit by **KD1JV** (serial number 131 of 150 kits (photos right)). Colin says it performs extremely well and he has already made QSOs with the USA and VE stations running 3.5W CW on 20m. He has also built two Rockmites, one making its first QSO on 20m with **N1EU** in Delmar, NY at a distance of 3239 miles. Colin is also continuing **LA1KHA**'s PP3 challenge with his battery having made 132 QSOs and still going strong. His current project is a Manhattan style HiMite 17, using the new 18086kHz crystals from Club sales.

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





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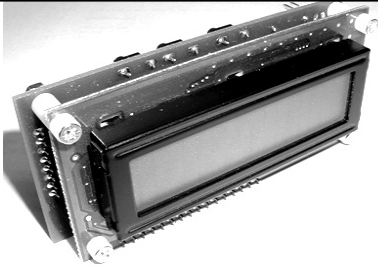
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DG8SAQ USB-controlled Vector Network Analyser VNWA covers 1 kHz to 1.3GHz - In stock Assembled and tested as reviewed Radcom Nov 2011 - Calibration Kits - Details on Webshop

Si570 ICs - Si570CMOS only £14.10, Si570DBA 1.417 MHz, Si571CFC with FM Modulation Mitsubishi RF FETs stocked: 175 MHz RD15HVF1 £4.80, RD06HVF1 £3.72, RD00HSV1 £1.44, 30-50 MHz RD16HHF1 16W £4.20, RD06HHF1 6W £3.20 RD00HHS1 0.3W £1.14 all + pp

KB9YIG Softrock Lite SDR Receiver Kits 80m with or 40m versions with 2 Xtals each £16.00 UK Package and Posting £2.00 to be added to all orders - UK cheques payable to Jan Verduyn

Jan Verduyn, 14 Ragleth Grove, Trowbridge, Wilts, BA14 7LE, UK sdrkits@gmail.com

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.

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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 or qsl@kz.orbitel.bg or if no internet access via the postal address: Atanas Kolev, P.O.Box 49, 6100 Kazanlak, Bulgaria. Examples of cards and prices can be seen at **www.qslprint.com**

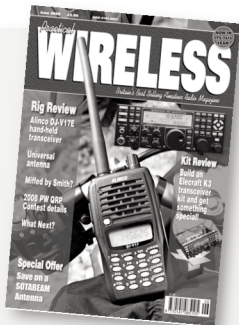
For people need QSL cards urgently LZ1YE dispatches three days after the payment is made. UK Members can pay via a UK address: Please send your cheque / cash via recorded delivery to: LZ1YE QSP Print service, c/o Melanie Rowe, St. Leonards House, 35 St. Leonards Road, Exeter, EX2 - 4LR, Devon. e-mail: m0mja@aol.com (make cheques payable to : Melanie Rowe)

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

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

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

GQR Club Sales

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

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

6 pole 9MHz CW (500Hz) and SSB crystal filter (2.2kHz) £12 plus post } £2.50 (UK); or
(Supplies of these are getting low, so a max of 2 per member) }

Polyvaricon capacitors – 2 gang (A = 8 to 140pF, O = 6 to 60pF) c/w shaft ext & mtg screws - **£1.40 each** } £1.60p (EU); or
– 2 gang – (both 8 to 295pF) c/w shaft ext & mtg screws - **£1.40 each** } £2.20p (DX)

Pair LSB/USB carrier crystals HC49U wires - [9MHz ± 1.5kHz] **£4 pair** } **All components**

HC49U (wire) crystals for all **CW** calling freqs – 1.836, 3,560*, 7.015,
7.028, 7,030*, 7,040, 7,0475, 7,122, 10,106, 10,116*, 14,060*, 18,086, 18,096, } **(ANY quantity)**
21,060, 24,906, & 28,060 all are **£2.00 each** (* = also available in low profile HC49/S) } £1 (UK), or

HC49U (wire) crystals – 1.8432, 3,500, 7,00, 7,159, 10,006, 10,111MHz – **50p each** } £2.20p EU, or

HC49U (wire) crystals – 2.00, 3.00, 3.20, 3.579, 3.5756, 3.5820, 3.6864, 4.0, 4.096MHz } £3.30p (DX)

4.1943MHz, 4.433, 5.0, 6.00, 7.6. 8.0, 10.0, 11.0, 12.0, 13.50, 20.0, 24.0, 25.00MHz } £1 (UK), or

27.0, 28.0, 32.0, 35.50, 43.00MHz – **all 35p each** (Some of these are low profile types) } Post free

Ceramic resonators – 455kHz, 2.0, 3.58, 3.68, 4.00, 14.32 & 20.00MHz – **50p each** } if ordered

Schottky signal diode – 1N5711 low fwd volts for up to vhf/uhf **20p each** } with heavier

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

Varicap diodes – **MVAM109** – 40pF @ 9v, 50pF @ 1v. **50p each** } max of 2 of } binders,

– **MV209** – 5pF @ 12V, 40pF @ 1V **35p each** } each per member } toroids,

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

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

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

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

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

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

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

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

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

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

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

FETs - IRF510 – 50p each; 2N3819 - 12p each; 2N7000 - 10p each } as books

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

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

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

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

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

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

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

4.7uH, 6.8uH, 10uH, 15uH, 18uH, 22uH, 39uH, 47uH and 100uH - all **17p each.** } components

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

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

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

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

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

All toroids are plus postage – up to 5 packs = £1.00 (UK), £2.20 (EU), £3.30 (DX). Each additional 5 packs, please add 50%

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

NEW – **ATU kits - £36 and SBSS PCB clamps – single - £12, two - £18 all plus post - See inside this Sprat**

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

EU - £4.00, DX - £7.00

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

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

(one: UK - £1.40, EU - 3.00, DX - £4.00. More - add £1.10, £1.50, £2.50 each)

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

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

postage stamps (any denomination £1 or less please) - any quantity of stamps is OK, or cash. I can accept cash in GBPounds, or

US\$/ euros (at the current exchange rates) – but please send securely! You can order via e-mail and pay by PayPal.

Use g3mfj @ gqrp.co.uk – pay us in GBPounds and you **MUST** include your membership number and address please.

PayPal charge us about 4% so a contribution towards that is always welcome - thanks