



# SPRAT

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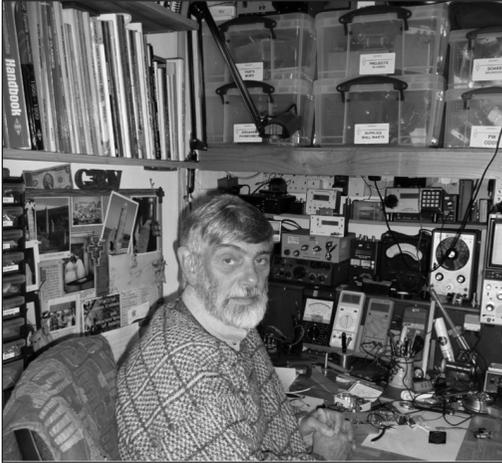


IK0IXI 20m CW Transceiver

## In this issue

Two Band VXO ~ A Primer for SDR ~  
PFR3 Mods ~ Rescuing a 5Y3 ~ ILER-40 for PSK31  
PSK31 with a Kindle ~ Crystal Socket  
20m Mountain Topper Transceiver  
20dB RF Amp ~ RUQR Activity Year ~ Club Awards  
A Gift Involving Radio Fun  
Communications and Contests ~ cwmadeasy  
Antennas, Valves and Vintage ~ Members News

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## **Rev. George Dobbs G3RJV**

As readers will notice, this issue features PSK31; a very effective mode with QRP. We offer several good ideas along this approach. Usually I like variety within each edition but for this issue I had limited choice although it is full of worthy articles. I need a few more articles for my in-box. Readers know the format and I can supply a template on request. Can I remind you of our new trophy. The **Gordon Bennett Trophy** is awarded each year to the member thought to have submitted the best practical article to SPRAT. 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 below. The closing date for this particular round is the autumn issue so it falls in line with the Gordon Bennett Trophy.... Get soldering!

72/3

 G3RJV



## **The W1FB Memorial Award 2014/2015**

An easy topic this year - "My favourite weekend project". There are dozens of little construction projects laying around on member's work benches. So .... Describe your favourite little project for other members. It can be original work but I am happy to see existing projects that have been improved or updated.

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.

## Two Band Ceramic VXO

**Peter Parker, VK3YE, 5/51 Blantyre Ave, Chelsea, Vic 3196**

This article was first published in the Sep. 2011 edition of 'Lo Key' the Journal of the VK QRP Club; our thanks to the club and to VK3YE

Here's a 2-band switched VXO that I've found useful in simple transmitter and receiver circuits.

It comprises two Colpitts oscillators and a buffer stage. All switching is DC so there's no switches to add capacitance and lessen frequency range. In addition capacitor and series inductor (if used) values can be optimized in each oscillator for desired coverage. A two-gang variable capacitor is needed but the sections do not need to be equal.

My own version was initially used in a direct conversion receiver for 80 and 40 metres. This then became a double sideband transceiver. Because I had enough 40 metre rigs, I later removed the 7.2 MHz ceramic resonator and substituted a rare 3.68 MHz ceramic resonator (courtesy David ZL3DWS).

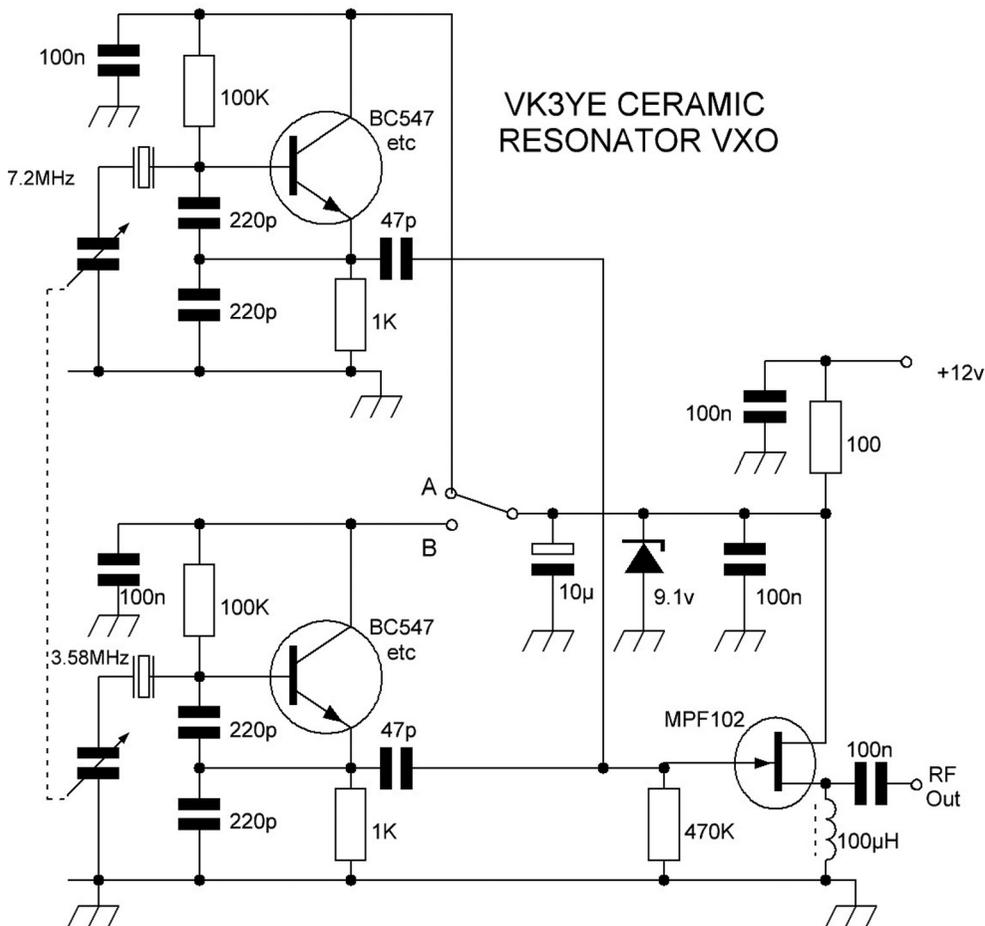
The switched 3.58 MHz and 3.68 MHz oscillators cover nearly all of 80 metres – unusual for a ceramic resonator rig.

Even if you only have resonators for one frequency this circuit could still be useful. For example you could have low and high ranges – the low range for CW use and the high range for DSB. The low range would have a series inductor, larger capacitors for bottom end coverage. A fixed capacitor across the tuning gang would restrict unwanted higher frequency coverage and improve band-spread. In contrast the high range would have smaller parallel capacitors and no series inductor to optimize top end tuning.

Ceramic resonators can drift a little so sometimes it is handy to have crystal control as well. Easy!

Have one oscillator with a ceramic resonator and another with a crystal. You get the best of both worlds and can quickly QSY to the crystal frequency if clear. Eric ZL2BMI uses a similar arrangement and finds that crystal control at both ends allows easy DSB reception on a direct conversion receiver.

All components are easily obtainable. The 3.58 are easily found but the 7.2 MHz ceramic resonators are a little more difficult to source. I used an air spaced tuning capacitor, though even a 60 + 160 pF plastic type should be suitable for a low range/high circuit.



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

FOR TRADE: S&S-Engineering TAC-1 for 80m incl. manual, I would like to trade it for an ARK-30 incl. manual. Andy DH5AK, phone: ++49-431-89353, dh5ak@arcor.de

FOR SALE: MLX board and paperwork. White Rose project selection of boards (Rx and Tx), some with components. W3NQN passive audio CW filter. Small number of Denco coils. Some valve holders (inc for 807) and anode connectors. 9 MHz filters 2 of them. 50 MHz receive converter. Some small project kits. A job lot. All for a donation to charity! To be collected or maybe meet somewhere near the M62.  
G4HYY - David - East Yorkshire - 01964 612998

# A Primer for Software Defined Radio (SDR) using the RTL2832U R820T Dongle

Ken Marshall G4IIB <ken.marshall1@btinternet.com>

The DVB-T TV dongle has been around for several years now. These are very cheap (typically under £6 from eBay) other outlets are available)) and can easily be converted to a very versatile general coverage receiver covering from 0 to 1.7GHz. A useful and interesting addition to any shack as, used with the right software provides a selection of receiver modes and useful filters. The DVB-T dongle discussed in this primer is one utilising the RTL2832U and R820T chip set. The RTL2832U is an analogue to digital converter and the R820T is a tuner chip covering 24MHz to 1.7GHz.

This primer is intended to guide you through the purchase of a suitable dongle and the setting up of suitable free software. In addition I will also describe a simple hardware modification and software parameter change to get the dongle to work on the lower HF frequencies.

## Hardware required:

An RTL SDR Dongle

A computer running windows XP/vista/Win 7/8 with dual core CPU, USB 2 or higher and minimum 1Gig of memory Note PC must be running Microsoft.Net (but probably already is) and 7ZIP.

A suitable antenna and ATU

You require a DVB-T TV dongle, make sure that it has the RTL2832U and R620T chip set before you purchase. The cheapest place to get one of these is eBay. Here one can be purchased for as little as £6 if you shop around and are prepared to wait for one shipped from China (worth the wait in my opinion). However, for the more cautious or impatient buyer a few UK outlets are selling these but you will usually pay a premium for UK sourced dongles. I have also seen these at rallies for around the £10-15 mark, well worth consideration. Opposite, for reference, is a picture of what you need to purchase.



Note the MCX antenna connector; this is desirable as it provides better loss figures at the higher frequencies, although it is likely that you will change the antenna socket if you decide to put it in a metal box.

Once you have the dongle we can get it up and running using one of the FREE SDR software products such as HSDR, SDR#, GQRX and others. This primer will concentrate on the HSDR software as it provides both RF and Audio FFT (*Fast Fourier*

*Transform*) waterfalls and a range of sophisticated filters. However, all of the above software products have their plus points.

First of all unpack your dongle. **THIS BIT IS REALLY IMPORTANT** pick out the accompanying CD and carefully remove this from the packaging now **THROW THE CD IN THE BIN**. The CD is useless for SDR and even if you intend using it to receive TV, up to date software for this is available for download on the web. The other item we can get rid of is the remote control, whilst this will work with the TV dongle it will not work as an SDR radio, put it in your “might come in handy bin”. The antenna can still come in useful.

### **Software Installation**

Download ZADIG driver software from <http://zadig.akeo.ie/> you will need 7zip to extract it - note different versions for windows version i.e. Win XP. Plug in your RTL2832U stick. Follow this User Guide <https://github.com/pbatard/libwdi/wiki/Zadig>. Basically list all devices in the option drop down menu to see your stick. This will usually be a bulk-in, interface (interface 0) device or in some cases simply rtl2832u. Once selected proceed to install the driver. Don't worry about the *Windows can't verify publisher warnings* just install it anyway. If you have more than one dongle you may have to rerun zadig on another USB port. I could not get two dongles to run on the same port, but I have recently come across some that do. A case of try it and see.

**Note: the following steps will not have to be redone for the second dongle.** You should only need do these steps once.

Download HSDR from <http://www.hdsdr.de/> download button is at the bottom of the page.

Install HSDR follow the instructions from this site

<https://sites.google.com/site/g4zfqradio/installing-and-using-hdsdr>

Download ExtIO\_RTL2832U.dll file from

[https://github.com/josemariaaraujo/ExtIO\\_RTL](https://github.com/josemariaaraujo/ExtIO_RTL) press download button extract then open the release folder you have a choice of 32 or 64 bit versions. Copy the appropriate version into the HSDR directory i.e. C: Program Files (x86)/HSDR

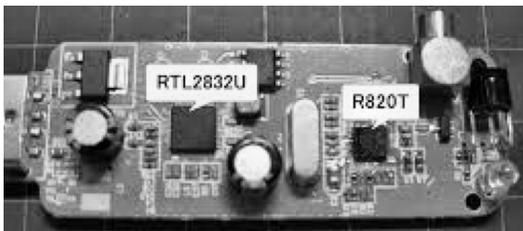
Plug in your dongle and start HSDR. There is no official user guide but the previous instructions at <https://sites.google.com/site/g4zfqradio/installing-and-using-hdsdr> will help in setting up the software parameters. In addition the HSDR FAQ is useful. If you hover your cursor on any HSDR buttons a brief description/instructions on use will appear. You will find that HSDR is quite intuitive to use.

Once you plug in a suitable aerial and start HSDR your dongle should now be able to tune from 24MHz to 1.7GHz and you can listen in AM, ECSS, FM, LSB, USB, CW and DRM modes. Prior to it reaching operating temperature it does drift a little but the dongle becomes quite stable after about 4-5 minutes of actual receiving i.e. not just plugged in on standby.

## Getting the Dongle to work on lower HF frequencies

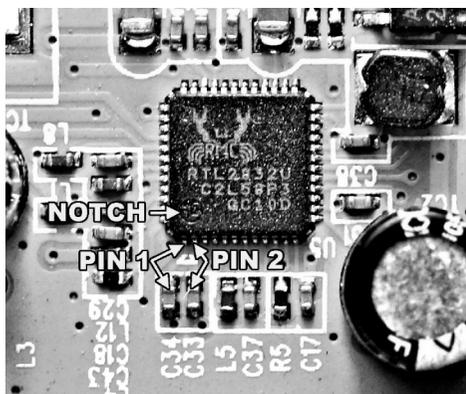
Once you prise open the dongle you should be able to identify the following.

The RTL2832 analogue to digital converter can tune from 0 to 29 MHz. However, for TV reception purposes its tuning range is extended from 24 MHz to 1.7 GHz as it is fed by the R820T tuner chip, the lowest



frequency that this chip can tune being 24Mhz. SDR software has the facility to allow the user to change the sampling mode. Using the tuner chip the SDR software (in this case HSDR) uses Quadrature sampling. In the previous steps above you may recall that we placed ExtIO\_RTL2832.DLL in the HSDR directory. With HSDR running you will see that the ExtIO tab is highlighted bright blue (next to Tune digits). If you left click this tab a panel will open up. Under the second heading “Direct Sampling” you will see that it is Disabled this gives us Quadrature sampling as we are using R820T. The other method of sampling is Direct sampling, in this method the R820T tuner is bypassed and the RTL2832U looks for a signal on its input pins 1&2 (I channel) or 4&5 (Q channel). Again with HSDR running, but STOPPED, and clicking on the ExtIO tab you can see that we can enable Direct sampling on either the I or Q inputs.

The R820 feeds pins 1&2 via capacitors C33 & C34. Pins 4&5 are not used i.e. there is no connection. If we connect an aerial to these pins then we can receive the lower frequencies by changing to the direct sampling method.



Note: I use the term Quadrature sampling purely from a software parameter setting point of view. In this dongle actual physical Quadrature sampling is not used as only one channel, the I channel, is connected. Dongles using the E4000 tuner chip (and others) do offer full Quadrature sampling as they feed signals to both the I and Q channels of RTL2832U. E4000 dongles have become obsolete but can still be obtained but are much more expensive than the R820T variety and cover slightly different frequencies 50MHz to 2GHz. Furthermore, from an HF mod perspective using one of these more expensive E4000 dongles would be like using a broken pencil. POINTLESS.

How good are your soldering skills?

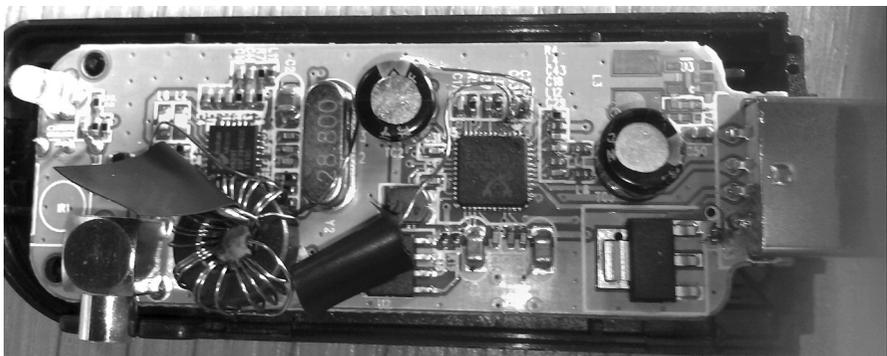
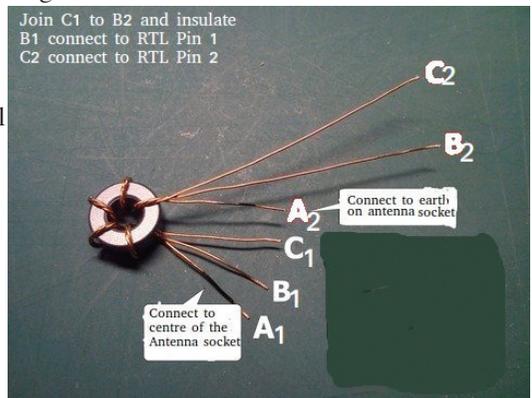
I thought that mine were reasonable. They were rubbish! In theory you could use the unused pins 4&5 and solder a toroid to these and connect a separate aerial socket to the other end of the toroid, this way the dongle would tune 24 MHz to 1.7GHz using

Quadrature Sampling and 0 to 24 MHz using direct sampling. If you can solder on to these pins, then good on you. For me that was impossible, so I opted to solder my toroid (8 turns trifilar wound on FT37-43) on the pin ends of the two capacitors C33 & 34. The reason for using both pins on the RTL2832U was that it creates a differential input of the + and - portions of the signal. In attaching the toroid I accidentally bridged these capacitors with a blob of solder. In removing this blob I also succeeded in removing both capacitors (looks like I need an even smaller bit on my iron). Ah well, I was going to dedicate this dongle to receiving HF only anyway. To retrieve the situation I managed to solder a single piece of wire to the pin end of where C34 had been i.e. on the track leading to pin 1. The toroid will have to wait until I upgrade my iron and soldering skills. I soldered the other end to the static protection diode D8 on its contact next to C13, thus the aerial socket was now connected directly via D8 to pin 1 of the AD converter. Connecting the aerial socket to my ATU and using the direct sampling method on I input, the dongle now tunes 0 to 24 MHz.

Impressed with the results of my botched HF mod a fellow amateur friend asked if I would convert a dongle for him. A good chance to practice my soldering skills. After purchasing a temperature controlled iron with a finer point, and with the advice offered by G8RIW in Sprat 161 regarding the use of blue tack to hold the wires in place before soldering, and with the aid of two pairs of glasses and a magnifying glass (it's awful getting old) I have managed to solder a toroid to C33 & 34. For the toroid I used an FT37-43 with 8 turns trifilar wound of 33 SWG magnet wire (I found this to be better than 5 turns). For connections follow the instructions in the image shown below.

Both of the above HF mods work but the toroid mod performs slightly better, I believe due to the use of the differential signal. See the results of my efforts below. And you can get the lid back on; however, they are best housed in a metal box.

I also have a dongle with an up converter but the above direct sampling mods perform better.



## Improvements

Further improvements can be achieved by adding a preamp for HF reception and constructing band pass filters for your favourite bands, a good site for calculating these is [http://www1.sphere.ne.jp/i-lab/ilab/tool/BPF\\_C\\_e.htm](http://www1.sphere.ne.jp/i-lab/ilab/tool/BPF_C_e.htm)

The T820 does contain a preamp but it is noisy (typically 8db) this can be improved especially for reception at the higher VHF frequencies by adding an LNA ideally at the antenna end. If you are not using the dongle for TV then I suggest removing the IR sensor (3 pinned black thing next to aerial socket) as it is a source of noise especially at the higher frequencies. The dongles are best screened by being mounted in a suitably robust metal box. They run hot this is normal.

## Station Monitor and Panadapter

These cheap dongles can be a useful second/umpteenth receiver for the shack. They are also useful for monitoring your signal via both the RF and audio spectrum displays.

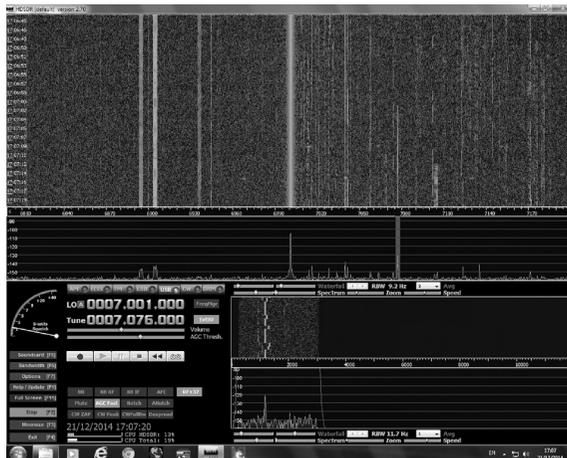
In addition, if your rig has an IF output, connecting this to the dongle aerial socket means that the dongle can be used as a panadapter by tuning HSDR to your first IF frequency, then anything you tune on your rigs receiver will appear on the RF FFT display, allowing you to see a panoramic display of the band.

The RTL2832U ADC is only an 8 bit device in the future 16 bit dongles are likely to appear on the market these will offer an improved performance. If the price is right watch this space.

Have fun with your dongle!

**Note:** if you want to use a “sound card type Receiver” like the one in SPRAT161 you only need install HSDR and plug the RX in to the sound card. Follow the user guide <https://sites.google.com/site/g4zfqradio/installing-and-using-hdsdr>. You only need the zadig driver and the DLL if you are using a dongle. A good sound card helps i.e. one with a bandwidth of circa 50KHz or better still 100KHz.

*Screen shot of dongle after HF conversion receiving JT65-HF on 40M*



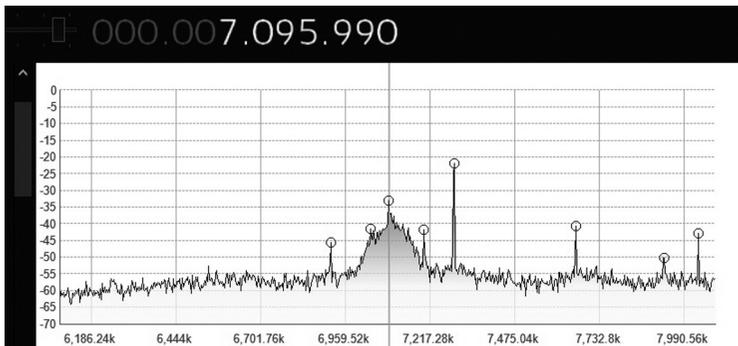
## More on using the RTL2832U R820T Dongle

Tony G4WIF <g4wif@gqrp.co.uk>

Elsewhere in this Sprat, Ken G4IIB shows how to convert this very prolific device often seen at rallies. I got mine for £15 a year ago and just recently, our USA DX rep, Dave W7AQK ordered one for \$9. So we aren't talking about a big investment.

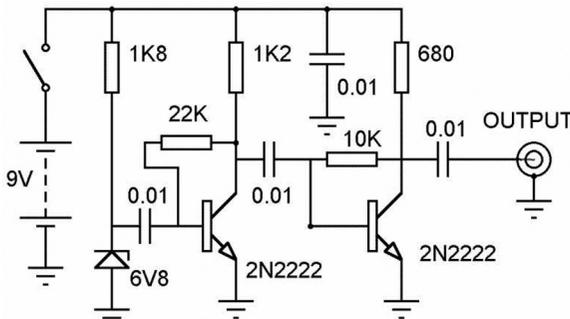
Having followed Ken's instructions I was amazed at how well it worked on HF considering the simplicity of the conversion and I started to wonder what else we could use it for. I am blessed in having a spectrum analyser but this tool won't feature in every shack - and just being able to see at a glance if a filter is performing at all is just plain useful.

So I injected wideband noise into a 40m band pass filter and looked to see how the output appeared on the TV dongle SDR display. Below you can see the results.



(snapshot taken using "SDR Sharp" software as an alternative to HSDR used by Ken)

Now I'm not at all suggesting that this is a precision piece of measuring equipment or that the SDR software dB markings should be taken as anything more than guidance. This is what you could call "indicating equipment" and simple test gear is a lot better than none at all. On similar lines is the noise generator that I used. It is the only one I've ever needed and I built it quite a long time ago from a design by Tom NOSS.



To save space in Sprat from unnecessary duplication I have put some notes and photos of my version of Ken G4IIB's project on the Sprat pages on the club website.

# Hendricks PFR3 receiver mods

## Roy Kavanagh GM4VKI

I seem to have an attraction to PFR3s don't ask me why, but having built and then sold on two already, when another came up for sale on our favourite auction site in an unfinished, un-working state, I just couldn't miss it. It was bought at a ridiculously cheap price and duly arrived in the post. I was delighted to see that unfinished was in fact "it didn't have the case on" however the board was populated complete but not working. The board itself is well designed and the hard to fit SMD devices are already pre-soldered onto the board so I was pretty confident that they were all ok. Quite a lot of dry joints later and an SA612 replaced, brought the RX to life, The TX - once again a few dry joints and bad soldering made this part function. So now having a working PFR3 how could I break it!!!



Well first of all, my favourite band was 40 and I do like to listen to SSB as well when portable. But the I.F. and Audio bandwidth is tailored for a 300HZ bandwidth specifically for CW reception. One "Field Friendly Radio" I have always fancied is the KX1 and so as the two circuits are very similar I decided to modify the PFR3 RX in line with the KX1.

The first mod was to copy the idea of a variable crystal filter and so having purchased a selection of varicaps from GQRP Sales - MVAM109 and MV209, I set too to butcher the PFR3.

First of all build a small 5.1 volt regulated supply using a 1k resistor and a 5.1 volt zener across the i/c 12 v supply to give a stable supply voltage to pull the varicaps with. Call this supply A+. See fig1 & photo below.

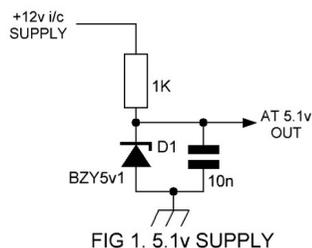
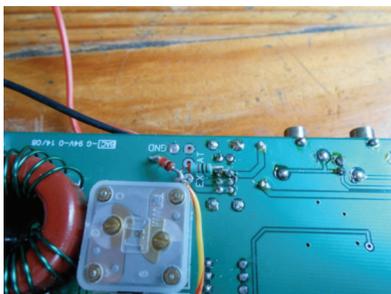
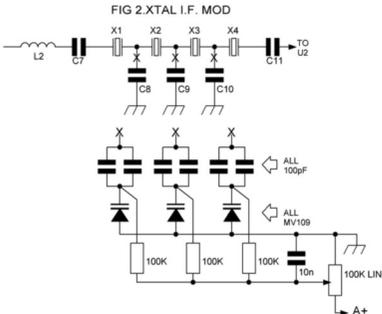


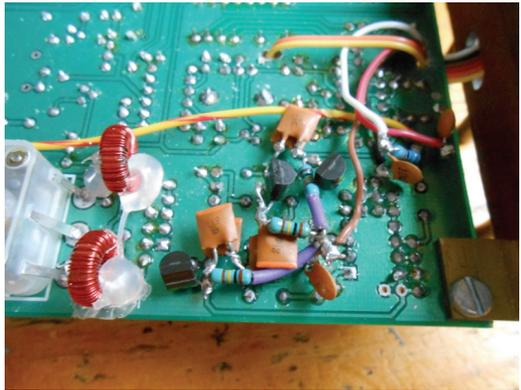
FIG 1. 5.1v SUPPLY

## XTAL FILTER MOD.



replace C8, C9, & C10. Feed each MV109 through a 100k resistor and then feed all three 100k resistors from a 100k pot from the new 5.1 v zenered supply with a 0.01uf across the pot output. As per the circuit diagram (fig 2) and photo right.

Remove or don't install C8, C9, or C10, then build up piggy back type construction on the underside of the board by doubling up 2 x 100pf capacitors and wiring in series with a MV109 to



## BFO MOD

Like the xtal filter mod, C16 is removed or not fitted and a MV209 is placed across C16 fed by a 100k resistor from the centre of a 100K pot. See fig3 (right)

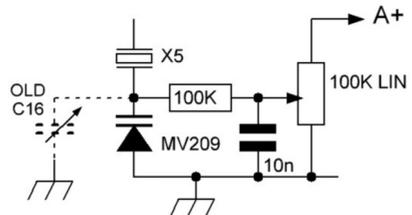


FIG.3. BFO MOD

## AUDIO MOD

This mod widens the audio bandpass so that SSB signals can be heard better. Remove or do not fit C21 – this is between pins 6 and 7 of U3b. Lift the end of C22 that is connected to the output of U3A and fit a 10k pot between C22 and pin 1 of U3A - see fig 4.

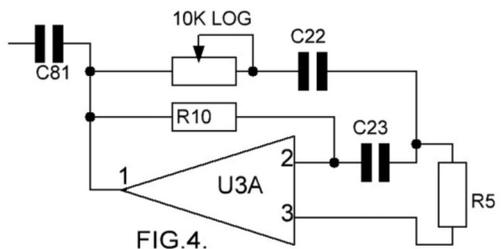
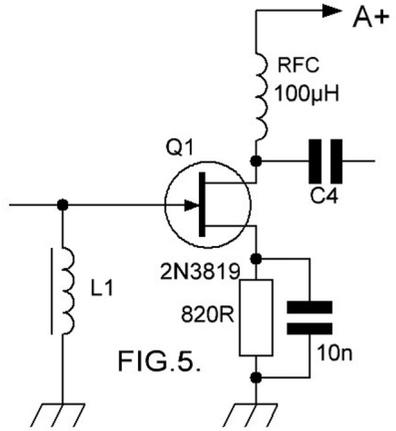
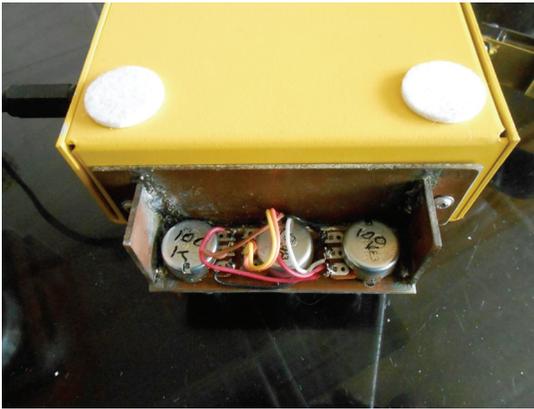


FIG.4.

**RF AMP MOD**

To increase the gain on RX I tried to fit a FET (2N3819) between the top of L1 and C4. This did in fact increase the gain so much that instability crept in so further work is required here. See fig 5

The three pots were mounted on a small shelf made out of PCB board with a ribbon cable slotted through the PFR3 main board. See below.



Was it worth it? Well I personally think I have a more flexible radio and easier to tune and listen to. Have fun



## EA3GCY

### HAM RADIO KITS

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<b>ILER 20 / 4-5W QRP SSB 20m TRX KIT.....</b>	<b>78,65 €</b>
<b>EGV 40 / CW QRP 40m Transceiver KIT .....</b>	<b>72,60 €</b>
<b>ILER-DDS VFO/DDS - Generator 0 to 40MHz.</b>	<b>50,82 €</b>
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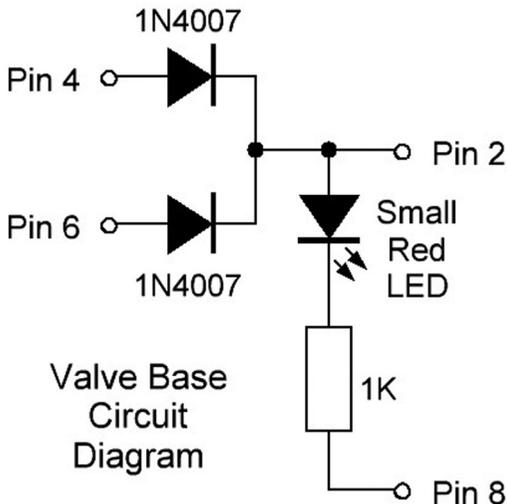
**SEE PAGE 15 FOR USING THE ILER 40 FOR PSK31**

## Rescuing a 5Y3

Stuart Vanstone, M0SGV, [stuartvanstone@btinternet.com](mailto:stuartvanstone@btinternet.com)

A 5Y3 rectifier valve was needed for a valve Tx/Rx project. One was found in the junk box but it failed the filament test, it was open circuit. Looking for a replacement valve online I saw a substitute for sale, it seemed to be just the valve base with the cavity filled in with potting compound. I surmised I must have a couple of diodes hidden under the potting, something like the 1N4007.

I managed to find and purchase a proper 5Y3 but I also thought I would try to use my old one to make a solid state replacement. The glass bottle of the valve was just starting to work loose, so with a bit of wiggling the wires fractured and the bottle came away from the base. The wires were de-soldered from the base and the pins cleared of solder by heating and tapping the base on a hard surface (watch your eyes) the diodes were wired in but kept as low as possible to allow the bottle to be refitted to keep up appearances. To preserve the warm glow a resistor and a small red led was wired to the 5V heater pins. The salvaged led I had needed a 1K resistor to produce the right effect but you may have to experiment to get the right amount of glow.



The results were interesting; with the 5Y3 and without a load on the psu, 330V ht was obtained. With the diode substitute, 355V was reached again with no load. I have not had the opportunity yet to do tests under load conditions.

Once all is proved to work the bottle can be glued in place with epoxy resin adhesive and the valve will live on to fight another day.

## Using the ILER-40 Transceiver for PSK31

Ken Maxted GM4JMU, 18 Castleton Ave. Newton Mearns, Glasgow. G77 5NF

The ILER is a delightful QRP SSB transceiver. The kit is of very high quality and the construction manual is clear and very helpful. In my example all the coils were already perfectly peaked on receipt and no adjustments were required. As a construction project I can wholeheartedly recommend it. I particularly wanted to use the ILER to keep PSK 31 skeds and it has fully lived up to its promise in this respect. I was not interested in using it for SSB speech although I am certain it will perform well in this mode.

There are some minor modifications that improve its characteristics for PSK 31 use:

- 1) a computer interface
- 2) revised transmit audio gain
- 3) VXO range restriction (for enhanced stability)
- 4) Alternative driver transistor with higher feedback applied.

Possibly the most important is the VXO modification. I found that the rig drifted as much as a hundred hertz during an extended QSO, principally due to the warming of the VXO coil by the pre-driver transistor- closely adjacent to the VXO stage. This meant that I lost frequency lock with stations.

The interface is a more or less standard design but the parts can be obtained very inexpensively from Farnell. It was mounted external to the rig. I elected to reduce the transmit audio gain along the lines of the construction manual suggestion for electret microphones: reduce R6 (IC1 preamp) to 22k. This means that the microphone input is directly compatible with computer line-out levels and runs with the computer audio set at about 60%, no requirement for additional attenuation and it confers a reduction in the possibility of mains supply hum pickup. The opto-isolated PTT will drive the Tx/Rx relay and is protected against reverse emf.

Please note that the PTT will be activated when the computer boots up and before the PSK interface is loaded. It is a good idea to switch the rig on after loading up the PSK program, however no harm will come if you ignore this as the output power without audio drive is very low- it is simply bad practice!

In initial trials of the original circuit I had some poor IMD reports that suggested non-linearity, output power also dropped about 30% on extended QSOs even though the PA was running cool. I decided to replace the BD135 driver with a 2N3866 and increased R44 to 3.9 ohms. (Use the alternate TO5 transistor pad arrangement on the board for the 2N3866). This increases the negative feedback and potentially improves linearity. It is important to keep the drive level to 2Watts RMS output on the “tune” setting of the PSK interface (the rig will comfortably output 4 watts but IMD increases). IMD will be around -22—23 dB. The mod is worthwhile but not absolutely essential- I am personally happier

to use a decent RF transistor for this application using a crown type heat-sink to improve cooling. On extended QSOs with the original transistor the IMD worsened along with falling output power suggesting that the driver was tending towards saturation and running non-linear, this no longer happens.

The VXO was first tried with a pair of 12.000 MHz timing crystals as a lower frequency alternative to the crystals supplied with the kit of parts. This gave coverage of 7.020 – 7.085 MHz- more than adequate to cover the 7.042.5 MHz segment. The drift was too great for comfortable PSK31 operation and it was tried with the coil removed (shorting link) giving coverage of 10KHz, centred roughly on 7.087MHz. As proof-of-concept the rig was tried at this frequency and worked perfectly without drift. A pair of crystals for 11.955MHz has now been ordered to centre operation at 7.042 MHz (LSB).

Please note that PSK 31 is sideband independent: the ILER is a lower sideband transceiver. Crystals cut to order are fairly expensive and a single crystal in the circuit would give adequate coverage for PSK use. The specification for a single crystal VXO is 11.957MHz, parallel resonance, 30pF, HC49U case, with a super VXO (parallel crystal circuit) the crystal frequency can be 2KHz lower (because the VXO swing will be greater), the spec is otherwise the same.

Crystals available from QuartSlab (but a minimum order charge may apply, so it could be a good idea to pair with another constructor and use the single crystal option).

Parts for interface:

Transformers.....1:1, 600ohms, Triad TF01380, Farnell part no TY145P (£2.49)

Opto-isolator....4N25

LED, colour and power to choice.

Diodes 2x 1N1418,

Zener BZY24,

Transistor BFY50

Resistors 1K, 1.2K

Additional resistors: 22k for the Tx preamp mod. 3.9 ohm for the driver feedback if a 2N3866 driver transistor is used.

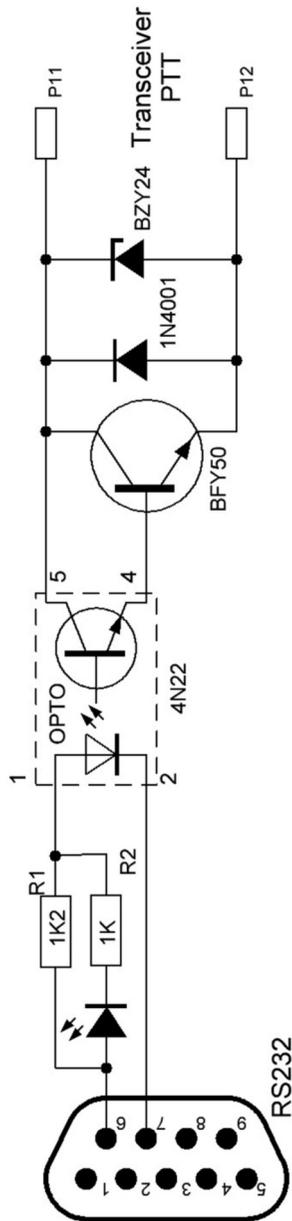
In summary I am amazed how easy it is to QSO with only 2 watts in PSK31 mode. Even on a seemingly dead band I have been able to QSO regularly and reliably with G3JNB at 350 miles distance using only a 17m end fed wire 5m above ground level. The ILER is a very well-designed rig and a joy to use.



Computer Line Output



Computer Line Input



PSK-31 INTERFACE FOR ILER-40 TRANSCEIVER

## Minimalist PSK31 QRP Station using a Kindle

Herb Perkins, WA2JRV, Dallas Texas (wa2jrv@aol.com)

I have been active on PSK31 since the first article on the mode came out in QST. I loved it from the start and quickly gave up my RTTY activities. However, I travel a lot and I like to take my ham radio hobby along with me. In the past this meant a TenTec 509, a home brew antenna tuner and batteries. I could easily find something to put up as an antenna and I had fun on CW but if I wanted to do PSK 31 the TenTec was not going to cut it.

Then I found the PSK20 at Small Wonder Labs (unfortunately Dave closed the doors and Small Wonder is no longer in business). I was hooked. The kit arrived, it went together easily, and worked my first time with a QSO from Dallas to Cuba on 3 watts. That almost makes a thousand miles per watt.

I used my MacBook to interface to the PSK20 and had only one complaint, My Mac ran out of battery before I was done having fun.

I looked around for alternatives and in each case there was a possible solution but I would have to carry additional computer batteries. That did not appeal to me so nothing further was done. That is until one day I found Wolfgang Phillipps (W8DA) at [www.wolphi.com](http://www.wolphi.com). He has written an application for an Android Tablet that would copy and transmit PSK 31. (Android PSK-31 available through either Google or Amazon ) I had a Kindle Fire HD that I like almost as much as I like my Mac. This just seemed to be too good to be true. With a little effort, not only could I create a truly transportable and minimalist PSK31 station but the Kindle would run for many hours on an internal battery. As a wonderful plus, I could recharge both the battery for the PSK20 and the Kindle from a solar panel or from the car. Now I would be truly portable and the whole thing would fit in a small backpack or oversized fanny pack.

My first problem was the interface to the Kindle. The software had been designed to use the internal Microphone in the Kindle as well as the internal speakers to both receive and transmit. This was not what I needed as the Small Wonder transceiver used 3.5mm audio cables so the search began for a supplier of the 4 conductor jack on the Kindle. My original plan was to build a simple interface. However, as I looked around the Net, I found a “Y” connector that looked to be just perfect. It separated the Microphone and speakers on the Kindle. No joy; the cheap cable did not cut off the internal Microphone and this made it useless. However, the search eventually took me to the iRig site (iRig is available through Amazon) and this ultimately turned out to be the answer to my interface dilemma.



By using the iRig I could use the headphone output direct to Small Wonder transceiver. I made up a simple interface cable using a 3.5mm audio cable to an XLR connector for the iRig. The iRig connected to the Kindle and the whole combination worked the first time. I only had to adjust the microphone input volume on the iRig and boost the speaker volume on the Kindle to make the software work perfectly. On my first try, a contact was made with K4PEW who gave me a 599 report at 3 watts into a dipole. He also put up with the fact I had to use the internal keyboard on the Kindle which made typing very slow. (Really painful to be more exact)

The next addition was a Bluetooth keyboard to sync up with the kindle and give me a real keyboard to work with during a QSO. A quick visit to my local computer store and by the evening I was on the air with my Kindle and my Small Wonder Labs PSK 20.

The set up has worked out well and I have enjoyed the combination. It will easily fit inside a small back pack or a large fanny pack. As I noted, I use an SLA battery that gives me all day operation and in a pinch will recharge the kindle using my cell phone car adapter

### Minimalist PSK-31



## RSGB Construction Competition

An email, from Graham Coomber, G0NBI, General Manager of the RSGB.

As you may know, the RSGB organises a Construction Competition each year that is judged during the Convention in October. This was first organised in our Centenary Year and has already established itself as part of the RSGB calendar with the award of the prestigious G3VA trophy to the overall winner in memory of Pat Hawker, the long-time author of the Technical Topics column in RadCom.

The G QRP Club is an organisation that I know is interested in this intrinsic part of our hobby, I am writing to ask if you would consider making an entry in 2015. There are categories for designers, craftsmen, beginners and junior Members – a category to suit everyone – with the opportunity of having entries published subsequently in RadCom.

We will be asking for entries at the end of the summer but it is not too early to start thinking about projects now in preparation. I look forward to entries from G QRP club.

Graham Coomber, G0NBI, [graham.coomber@rsgb.org.uk](mailto:graham.coomber@rsgb.org.uk) Tel: 01234 832701

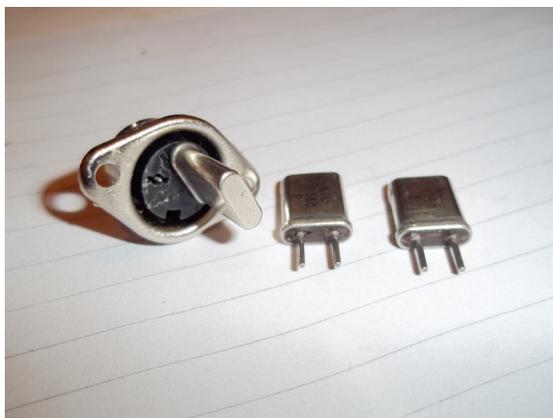
## Crystal Socket

Peter Howard G4UMB 63 West Bradford Rd Waddington Lancs

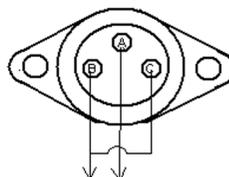
I thought I would share this idea I had with GQRP Club readers.

I have always had difficulty in finding suitable chassis sockets for the HC49U small type crystals. ( I got the ones in the photo. from the GQRP Club sales but I don't think they are for sale any longer).

I have found that a DIN socket can be adapted as a crystal socket by carefully twisting the connections in them so that they can be slid out of the socket and squeezed together to make them fit tighter to the crystal connections . If you use a 3 way DIN socket the holes can be wired as shown to enable a crystal to be fitted in either position. If anyone else can help me with an alternative solution to a socket I would be glad to know.



LINK B & C  
Fit Crystal across  
A & B or A & C



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

FOR TRADE: S&S-Engineering TAC-1 for 80m incl. manual, I would like to trade it for an ARK-30 incl. manual. Andy DH5AK, phone: ++49-431-89353, dh5ak@arcor.de

FOR SALE: MLX board and paperwork. White Rose project selection of boards (Rx and Tx), some with components. W3NQN passive audio CW filter. Small number of Denco coils. Some valve holders (inc for 807) and anode connectors. 9 MHz filters 2 of them. 50 MHz receive converter. Some small project kits. A job lot. All for a donation to charity! To be collected or maybe meet somewhere near the M62.

G4HYY - David - East Yorkshire - 01964 612998

# IK0IXI Mountain Topper 20m Transceiver

Fabio Bonucci, IK0IXI - KF1B, gqrp-italy@ik0ixi.it

G-QRP Representative for Italy

Last fall I worked on a new project; a simple portable 20m QRP CW transceiver.

My goal was to build a transceiver in the K.I.S.S. mode, easy to take with me in portable operations, demonstrations etc.....and the Mountain Topper is born. I live on the sea shore so “mountain” operations aren’t easy at all..I will use it for my camping next summer.



The Receiver is a DC type, tuned by a VXO with Classic SA612 - 741 - 386 trio.

The Transmitter is a simple VXO osc plus amplifying chain with relay operated offset. I pulled the crystal about 5 kHz, not great but very stable and

with a good CW note. I devoted particular attention to the antenna PB filter, which is very narrow to avoid BCI.

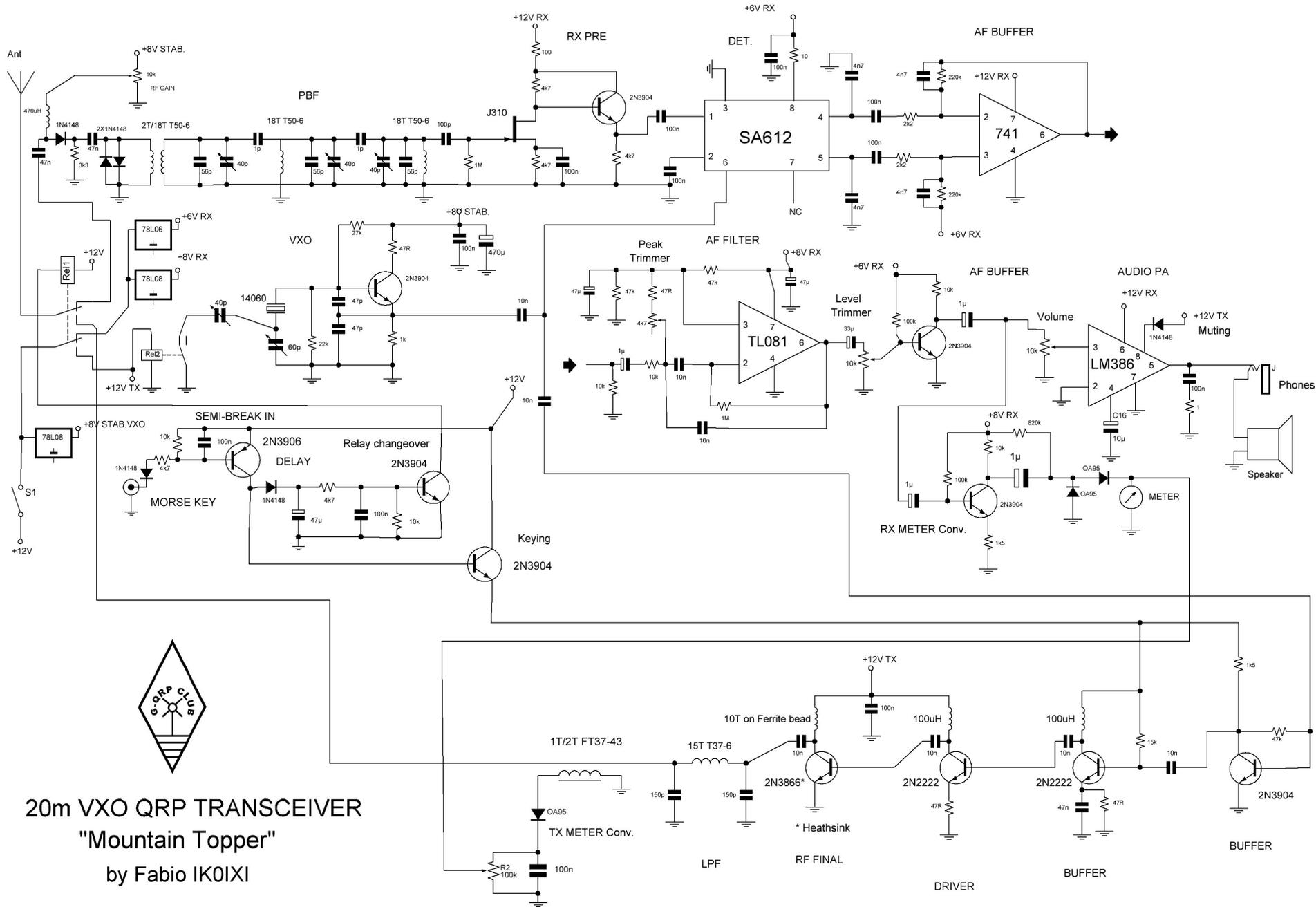
It’s a W7EL old design; a “must” in this family of receivers. The RF preamplifier is a high gain type and it works well to the PB filter which act as “roofing”.

The RF Gain control is “solid state”, useful when a neighbour ham is transmitting on the same band causing overload (there are 80 hams in my town...). I added an S-Meter from an FT-290R wreck, it works also in RX also thanks to a simple circuit, AF derived.



The audio filter is a OK1CDJ 2012 project. I found it as kit, sold on Ebay and made using SMD components. I built it with normal size components. It works fine and finally I have good reception “stand alone”, without help by Datong FL-3 audio filter.

The transmitting chain is very simple and it gets more than 1 Watt out. A semi-break in circuit allows “hands free” operation. I made more than 40 2XQRP QSO in few days, including G3VTT, GM3JKS, UR5TKM, SM7RYR/7.”



20m VXO QRP TRANSCEIVER  
 "Mountain Topper"  
 by Fabio IK0IXI



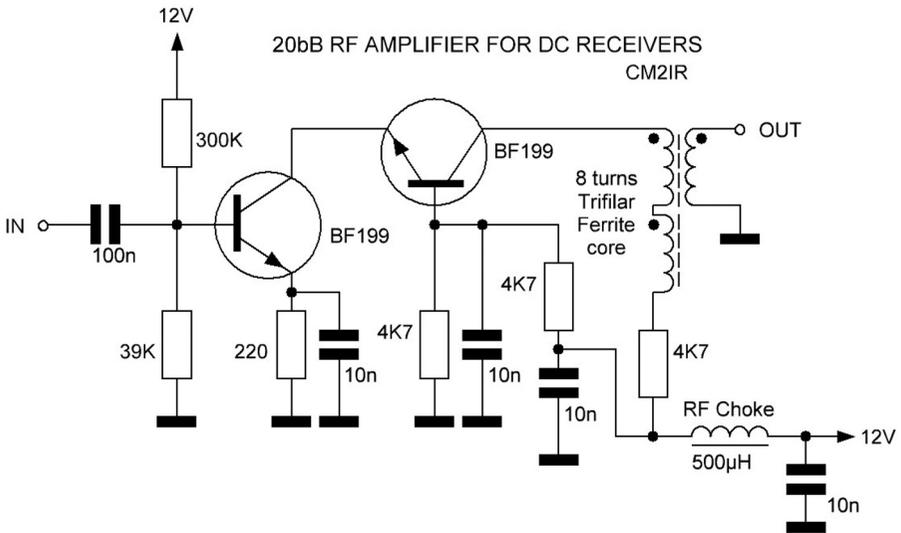
# RF 20 dB AMPLIFIER FOR DC RECEIVERS

ERMITA #233 APTO 20, C. HABANA 10600 CUBA

[cm2ir@frcuba.co.cu](mailto:cm2ir@frcuba.co.cu)

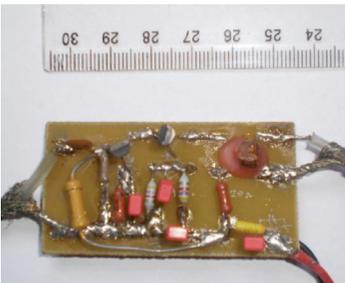
I built this RF Amplifier for my Direct Conversion Receiver. I use a Transistor BF199 because it works very well for 7 MHz. (Ft max= 300 MHz)

I probe this circuit in a HAMEQ Tracking & Spectrum Analyser, and the frequency response graphic was 20dB from 3 MHz to 35 MHz with very good linear performance! You can regulate the amplification with a potentiometer replacing the 300 K resistor.



**Fig. 1 Diagram Schematic.**

All capacitors are Polyester or Silvered Mica. The resistors must not be inductive types. The Balun can be 4:1 or 6:1 because output impedance of an RF Cascode Amplifier design is around 200Ω to 300Ω. The input capacitor is 0.1 μF with a resistor to ground of 39 KΩ. Input Impedance: 50Ω . Output Impedance: 50Ω



In the balun I use a little ferrite core but I haven't a serial number or type, but I think that you can use any ferrite because the frequency is low (7 MHz). I used three twisted wires (0.12 mm) with 8 turns around the ferrite core. If you have a Spectrum Analyzer and Tracking you build two baluns and connect as 50Ω-50Ω (IN-OUT) in each one you can observe the attenuation graphic of ferrite core.

# RUQRP Year of QRP activity

**Stan V. Sindeev, UA3LMR/RD2A, ua3lmr@mail.ru**

“Group members of RUQRP declare 2015 as “Year of QRP activity”. All radio amateurs in world, dedicated to QRP power are invited as participants. The motto of the event is the expression: “QRP activity on the air is better than activity on the Internet.” This event aims to enhance and promote the work QRP-stations regardless of their location, equipment, antennas, bands and modes.

First and the only rule - holding as many 2 way QRP (QRPP, QRPPp) QSO with the largest possible number of unique correspondents. Replays on different bands / modes in the result are not counted.

Recommended frequencies:

CW - 1810 kHz, 3560 kHz, 7030 kHz, 10106/10116 kHz, 14060 kHz, 18096 kHz, 21060 kHz, 24906 kHz, 28060 kHz

Phone - 1843/1910 kHz, 3690 kHz, 7090 kHz, 14285 kHz, 18130 kHz, 21285 kHz, 24950 kHz, 28385 kHz

Digi - at the end of the digital section for each mode

Year is divided into several stages:

Round I - January and February - all modes on 160-80-40 metres; Round II - March-April - all modes on 40-30-20 metres; Round III - May-June-July – all modes on 20-17-15 metres; Round IV - August-September - all modes on 10/12/15 metres; Round V - October - all bands only CW; Round VI – November - all bands only SSB; Round VII - December - all bands only DIGI.

Round winners are determined based on the results of each round. A QSO will not count for points if the station had been worked in a previous round. The absolute winner is the person who has contacted the most number of unique callsigns in the year.

All who participate and send a report, without exception, will be awarded an electronic certificate regardless of the number QSOs held. The overall winner among the members of the RUQRP Club will be awarded a valuable prize. When there is a will, you can establish your own prize / award in any category.

Reports on participation (in the form of extract from the log format ADIF / Cabrillo) should be sent to the e-mail address **logs@qrp-year.ru** within 3 days from the end of each month. Interim results are published on a monthly basis, the final results of our rounds and annual results are summed within a week after the receipt of the last report participant and published on the website **www.qrp-year.ru** Stories, records, photos and videos about the most interesting moments of participation in the event is mandatory for applicants for the top award. Their publication is available on the website **www.qrp-year.ru**, and elsewhere in the provision of links to familiarize with these materials to all participants.“

# Club Awards

Ryan Pike, G5CL, 63 Bishopstone Village, Nr. Aylesbury HP17 8SH.

Another Year and hopefully plenty of kind operating conditions to work lots of DX on the bands! I have been having a look at our club awards and following a few member queries, there seems to be a little bit of confusion as to who does what. To explain:

## Standard Club Awards

These include 'Worked All QRP', 'QRP Countries', 'Two Way QRP', 'CW Novice Award' and the ultimate 'QRP Master'. All these awards are handled by myself, so please send application directly to me at the address at the top of the page or via email at [RPike78088@btinternet.com](mailto:RPike78088@btinternet.com)

## Yearly Trophies

These include the 'G4DQP Trophy' (Winter Sports), The Chelmsley Trophy and The Suffolk Trophy. All these awards are handled by Dom M1KTA and applications/submissions should be made to him directly.

**Simple rule of thumb: If it says 'award' it is Ryan, if it says 'trophy' then it is Dom.**

If you have any queries, please email either of us for further clarification.

## 2015

I have been thinking about the current awards program and it seems that despite limited feedback from my last article, everyone seems happy with the existing structure and I therefore see no reason to change it. However, following conversations with a couple of very active GQRP operators, here are a couple of things you may like to turn a hand to this year:

**The 'One Hour' Award:** Very simple idea to see how many DXCC you can work with QRP in any one hour (you choose when to do it). Submit a log to me telling me your operating times, date and the list of stations you work and I will issue a certificate to you if you manage 15 (Bronze Award), 25 (Silver Award) and 40 plus (Gold Award) etc. Any mode (or a combination of modes), multiple bands permitted but strictly one hour operating time and QRP power limits. If anyone manages to work 60 DXCC in an hour a special small plaque will be awarded!

**All Continents in an Hour Award:** This is very tricky! I had this conversation a couple of years ago with Dave G3YMC and we have both done it, but it is far from easy and so much depends on operating conditions. Again, any mode, any time but only one hour and QRP power limits. Submit a log with your contacts which must include QSO's with

Europe, North America, South America, Oceania, Asia and Africa and I will issue you with a certificate to celebrate the achievement (I decided against including Antarctica, you will be pleased to hear!). From my own experience, it is something to try if you work a VK/ZL station first and then see what else is on the bands in the next 60 minutes. Might be one for contest season?

The aim of these two awards is to stimulate a bit of on air activity but at the same time, not take up a whole weekend or year slaving over the rig. It is also a bit of fun seeing what you can do in just 60 minutes and gives you the perfect opportunity to meet like minded souls– you could be surprised!

### **Buildathon Operating Challenge Results**

Following the Buildathon Challenge at Risworth (Tennrick Transmitter), I am very pleased to announce that the winner is Don GOACK who has supplied me with an impressive log of contacts he made on 40m using a mighty 200mW. Don's best 'DX' was a QSO with Victor SM7ZDI in Kagerod, Sweden, a distance of 628 miles from his QTH. Congratulations to Don and hopefully many more QRP contacts to follow.

## **QRP365 Challenge**

**Nigel Booth, M0CVO, m0cvo@yahoo.co.uk**

This year I have set myself a challenge, the QRP365 Challenge. The target is to make at least one QRP QSO every day of 2015 using either CW or Data (PSK). The maximum power used will be 5W RF, sometimes less.

Equipment in use will be a X1M TRX, and FT817 TRX or the TS-480SAT at its lowest power setting of 5W. I will be using PZT Log for Data modes (PSK31, PSK63 or PSK125) and an MFJ-564 iambic paddle or Kent paddle for CW.

I will be keeping a blog of my progress and achievements here:

<http://m0cvoantennas1.wordpress.com/2015/01/04/qrp-365-update-1/>

if anyone is interested. All I ask is that if anybody does hear me calling on any of the QRP frequencies they come back to me to enable me to continue with this challenge. A QSL card will be sent to all stations with whom I make contact both via the RSGB and via e-ql.cc.

Nigel Booth, M0CVO, GQRP #13966

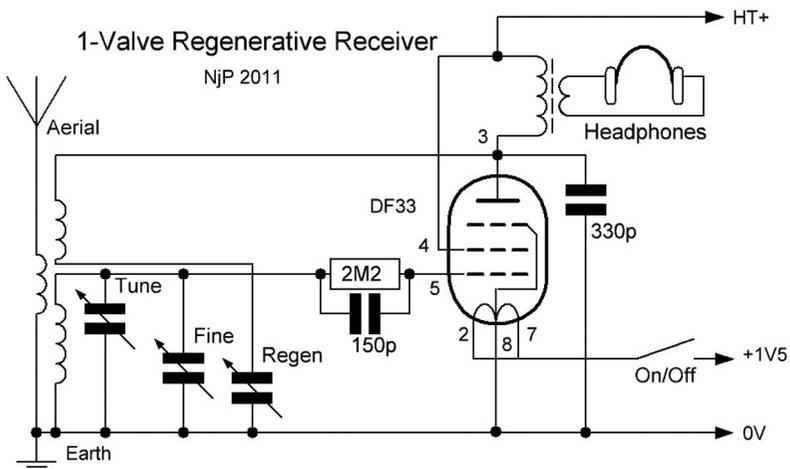


## W1FB MEMORIAL ENTRY

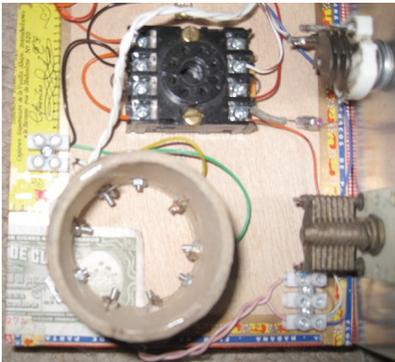
# A Gift involving Radio Fun

How to make a radio under the pretence of making a gift...  
Nick Pettefer on4Nic / m0NjP (nick@pettefer.com)

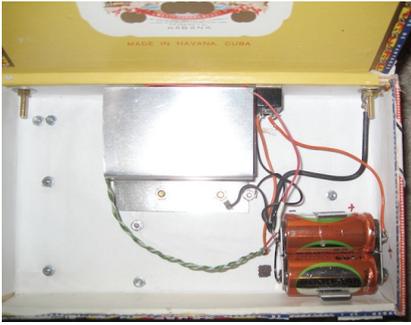
Everybody I know has everything. Buying gifts for people nowadays can be problematical, it's not as if anyone needs anything really. We were visiting Munich and meeting up with some very good friends and it was my friend's birthday and I wanted to get him a gift. He is a bit of a gadget-lad, like a lot of us, and I wanted to trigger an interest in him for radio. I hit upon an idea to make an exclusive interesting functional gift for him that would give him fun and a sense of achievement and would not cost me very much at all. Good idea? - you decide.



My idea was to build a simple one-valve regenerative receiver for him and, this is the good bit, take it apart again and present it to him in the form of a kit. Not knowing if he could solder (or if he could if he was willing to do so in a flat with three young kids) I decided to make it achievable using a screwdriver instead.



First of all I assembled the parts: a nice cigar box free from the local tobacconist, an aluminium front panel cut to the size of the cigar box lid, a cardboard postal tube for the coil with a couple of aluminium off-cut brackets to secure it to the cigar box, a small output transformer and 3.5mm socket so he could use modern telephones, three variable capacitors with knobs, tune, fine tune and tickler control. A couple of suitably old-fashioned components for that true retro look and, best of all, a battery pentode in its original pre-war packing box, complete with BVA guarantee! I found a suitable octal



relay socket in an electrical shop with screw connectors and an old-fashioned on-off switch, a choc-block connector, a C-cell holder and some PP3 clips completed the parts list.

I wound the coil, including an aerial winding (four turns?), tickler winding (five turns?) and the main winding, which I kind of guessed at, pitching it at the high end of the MW band and including some SW. (The impedance of the coil will need to match the capacitance of the capacitor to give the frequency band you desire but I am surely teaching

an Italian how to boil spaghetti...) The actual frequencies were not important to me but you may have differing requirements. I used clear adhesive tape to hold the windings in place and bolted bent solder tags to the bottom to cognacs the windings to. I then soldered wires to the coil and all the parts that didn't have leads. Be prepared to reverse all the coil windings' connections in your quest to getting it working!

I made a bracket for 3 PP3 batteries from a bit of gash ally, by making two bends and drilling a couple of mounting holes and then bolted it to the inside of the case. I screwed all the parts and connections together, inserted the darling valve, threw a length of wire out of the nearest window and stuck an iPod earpiece into my head... Well, what did you expect? - the set worked fine and received a host of stations (it was after dark) and there was CW, music, hisses galore, plenty of unidentifiable foreign stuff and even maybe a bit of SSB! Fine stuff for a first radio for my friend I thought. (Actually, I am such a liar; I spent ages getting it to work satisfactorily... The output transformer and the bypass capacitor went through a number of revisions before I was satisfied and I fiddled with the HT too before settling on 27V - 3xPP3s).



Now came the next fun part, the disassembly! First of all I colour-coded everything that needed it; I then took lots of photographs and then carefully drew a circuit diagram, making sure the circuit matched (important!). I next wrote the assembly instructions and made a little video so that he had proof it worked! I put all this material onto a CD for him. I then carefully disassembled the set and put all the parts into some small plastic bags, making sure the variable capacitors and the valve were well packed.

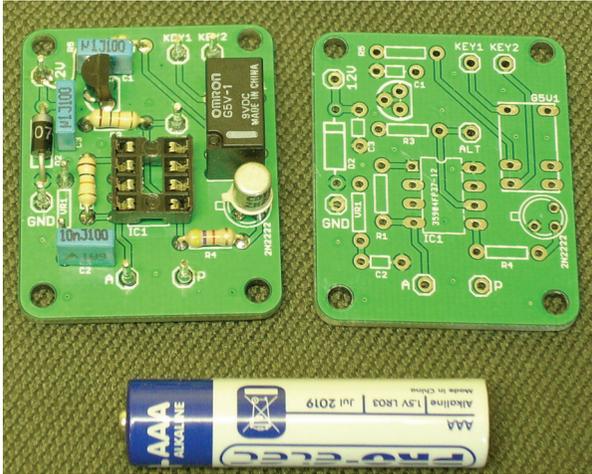
I managed to put everything into the cigar box including a long length of wire for the aerial and the front panel went on top. I then wrapped it up ready to present to him, a really unique gift!

He was really surprised, intrigued and thankful for his gift and couldn't wait to get home and start to put it together – just the result I was looking for. To me this was a success and really cost very little.

# cwmadeasy

An aid for operators with hand mobility problems  
Mike Wainwright G0CWM, 7 Woolacombe Ave, St. Helens. WA9 4NQ

cwainwright1@hotmail.com cwmadeasy@gmx.com



What got me started on this project was the onset of what the Doctors said may be Parkinson's. I only use CW and my hand shake was a big problem. So I sent for a PK4 keyer chip, but it was not user friendly, so I wrote my own program and came up with the "cwmadeasy".

The board is supplied ready built. There is no need for the operator to worry about programming (4 pages), it's all

done for you. I just need all station details i.e. name, qth, rig, aerial & power or any other information. There are some pauses in the QSO, for the other station's information. My pauses are set at 6 seconds, that may seem a long time but if the station you are working has a long call-sign you can just about fit it in, I send at 14 wpm. The speed is set by a fixed resistor, or a 10 K Pot, speed control; it is a bit touchy but OK.

Board size is 40mm + 35mm small enough to fit inside a home-brew rig. I have used an Omron G5V- 1 relay so it should key any rig. The circuit diagram and full information are supplied and there is an idiot diode fitted for polarity protection.

If you need change any detail i.e. change of QTH or Rig just post the chip to me and I'll do that free - just cover the postage. To complete the project you will need a couple of push switches a metal box, a jack socket and plug.

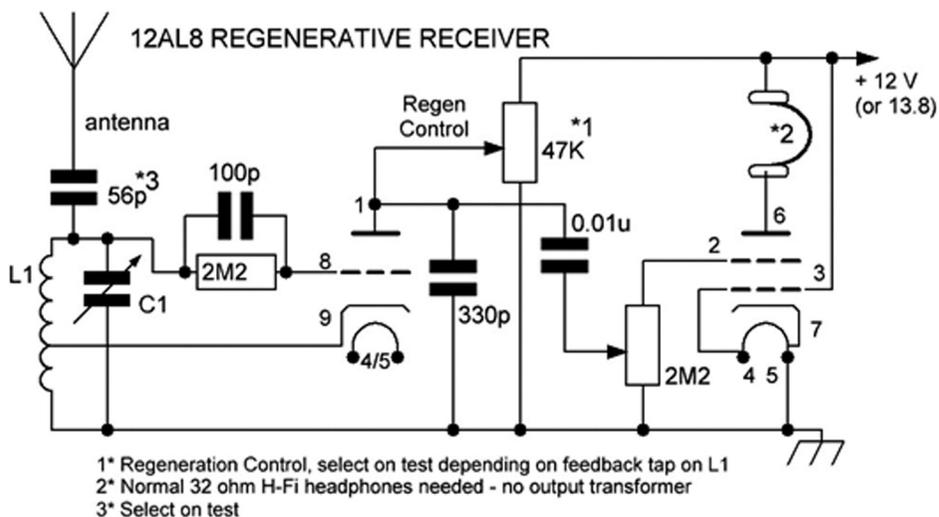
Cost to G-QRP members is £20 plus post, non-members £25. Please allow 5 working days payment is by PayPal. All boards are fully tested before dispatch.,

The YouTube Video shows the link to [cwmadeasy@gmx.com](mailto:cwmadeasy@gmx.com) and details on what message you want to include in your QSO. I will confirm your details by Email.

## Antennas Valves and Vintage

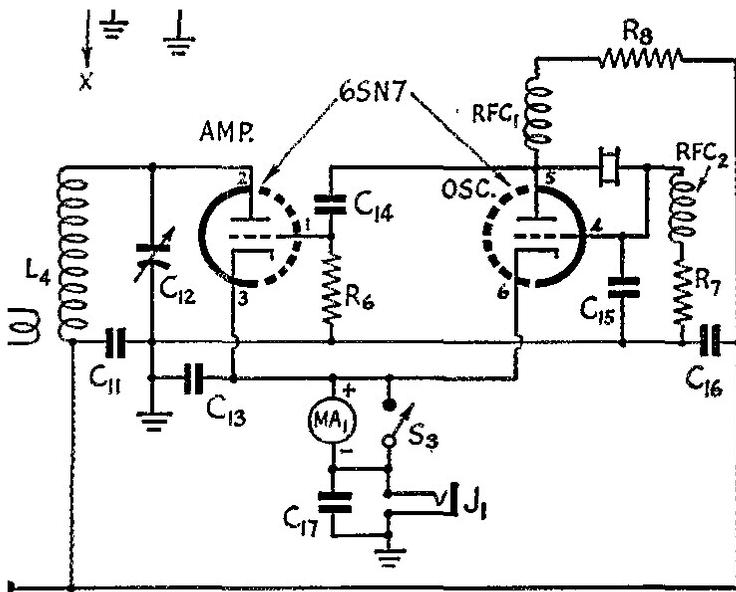
Colin Turner G3VTT 17 Century Road Rainham Gillingham Kent ME8 0BG  
[G3vtt@aol.com](mailto:G3vtt@aol.com)

I hope you all had a nice Christmas break with plenty of contacts in the Winter Sports. Here at G3VTT the one valve TX seemed to be switched on most of the day and night. There were a lot of low HT voltage valves made both on the US and Europe in the 1950's and early 60's for car radios which lend themselves to simple receivers. Some time ago Bill Whiffen sent in details of a low voltage TRF receiver that might of interest to those planning a receiver for portable or camping purposes. At least you won't get a 'belt' or shock from the low voltage HT supply! Bill writes: I thought Sprat readers might be interested in this 'space charge' style regenerative set that I have been experimenting with. Over the past few years I've been building different types of 12 volt valve regenerative receivers, either your innovative designs, or Dave Shmarder's 1625 style circuits. I nearly always use a 12K5 or 12AL8 as an output valve for my receivers but never thought that a regenerative receiver using a 12AL8 on its own as detector, oscillator and output device would work very well at all. I was wrong!

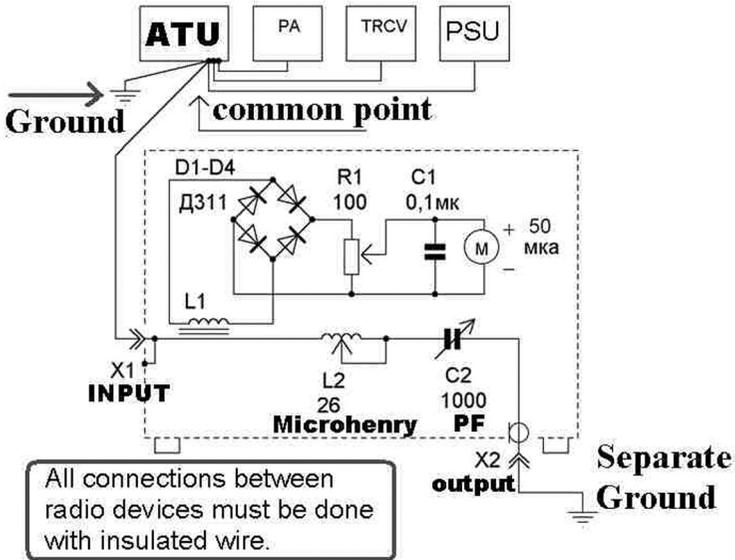
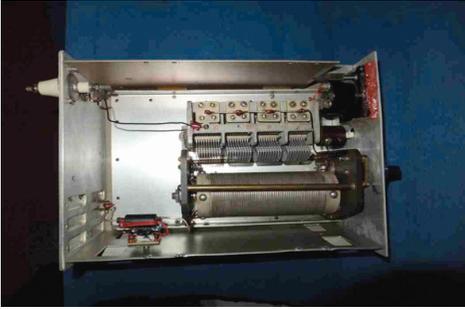


This remarkable valve seems to work very well indeed easily resolving SSB up to 17 or 18 MHz without the regeneration effect becoming unstable. An added bonus is that it works without an output transformer loading directly into a pair of normal 32 ohm Hi Fi style headphone with so much audio output that I've had to incorporate a volume control. I thought this might be worth considering for publication in Sprat at some time in the future as a project that would appeal to readers, firstly because of its simplicity and secondly for not requiring an output transformer or high impedance headphones. (or high voltages!

G3VTT).The valve is readily available from Langrex for a fiver but there are more than likely other sources out there on the net. If you get a chance to build it I'm sure that you won't be disappointed. Let me know what you think, or if there are any improvements that you can make. Try <http://stores.ebay.co.uk/GWW-Sales?trksid=p4340.12563> for supply from the US or contact Langrex at 01403 785600 who may be able to help you here in the UK.



The triode valve transmitter theme has certainly taken off with circuits coming in from members. An unusual double triode circuit was described last time using a grounded grid amplifier driven by a crystal oscillator - simple, stable and fun. Pete N6QW dug into his stack of old QST magazines and found a more conventional circuit. I recently got my Sprat (it takes a bit longer to reach the left coast of the USA) and was intrigued by the 6SN7 transmitter - although a bit hard to read. (That's how it came to me Pete). Attached is something from a 1952 QST article which uses the same 6SN7 albeit in a slightly different oscillator configuration. Regrettably, as typical with some of these older QST articles and even some of the current ones, key component values have been omitted - I guess proof reading is not a requirement before publication in QST. I suspect 2.5 mH chokes will work fine and the tank coil parameters for the transmitter are not present but with a bit of calculation assuming that at 7.030 MHz you would need 60pfd (C12) to resonate L4 then L4 is about 8.5uH. With 29 turns on a 1inch diameter pill bottle about 2 inches long should get you close, maybe number 20 or 22 gauge enamel wire held with coil dope. I would use maybe 10 to 15% of the number of turns for the link, about 3 to 4 turns. I may have to take the plunge myself! BTW really like the AVV format.73'sPete N6QW (The link <http://glowbugs.net/portable.pdf> will give full components details of this transmitter and its companion receiver. G3VTT)



Gary EW1MM in Belarus has sent me details of his earth tuner which is used to simulate a quarter wave connection at the ‘Separate Ground’ point. He uses this to keep RF of the transmitter chassis and so prevent radio frequency interference locally and improve antenna efficiency. I’ve used this idea myself a number of years ago where my homemade earth tuner, just a series tuned circuit, was used to load a 9m (33 foot) wire as a counterpoise on 160 and 80m when used in conjunction with a 25m (85 foot) wire. The whole lot fitted into a tiny garden and worked quite well. Note the way the RF is monitored using a ferrite core. A few turns of wire on a core and four 1N4148 diodes should do the trick with the ground wire passing through the core and you should tune for maximum RF indicated. I used to initially connect the counterpoise wire to the receiver input terminal and then resonate the series tuned circuit for maximum signals on the band before reconnecting the tuner and ground wire and tuning for maximum RF.

## Valve QRP Day Report

*Thanks to all of you who operated during the November Valve QRP Day. Activity is the key word here after some experimentation and work with a soldering iron. Reports received as follows: A brief report, I used my 6V6 co/pa TX and a Drake 2C RX but being crystal controlled found QSOs hard to come by particularly as my 3560kHz rock failed and my nearest on 3557 attracted little attention. I heard you in the morning on 80 working Rupert G4XRV and again on 40 later in the day but couldn't attract your attention as we were some 1 KHz apart! In the morning on 40m I worked G0GY Y and GM4AJV. In the evening on 80m worked G1SCT and S51WO Please do it again! I may have built a vfo by the next time. 73 Derek G3NKS (If you are on the QRP frequencies then don't forget to tune around for those crystal controlled stations who may be off your frequency). From Bill G4GHB Again I used a 61BT time base line output valve TX running one watt out on 40m but I forgot I used the choke and smoothing capacitor in another power supply previously! Out came the soldering iron! The Rx was an FR100B. Then I thought the TX wasn't quite tuned up properly and not oscillating so I kept adjusting it when I worked you but it turned out it was an internal break in the single screened wire to my key after years of repeated bending I guess. The aerial was a 40m indoor dipole around both bedrooms. One day I might get on without any problems as it seems something happens every year. From Paul G4VAM. Hi Colin just to say thanks for the QSO this afternoon. I was surprised by the quality of the signal from your 12A6 transmitter and am looking forward to the article appearing in Sprat. I was QRV with my valve rig this morning from home but found it difficult to make myself heard through the hullabaloo so I decided to go /p this afternoon so that I could put up a more effective antenna. The W3EDP works well on 40m. As it got darker I took it down and put up a shorter quarter wave sloper which is easier to reel in when there is no light. My antenna support is a 6m fishing pole. My /p location is an open grass field about 1km from home. I can leave home and be set up within twenty minutes or fifteen minutes if I put up the sloper. I used the car body as the ground.73 and good luck. Paul G4VAM. This was Graham GM4OBD first valve QRP Day with a TT11 valve, a valve type I first used in 1966 in my first transmitter. Saturday was a first for me in two ways. It was the first time I had participated in the valve QRP day and the gear I used was the first HF TX I had ever built. I thoroughly enjoyed working the few stations on 40 m including you. You asked me to tell you what was in the PA. The TT11 is a super wee valve that does what it says on the tin or at least in the valve data book. With 250 V on the anode and a loaded plate current of 30 mA or so it develops 5 W output, (4.8 W in the valve data book!). As there is no sidetone, no VOX and no muting of the RX it is quite different to use compared to the standard rig of today. A bit of real radio! I'm looking forward to future QRP valve days already. I hope to have some of these missing features sorted by then. 73 Graham GM4OBD A regular participant is Kare YU7AE Hi Colin here is my short report of my activity in Valve QRP Day working on the 80 and 40m bands CW only. I made a total 19 QSO's with 13 contacts on 80m*

and 6 on 40m. This gave me 15 DXCC score of countries. My best DX was HV0A on 80m through a pile-up and the most interesting QSO was with Z31JY. The operator was Mile aged 89 and a fine CW operator. I was working from my portable location near Srbobran, (the MW AM TX site of Radio Novi Sad) and I was using a Collins 51S-17 tube receiver. The transmitter was an RUP-4 which is an ex YU army radio, a modern version of AN/GRC-9, with a solid state power inverter. It uses 3x 6AK6, 1x QQEO03-20 and 2x ECC82 giving about 4-6W on low power depending on frequency. The antenna was a W3DZZ. *From Chris G3XIZ* Hello Colin, another enjoyable Valve Day has passed and I was actually QRV on the right day this time! As usual I dusted off my home brewed TRX and made a few 'improvements' including the winding of two new plug-in coils for the regen RX. Consequently I can now operate on 160, 80, 60 and 40 m although only rock-bound on the QRP frequencies. My transceiver has 4 valves, a 2 valve RX and a 2 valve TX (CO / PA) with an EL84 PA giving about 2 watts of RF. My attempts to get a ceramic resonator working and thus be more frequency agile have so far fallen on stony ground. The frequency drifts quite badly as the resonator warms up so I guess at valve voltage levels they are unsuitable. Anyway I managed 11 QSO's with 9 stations:-DL6UHA, F3ET, G3MJX, G3YHO, GW3UEP, G4NCU, G4XRV (twice), M0FMT (twice) and HA8DD/P. Seven of these were QRP and four were running valve equipment. Most contacts were on 80 m with DL6UHA and HA8DD/P being on 40 m. I had a single QSO on 160 m with my local pal M0FMT but despite several CQ's didn't attract any other contacts on that band. I've just had a thought, how about making the next event a 'Valve Weekend'? This may improve the incentive for a few more ops to dust off and fire up their old gear. 73 from Chris G3XIZ. *Finally Adrian G4GDR* I was QRV with my 6V6 transmitter with a 132 foot wire. I was mainly on 40m CW on 7028 and 7030 every half hour. I worked ON5AG, G3ROO and was also QRV on 5MHz.

### **Valve QRP Day Easter Saturday April 4th 2015**

The next Valve (Tube) QRP Day will be on Easter Saturday on which ever bands you work. It is not competitive, (there's too much of that in life), just be active using your homebrew or old style equipment using QRP and valves and have fun. I'm always interested in your comments and pictures and I'll try to put the pictures in this column but there are space problems in Sprat. You can always operate on Easter Sunday if you want and make it a weekend event as G3XIZ has suggested. The purpose of these events is to stimulate homebrew, operating and activity and with many participants using slow but effective CW speeds it might be a chance to brush up your CW skills if you join us.

Have a great spring and early summer and please keep sending me your notes, circuits and any antenna designs you may try to encourage others. Contact me at [g3vtt@aol.com](mailto:g3vtt@aol.com) or write to the address in the header of this column.



# MEMBERS' NEWS

by Chris Page, G4BUE

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My request in the last *SPRAT* for your QRP DXCC scores led **OM3CUG** to say he achieved 300 DXCC with QRP CW in May 2008. Igor's band totals with 5W are (cfmd/wkd) 160m 83/86, 80m 109/113, 60m 6/21, 40m 195/209, 30m 213/233, 20m 285/298, 17m 237/263, 15m 262/286, 12m 240/267, 10m 241/265, 6m 34/50, all bands CW 323/330, all bands SSB 188/254 and all bands digi 82/115, and with 1W 160m 32/34, 80m 53/56, 60m 1/1, 40m 51/60, 30m 55/59, 20m 84/92, 17m 7/8, 15m 22/31, 12m 4/11, 10m 26/39, 6m 2/1 and all bands 105/115. For the last three years he has been using a kit built ATS3B, see <[http://om3cug.rajce.idnes.cz/QRP\\_CW\\_SMD\\_Transceiver\\_ATS-3B\\_podla\\_KD1JV/](http://om3cug.rajce.idnes.cz/QRP_CW_SMD_Transceiver_ATS-3B_podla_KD1JV/)> and with help from **G8TMV** has added 60m. He is the only OM QRV on 60m but his licence will expire in February and so I am pleased I QSOd him on 20 January on 60m! **GM4HQF** is close to 200 DXCC confirmed, a lot on QRP, using dipoles, linked and trap dipoles, end-feds, mobile whips and random bits of wire at his apartment building. **PAØRBO**'s confirmed DXCC is 151. Ron's best DX in 2014 was **ZL4PW** on 17m CW with his K3 at 5W to a two-element cubical quad at 26 feet, and **B4L** in the CQ WPX Contest on 15m.

**W7CNL** started using QRP about 1986, after getting a bit burned out chasing DX, with two personal goals - 300 DXCC and 100 DXCC two-way QRP, and achieved both about two years ago, his current scores being 302 and 103 respectively. John writes, "Having been in the DX chase for many years, I have pretty decent antennas, five-element monobanders for both 17m and 20m which I continue to use with 5W and down to 5mW levels. Of course the antennas were a big advantage and shortened the quest by a number of years. Right now my focus is on SOTA which has aspects of both DX and QRP. Today the challenge seems to be working a QRP station on a mountain top in EU or VK". **G3YMC** is standing at 254 wkd/231 cfmd (since 2002). Dave keeps a note of annual DXCC totals and how long it takes him to work 100 DXCC each year. In 2014 he made 144 DXCC and got the 100 in early March. As of 6 January he was off to a flying start to 2015 with 39 DXCC.



Congratulations to **CO2IR** for winning this certificate in the QRP section of the 2014 CQ WPX CW Contest for first place in North America on 20m with 106,029 points. Congratulations also to **GØFUW**, **G3VTO**, **G4YTN** and **MØTGN**, the Bath Buildathon Crew, who hosted the successful 8th Bath Buildathon on 6 January. Steve writes, "This year's project was the new Walford Electronics Rode superhet receiver. Twelve builders started the day with some building for 20m and others for 40m, but no one elected to do the 80m version. Attendees came from as far away as mid-Wales, Lincoln and Southampton. Not all kits were finished on the day but there were some European 20m and 40m signals filling the room before the event had to close down. Reports since have confirmed that all but two receivers are now up and running and some Rudge companion SSB transmitters are now under construction. One attendee said he was disappointed not to have finished on the day but the experience had inspired him to build more gear".

**GWØVSW** was QRV for a week from 19 November in Madeira as **CT9/GWØVSW** (right) with his FT-817 running 5W CW, LDG Z-817 and half-size G5RV mounted on the hotel roof. Carl made 63 QSOs with 24 DXCC on 40, 30, 20, 17, 12 and 10m, despite a good deal of static noise due to thunder storms which made things hard going at times. He found little QRP activity around despite many 'CQ QRP' calls and his best DX was on 20m with **PY6JRP** and **PS7HD**. To promote QRP CW **F5NZY** says **F5SJB** will use special call **TM5CW** on the 5th of each month January-May 2015. Two QSOs with **TM5CW** on two bands qualifies you for the Telegraphy Diploma from the town of Lons le Saunier from **F5SJB**.



Back in 2011 **G5CL** asked if anyone had WAC with QRP in under an hour. **G3YMC** doesn't think anybody claimed they had, though some were pretty close. During the CQ CW Contest on 30 November Dave did WAC in 58 minutes with the following QSOs, all on 20m: 0830z **CR3L** Africa, 0832z **KL7A** N America, 0838z **OM7RU** Europe, 0844z **HD2A** S America, 0900z **VK2DX** Oceania

and 0928z **UBØA** Asia. He says if he had been trying a bit harder he could have done it in 30 minutes as there were plenty of Asiatic Russians about. Congratulations Dave. Also in the CQ CW Contest **G5CL** concentrated on 40m and added JA, BY, V4, 6Y, PY, LU, VP2E, A7, 4K, 9K and 8Q to his DXCC on the band. Ryan says, "I was utterly amazed at how easy it was to pick these off as many of them were begging for contacts if you were prepared to fish around amongst the big guns who were spluttering all over the place". **MØVAA** also went 40m in the QRP Assisted class with his K3 and aged Cushcraft R7 (base elevated about 12 feet) and found the first eight hours the best he had experienced on the band. Gerry says the highlights were working a VK and **H13A** with a single call, **VU4KV** after a few calls and eventually getting through a pile-up for **ZD8O**, who very kindly kept the mob at bay for at least a minute while he copied his full call. Final score was 620 QSOs, 26 zones, 98 DXCC for 27 hours operating. **G3JNB** ran his 'truly venerable' Heathkit HW8 with 500mW on 40m and 300mW on 20m to a low multiband doublet in the contest and found it 'entertaining', especially with its DC receiver. Victor says, "As always, a delight to be called back by the real FB operators who actually listen for any calls that are below S9+".

The photographs right show **G4ICP**'s Antennascope he made over Christmas, a junk box build, cost = zero! It is an old fashioned RF bridge, but extremely simple that Richard thinks was originally designed to be driven by a GDO, a valve one he expects as it needs a bit more grunt than his single FET 'GDO', not enough meter movement. However, not wishing to give up, especially after filing out a large hole for the meter, he tried driving it with the minimum power from the IC-703 running into a dummy load and it, "Goes like a train, 80% meter deflection which falls gently to a dip as you tune through the desired band, which you then adjust for best dip with the variable resistor, which in my case is a 220 ohm linear". Colin has calibrated it up to 100 ohms which has been sufficient so far and thus, the meter dip shows resonant frequency as read from the TX frequency, and the pot directly reads feedpoint resistance. The only web article he could find was <[http://www.qsl.net/we6w/projects/Ant\\_scope.txt](http://www.qsl.net/we6w/projects/Ant_scope.txt)>, the circuit is the same as **W6SAI**'s design in his *All about Yagi Antennas* book. **G3XAP** made reference to the antennascope in his excellent series of antenna articles in *Short Wave Magazine* some years ago. So far Colin has adjusted his 40m mobile whip bang on to 7160kHz for his WAB activities and it has been invaluable tuning up a **W3DZZ** trap dipole.



The Atlantic Challenge 2015 is a fund raising event for St Margaret's Hospice in Taunton, Somerset by **G4RBP**. Rowena is planning to sail a 72 foot yacht 2200 miles as part of the crew from the Bahamas to the Azores, departing Bahamas 28 February and arriving in the Azores around 21 March. To help her raise funds, she intends to take a Rockmite 500mW TCVR attached to a 'Whizz Whip' to work /MM with QRP throughout the voyage – or at least when her watch keeping duties allow! Amateurs who would like to support this venture by donating, may either pledge a sum of money per contact and thus pay on her return, or donate directly to her fund raising site at <<http://uk.virginmoneygiving.com/wetwindy>>. Two websites with details of the enterprise are <[www.challengeofalifetime.org.uk](http://www.challengeofalifetime.org.uk)> and <[www.wetwindy.me.uk](http://www.wetwindy.me.uk)>. **IKØIXI** will be QRV 15/30 June from a camp-site on Trasimeno Lake with his homebrew 'Mountain Topper' (1W on 20m) and end-fed antenna. **SM7EQL** was QRV 29 November/6 December as **VP5/SM5EQL** with a KX3 at 10W into verticals and dipoles.



**G3JNB** tried 'milliwattting' in the Winter Sports with this 'venerable' HW8 and 300mW on 20m and 500mW on 40m (left). Victor matched his personal target of 50 QSOs, however the timely arrival, in his Christmas stocking, of a tough supervisor 'CW Bear Esq', ensured he did not actually succumb to the temptation of reverting to his trusty FT-817! Whilst operating as **W1AW/4** from Florida in November I was pleased to QSO **GØKYA** running QRP on 12m. **G3VTT** called CQ on 22 November on 7030kHz with 5W from his one-valve crystal oscillator and was called by **WØJX** in Ohio, repeating it two days later with a report of 449. The antenna was a coax fed Windom at 30 feet and Colin says it was a 'real QSO' with questions and answers back and forth. **G8XUL**'s first retirement project was to repair his **G5RV** antenna and wanting to check it, with no commercial radios available, dusted off his Pixie 2 running 200mW through an ATU. Dave used the RBN to see he was being heard in eight EU DXCC and then on 23 December was heard by **K3LR**, 3750 miles away at 18dB SNR. He says, "Wow! I was well chuffed! So far this fascination in minimalist radio has lasted over 40 years and

survived a professional telecomms engineering career”. **G5CL** QSOd **VK2DX** on 28 December on 40m. On 29 December **M3KXZ** put the antenna on his vehicle, drove up the road, called CQ on 12m and was answered by **7Q7BP**.



Since October **M1BUU** has been building a 20m BITX SSB rig, but instead of using the traditional L/C VFO, has used an Arduino Pro Mini to control an AD9850 DDS module to provide the LO. Colin says the Arduino also runs a four line LCD with frequency readout, RIT status etc. The microphone is home-brew using a cheap electret insert from eBay. He tried the rig for the first time on 1 February and worked **DH7SA** with a 59 report, see <<http://youtu.be/U7c6Rr10hRE>>. Colin thanks **MØXP** for the Arduino code, **N6QW** and **N2CQR** for advice and support, and not forgetting **VU3ICQ** for sharing his great design. Toroids and diodes came from **G3MFJ** at club sales. **M1KTA** finally got his

Hustler 6BTV vertical back up after six months without a permanent antenna. Dom is looking at redoing **G3ROO**'s RAMU but using RG213 coax capacitors, Arduino control and prebuilt relay modules, and whilst working away from home playing with Arduino code for a Minima specifically for UK covering 137kHz, 472kHz, 60m and dual Si570 (based on code from **K07M**, **WAØUWH** and **VU2ESE**). After listening to **N6QW**'s thoughts on the *Soldersmoke* podcast about using an Si-5351 with an Arduino in his 'Lets build Something' SSB transceiver series, **MØNDE** is building the modular construction project. Nigel completed the audio amp and is about to start on the DBM. He still plans to persevere with the rescued FT-707 boards currently laid out on a plank for further refurbishment (*SPRAT 161 Members' News*) but says a cold workshop is not conducive to fast progress!

**G4JQT** recently acquired a couple of Heathkit HW8s and carried out the audio filter mod published in *SPRAT 161* by **MØCEM** and says, "It is spot on! I noticed the shift in audio peaks from wide to narrow and his simple resistor change made all the difference". Ian continues, "The only other mods I've done are the the 470 ohm in series with RFC1 to stop the motor-boating in the headphones during transmit on some bands, and the simple S-meter mod which fits nicely on a tagstrip next to the meter, just like the power meter components do on the other side. Of course it's not providing any meaningful readings, but it seems odd not having any meter movements on receive without the mod! I've also put four 3mm white LEDs in series above the meter and dial, the light from which brings the rig to life". **G3XGY** built the Foxx-3 60m TCVR and got good reports with 1W on 5262kHz. Brian says the DC RX took a bit of getting used to, hum being a problem, and it is important to use a battery and good earth. His next task is to build a 40m version and go /P in the Dorset area in warmer weather.

**GØFTD** has been building yet another TX (his third) for use on QRSS / WSPR (right), this time using a **GØUPL** U3 kit for the LF bands (136 and 475kHz) that he put a custom green display on. Andy also built an ATU for 160/80m into the rig and a small QRP ATU externally for the LF bands using a ferrite rod and a polyvaricon from the G-QRP Club. To make it even harder on these bands he is only using 1.5W to a 49 feet piece of wire in the loft! Andy says, "So far 475kHz has revealed itself to be a completely different animal to 160m, mostly ground-wave even at night, and best DX being 155 miles, but reliably 112 miles over to PA land. This seems about in keeping with the propagation experiences of others. The RBN spotted him in W2 using the U3 TX on 80m with the same piece of wire. He is now considering a 5W PA to boost LF results.



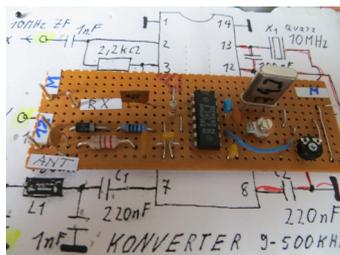
**MØVVC** is documenting his Kennet receiver design and when analysing each stage of the receiver, found his knowledge was not quite as complete as he thought. Matt says he needs to get a better understanding so has been using his trusty oscilloscope and Softrock Ensemble as a cheap spectrum analyser, to get at the facts. The hardware fun had to stop recently as his QRP home-brew work bench had to be packed away to allow them to decorate, although he still had his new Mac to play with. Whilst painting, Matt had a thought - how difficult would it be to code a simple spectrum analyser on a Mac? It turned out to be not too difficult. The app connects to a USB audio capture device (Behringer UCA222) and a Softrock Ensemble RXTX. In time, he hopes to improve the app and open source it and invites anyone interested to get in touch with him.

**DL2BQD** says if you are interested in construction details of the Minimal Art Session TRX, see <[http://www.dl2to.de/sc/HB\\_MA12.htm](http://www.dl2to.de/sc/HB_MA12.htm)>. **G3CWI** released two new products in November: a 20w dummy load with RF indicator and a HF/VHF SWR bridge, available ready built or as kits, see <<http://www.sotabeams.co.uk/boxa-load-50-ohm-rf-dummy-load/>> and <<http://www.sotabeams.co.uk/>>

boxa-swr-high-performance-vs-swr-bridge/>. While messing around with construction methods for prototyping SMD, **G8JNJ** thinks he found a useful twist to a ‘Manhattan’ style construction, which seems to work quite well. Martin says, “The principle is to ‘coat’ the surface of PCB material with a layer of self-adhesive Kapton tape. This is a thin insulating plastic material, which is resistant to very high temperatures, and will not melt when a soldering iron is applied to it, and it’s commonly used in the electronics and space industry. Rolls can be bought from your favourite on-line auction site for just a few pounds, as it is frequently used to cover the build plate on 3D printers. To expose the ground plane with a Kapton solder resist mask around it, just cut a hole through the tape and lift out the section with a scalpel. Self-adhesive copper tape can be applied directly onto the insulating Kapton tape to form tracks or islands as required. Low value capacitors and strip lines can be formed in the same way. This method allows components to be mounted flat to the surface of the PCB without having to ‘float’ in the air between pads. This is particularly useful for SMD components as it helps to reduce mechanical stress on the solder joints. I’ve posted information on my website at <<http://www.g8jnj.net/currentprojects.htm>>.

**N2CQR** was in the Dominican Republic in December and took a 5W 20m DSB TCVR largely derived from ideas and circuits in *SPRAT*. Bill used a dipole and his power source was 10 AA penlight batteries, but he managed to make many contacts. More info and pictures at <<http://soldersmoke.blogspot.com/2015/01/a-thatched-roof-some-palm-trees-dipole.html>>. When on holiday **MØCIW** usually uses his homebrew Epiphyte with an inverted-vee dipole and fishing pole support, but now encouraged by the Winter Sports initiative, he operated SSB with his main IC-707 rig at 5W and a 20/40/80m nest antenna (resonate dipoles with a common feed point about 20 feet) in the garden, together with 12m and 17m dipoles in the pitch of the roof. Howard’s best DX was Canada on 12m and especially enjoyable were the two-way QRP QSOs, one with **G4OEP**. A friend of **G3CWI** had a problem with his coax cable recently and so Richard wrote a simple way to check cable loss, see <<http://www.sotabeams.co.uk/blog/measuring-coax-cable-loss/>>.

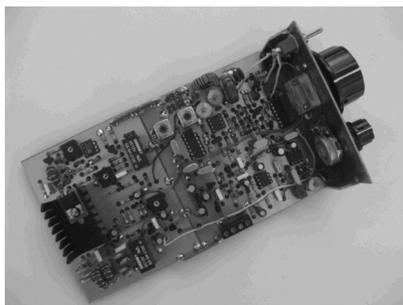
**G4FDC** says the Slovak QRP rally, organised by the Slovak Band of QRPers and Telegraphists and supported by Radioclub Vrutky, **OM3KFBV**, will be held 16 May at pension St Mitro in the small village of Turcianske Klacany near Vrutky in northern Slovakia. Alex writes, “Limited accommodation/board is available, food and refreshments from early morning, lectures about QRP home-built equipment throughout the day and a home made equipment exhibition. Every QRP enthusiast is welcome”. More information from Alex <[alexanderkorda@hotmail.com](mailto:alexanderkorda@hotmail.com)>.



**DL2BQD**’s 9-500kHz converter that receives SAQ 17200 Grimeton historical Alexanderson alternator. Dieter has already used it with older transmissions and hopes to be successful on Friday extra transmission, see <<http://www.elektronikbasteln.pl7.de/laengstwellen-konverter-von-9-bis-500-khz-mit-einem-so42p.html>>. **GØXAR** says the website <<http://www.americanradiohistory.com/index.htm>> has a great many items of interest for those who like old radios. It holds a huge amount of articles from old magazines and technical journals. When **VK3YE** was looking for a circuit to use for a hand-cranked transmitter built into a wind up torch, the OXO immediately came to mind. Peter says as usual it worked first time and with normal cranking the output is about 500mW on 40m, being copied at 310 miles and heard around 435 miles away. The video at <<https://www.youtube.com/watch?v=ARhiSUI8-5w>> includes a description and the WWII set that inspired it. **G3CWI** writes, “Over the years I have had a lot of fun with ‘Extreme QRP’ - QRPp - less than 1W. However, it has always been tricky to measure very low power levels and most transceivers won’t go much below 5W. As a solution, I have designed the ‘MilliWatter Extreme’, an add-on unit for any transceiver that gives two RF-switched attenuators, see <<http://www.sotabeams.co.uk/boxa-mwextreme/>>.

Since 2013 **DK6SX** has been QRV on the new MF-band (472-479kHz), first with a home-brewed TX with an output of 30W to a T-antenna (39 feet vertical and 230 feet horizontal) resonant on 472kHz needing about 140µH inductance, and then with a 100W TX. Willi says because the efficiency factor of the antennas on MF is very poor, approximately 0 to 1%, he increased the power and built a new 300W TX giving between 300 and 700mW ERP. In the last two years he has QSOd stations in 9H, DL, EI, F, G, HB9, I, LA, OK, OH, OM, ON, PA, SM, SP, S5 and YO, the furthest being **OH2BCI** at 1000 miles and **EIØCF** at 800 miles.

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



## New 3 band DC RX & CW TX

Marsh (photo) – Xtal mix VFO  
for 3 of 20 - 80m

Mells – 1.5W 3 band CW TX  
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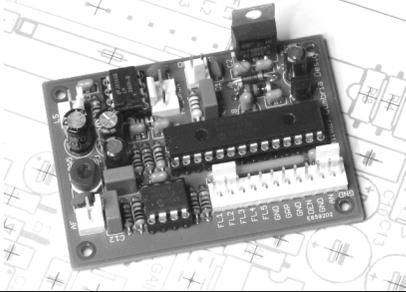
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LZ1YE has sent me details of some attractive QSL cards including the Club Log.

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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

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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)

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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. Well maintained with a large living area, conservatory, double bedroom, twin bedroom plus a double bed sofa in the living area.



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

# GQR Club Sales

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

Antenna Handbook – 2<sup>nd</sup> edition – members £6.00, non-members £10.00 plus post } £2.00 (UK) or £5.50 EU  
Radio Projects volumes 1, 2, 3 & 4 – by Drew Diamond – members £6, non-members £12 } or £8.00 DX per book

6 pole 9MHz SSB crystal filter (2.2kHz) £12 plus post (max of one) } £3.50 (UK); or  
Polyvaricon capacitors – 2 gang (A = 8 to 140pF, O = 6 to 60pF) c/w shaft extension & mtg screws - £1.50 each } £3.50p (EU); or  
– 2 gang – (both 8 to 295pF) c/w shaft extension & mounting screws - £1.50 each } £4.50p (DX)

Pair LSB/USB carrier crystals HC49U wires - [9MHz ± 1.5kHz] £4 pair } All components  
HC49U (wire) crystals for all CW calling freqs – 1.836, 3,560\*, 7.015, } plus postage

7.028, 7,030\*, 7.040, 7.0475, 7.122, 10.106, 10.116\*, 14,060\*, 18.086, 18.096, } (ANY quantity)  
21.060, 24,906, & 28,060 all are £2.00 each (\* = also available in low profile HC49/S) } £1.20 (UK), or

HC49U crystals- 1.8432, 3.500, 5.262, 7.00, 10.006, 10.111, 14.00MHz – 50p each } £3.50p (EU), or

HC49U crystals – 2.00, 3.00, 3.20, 3.579, 3.5820, 3.6864, 4.0, 4.096MHz } £4.50p (DX)

4.1943, 4.433, 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, 25.0, 26.0, 27.0, 28.0, 32.0, 33MHz – all 35p each (Some of these are low profile types) } Post free

14.070MHz – 20m PSK – set of 3 crystals - £2.55 } if ordered with

Ceramic resonators – 455, 480kHz, 2.0, 3.58, 3.68, 4.00, 14.32 & 20.00MHz – 50p each } with heavier

Diodes - Schottky signal diode – 1N5711- 20p each; 1N4148 GP Si – 10 for 10p } things

Varicap diode – MVAM109 – 40pF @ 9v, 500pF @ 1v. 50p each } like binders, 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

LM386N-1 - 4 to 15v, 300mW, 8pin DIL - £0.40, LM386M-1 SMD – 35p } Use just

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

TDA2003 - 10w Audio amp 5pin – £0.25 each } postage

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

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

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

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

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

BC517 Darlington (npn) FT - 200MHz, hFE-30,000, VCBO +40V - 13p each } postage

FETs - IRF510 - 50p; 2N3819 - 20p; 2N7000 - 10p; BS170 - 8p - all each } as books

Dual gate MOSFET – BF981 – 50T103 - 1GHz (diode protected gates) - 85p each } or DVDs

Pad cutter - 2mm shaft: 7mm o/s, 5mm i/s diam, gives a 5mm pad with 1mm gap £6.00 } do not

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

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

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

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

4.7, 6.8, 10, 15, 18, 22, 33, 39, 47, 56, 100, 150, 220 and 1000 - all uH and all 18p each. }

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

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

T50-6 – £1.10; T50-7 – £1.20; T50-10 – £1.20; T68-2 – £1.80; T68-6 – £2.20; T130-6\*\* – £2.00ea. FT37-43 – 80p; FT50-43 – £1.20;

FT37-61 – £1.20; FT50-61 – £1.60; BN43-2402 – £1.20; BN43-202 – £2.00; BN43-302 – £2.00; BN61-202 – £2.40. Ferrite beads –

FB73-101 (3.5mm dia x 3.2mm long, 1.2mm dia hole) – 40p for 5

All toroids are plus postage – up to 5 packs = £1.20 (UK), £3.50 (EU), £4.50 (DX). Each additional 5 packs, please add 50%

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

SBSS PCB clamps – single - £12, two - £20 all plus post (£3.50 UK & EU : DX – order direct from Rex please),

MeSquares & MePads – £6.50 each plus post (£3.00 UK & EU : DX – order direct from Rex please),

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