



SPRAT

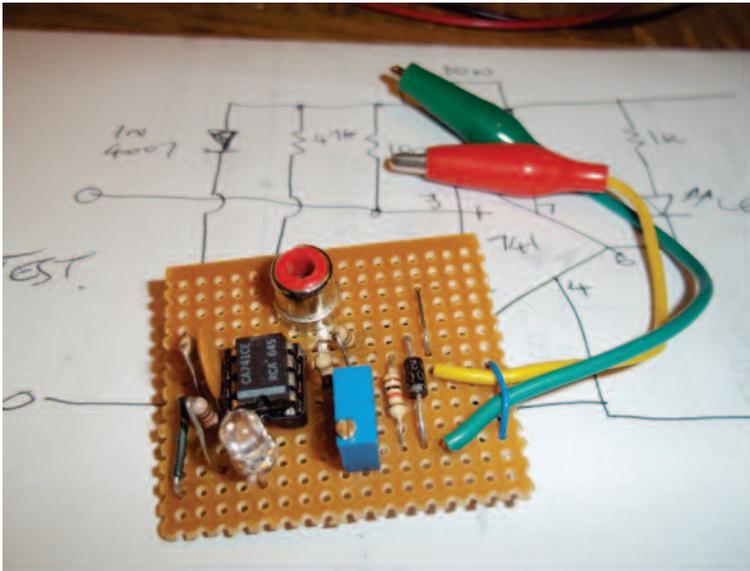
THE JOURNAL OF THE G QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

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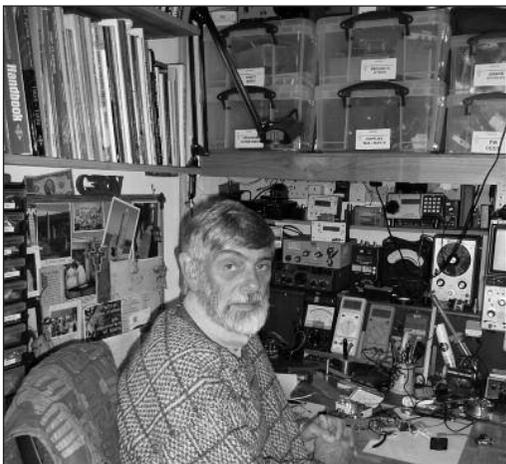
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WINTER 2016/17



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JOURNAL OF THE G QRP CLUB



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Rev. George Dobbs G3RJV

Members may be interested to hear that the club has agreed to support the RSGB with the Youngsters on the Air (YOTA) event in 2017. We have agreed to help with the purchase of the Buildathon kits for the youngsters to build as part of the event.

I have had very few items submitted for the W1FB Trophy 2016 on the topic "Useful items and tips for Test Equipment". We do need more material for SPRAT.

As with all items for SPRAT (almost) any format or medium may be used. Ideally I would prefer items in MS WORD and in the preferred SPRAT format but we attempt to use any articles we receive. Contact G3RJV for a SPRAT formatted page.

Thank you to all who attended the final Rishworth Convention and a special thank you to all of those who have helped throughout the years.

UK members that used the Standing Order form in last month's Sprat please read the membership secretary's comments on page 21.

72/3

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

Children in Need Bring-a-Book Buy-a-Book

A note from Richard, G3UGF

Hello Everyone

Friday November 19th was BBC Children in Need Day and the day we hand over the money raised from our last Bring-a-Book Buy-a-Book sale at Rishworth.

The amount sent tonight is £600.00!!! By donating it in a personal name the total gets boosted by 25p for every pound by the government, making the final amount - £750.00

We raised £510.00 on the day from books. A generous postal donation for one of the JA postal sacks, plus books Roy GM4VKI sold at a Scottish rally and to his local club, pushed the total higher.

The final left over stock was totalled up from the ticket values and advanced to the pot, against possible later sale (eBay) for the final magic total of £600.00 sent tonight to BBC CIN and for inclusion in the inspirational One-Show Rickshaw Challenge totals.

Well done everyone, I think that this year's total is one of the largest we have ever had purely from book sales alone, on the day.

It looks like that over the years, you have contributed around £4,000.00+ to help children, through the Rishworth Convention . Thank you to all those who have donated books and all those that have bought books (including some of their own!) year after year.



The Last Rishworth

Graham Firth G3MFJ

If we wanted to go out with a bang this year – we certainly did that! The Hall was full of traders, and the attendance was up on last year, and the speakers were incredible. We had a number of overseas visitors, and most counties of the UK had at least one attendee.

The Buildathon on the Friday evening was a success – they built a solar powered 40m TX (20mW!) to a design by Johnny Appell (SM7UCZ), who, due to changes of ferry crossings, was unable to come to see the fruits of his labours.

We had stunning lectures, firstly, Roy Llewellyn W7EL from Oregon talked about antennas, and answered questions in his usual casual way. Roy is the designer of the famous Eznec antenna modelling software, and he certainly knows his stuff. The second talk after lunch was by Rex Harper W1REX from Maine – he gave a short talk about building kits on the kitchen table, and then he finished his session with the UK's biggest buildathon. Well over 100 attendees built an RF probe whilst sat in the lecture room. Rex had organised the world's biggest buildathon in Dayton in May this year when some 250 people built a small 40m transmitter – but they had tables in front of them – whilst ours was done on the knees of the attendees! Finally, George gave his usual polished performance as he wound up the event with a talk on past QRP events.

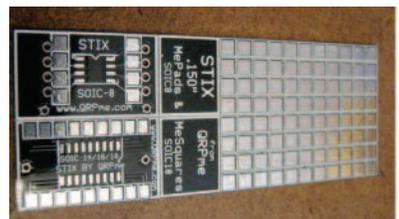
So, what of the future? Well, we have agreed with the Telford group that they will feature the G-QRP convention events at their next rally on the 3rd September next year, See Martyn's article on page 30. Also, we are negotiating with two other groups who wish to do similar in other parts of the country - more news about that later, when the decisions are made.

Thanks again to all who organised, or helped or attended this year's event.

Club Sales News

Graham Firth G3MFJ

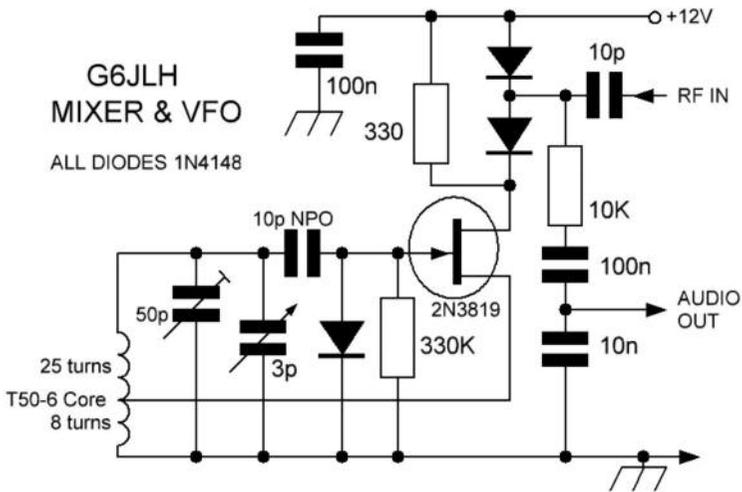
Just a quickie to tell you about a new board from Rex. He calls it STIX and it is a smaller combination of his other two boards. It is 3" x 1", the squares are smaller than MeSquares – 80 of 0.15 x 0.15 and there are a couple of SOIC pads as well. Price is £3.75 each.



Simple DC RX covers 8 bands 40m to 10m with 27 components Andrew Davies G6JLH

This DC RX breaks with the conventional approach to direct conversion receiver design and covers more with less. The component count is down to just over 3 components per band!

The VFO covers 7 to 7.2 MHz this makes the harmonic mixer sensitive to 40m on the fundamental frequency and 20m, 15m, 10m on harmonics. With a suitable band setting variable capacitor the 7MHz VFO can be reduced to 5.05MHz to cover 10.1MHz for 30m coverage on the second harmonic. Likewise the third harmonic of 6.022 MHz could be used for 17m and fourth harmonic at 6.225MHz for 12m.

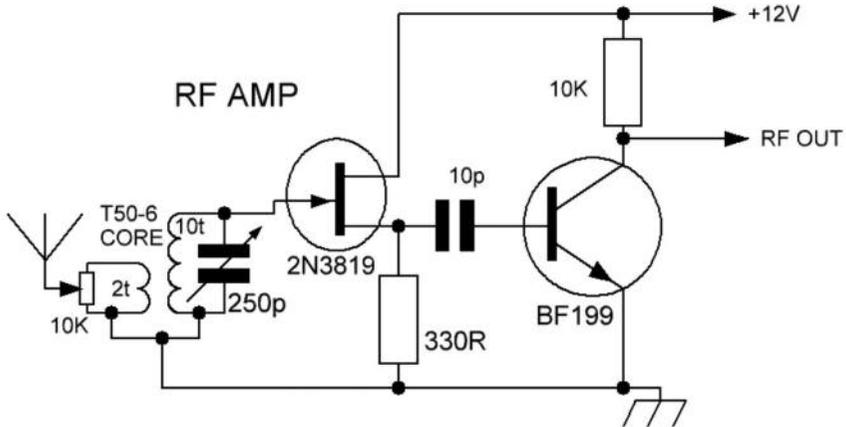


The RF gain pot is provided for volume control and protection against overloading and AM breakthrough. In strong signal conditions without the RF gain control you have an Atmospheric radio. This gives a new mode of operation and another band.

RF Amp Pre-Selector

I used only a single tuned circuit for simplicity of construction. I found that pushing one toroid inductor to its limit will tune 40m to 10m without the

need for switching. The RX front panel needs the ham bands marked out. The alternative idea of using a rotary switch and a bank of trimming capacitors would increase complexity. Some experimentation may be required for highest stable gain regarding the inductor winding phasing. Try to keep the pre-selector away from the VFO or use some Faraday shielding. The 2N3819 FET used common drain giving lower gain but it is more stable.



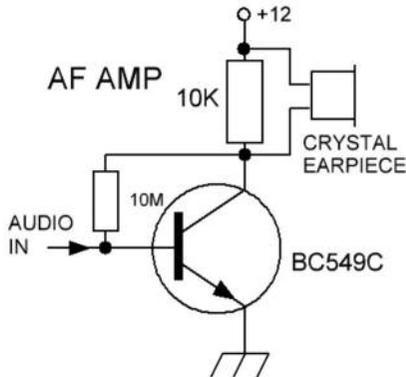
The next stage is a BF199 common emitter RF transistor. This RF amp more than makes good the losses of the mixer when operating on harmonics.

The amplified RF is fed to the mixer I have not seen this configuration before so this could make it the first DC RX with a Davies mixer. The audio output is fed to a BC549C low noise audio transistor. The crystal earpiece provides sensitivity without being dangerously loud avoiding the need for an AGC circuit.

**** Sorry to say Andrew ... I think you have been beaten on the mixer. I recall versions of this circuit appearing on a website. I cannot quote chapter and verse but suspect others will.****

I used a 2N3819 FET for the VFO because I have a lot of them but other types can be substituted.

The 3pf tuning variable capacitor is not a common junk box part you may experiment by using a larger value connected between the FET source and ground on the tuned circuit tap.



New Mixer Design (?)

This mixer came about as a result of trying to build a simple superhet receiver with a single FET unbalanced mixer. The considerable unsuppressed output from the VFO caused the crystal filter to ring and over loading of the IF amplifier. After some thought I came up with a simple diode mixer that fixed the problem. The next step was to test the mixer's suitability for use in a direct conversion receiver by testing its ability to resist demodulation of amplitude modulated broadcast band signals. A capacitor of 0.01 uf was added to the output taking RF to ground so only AF is present at the output.

Circuit Description

The two diodes in series with the FET drain act as an RF switch. When no current is flowing the diodes offer a low impedance to ground. The result is the audio frequency output.

Because it works on switch mode it is also sensitive to harmonics at reduced efficiency.

Even though the diodes are driven by a sine wave not a square wave it took 100mV AM signal before the audio signal could be heard breaking through. So the diodes will not react as an envelope detector easily. This made the mixer suitable for more testing in a DC RX.

Cheap and Cheerful Single Lever Paddle

Herb Perkins WA2JRV
WA2JRV@gmail.com

While I must give credit for the overall design of the paddle to Dave AA7EE, I did build one based largely on his design.

As I am quite cheap (read that as frugal) I took apart an old IDE hard drive that was just a door stop, removed the magnets, broke one into four small sections and used marine epoxy to put four small pieces on the respective corners of the mounting board. I also covered them with epoxy so the FT 817 would not get scratched.

The QRP Guys (<http://www.qrpguys.com/>) offer the Paddle kit for \$15.00. The pc card material was scrap, the hardware was from the junk box and the cable to the radio was from an old set of ear buds that were well past their prime.



For a junk box paddle, it has worked well for me.

73's

Herb

Cheap alignment tool for slug-tuned coils

Gereon Ostermann DJ1WY Hauptstr. 35 D-55568 Staudernheim. GERMANY

Ever needed to tune a ferrite slug in a TOKO-coil, for example tweaking a band-pass filter in your latest project?

Well, at least DJ1WY had to do this a few times in many years...not enough yet to justify purchasing a professional non-metallic "slug alignment tool", though. Instead of this I always used the end of a wooden matchstick. With a little whittling the need tip is quickly prepared at the bottom-end of the matchstick, and it is solid enough to last at least two full tuning procedures. After that the match still can be used for its intended purpose. Fast, easy and cheap.

Banbury Amateur Radio Society Project

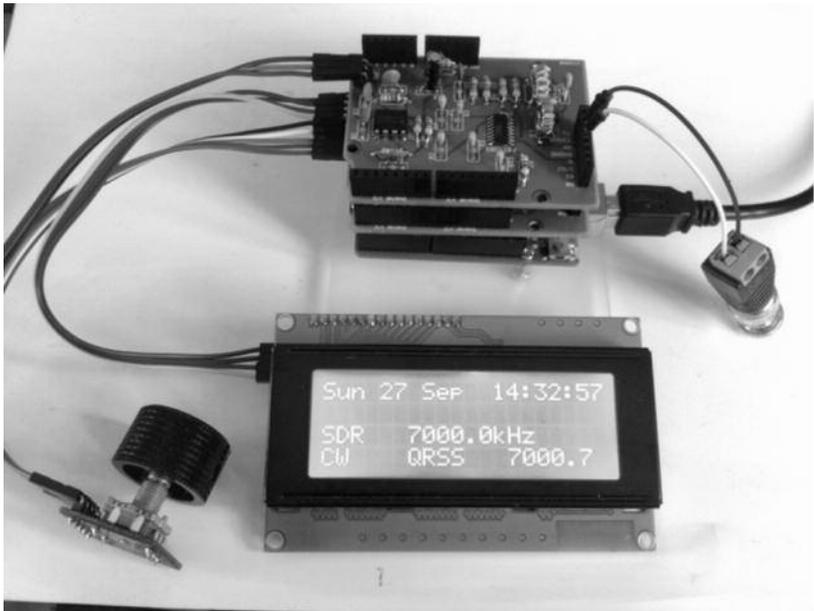
Antony Watts, M6KWH

Last year I ran a course last year called “Concept” for the Banbury Amateur Radio Society (GOBRA, banburyars.org). On this course 10 members studied the Arduino single board computer, the Si5351 Digital Synthesiser, the DS3231 RTC and software for them. Then went on to build kits of two Arduino boards (or shields as they are known) which carried, on the first, a Si5351 module and RTC clock module, and on the second an SDR receiver for 40m. The SDR interfaced with members PCs (stereo audio inputs) and worked with the HSDR software (hdsdr.de). The course won the constructors prize at the 2015 RSGB convention.

Full information, PCB files, parts lists, course notes and slides and all the software are on the web at github.com/M6KWH/Concept. Anyone or any other club that wants to download and use the course and designs is welcome to do so.

Picture of the finished project attached. There is a future QRP SDR all mode TX in the planning stage.

73, Antony Watts, M6KWH



Check your key practice

Bernd Kernbaum, DK3WX, Ruppinstr. 13, 15749 Mittenwalde Germany
 (dk3wx@dark.de and <http://www.dk3wx-qrp.homepage.t-online.de>)

If you have problems with single or squeeze paddle or Mode A or B Keyer analyse your key practice. With a Digital-Multichannel-Recorder you may save the keyed text and analyse it. I have not such an expensive device so I build a simple weekend version. One channel of a stereo recorder saves the result of keying (side tone). The other channel saves actions on the Dot and Dash Line. This control channel is amplitude coded and shows the paddle line activity.

Paddle pressed	Amplitude
no	0
Dot	0.3
Dash	0.6
Dot + Dash	1

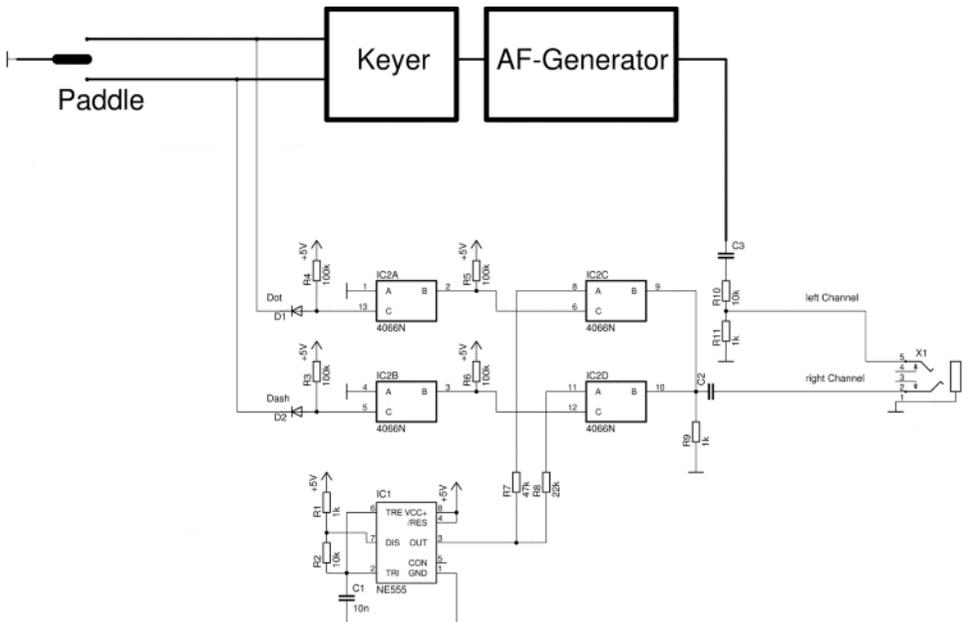


Fig. 1 Circuit – Add a few parts to your keyer and sidetone (dark line)

An audio generator with the well known 555 IC generates a 6.5 kc square wave. With an analog switch 4066 and a voltage divider R7 – IC2C – R9 you get a small amplitude to the audio line input if you press the Dot-Line-Paddle (0.3). Press the Dash-Line-Paddle and the R8 – IC2D – R9 voltage divider increases the amplitude (0.6). The analog switches IC2A and IC2B act as inverter with a high resistive input. All parts are placed on an universal PCB and wired in ugly construction.

I am using the FREEWARE program Audacity for an audio recorder. Figure 2 shows the control channel with the pressed dot line for a short time and subjacent in the other channel the dots. The middle part shows the pressed dash line with the greater amplitude and the dash sequence. In the third part both paddles are squeezed, the amplitude of the control channel is still higher than the other and a dash dot sequence is generated. You see I pressed the dash line first.

For better comparison you can zoom in with the + button.

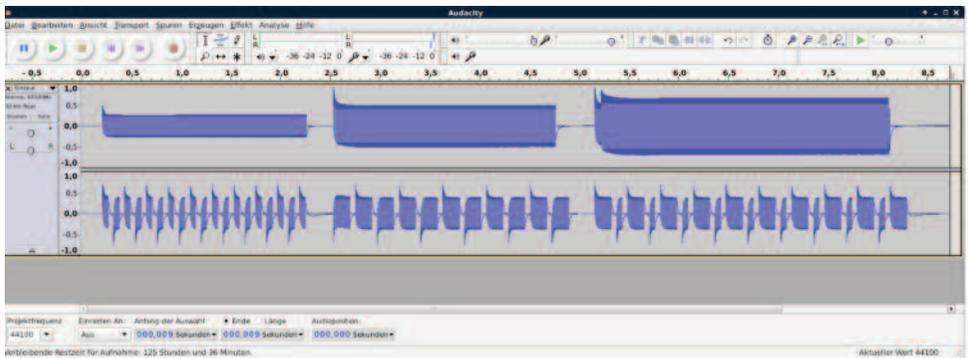


Fig. 2 Audiorecord by Audacity

There is a transient effect when the square waves start but I think that's not a problem. Start with the first edge.

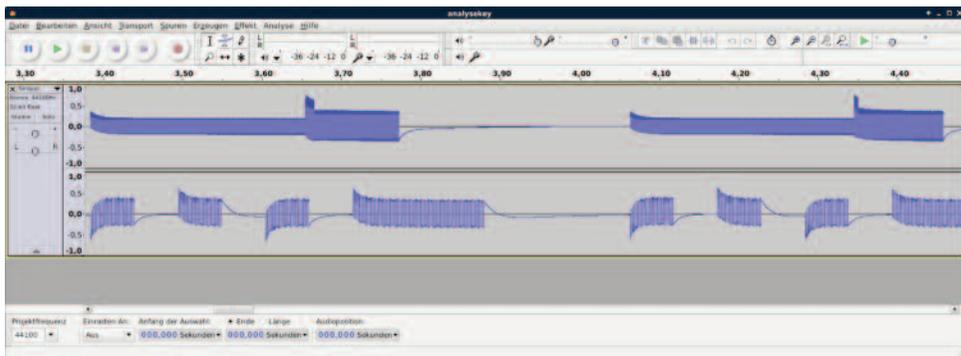


Fig. 3 Record the symbol „v“

I key a few vvvv. First the dot line is hold, during the last dot the dash line comes along. A short moment later only the dash line is active until the middle of the dash. The overlapping Dot/Dash is shorter in the second v.

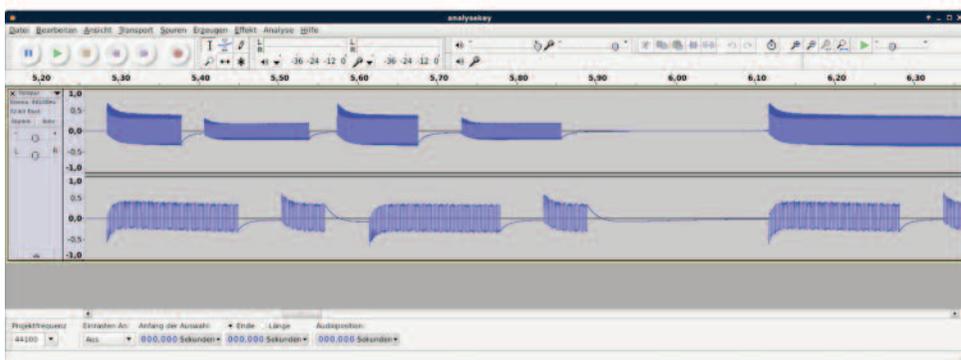


Fig. 4 CQ call

The CQ call whistle-blow - I am not a good squeezer.

In my last project I had problems with the keyer program and I hope this little circuit can help to find a solution.

I have no experience by training a good squeeze mode but I will try and learn. If you be aware a better method please let me know.

72 Bernd DK3WX

Observations with Ceramic Resonators In Super VXO Mode Mark Dunning VK6WV

I have used ceramic resonators as VXO's for some years and have found them a convenient method of obtaining a stable range of variable frequencies, although this is limited to a restricted range based upon standard frequencies unless one resorts to mixing. Recently I have seen reports of the use of super VXO ceramic oscillators (two or more resonators in parallel) with a very wide tuning range resulting. This was attractive to me so I thought I would do some investigating.

When I first tried paralleled ceramic resonators about a year ago I was not able to replicate the reported results. I was very busy at the time. I assumed that I must be doing something stupid and put my circuits aside until I had more time. When I finally did get back to testing I confirmed that rather than parallel ceramic resonators increasing tuning range, the reverse occurs, the tuning range is reduced. This is the reverse of my experience with crystals operating as a super VXO and I have not seen this reported in the literature.

I tried various popular circuit configurations but they all had the same result, although the various oscillators did affect the nominal centre oscillation frequency and range available in tuning.

I decided to record the results and list them below in table 1. For simplicity of testing I chose to use the Colpitts oscillator circuit shown in figure 1. I did try adding various values of chokes in series with the resonator to see if this would improve the situation.

It did not. The nominal centre frequency was shifted by the choke but it did not improve tuning range. In addition I found that when I added a choke in series with the resonator, if the choke was large enough, over part of the tuning range the resonator lost control and the

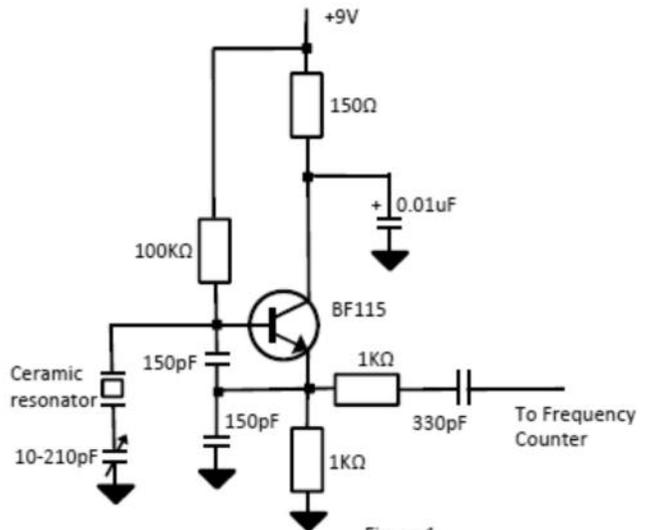


Figure 1

oscillation frequency became dependent upon the inductance of the choke and the sum of all the circuit capacities, in other words a free running VFO rather than a ceramic resonator controlled VXO. The reason for this became apparent when I measured the parallel capacitance across the ceramic resonator. It ranged between 28 and 54pF depending on the resonator. With this range it was not hard to see how the VFO came into action once the ceramic resonator lost control.

Nominal Frequency	Resonator Parallel Cap (pF)	With Minimum Cap (MHz)	With Maximum Cap (MHz)	Difference %	Number of Resonators
4.00MHz	49.6 *	3.98091	3.90117	2.04%	1
		4.00106	3.93909	1.57%	2
4.19MHz	38.2	4.23036	4.11949	2.69%	1
		4.26589	4.16320	2.47%	2
		4.26840	4.18639	1.96%	3
4.91MHz	38	4.95990	4.84639	2.34%	1
		4.99201	4.88579	2.17%	2
6.14MHz	52.7	6.22658	6.02677	3.32%	1
		6.26541	6.09696	2.76%	2
7.16MHz	31.8*	7.11340	6.91339	2.89%	1
7.16/7.20MHz		7.18415	7.00527	2.55%	7.16//7.20
7.20MHz	27.9*	7.147277	6.95512	2.76%	1
		7.20311	7.02229	2.57%	2
8.00MHz	40.1	8.09332	7.85342	3.05%	1
		8.16341	7.93564	2.87%	2

Tuning C Min	10.5pF	All resonators two lead types apart from those with *
Tuning C Max	208.9pF	Capacitance measurements made with AADE L/C meter IIB

I think that the data can be interpreted as follows;

The resonators are operating in a frequency area where they act inductively in the oscillator. When two or more are in parallel it has a similar effect as might be obtained by placing inductors in parallel. That is the effective inductance reduces so the nominal centre frequency of oscillation increases. This itself can be a useful effect, particularly in the 40m area.

In my case the amount of frequency change using the variable capacitor that I used is in the order of 1.5-3.3%. This amount of change reduces a bit when the oscillator has more than one resonator in circuit. This is totally different from what I have read on the web.

I think that the tuning range of paralleled resonators is reduced because of the high capacitance across the resonator. I think with multiple resonators in parallel this high parallel capacitance becomes a dominating effect effectively reducing the tuning range of the variable capacitor. By the way the parallel capacitance of the resonators seems to be temperature dependent as well which is not a good thing. This high parallel capacitance may also cause problems with unwanted oscillation modes in some circuit configurations.

COMMUNICATIONS AND CONTESTS

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

Hi. I hope everyone has had an interesting time on the air this Autumn and are looking forward to the Christmas holiday period. I note the conditions have been varied between downright dreadful and barely passible but managed to hear QRP ops on the bands most of the time.

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

G QRP Club Winter Sports

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

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

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

CW: 1836, 3560, 5262, 7030, 10116, 14060, 18086, 21060, 24906, 28060
SSB: 3690, 7090, 14285, 21285, 18130, 24950, 28360 kHz

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

Please take part if able and join Jos ON6WJ, and friends as they keep QRP enthusiasts active all through the winter. He has organised his so-called EU FOXHUNT twice weekly, from **November – February 2017** . Is well worth taking part as they will love to have members from GQRP take part. There is a website:

http://www.on5ex.be/foxhunt/foxhunt_view_unreg.php

I thought I should also mention the **RSGB Foundation Award**, by its very nature is QRP. If you are a new licensee please be active and bag the award, it might help show the RSGB are not just about 400W and beam activity!

<http://rsgb.org/main/operating/amateur-radio-awards/foundation-award/>

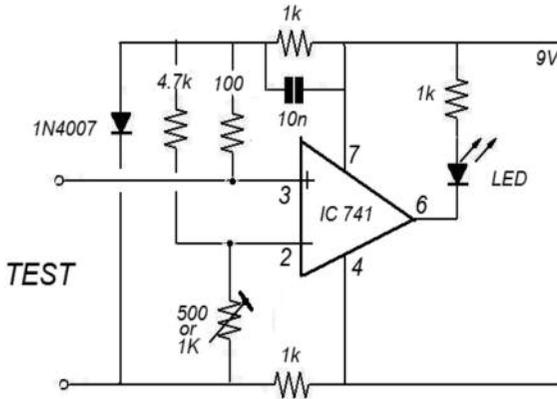
RSGB Spectrum Issues:

This year seems to be another one where DXpeditions are located on or near one or other of the QRP CoA (especially 30m) for their calling frequency or it becomes buried in the subsequent pile up. If for an hour or so it can be frustrating to those that were trying to manage some qrp operation. However, it had been seen to occur more than once by different groups day after day which means it becomes a spectrum issue. This was raised before the RSGB Spectrum forum and I have been advised this will be mentioned at IARU meetings as the region band plan differences that some would like to harmonise were used by those in defence.

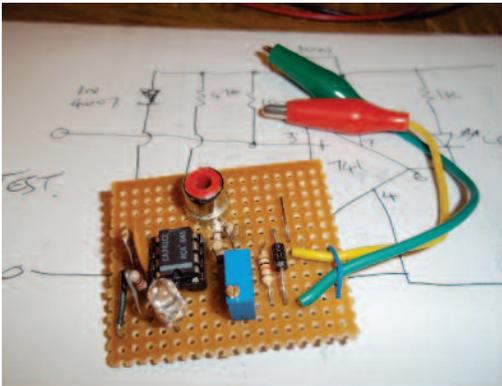
Please do not forget to start to collate logs for the CHELMSLEY TROPHY for DXCC worked in 2016. It will be interesting to see how some have performed.

SIMPLE SMART CONTINUITY TESTER

Peter Howard G4UMB, 63 West Bradford Rd. Waddington, Lancs. BB7 3JD



I have simplified a circuit that was published 40 years ago in Radio Constructor Magazine September 1977 by N. R. Wilson. It is a Smart Continuity Tester based on a Wheatstone Bridge which can be pre-set to indicate when a resistance is lower than a set value. Handy when tracing a wiring harness or where wires are connected through low resistance components. It can also be used to check whether earth paths are good. The setup is done by adjusting the 500 ohm



variable resistor (I have used a multiturn type) to light up the LED at your selected test resistance. I set up mine up by connecting a resistance of 0.8 ohms across the test probes without the LED lighting up. But a dead short of the probes lights up the LED. The circuit wants a stable supply voltage and can also be run at 12v. At 9v the circuit draws 5 to 10mA. I have used a bright

white LED from an old torch and tried different ones and all were OK. In addition you can add a piezo sounder across the LED to provide an audible indicator.

SLA CHARGER

Brian Harris G3XGY

I have a couple of sealed lead acid (SLA) batteries that I use in the shack when operating QRP with dc receivers. I know it is important to charge with a constant current with an eye for the maximum time. The circuit I use is based on the positive temperature coefficient of a car side lamp.

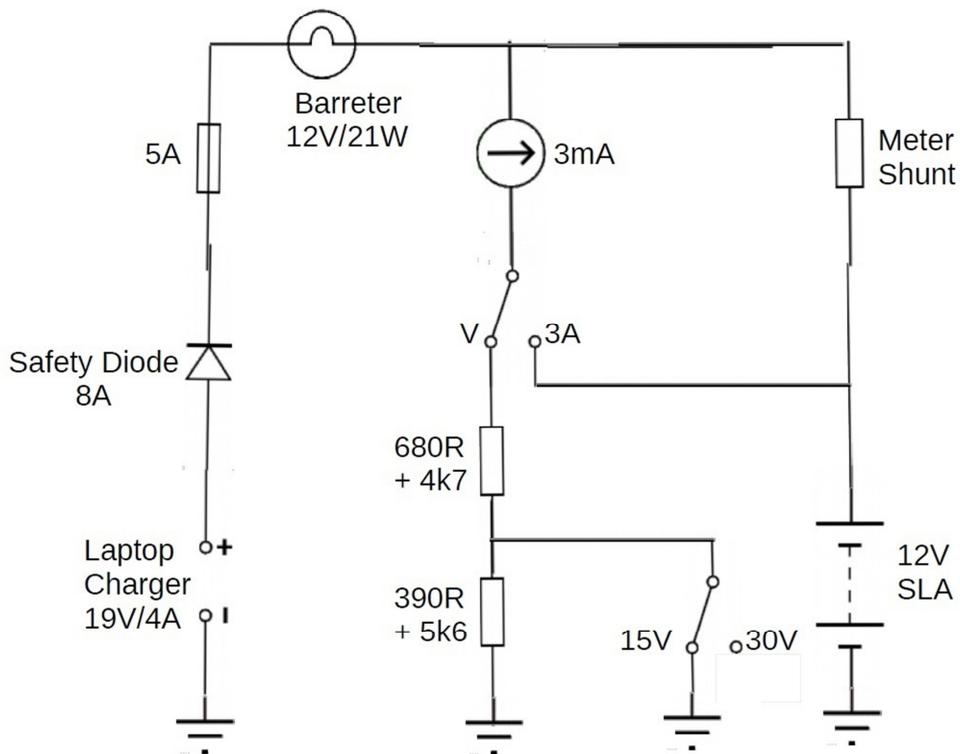
The supply was from a laptop charger from a Dell 1150 to give me 19V at 4.62A. The diode is necessary to prevent the possibility of the charger being rendered unserviceable by the battery when the charger is disconnected from the mains supply. The fuse is perhaps unnecessary, but provides an anchoring point for the diode. Barreters are difficult to get hold of and I could've used a thermistor. However, the car lamps provided me with some flexibility and I could, at least, see what was going on. The 3mA meter is ex-19 set, I believe. I adjusted the voltage multipliers and meter shunt values to suit the scales, so I could read 15 and 30 volts, and 3 amps full scale. I used a digital multimeter as my standard and I was happy with a 10% tolerance. It was fun anyway and took me back to my early days of training. The resistance values shown are only examples and the meter shunt is hook-up wire wound on a large resistor.

In use, one 12V/21W lamp gave me 700mA charging rate which suited my 7Ah SLA and two lamps in parallel gave me a 1.2A rate for my 12Ah SLA. These rates would be for C/10, and to allow for efficiency losses, allows for a charge time of 15 hours. Lower powered lamps can be used to charge smaller SLAs.

My thanks go to Mike G3PCW for help in the circuit design.



SLA CHARGER - G3XGY



CS5 Direct Conversion Multi-band SW Receiver

Keith Ranger G0KJK

Poor HF conditions and low activity on the bands made me think of putting together a low-cost, no-frills, easy to build SW receiver that would pull in worldwide DX and cheer me up – as I reluctantly gave my QRP transmitter a rest. The result has been the circuit featured here. Carefully built and properly operated, it should be found an effective simple amateur bands receiver, with good SSB and CW resolution and capable of covering a number of amateur bands.

I have called it the “CS5” because “CS” stands for “Club Sales” and it uses five crystals or ceramic resonators all available from Graham G3MFJ, who faithfully serves us all with these vital components.

The five transistors used in the CS5 circuit could be 2N3904 or 2SC536 devices available from Graham at a mere 50p for each lot, and the LM386 IC would add a mere 45p to your bill. In other words, you get all of them for less than half the price of a tea-shop cup of coffee (apart from P and P of course)! Who says amateur radio equipment has to cost the earth? Actually, as the CS5 circuit diagram reveals, I used BC109C and 2N2222A devices because I had them available, but either the 2N3904 or 2SC536 should do the job well, just peruse the performance specifics given by Graham on the back outside cover of your SPRAT.

The polycon variable capacitors sold by Graham, a 285pf and a 140pf example, will ideally provide the frequency agility respectively of both bandpass filter and local oscillator, as per the circuit diagram. You will need to find a top quality of 5pF air-spaced variable capacitor for the bandspread capacitor in the Local Oscillator, to give easy resolution of SSB signals especially. Check the Web and radio mags or visit the Rallies!

Now for some circuit details, etc. I used a desk-based 3ft long telescopic aerial, but your creativeness may suggest better mounting alternatives to my aluminium right-angled flange, which is secured to an off-cut wooden base by two wood screws. A hole large enough to hold the telescopic aerial’s knuckle using grommets completes this assembly.

Such a short aerial has both advantages and disadvantages. It does not provide a strong input signal but it does prevent overload and fits the challenge of our G QRP Club ethos – “It is vain to do with more what can be done with less”. An indoor aerial is also convenient in space-using terms. To make sure the CS5 RX has real sensitivity that does not over-rely on its AF stages, where such dependence could produce instability and/or microphony, a powerful two stage RF amplifier precedes the Mixer.

The overall effect is very pleasing. AM breakthrough does occur from time to time but usually never enough to cause reception trouble. The gain distribution results in a real DX-puller receiver.

The Mixer in this circuit avoids the assembly of trifilar coil windings and matched diodes, which some Club members have described as something of a headache and easy to get wrong. The 2N2222A (or 2N3904 or SC536) is ideally suited to Mixer use, the RF stages and Bandpass Filter feed into the Mixer's base and Local Oscillator connects to its emitter, please consult the circuit diagram. An added advantage of this arrangement is that it provides some overall amplification rather than an insertion loss.

I am a very amateur radio amateur with no formal electronic training, so in circuit design and construction all that interests me is – “Does it work?” and how can I very conveniently put the whole show together? If you hesitate to go down the printed circuit or SMD route, why not use my simple method of using tag boards? Always gracious and helpful Will Outram, of Bowood Electronics, who advertises in SPRAT, sells superb tag boards. You will see examples of their use in the photo of the inside of the CS5 contained in this article.

Possibly the greatest difficulty, if circuit assembly gives you such, will be encountered when you put together all the features of the Local Oscillator stage, which will require 5 switchable crystals or ceramic resonators, all available from Club Sales, a series of small axial inductors, also from Club Sales, two 1P 12W rotary switches and two variable capacitors. Please consult the circuit diagram.

The five crystals or ceramic resonators are 3580kHz and 14320kHz resonators and 5262, 7030 and 1011kHz crystals. The wide-ranging bandpass filter, using inductance or capacitance switching to extend its tuning range, will tune to the fundamental frequencies or harmonics of all these five devices. This means many amateur bands are in part or in entirely coverable. As an example the 3580kHz resonator will tune up to 3620kHz in this circuit. The fifth harmonic is found in the 17m band, and reception at that frequency is good. A series of axial inductors, say 3.3,3,3, 4.7, 6.8, 10, 100uH will spread crystal and resonator coverage considerably.

There may be occasional frequency jumps but generally good stability, with for example the 14320kHz resonator covering the entire 20 metre band. Amazing things can happen at harmonic frequencies; with the bandpass filter at minimum capacity I have heard a local amateur loudly calling CQ on the 6 metre bands!

Please note that the tuning of the Bandpass Filter for maximum sensitivity is really sharp. I have been amazed at how sensitive the circuit has proved when correctly sharply tuned, in reasonable conditions on the HF bands especially the DX simply

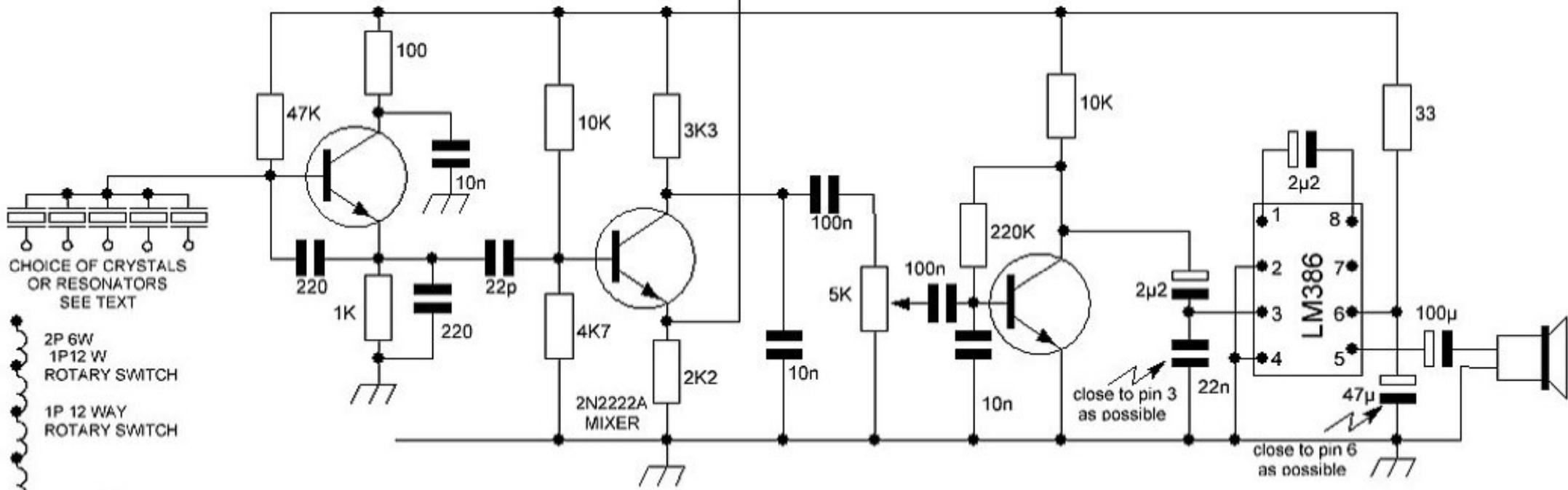
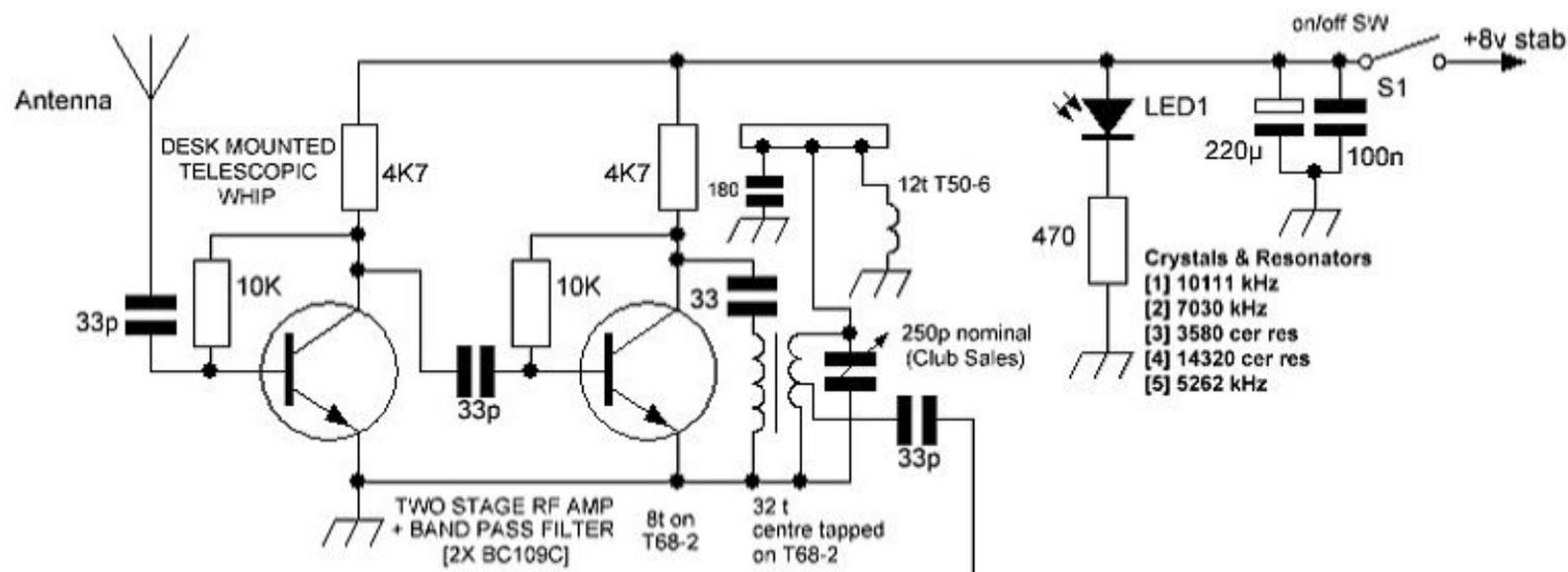
pours in! The overall results are very encouraging for a very basic receiver without an RF Attenuator or AF Filter!

Construction should prove straightforward and results satisfactory if you take great care to keep all AF wiring away from the RF and Mixer stages of the circuit. Also, place the bypass capacitors at pins 3 and 6 of the LM3886 IC as close to the pins as possible. The LM386 enjoys singing unwanted tunes if such precautions are neglected! It is a great, cheap amplifier but can be hard to please if you fail to pay the fullest attention to avoiding unstable feedback



I hope the above gives you all the info you will require to build the CS5. If you hit problems, please feel free to contact me at keithcath@ranger144.fsnet.co.uk and we will discuss how to solve them.

Good hunting! You might even hear a 599 signal from OX3HR in Greenland, as I did the other day or CO3ARE in Cuba calling CQ at 579 strength on a completely dead 20 metre band – who knows!



Building the “Sweeperino”

Nick Tile G8INE and Tony Fishpool G4WIF

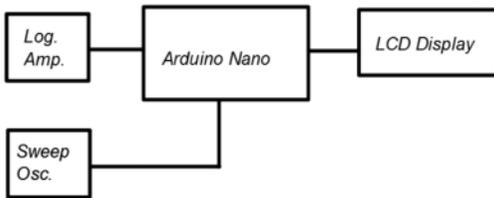
This is not going to be a construction article but more an encouragement to go to the internet, download the considerable amount of material on this project, and have a go yourself. To publish the design in full would also take up most of Sprat. This article also describes a journey for the two authors as we explored new (to us) technologies and learned new techniques along the way.

The Sweeperino is a very useful Arduino based test instrument designed by Ashar Farhan VU2ESE, who also designed the well-known BitX transceiver.

It combines;

- A very stable, low noise signal generator from 4 MHz to 160 MHz without any spurs using the Si570 or the Si5351.
- A high precision power meter with 90 db range and 0.2db resolution using the AD8307.
- A sweeper facility that uses an Arduino to manage the process and communicate with the outside world.

The device generates a signal and then sniffs the output from the device that you have connected it to, typically, you can use it to be your antenna analyzer, plot your crystal or band pass filter through your PC.



The block diagram (left) shows the 4 basic sections.

The device under test is connected between oscillator output and logarithmic amplifier input.

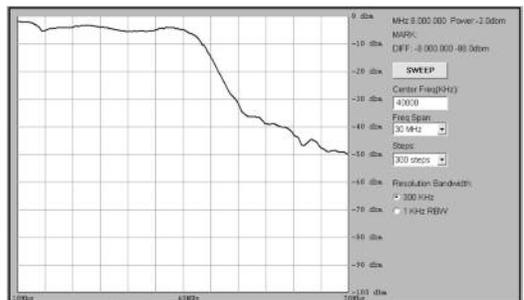
modular construction, so you can get each of three major components working before combining them - making it manageable to build and much easier to troubleshoot.

Theoretically at least, the instrument will work from about 4MHz, the lower frequency limit of the Si570 (which is a programmable Oscillator), up to 100MHz, and if you are careful with the matching on the AD8307, it will be fairly flat. It could have a dynamic range of about 92dB (according to other articles) so careful construction is essential.

So what can you do with it?

You can test filters.

To the right is the sweep of a 37MHz low pass filter using VU2ESE's “Specan” software .

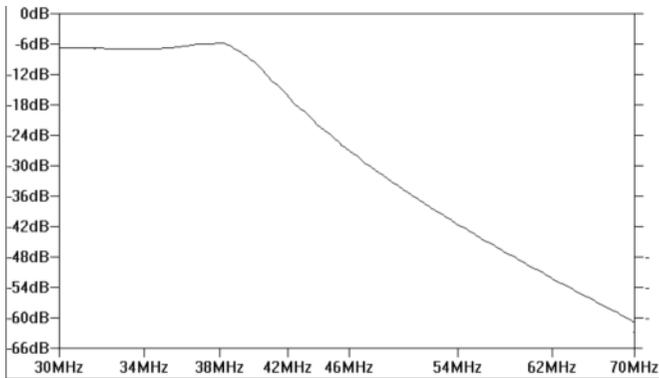


The PC software is free from VU2ESE - although the Sweeperino also allows testing via the use of a physical frequency tuning control together with the LCD display. Here is a photo of another filter being tested.



This is a 10MHz low pass filter, so the attenuation is shown as high – just as you would expect at 20 MHz.

During construction, we compared notes by email (as we live some 60 miles apart) and we wondered if the results that we were seeing were correct. So there was a slight diversion as we learned how to use “LTSpice”. This free software will easily model filters and without a steep learning curve. There are some superb tutorial videos on the LTSpice website.



It is pretty similar to our sweeperino results, and we found that the use of LTSpice to be very useful for those occasions when you build filters from published articles - and you don't really know how they should perform. It takes just five minutes to draw the filter circuit and then you can see the predicted results as shown above.

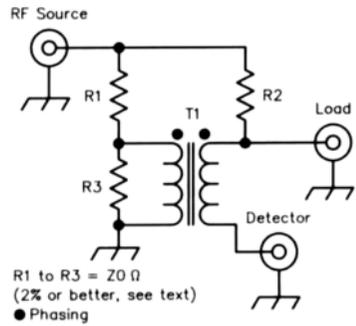
Our construction techniques varied. While one of us likes to etch PC boards, the other builds “Manhattan Style” using “ME Pads” produced by Rex WIREX. These are available from club sales and of course direct from Rex in Maine USA.

Just when we thought that the project was finished we discovered that a Dutch group had designed an accessory providing enhanced facilities. Possibly the most useful was operation

below 4MHz. This project was published in their June magazine called “Razzies” which is available free online. Downloading this article is highly recommended as it corrects a few errors in the documentation on VU2ESE’s web page.

Just recently we’ve been experimenting with “return loss bridges”. A very simple design was published by Jim Ford N6JF and was published in QST September 1997. You can still find the article online.

Using the Sweeperino with a RL Bridge to test a 20/15/10 metre trapped vertical gave results that were pretty close to an antenna analyser – I also tried a noise generator as a signal source – then used a TV dongle as a spectrum analyser to look at the signal coming back. The noise fall off in output (as frequency increases) has me now experimenting with monolithic amplifiers.

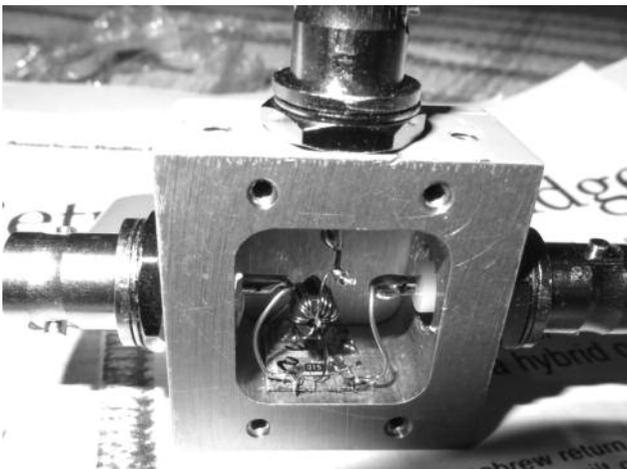


Hopefully this brief description will inspire a few members to have a go at this fascinating and very useful project. Significant thanks go to VU2ESE for documenting and sharing both this project and all his other designs.

References:

- <http://hfsignals.blogspot.co.uk/p/sweeperino.html>
- <http://www.pi4raz.nl/razzies/> (you need the “juni” issue which is in two languages)
- <http://www.linear.com/solutions/ltspice>
- <http://goo.gl/qRTGxk> (N6JF article)
- <http://www.fishpool.org.uk> (G4WIF & G8INE construction notes)

Shown below, the G4WIF constructed return loss bridge.



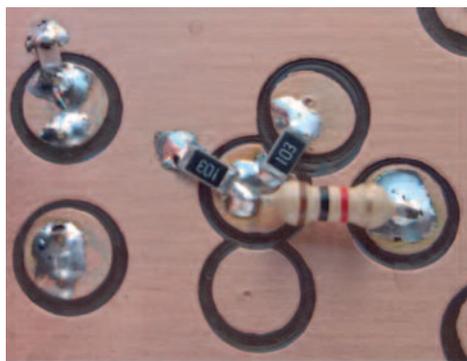
SMD Prototyping with a Pad Cutter

Len Nunn, G6YZB, 103 Bladindon Drive, Bexley, Kent. len.nunn@bcs.org

I have tried a number of methods of prototyping simple circuits using surface mount passive parts, each with their own limitations, including home etched PCB (takes a relatively long time), Veroboard (not great for RF) and Dremel-cut islands (hit & miss given my poor machining skills).

I have slowly realised that, whilst great for wire-ended parts, the islands created by a rotary pad cutter on a plain copper-clad board can also be used for mounting 1206 and 0805-sized SMD parts. Pad-to-ground connections are straightforward and isolated links are possible by cutting overlapped pads. Using double-sided board also delivers an RF ground.

The layout time using pencil and paper is on a par with that required for Veroboard and marking the pad centre-points with a sharp object from a scale layout through to the copper clad board allow an easy transfer of the approximate pad positions. The pads do need to be cut carefully, especially lining up the overlapped pads by eye (and the cutter requires a drill press) but, if I can do it ...



The picture hopefully demonstrates the technique and, in case you are interested, shows a partially completed circuit for G3UUR method of crystal motional parameter measurement (QEX Jun 1995 p20).

Using a tiny circuit board offcut and being able to choose from both SMD and wire-ended parts meant that I spent nothing on this build.

It was also the fastest RF-friendly layout I have ever been able to achieve. With some care, the technique could be adapted to, for example, SOT-23 parts and other SMD package types.

The pad cutter I used in this instance is the model currently available through G-QRP club sales.

Rig Safety

Dick Arnold, AF8X

One of the local hams, Paul, AA8OZ, ran into a problem while operating with his Elecraft K1. Paul uses a wire antenna held aloft by a kite and he recently had a problem caused by a static build-up on the antenna that zapped one of the components in his rig. After repairs were made Paul installed a 1K resistor across the antenna terminals in the radio to drain any static build up on the antenna. When Paul told me about this I thought my rigs should also be protected as I also operate portable using wire antennas with no protection.



A little research told me that resistors between 1K and 10K would make a suitable drain resistor without affecting receive or transmit modes. I thought that I could install the resistor outboard of the radio and not have to find room in the innards.

I looked through my junk box and found a 2.2K resistor and a T-adaptor. I turned on the solder station and soldered the resistor from the center jack to the shell effectively bridging the antenna connections with the 2.2K resistor. For the K1 and KX-1 I needed an additional adaptor to adapt the SO239 to the BNC antenna connection on the rigs.

Now when connected to a random wire or available flagpole, I can be sure my rigs are protected from a static build up from either wind or nearby storm activity.

The Kenwood TS-50 & AT-50 Tuner

Dick Arnold, AF8X, 22901 Schafer St. Clinton Twp., Mi. 48035. USA

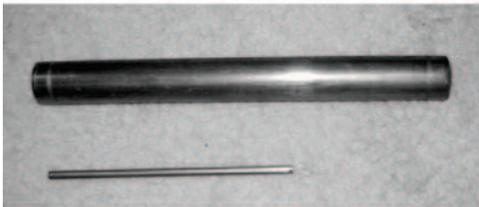
When the Kenwood TS50 first hit the market, it was the answer to the portable/mobile operator's dream. A small full power rig with all the popular features, except for an internal keyer. The matching AT-50 tuner operates automatically with the TS-50 and is a pleasure to use. There are a lot of TS-50s still in service and more on the trading block at attractive economical prices. This is how I combined my Kenwood TS-50 and AT-50 auto-tuner into a more compact/portable package by joining the two with aluminium plates and a solid RF connection.



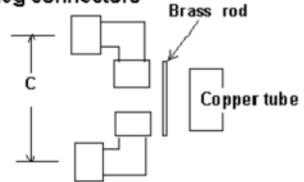
The mounting holes in the $\frac{3}{32} \times 3\frac{1}{2} \times 4$ -inch aluminium plates were laid out to match the mounting holes on both the transceiver and tuner with the TS-50 sitting unsupported atop the tuner. The plates were secured with the metric bolts that came with the radio and mounting bracket.

The RF coupling was made by carefully measuring the centerline distance between the two RF connectors on the rig and tuner,

which provided the measurements for the $\frac{1}{8}$ " brass tube¹ and the copper-connecting pipe². The two 90° female/female connectors were laid out on that centerline measurement and the connecting tubes were cut to length.



2-90 deg connectors



C = Center measurement between rig & tuner



The $\frac{1}{8}$ " tube was fitted onto the center pin of one 90° connector, then the section of copper pipe inserted into the threaded part of that connector. The other connector was then connected to the tube and pipe extending from the first connector. Finally, the copper pipe was carefully sweat-soldered to the two connector-threaded shells.

This solid mechanical and electrical connector excludes problems with coax jumper cables.

¹ Available from hobby shops

² $\frac{1}{2}$ " ID water line copper pipe.

G-QRP Convention at Telford HamFest

2/3rd September 2017
Martyn Vincent G3UKV

In SPRAT 166 (Spring 2016, page 8) Graham G3MFJ wrote a piece entitled “All Good Things Must Come To An End”, which I think came as a bit of a shock to us all, as it heralded the final G-QRP Club Convention at Rishworth. My thoughts were “Oh, no – surely not”

But a chink of light shone in the final paragraph under a ‘So, what about the future?’ sentence which went on to say “The convention could be part of a rally . . .” – I pondered this idea, since here in Telford (Shropshire) we have been running a successful radio rally since the dark ages (1978, to be precise).

The Telford Club (TDARS) committee were most enthusiastic, and subsequently emails were sent to several G-QRP ‘chiefs’, making an offer. Graham dropped into the Telford HamFest in September, and apparently liked what he saw. Further chat followed at Rishworth in October, since whilst we had lots of experience in organising rallies, with guest speakers, a Convention was new ground to us, although we have held a RSGB AGM and a Microwave Convention in the past.



So we LISTENED, and then some more. A green light shone. . .

So, now it’s time to invite all SPRAT readers to think about coming to Telford next September for a combined Rally and G-QRP Convention. The event takes place at the Ingenuity centre in Coalbrookdale, Telford (TF8 7DQ) which is a really exciting World Heritage site in beautiful surroundings. Good catering on site, and a local pub next door.



Access is easy via road and rail networks. We are already planning to hold a Bath style Buildathon on the Saturday evening, shared with the traditional G-QRP social event in a decent hotel, with the option of staying overnight.

So maybe Graham’s “Good Things” can continue, after all !

e-mail hamfest@ukv.me.uk and perhaps look at our website www.telfordhamfest.org.uk

Antennas Valves and Vintage

Colin Turner G3VTT

182 Station Road Rainham Gillingham Kent ME8 7PR

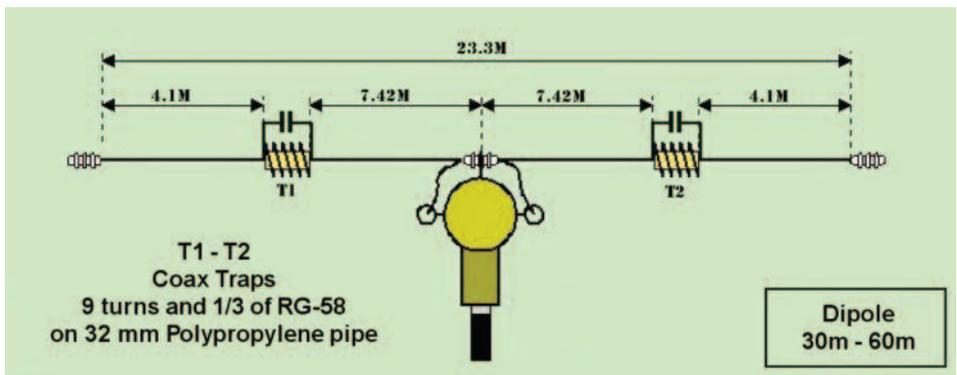
G3vtt@aol.com

It was a great privilege to be able to attend the last Rishworth GQRP Convention and to meet so many of you again. I'm looking forward to hearing all those valve projects you told me about whilst on the stand on air during the Valve QRP Days and the Winter Sports!

So often these days with the poor conditions members are heard saying they are giving up operating so I ask are you part of the problem or its solution? With the new band on 60m there is a lot that can be done and will you be joining in with the Monday activity periods on 60m? Fabio IX0IXI has once again been developing new aerials and has provided details of an aerial for 30m and 60m which will work in a small space.

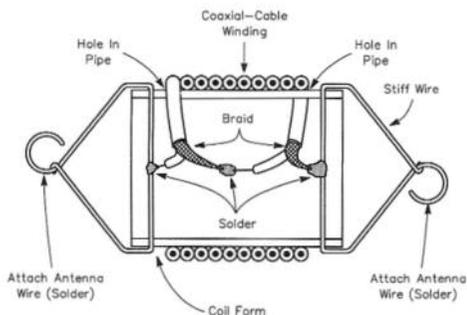
Hi Colin, how are you? I have built a new wire antenna for 30m and 60m band. As you know the 5 MHz band is not allocated yet here in Italy but WARC-15 said that 60m is a ham radio band so I hope to be QRV on 5 MHz next year. Meanwhile I've built this dipole to receive foreign traffic on that band. For sure it could be an interesting antenna for those whom already operate on 60m.

The choice of the 30m/60m combination is due to my passion for 10.1 MHz band so I built a dipole for this purpose first then I decided to put a couple of traps to resonate it on 60m as well. *Thanks to Fabio again. The WARC-15 documents from DARC seem to indicate contests allowed on 60. Some mistake surely?*





Easy Trap Construction



Coax Cable Capacity

For the Valve and Vintage fans another project from IZ3CQ. The RK34 was a double triode valve designed just before World War 2 in 1938 as a driver, oscillator or PA for the then VHF bands working around 60MHz. With reduced power it could be used up to 240MHz.

Chris IZ3CQ has crafted a magnificent self-excited oscillator transmitter using one of these valves and I'm sharing this project with Sprat readers to show what can be done with old components – and a bit of spit and polish! QRP – building and operating.

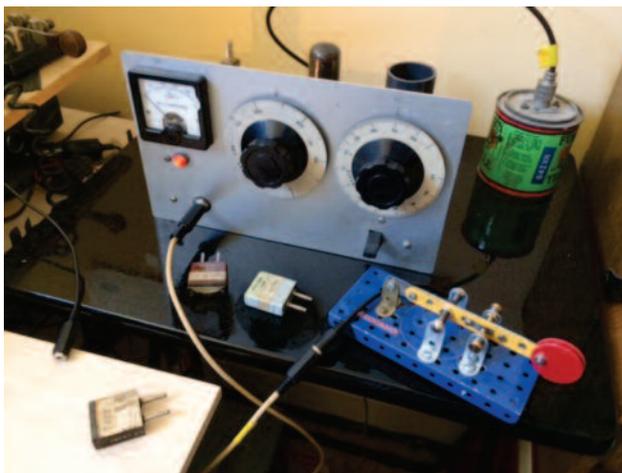
Dear Colin, here are couple of pictures of my very big jump into the world of absolute minimisation. This is a Hull-Hartley transmitter with the same exact schematic diagram from the 1920's that radio amateurs used to build although made with slightly less older components.

An RK34 double triode is used as an oscillator, (this was used on some airborne radio sets in World War 2), and is fed from an electronic (regulated) plate supply using an 807 as series regulator. This transmitter covers from 1.7 up to 5.0 MHz putting out more than 5W when properly loaded at 400V anode supply. Due to the anode voltage stabilization the output is stable and chirpless and it is hardly distinguishable from the modern radios on the air.

The 'side-effect' of this enterprise into the 'hard' minimalism is that the performance of this bunch of 10 components is totally unexpected and I'm feeling much less the need to carry my ordinary radio traffic on the lower bands with my 'sophisticated' MOPA plus VFO. Perhaps is not that far from the day in which I will sweep out from my radio shack most of my other radios. *(I get that feeling most days Chris).*



Perhaps Chris will share the circuit diagram with us. This is a beautiful project indeed that is a credit to its maker. If you attend a traditional rally or maybe a Vintage and Military ARS auction you can still get these kinds of components and craft some real radio equipment.



I often work Martin G4ZXN on 3566 KHz with his homemade cootie key and he wanted to share a picture of his single 6V6 creation. To make contacts using a homemade key and transmitter must fill him with great pride. He has a super fist with that Meccano key.

I recently attended the Vintage and Military Radio Society auction at Coventry and saw some quite serviceable BC221 frequency meters for auction being almost given away. They make a very respectable signal generator and of course can measure frequency accurately for many day to day amateur radio operations. I have an LM14 in almost pristine condition here which is in regular use. Colin G3VKQ has sent some notes about 4 BC221's he recently serviced (see page 34).

Finally, it's Christmas yet again and with it comes one of my favourite operating times of the year, the Winter Sports. I hope to work many of you over the period between Boxing Day and the New Year. May I also take this opportunity to remind you about the change of CW QRP activity on **Mondays** to 5262kHz from 2000 local time here in the UK from January 2017, but I am certain there will be plenty of us active from earlier on. Let's try and make Monday QRP activity day in 2017.

My sincere best wishes to you all for the Christmas period and a happy and healthy New Year to us all.

Restoring BC221-M Frequency Meters

Colin McEwen G3VKQ [colin@the-mcewens.co.uk]

I acquired 4 off BC221-M frequency meters in an SK sale. Here's what I found when getting them going. Interestingly, none of the units needed any new valves – all of the faults were in passive components. [If you do not have a manual, search for filename BC-221.pdf on the internet. Page 93 has the BC221-M circuit diagram]

1. Power Switch – corroded contacts. All of the units needed the power switch to be cycled quite a few times to turn on. Leave this switch on when packing up.
2. Resistors in the VFO circuit gone high value (all units had this fault to some degree). Shows up as poor VFO starting from cold, especially if the tuning has been left at the low end of the range. R19 (VFO anode load) should be 56k but measured up to 72k. R22 (VFO screen) should be 9.1k but was over 11k
3. Audio choke 30 open circuit (2 units had this fault). Shows up as very weak audio in the “Xtal Check” position (I was surprised that there was any audio at all when I found the fault). Check volts on pin 3 of the 6K8 mixer – should be about +90V. If zero then the choke is open circuit. I bridged the choke terminals with a 15k resistor to resort usable audio.
4. Audio capacitor C9 leaky. Shows up as distorted audio and increasing the “Gain” control does not seem to adjust the audio correctly. Check there is no DC voltage at the top end of the “Gain” control – one unit had nearly +8V at this point. Replacing C9 with a modern unit fixed the problem. I left the old C9 body in place and stuck the new unit to it.
5. No beat note in “Xtal Check” position. Two units had this symptom, but different faults found:
 - a] Crystal oscillator not running. This unit had a non-original glass 1MHz crystal – should be in a metal can looking like a metal valve. Turned out that the crystal was wired to pins 2 & 8 instead of 3 & 8. Fortunately pin 2 of the crystal socket was not used in the BC221-M so I strapped pins 2 & 3 together on the socket, which fixes the problem.
 - b] VFO not running on “High” range. Coil 14 (the High range coil) turned out to be open-circuit in the cathode ->ground section, with the rest of the coil being good. I found by experiment that the cathode-> ground section should be 7 turns to restore the original inductance (one I had the winding polarity correct....).
6. Crystal oscillator not adjustable to 1.000MHz. All of the units needed 4.7pF across the crystal to be able to get the 1MHz crystal on frequency against a Droitwich standard. (not bad for a 70 year old crystal....)

MEMBERS' NEWS

by Chris Page, G4BUE

E-mail: chris@g4bue.com



GØFUW reports the QRP events at the RSGB Convention in October went down well with a Kanga kit buildathon and small stream of lectures on low power operating, construction and using test equipment. The picture below shows **GØACK** smiling at the camera during the buildathon. Steve and



G4YTN were also involved in the solar powered TX buildathon at Rishworth, which proved as popular as ever, and was followed the next day with **WIREX** leading the biggest (solderless) British buildathon. The Bath Buildathon Crew are now preparing for their 10th annual event on Saturday 7 January. **G4GHB** writes, "Rishworth Rally, is it the

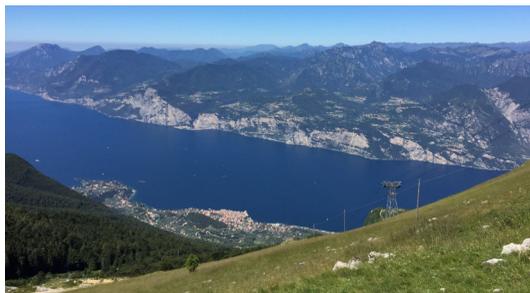
end of an era? Where have the young people been at these rallies to continue the hobby? I hadn't realised we were building in the second lecture but luckily I had for once taken my glasses! I have since soldered all components in as they were a bit loose and have used it already".

Regarding Rishworth, **WIREX** writes, "I would like to thank the G-QRP Club's Rishworth organisers for another fine convention and for a 27 year run! I was lucky to get to three shows but wishing it had been many more! I made a presentation on portable kit building and hosted a buildathon within my talk. We had 110 attendees building RF probes in the lecture hall, thereby setting a UK record for the number of builders building kits at the same time. For those of you who built the kit, a schematic can be found on my website <<http://qrpme.com/?p=product&id=UKBB>>. There is also a link to a *YouTube* video of the talk and UKBB Buildathon on the same page. **G8TMV** had a good time at Rishworth and took part in the buildathon. Colin has been thinking of ways to actually have some QSOs with the solar powered 80m CW TX that was the buildathon project, but first decided to see what the output looked like on his spectrum analyser. He has put the results on his website at <<http://www.tuckley.org/solar-tx/>> and says, "Unfortunately, it looks like the low-pass filter isn't really doing its job properly since the second harmonic is only 22dB down. Has anyone else looked at using the TX and, if so, have they thought about the harmonics?"

DL4WO is QRV with a 'Pixie in the Matchbox' (right), see <http://www.funk-amateur-dresden-ov-s06.de/index.php?article_id=392&clang=0>. Wolfgang built the Pixie and sent it to **DDØVR**. **G3CWI** announced a new kit in August, in a smart looking enclosure with an audio amplifier that is

designed to accommodate the SOTAbears audio filter modules. Richard says the kit is easy to build and makes it simple to use their DSP filter modules with all your favourite radios, see <<http://www.sotabeams.co.uk/amplifier-and-enclosure-kit-for-laserbeam-dual-filters/>>. **GØUPL** has announced a new QRP-Labs kit, a high performance single-band (10 to 160m) receiver for \$25, including one BPF. Hans says it is on a 80 x 37mm PCB that 'fits' with the U3S and VFO/SigGen kits. At the end of September **IKØIXI** was waiting for a X1M PRO chinese QRP TCVR and wonders if anyone else has bought or used the rig?





In August **MØJGH** enjoyed a picturesque afternoon of open-air QRP (above), introducing curious local friends to the hobby from high up on the slopes of Monte Baldo, overlooking Lake Garda in Italy as **I/MØJGH/P**. Jonathan said, “Unfavourable band conditions were soon forgotten under the cloudless summer skies, particularly once the barbeque was lit and the local wine uncorked!”. In December he was planning to be **QRV** from the hills around Rome, Frascati and Siena, again in Italy, on 40m **QRP CW**. **G3TPI** is contemplating a return to amateur radio and is looking for a cheap RX for 40m to get his CW speed back. Ted says, “Anything will do as long as I can listen”.

GM4VKI and **GØUPL** worked together at Rishworth to present Hans’s QRP-Labs kits which were well received, with Roy’s good lady joining the catering team to make toast for everybody. At 4pm they dived into the car and headed for Galashiels for the rally there the next day, with **GM3WIL** who had travelled over from Prestwick. The rally was superb as usual with 18 members signing in and three new members joining the happy band. As usual toroids were flying out the door. In November **VK3YE** was among the 25 attendees at ‘Melbourne QRP by the Bay’, the nearest VK has to a QRP gathering. Peter says there is a video at <<https://www.youtube.com/watch?v=IU9pjceEcc>>.



GØFTD says he finally managed to do some operating in the Scilly Isles in September (above) where he had been promising himself to do that for a few years. Andy soon learnt how to find various rocks to wedge the fishing pole in for an antenna support and became quite adept at that! He used a FT817 and 100 feet of wire, either as an inverted L or shortened vertical by the beach on various piles of rocks. He says he was shocked at how bad propagation was, very weak Europeans and a few DX signals. He had CW contacts with **EB4IC** (two-way QRP 17m), **IN3RSV** (12m), **IK2YYM** and **SM4LWY** (two-way QRP 20m), **IZ2ZSH** (15m), **G3NIJ** and **GM4OAS** (two-way QRP 40m) and **EA5/DF2SJP** (30m) who was out camping with a 20W rig. The RBN showed his best DX was Florida, USA on 17m. Andy has come to the conclusion that using a simple L-match often requires messing about with the lengths of the antenna to achieve a good match. Normally he prefers a T match, they tune anything he says, so he is going to scrap his /PATU and build a new T match. Finally he says, “Unless HF propagation seriously improves I’m not sure if I will bother taking the rig next year”.

E5IAND reports that **M1KTA** will be **QRV** 11/12 March 2017 during the BERU Contest from E5/S (Rarotonga) with a few days of more casual operating either side of the contest. Dom also

hopes to take a UK group on a DXpedition to Manihiki in the North Cooks, with dates to be announced. Back in the UK, he has been flying the QRP flag, see <<http://m1kta-qrp.blogspot.co.uk/2016/11/rsgb-iota-2016.html>> and lectured at the RSGB Convention. **VK3YE** released a new QRP book in August, *Hand-carried QRP Antennas*, with many portable antenna projects. Details at <<http://home.alphalink.com.au/~parkerp/handqrp.htm>>.

G4EDX was disappointed when the *Sprat* binders changed from 12 string to 16 string. Looking at the end binder on his shelf, which contain 11 issues, it was clear that he will struggle to fit 16 in. John decided he would still only put 12 issues in the new 16 string binders and would have to buy more binders and they would take up more shelf space. His collection of *Sprats* is complete; he joined in 1983 and the first *Sprat* he received was issue 34, but he has since printed all the earlier copies from the *Sprat* CD-ROM. On 16 October, as he was about to print new labels for his binders (white on clear film) it suddenly occurred to him - the early copies were thinner, and 16 will easily fit in a binder. Now he is transferring the early copies to the newest binder. The missing/non-existent issue 13 will be replaced by the last edition of the yellow-covered *Member's Handbook*. John says, "Sorry if this affects club sales of binders!". **G3YMC** responds, "**G4EDX** talks about printing all the issues of *Sprat* from the CD. Well I am going completely in the opposite direction! I don't know what the plans are for an update of the CD, but having just got an auto-feed scanner (marvellous device at 30 double sided sheets per minute) I have now scanned all my remaining paper copies and have them in PDF on a USB stick and CD rom. I have just finished doing the same with my RAOTA *OT News* magazines, and a pile of *RadComs* is beckoning next. Great fun, and incredible that I should be able to get them all on a single thumb drive. By the way, is there an update to the *Sprat* index planned? The one on the website only goes up to *Sprat* 161" **G4WIF** replies, "The answer is yes Dave, I need to get my finger out and update the index".

In September **G4GXO** tested a portable magnetic loop from Sandyhills Beach on the Galloway coast as **GM4GXO/P**. Ron writes, "Whilst I have always been sceptical of claims made about compact antennas, the magnetic loop really does appear to be the exception. I have built a portable version out of plastic conduit and RG213 co-axial cable which mounts onto an old camera tripod. This is intended for camper-van trips where there is no room to stow larger antennas and accessories. The results astonished me: an easy QSO into Z3 on 20m with 2.5W SSB and numerous other European and UK contacts. This type of antenna is multi-band, is very quick to put up and pack away, takes up little room when stowed and for portable operation is clearly an effective alternative to wire antennas". Ron plans to build a slightly larger version to extend low-end coverage to 40m and believes that with remote capacitor tuning, it would be an ideal solution for those with limited space for conventional antenna systems.



G3XIZ has been doing some experiments on LF (137 kHz) with **G7NKS** in a neighbouring village and has received his LF QRP signals of around 1W. They plan to try some earth mode transmissions in the near future. Chris has just started building a new 80m TRX. His present 20 year old unit has a DC RX which is not so good under crowded band conditions and the new TRX will have a narrow 4MHz crystal filter and a low VFO of 400-500kHz, both already built and working. He soon hopes to have a permanent /A installation on the edge of town and sporting high trees, ideal for a decent antenna system. He has installed one mast and is just waiting for the leaves to fall before shooting a wire over a 60 foot tree. With the much lower noise level there and a decent antenna, Chris should have greatly improved QRP performance.

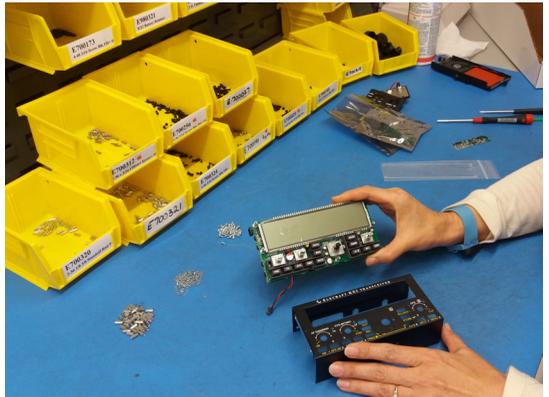


F5VLF has a little ‘adventure’ to report. One dark night, a wild beast from the local forest tried to force its way between John’s 2 x 6.5 feet eight-turn loop (used for monitoring LF) and the hedge, and succeeded in wrecking the antenna. John says, “From the tracks the creature in question was not a domestic animal and must have been substantially bigger than a dog. I suspect a deer as it mainly demolished the top half of the loop”. He has rebuilt the loop with the same dimensions and number of turns, but with different wire (loudspeaker cable instead of 16/0.2 sleeved) and finds its resonant frequencies are rather different. He is having great fun with a General Radio 1606A bridge trying to find out what is going on with it. The pictures show the loop before the incident (left), after the incident (centre) and rebuilding it.

GØXAR writes, “For some years there has been an HA QRP contest for CW on 40 and 80m in early November but this year’s has been cancelled and there will be no more. However, the good news is the contest has been replaced by a diploma which might be suitable for those of us who enjoy a less pressured activity than a contest. Details are at <http://www.ha-qrp.hu/en/ha-qrp-award>. I spend quite a bit of time in Hungary each year and was wondering if there are any G-QRP club members who live in Hungary or are Hungarian? If there are please get in touch, squirrelrox@gmail.com.”



F6EQO spent the first week of September QRV on Oleron Island (EU-032) in a bungalow in Le Château d’Oléron. Jean-Pierre holidays there every year, and first knew it 62 years ago when he was taken there as a ten year old child. His QRP station was either a K1 or FT 817, both very good rigs for portable activity, with a home-made dipole for 40 and 20m and a solar powered seven amp battery. He says, “Lady Propagation was not at her best, but I could work in good conditions to ON, EA and HB and I, QRO or QRP stations. **G3VTT/MM** was heard, but not QRP, sorry Colin!” In July Jean-Pierre got an Argonaut 515 in very good condition at the Marennes Radioamateurs meeting, with power supply and filter/noise blanker. He sometimes uses it on 40m and says it is an amazing rig, being 35 years old.



During **DDØVR**'s last holiday trip to the USA west coast on 7 July, he visited the Elecraft factory near San Francisco and met Eric Swartz, **WA6HHQ** (centre in picture on right) at the final mounting of the KX2. Heli says the factory is very clean and interesting.

MØNDE has hardly done any construction this summer except for SotaBeam traps and a power pole distribution box for the RV. A new Bencher paddle in Nigel's shack is so much better than his old paddle. A possible winter project idea is a Bitx 40m SSB TCVR (<www.hfsigs.com>) in the glove box of the car as his 2m FM is hardly used except for APRS. **N2CQR** has been having

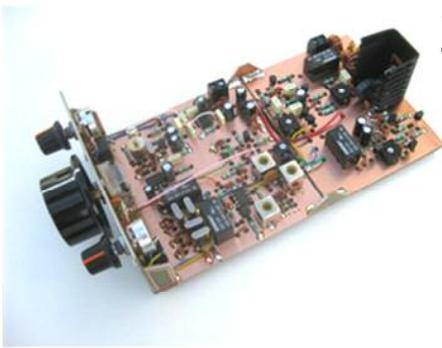


a lot of fun experimenting with the new BITX 40 module and has been building a superhet receiver around a National HRO dial and gearbox given to him by **W1UQO**.

The Board of Directors of QRP ARCI have elected Preston Douglas, **WJ2V**, as their new President, Kathy Bromley, **WQ5T**, Vice President and Jeff Hetherington, **VA3JFF**, Contest Chair. Preston says, "The latter two have graciously stepped forward to fill spots they have held before, and QRP ARCI is lucky to have their services. We are working hard on getting the logistics for a 'Four Days in May FDIM' in 2017 working, so stand-by a bit longer".

DDØVR planned to be QRV 18 November/3 December from EA8 with his new Elecraft KX2 he received in October. Heli will also be QRV QRP 13 April/2 May 2017 from KH6 (Oahu, Big Island, Maui and Kauai) with his KX2 or KX3 and a vertical dipole (2 x 17.4 feet, 80-10m with 2 x 75 ohms switch in row (parallel RG179 75 ohms x 2 = 150 ohms), and a single quad for 20m with symmetrical wireman 300 ohms and a 1:1 or 1:4 balun. If he has space, he will use the **DL1VU** Currentsume antenna (550 feet long). The main antenna in small rooms is a 34.5 feet vertical for 40, 20 and 10m that he used in 7P8, <www.hyendcompany.nl>. In 2018 Heli and Bigi **DE3BWR** plan to go to some Pacific Islands (3D, 5W, A3 and E5).

Thanks to the contributors to this column. Please let me know how your autumn goes for the Spring 2017 *SPRAT*, what you have been building, who you have been working, and any other information about QRP, by 10 February. Also, interesting photographs please, don't be shy in letting members see what you have been building and/or where you have been operating from, your antennas, who you have been meeting and even a shack photograph to let other members know what you and your equipment look like. Let me know if you intend operating from somewhere other than home during the spring and summer months so I can let members know to listen out for you.



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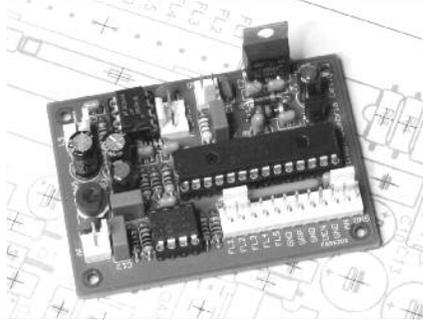
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