SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

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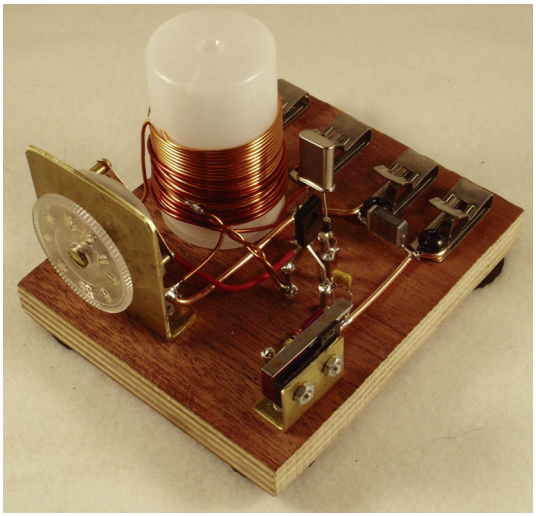


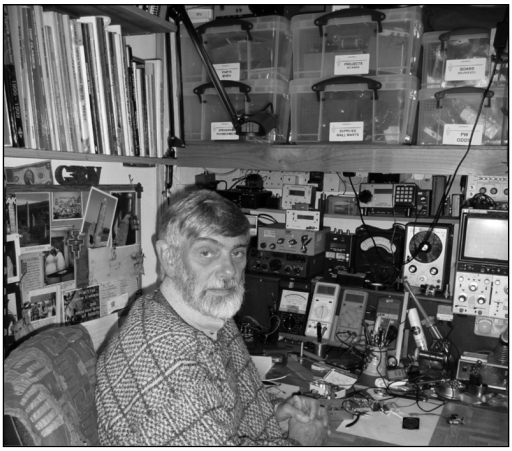
The Swedish Michigan Mighty Mite

Above:
The RV3GM Micro-80
Transceiver is 20 years old.

In This Issue:

THIS IS SPRAT NUMBER 150!

JOURNAL OF THE G QRP CLUB



Rev. George Dobbs G3RJV

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Welcome to SPRAT number 150! For me that is amazing - have I really done 150 of these! The club was formed in a very different world but is doing well in today's world. After some reduction in numbers, we are now growing again.

May I thank all of those who have contributed to SPRAT over the years. We have had an amazing variety of articles. Some have gone on to be "QRP classics" that are still being built and featuring in numerous web sites. SPRAT is only what members send to me - so keep the articles coming. SPRAT is compiled in MS Word and would-be contributors can be supplied with a SPRAT formatted page. But we accept almost any format from "SPRAT-ready" to pencil notes on a scrap of paper. Contributors may sometimes have to wait for their article to appear depending upon material in hand and a balance of articles in each issue. Thank you for your support.

72/3

G3RJV

The W1FB Memorial Award 2011/2012

The theme is "SPRAT Article Feedback". Many members build projects in SPRAT, many with improvements and modifications. So – I invite members to send their versions of previous SPRAT projects: Mods, improvements and pictures of their completed projects with notes. In fact, any useful addition information on what we have published before. Please submit before the end of April 2012.

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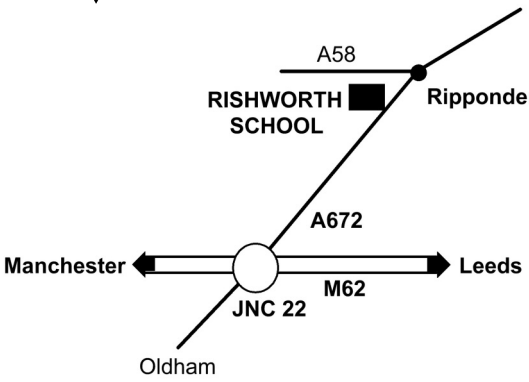
THE G QRP CLUB
MINI-CONVENTION

(in conjunction with the Halifax Radio Society)

Saturday 20th October 2012

The Rishworth School, Ripponden



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

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

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

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

Other suggestions for local accommodation:
The Premier Inn, Milnrow. Junc 21 on the M62 (Tel: 0871 527 8936) www.premierinn.com/en/hotel/ROCTHE/rochdale
The Malthouse, Rishworth. Almost next door to the school – only 5 rooms (Tel: 01422 822382) www.malthouserishworth.co.uk
The Turnpike Inn, Rishworth, excellent but quite expensive. (01422 822789) www.turnpikeinn.com

A Simple Valve Transceiver for 40m By G4PKW

Described by G3VTT, G3vtt@aol.com

I had a letter from John G4PKW about the Valve QRP Day and he later sent me details of a simple transceiver for 40m that was developed by the late G3EPY that he had used on 40m for the session. It's a fairly conventional circuit and if you find the parts and build it you should have hours of fun on 40 and can join us in the Valve QRP Day this year or next. There is a picture of it in the Valve Day report for last November 2011.

The transmitter is a straightforward CO/PA using and EF91 driving a 6BW6. The crystal oscillator fires up with any government surplus crystals but is particularly effective with the GQRP club HC49U types available from club sales at G3MFJ. The 22uH min choke lowers the resonant frequency of the crystal slightly and also reduced a slight chirp that was noticeable in the original, The 6BW6 PA produces about 4 watts output and if you can arrange it moving the link coupling will vary the RF output. The tank tuning capacitor could be a 100pfd capacitor. Valve circuits are a joy – you can change values of components and little happens.

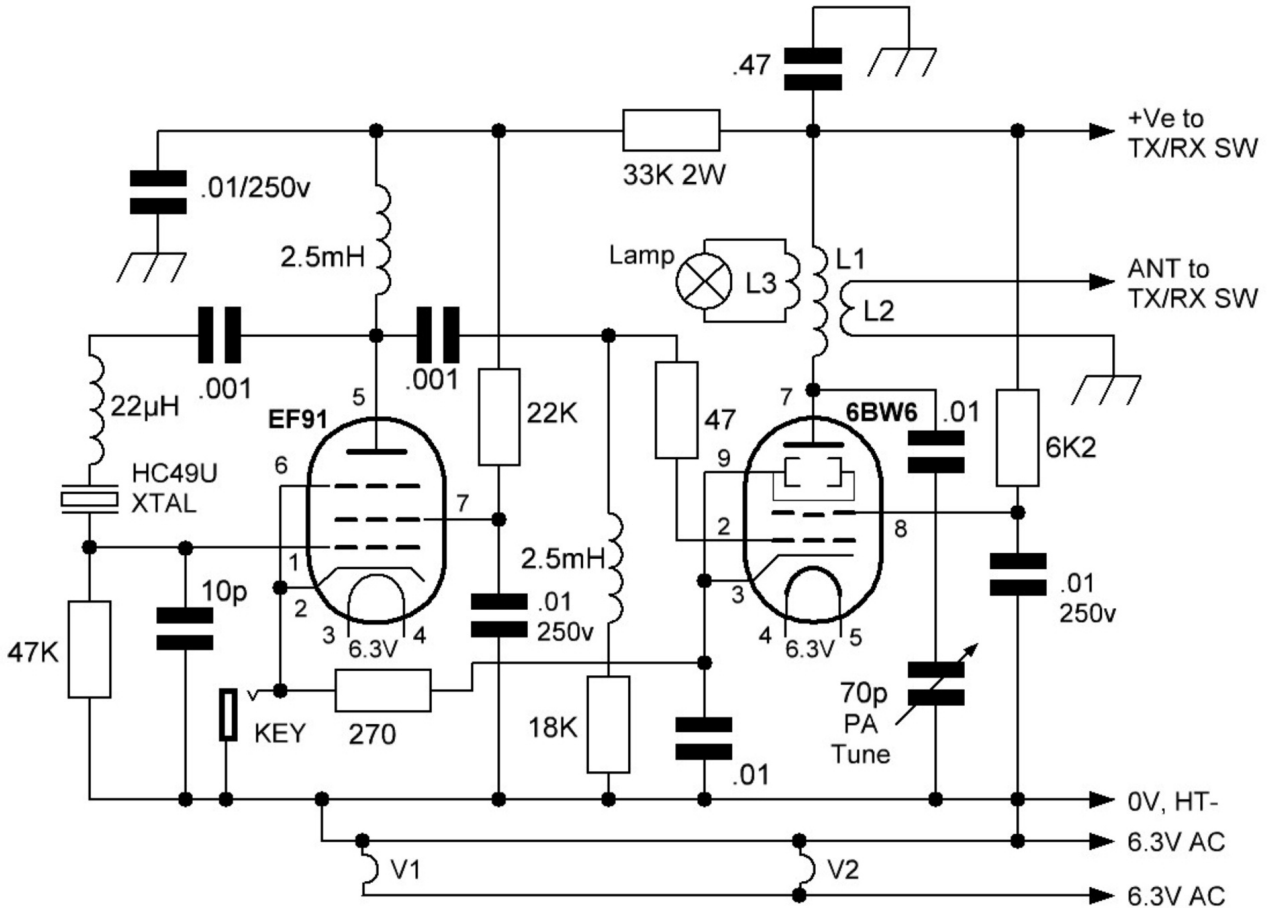
An ATU is perhaps advisable to reduce any harmonic output and don't forget that GQRP club crystals in HC49U casings can be fitted into a larger socket to ease quick frequency changing. You could, for example, fit the club crystals into a 10X crystal casing although at G3VTT I tend to prefer the smaller FT243 crystals, (only because they remind me of my youth and copies of QST you could slip into your pocket!) .

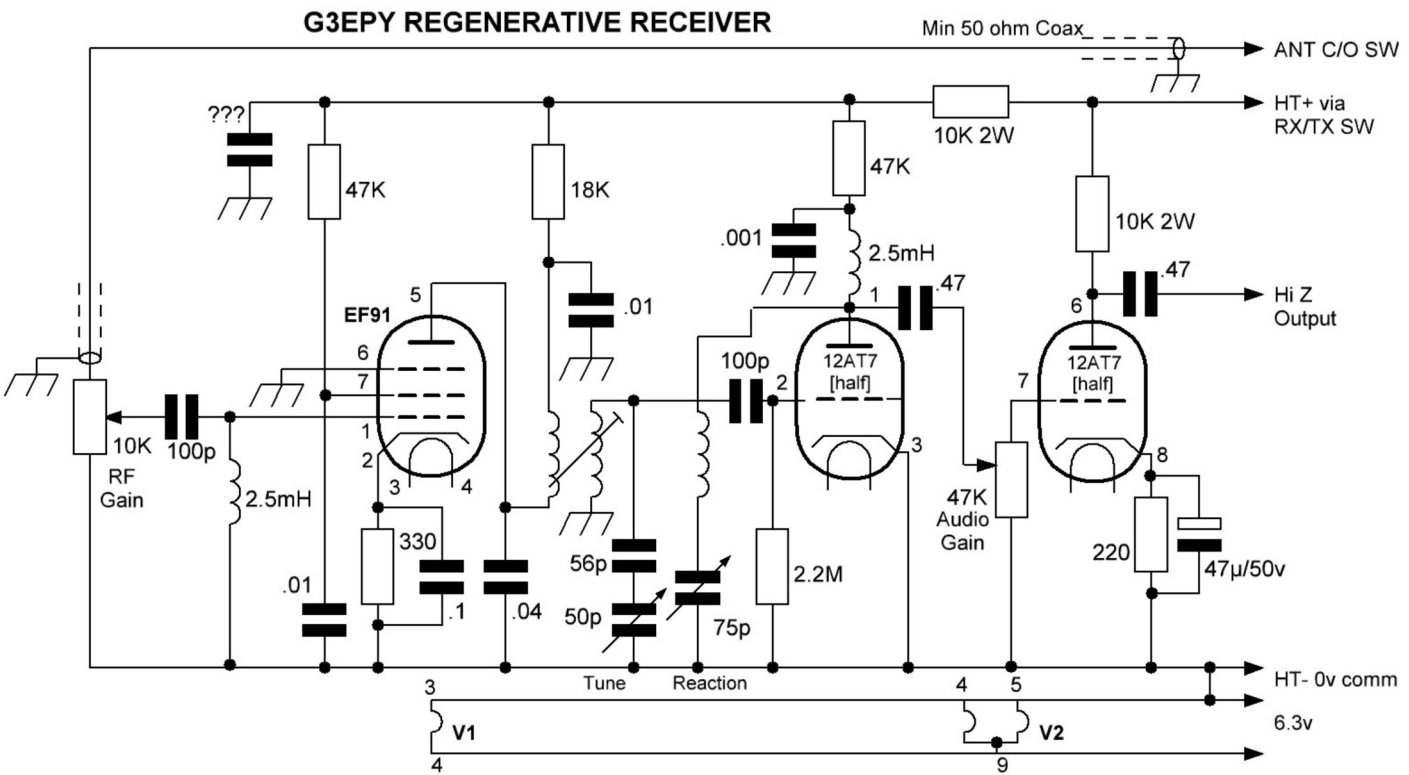
Like many others including Bodgitt and Scarper I use a crystal checker to net my TRF receivers onto my transmitter crystal frequencies. The main tank tuning coil L1 is 27 turns on a 1 inch diameter former and the link winding is 4 turns over the cold end of the coil, i.e. nearest to the HT supply. The tuning indicator is a single turn link to a suitable small lamp.

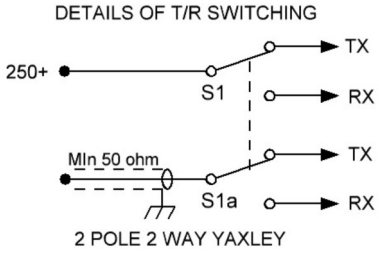
The receiver section is a 1V1 circuit with an untuned RF amplifier using an EF91 followed by a 12AT7 double triode as detector and audio stage. Like many of my own TRF receivers, including the Paraset arrangement, the tuning is just enough to cover the CW portion of the band with a 50pfd tuning capacitor and 56 pfd in series and the input attenuator prevents overloading quite effectively. I don't like listening to SSB as it makes my ears hurt so I keep the regeneration just into the point of oscillation which will give best selectivity and gain and reduces bandwidth for effective CW operation.

The reaction control is reported to be smooth. Note that the circuit works best with the ex Army DLR high impedance headphones but a small transformer could be used to permit operation with a low impedance pair of phones.

In the original circuit a Denco coil, possibly very hard to find these days, is used but this can replaced by a coil wound on a quarter inch slug tuned former. This would use 30 turns of 24 swg wire on the grid coil with an anode coil of 4 turns. The reaction coil uses 10 turns, remember to wind it to give correct regeneration. The original notes say the circuit is hum free with smooth reaction and the tuning capacitor for regeneration should be 75pfd to 100pfd. Use the parts on hand!


.47
+Ve to
TX/RX SW
33K 2W
.01/250v
2.5mH
Lamp
L3
L1
L2
ANT to
TX/RX SW
.001
.001
22µH
EF91
22K
47
6BW6
.01
6K2
HC49U
XTAL
2.5mH
.01
250v
10p
47K
6.3V
6.3V
KEY
270
18K
.01
70p
PA
Tune
.01
250v
0V, HT-
6.3V AC
V1
V2
6.3V AC


G3EPY REGENERATIVE RECEIVER
Min 50 ohm Coax
ANT C/O SW
HT+ via
RX/TX SW
???
47K
18K
10K 2W
47K
.001
2.5mH
10K 2W
.47
Hi Z
Output
EF91
.01
100p
12AT7
[half]
12AT7
[half]
10K
RF
Gain
100p
2.5mH
330
.1
.01
.04
56p
50p
75p
2.2M
47K
Audio
Gain
220
47µ/50v
Tune
Reaction
HT- 0v comm
6.3v
V1
V2



The original switching is simple just changing the HT supply from receiver to transmitter and the antenna from receiver to transmitter.

We are at Sprat productions are indebted for John G4PKW going to the trouble to write out the notes for this article.

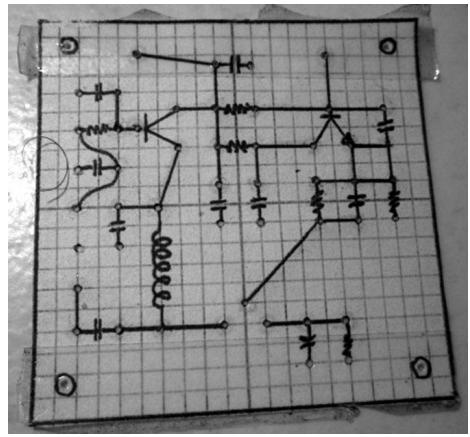
Return of the OXO (SPRAT 149)
Correction by GM3OXX.

George writes,

Chris GM4YLN phoned me to say that I had missed a line on the top of the overlay for the OXO. In fact, it is the two lines that connect the cap to the emitter of TR1. The underside picture is correct.

The picture (right) shows the correct overlay.

(Sorry about the black hair in the picture .. its not mine … but from one of the cats!)



QRP in the Country 2012 (with a challenge)

Tim Walford G3PCJ is pleased to announce that, following the much increased attendance and very successful QRPiC 2011, this year's event will be held on **Sunday July 15 2012.** As before, it will be held at Upton Bridge Farm, Long Sutton, Somerset. The theme remains low power radio operation and home construction, in a country setting! If the weather allows, it will be outside; otherwise, it will be in the barns like last year. Tim is particularly keen to increase the attendance by West Country Clubs and individuals with interesting things to show off. If you wish to reserve an early place or can suggest a novel feature; just drop him a line at walfor@globalnet.co.uk

Construction Challenge

Tim Walford G3PCJ invites entries for an informal construction challenge to be held at QRPiC 2012 on July 15th at Upton Bridge Farm, near Langport, Somerset. Well known radio constructor Steve Hartley G0FUW will assess the entries and decide who gets the prize of some local Somerset produce!

The task is to build a receiver for any amateur MF or HF band using no more than 10 discrete components and optionally one integrated circuit and one supply regulator. The choice of all parts is yours! This should allow a reasonable RX to be built and Steve will no doubt be considering the three 'S' aspects in his decision – stability, sensitivity and selectivity! There will be a long wire aerial, signal generator, phones and PSU available for your demonstration of the working RX; but use your own if you wish - they don't count in the parts tally. The style of construction is not important and can be 'informal' just like the attached photo! No prior entry is required - just turn up with your RX on the day.

RF 20 dB AMPLIFIER FOR DC RECEIVERS

CM2IR, ERMITA #233 APTO 20, C. HABANA 10600 CUBA

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.**

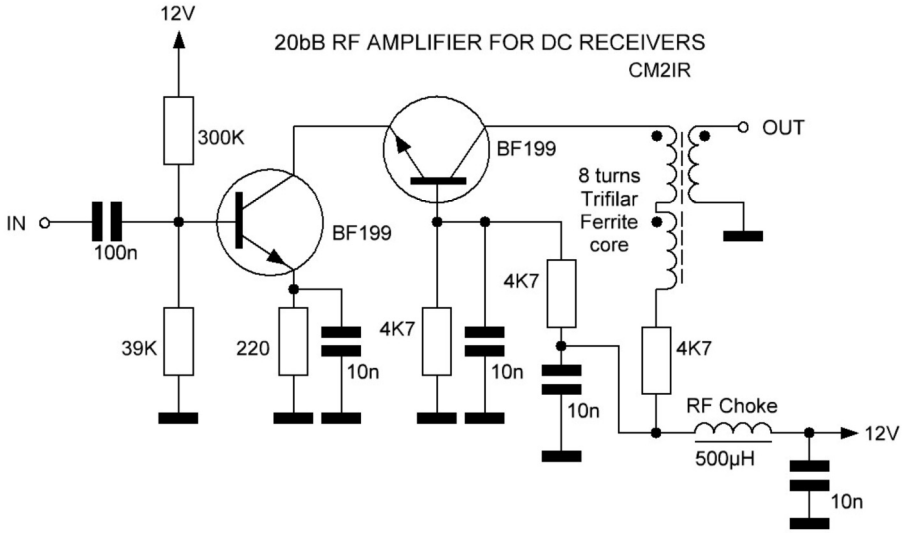
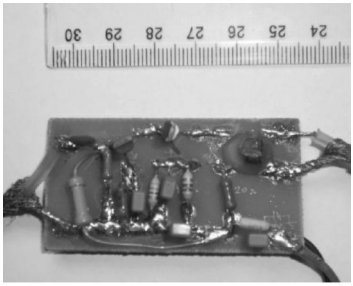


Fig. 1 Diagram Schematic.

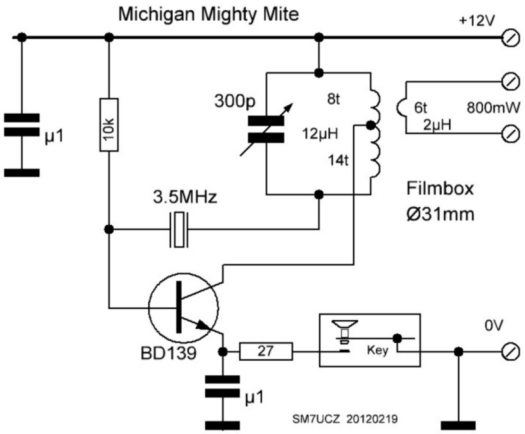
All capacitors are Polyester or Silvered Mica. The resistors must not be inductive types. The Balun can be 4:1 or 6:1 because output impedance of an RF Cascode Amplifier design is around 200 Ω to 300 Ω. The input capacitor is 0.1 µF with a resistor to ground of 39 KΩ. Input Impedance: 50 Ω . Output Impedance: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

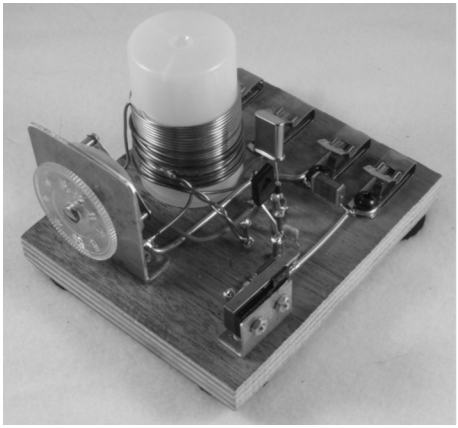


In the balun I use a little ferrite core but I haven't a serial number or type, but I think that you can use any ferrite because the frequency is low (7 MHz). I used three twisted wires (0.12 mm) with 8 turns around the ferrite core. If you have a Spectrum Analyzer and Tracking you build two baluns and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

Michigan Mighty Mite Transmitter

Johnny Apell ,SM7UCZ, revisits a QRP classic circuit. http://sm7ucz.se/





In Johnny's own words – "I made a MMM this evening and made a 250km QSO!! On Reverse Beacon it was heard in Italy... on 3.560kHz"

16th RED ROSE QRP FESTIVAL.

Sunday 1st July, 2012. 11am to 3pm. Formby Hall, Alder Street (off High Street), Atherton, Manchester. M46 9EY. Admission £2.00 Children under 14 free.
Easy access from all directions. M6, M61, M60, A580
Features: Trade and individual stalls. Club stands, including RSGB, GQRP. Very low cost "Bring & Buy. (No sell, no pay!) Sales of new and surplus equipment /components. Hassle free. Large spacious halls at ground level. Huge, free car park, disabled facilities. Delicious refreshments at QRP prices! Comfortable, well stocked lounge bar.
Some tables available at £8 but please book early. Ideal opportunity to sell those unused items. Contact Les Jackson, G4HZJ g4hzj@ntlworld.com 01942 870634

11th Junction 28 QRP Rally. 10th June 2012.

Alfreton Leisure Centre, Church St, Alfreton, Derbys. DE55 7BD
10 mins from M1/J28 and the A38. Admission £2.50. Open 10am.
Details: Russell Bradley, G0OKD, 01773-783658,
russelbradleyG0OKD@ntlworld.com
Web: http://www.snadarc.com

Transformer Tip from David M3CCQ

A cheap source of mains 12v 20w transformers is from the 12v Halogen reading lamps....the type with two telescopic arms.....they are available from bootsales for 20p to 50p.....nobody wants them when the bulb has blown.

Over the Horizon on 481THz

Roger Lapthorn, G3XBM, 37 Spring Close, Burwell, Cambridge, CB25 0HF

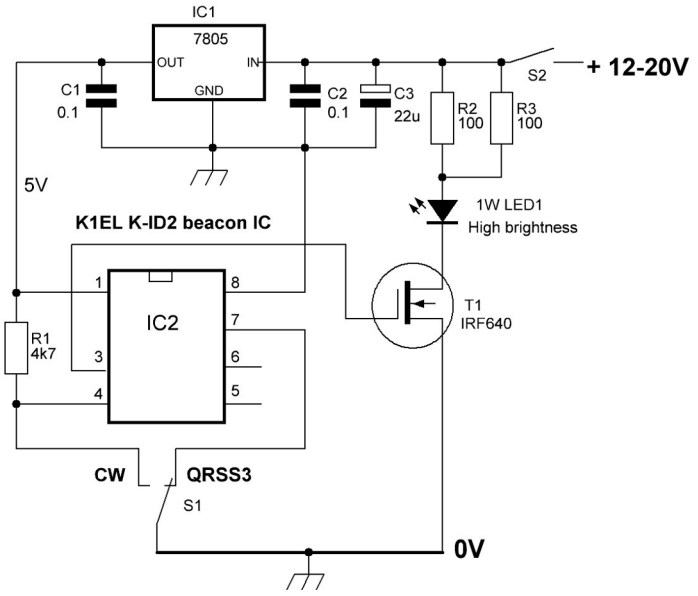
http://www.g3xbm.co.uk http://g3xbm-qrp.blogspot.com/

Over the last few months I've been building kit for optical communications using high brightness red LEDs and PIN photodiodes. This was inspired by a fascinating series of articles in RadCom last year by Stuart G8CYW. The majority of people experimenting with light want to see how far they can get "line-of-sight", but my interest was rather different: using the weak signal techniques tried successfully at VLF, I wanted to see if I could detect optical signals "over the horizon" on a non line-of-sight (NLOS) path by "cloud-bounce" or free space scattering. My tool would be free Spectran software running on a laptop PC fed from a sensitive home made optical receiver.

To test this I set up a simple QRP CW QRSS3 (3 second dots) optical beacon (input about 0.7W) sending a keyed 820Hz tone over the red LED light beam. The TX beacon was focused with a 100mm lens from a Poundland mounted in grey 110mm drainpipe and mounted on a small tripod (see picture). The signal was fired out of the bedroom window at an angle just clearing a nearby rise in ground level aiming east.

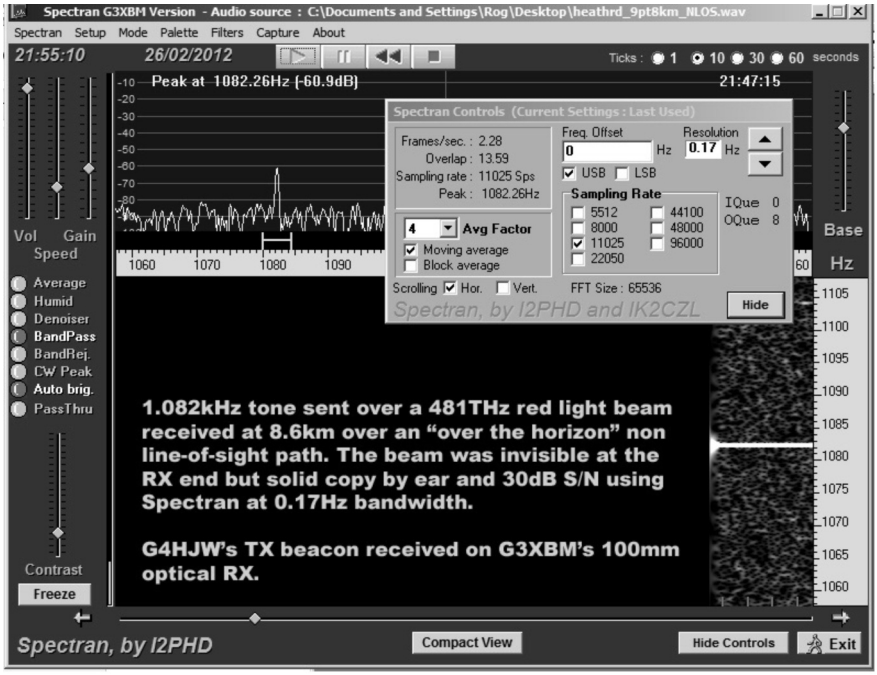
At the receiving end I used a similar 100mm lens feeding the optical signal into my very sensitive optical receiver using a BPW34 PIN photodiode detector. The output of the head was fed after some amplification to a crystal earpiece and to my laptop PC running Spectran software. This was set up at night at a roadside location 3.6km away from home at a site "over the hill" i.e. it was definitely not line-of-sight.

G3XBM - 481THz CW/QRSS3 Beacon (0.8kHz Subcarrier)



To my great surprise I was able to copy my beacon on 481THz (red light) at 10dB signal to noise in a 0.67Hz bandwidth despite not being able to see any sign of the red beam at the receiving location. Aiming was critical.

A week later I did another "over the horizon" test, this time with G4HJW who was 8.63km (about 5 miles) away from me. He was using a higher power red LED beacon and his signal could be copied by ear in the earpiece when aiming in the right spot on the distant horizon. Feeding the optical receiver into my PC running Spectran software I could copy Bernie's signal at an amazing 30dB S/N in 0.17Hz bandwidth. Again there was no sign whatsoever of the red beam in the sky. The signal was being scattered by dust particles in the air and water droplets rather than being bounced off the base of clouds.



Speech optical communications has been achieved (by others) line-of-sight up to 117km in the UK, but for me now the challenge is to see how far a signal can be detected "over the horizon" using weak signal data modes. The experiments have only just started (early 2012) and by the time you read this lots more will have been done.

The optical and electronics equipment needed are very simple and very inexpensive to make, so it is ideal for those wanting to experiment with something a bit different and without spending very much. Only the most basic of test equipment is needed as most of the engineering is being done at audio frequencies. Best results will be achieved at night as daylight tends to reduce the sensitivity of the receiver.

There are lots more details of circuits and useful links on my blog and website.
See https://sites.google.com/site/g3xbmqrp/ and http://g3xbm-qrp.blogspot.com/

Simple noise sources and how to calibrate them.

Tuck Choy M0TCC. tuckvk3cca@gmail.com

There are many simple circuits for noise generation most of whom are based on zener diodes [1] or the base-emitter junctions of RF transistors [2] and the more expensive NC302L diode originally suggested by Paul Wade N1BWT [3]. Building these sources is easy; it's the calibration that can be very problematic. I was therefore rather surprised to find that there is in fact a rather simple but nevertheless tedious procedure in which you can calibrate any noise source you build using nothing more than a signal generator. This has in fact been described before in the QST and QEX articles but no one actually explained the method or its principles so I (like many others) must have grossed over it and ignored the method altogether. I came across a more thorough description of the procedure in an old Wireless World article by a C.G.N. Matthews [4]. This article is written to encourage you to calibrate your noise sources, as I am sure many of you will have one of these lying around somewhere even if you had not made a home-made one before, such as in an old RF noise bridge. One of my earliest noise sources was built using a good old vacuum diode CV2171 and is described in some older editions of RSGB handbooks and publications such as [5]. This is one area where good old vacuum technology has an edge over semiconductors which is hitherto unsurpassed in simplicity. For the noise factor of a vacuum diode noise generator driving a source resistance (Rd in ohms) is directly related to its filament current Id (in mA), which at room temperature (290K) is given by

NF (dB) = 10 log10 (0.02 Id Rs).

Thus to find the noise factor of the generator you only need to measure the diode dc current, a piece of cake and the simplicity this wonderful result is a gift from the physics of thermionic emission. Unfortunately semiconductor noise generators do not have such a simple rule which makes calibration complicated and tedious. The reason for this is that semiconductor noise generators function via avalanche breakdown and its noise spectrum depends more on the device characteristics than its operating condition, even for specially manufactured "white" noise diodes such as the NC302L.

In the past I have always had to reference my zener diode noise source from my RF bridge with my CV2171 generator. Now you can apply this simple but tedious procedure if you want to calibrate your semiconductor noise source if you do not have a thermionic one to reference it with. You will need a signal generator, preferably one with a good clean spectrum, a wide band amplifier, an audio power meter, a 3dB pad and a calibrated attenuator. The audio power meter can be a homemade unit [6], alternatively the wideband amplifier can be replaced by a receiver but you will still need an audio power meter as an S meter is not usually reliable.

First we shall find the NF for the wide band amplifier or receiver, using the method detailed by Matthews [4]. Connect the signal generator to the amplifier via the switched attenuator. The output of the amplifier goes to the power meter via a 3dB pad. First short the 3dB pad. Now adjust the attenuator so that you are reading a signal about half that for normal operation, with a meter reading of about 1/2 scale say. Next remove the short i.e. reinsert the 3dB pad to the output line and reduce the attenuator until the original signal level is restored. This ensures that your amplifier is now operating under its normal

condition. Now the noise factor of the amplifier will be equal to the attenuator setting in dB let's say S1. If you have a good wideband amplifier or receiver this test should show no significant variation of the NF with frequency, but be prepared for surprises, especially with modern HF rigs with complex front ends. Now replace the signal generator with your noise source. You will find the power output would increase somewhat. Now increase your attenuation setting to restore the power meter to its previous reading. The dB difference between this setting S2 and the setting S1 will be the NF for your noise source. Repeat this across the band as semiconductor noise sources are not white and can vary across the band. Note that the noise factor of your generator must be subtracted from the thermal noise factor at room temperature if you only want the excess noise for your source.

References

[1] Doug de Mauw and West Hayward, Solid State Design for the radio amateur fig 62, pg 168.

[2] Elektor Summer Circuits no pg 17, July/Aug 2010. This circuit is dead simple (see also [5] below) and uses a BF199 transistor, but I would expect that for HF use only other transistors with high Ft's (2N2222 or BC549) even the old timers OC170/AF115 could be pressed into service. Note that my attempts to buy a BF199 at Maplin's was a failure as they no longer stock it, however they are still available from Farnell UK.

[3] In the UK the Warrington Amateur radio club see http://www.warc.org.uk/proj_noise_source.php puts out a kit for the original Noise source circuit. Unfortunately the diode is not cheap $10 each and you must buy a minimum of two diodes from Noise Com plus $4 postage. Calibration will cost you anything from $50 onwards when you have built the circuit.

[4] Noise Figure Measurements, by C.N.G. Matthews, Wireless World Oct 1967 pg 393.

[5] VHFUHF Manual by G.R. Jessop G6JP, pg 11.22 to 11.24, RSGB pre 1983 editions.

[6] A true rms to DC converter can be home made, such a circuit is detailed in Sabin: QST Oct 1992 pg 30-34.

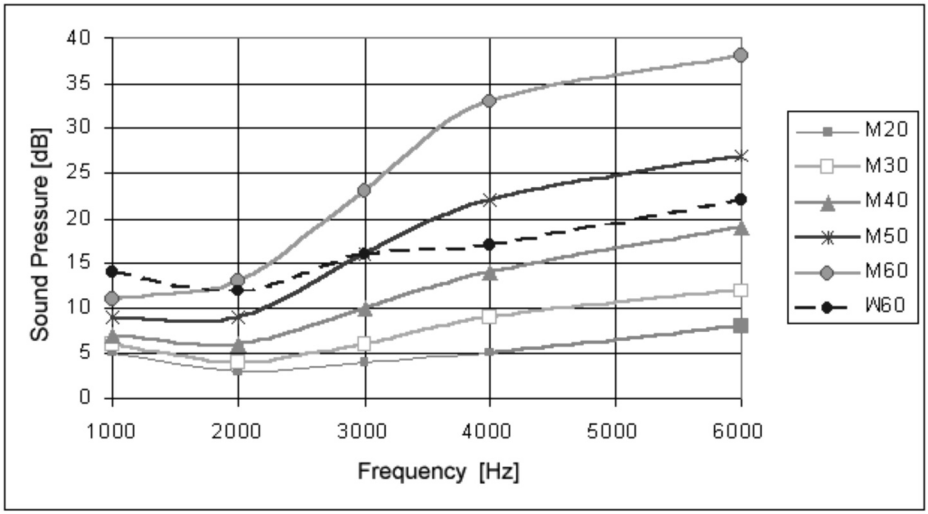
Know your Headphones…& Ears!

Bob G4VSO, Nailsworth Gloucestershire. bob@carterrl.co.uk

Over the years, I have seen a number of minimalist designs for receivers using only one or two devices for audio amplification and even, in one recent design, none at all. Surely in such a design the sensitivity of the headphones (and your ears) must also be a consideration, but I have never seen any discussion on the topic.

First some Background on Sound levels and our Ears

To understand the interface between the electrical signal and sound wave, some background information on sound measurements. Sound pressure level (SPL) is a logarithmic measure of the effective sound pressure of a sound relative to a reference value. As in the electrical radio world, it is measured in decibels (dB) above a standard reference level in a similar way to dBm is used for RF power. With sound pressure level the "zero" reference sound pressure in air is 20uPa RMS, which is usually considered the threshold of human hearing (at 1 kHz).



There a number of interesting points we need to be aware of regarding Human hearing:

- Human hearing is most sensitive between 1 & 3kHz
- Our hearing sensitivity reduces with age, up to 6dB by the time you get to 60
- Although not shown on the graph above there is a 5dB reduction in sensitivity between 1kHz and 500Hz
- Male and female hearing differs as above showing gender and ages

Please see http://en.wikipedia.org/wiki/Absolute_threshold_of_hearing for further information.

To give a feel for practical sound pressure levels here are some examples of sound pressure levels in the real world:

Traffic on a busy road	80 to 90dBA
Long term hearing damage	Above 85dBA
Washing machine / Dishwasher	50 to 53dBA
Normal Conversation at 1m	40 to 60dBA
Quiet rural area	30dBA
Whisper, rustling leaves	20dBA
Breathing (Barely audible)	10dBA
Very calm room	20 to 30dBA
Threshold of hearing	0dBA

Please see http://en.wikipedia.org/wiki/Sound_pressure for further examples.

From these figures we can make an estimate of the sound level we need from our headphones that, with some age correction, would give a minimum comfortable listening level of about 30dBA.

Headphone Specifications

Most reputable suppliers of Headphones specify the sensitivity of their headphones as a sound level produced when 1 mW of audio power applied.

Manufacturer	Model	Impedance Ohms	Sensitivity dB
AKG	K141M	600	98
Beyer dynamic	DT770PRO	600	96
Sennheiser	HD433	32	94
Ross	R/90, HD/2, SB/15	60	100
Sony	MDR-V100MK2	32	98

Please see reference http://gilmore2.chem.northwestern.edu/tech/dbohn1_table.htm for further information.

This means for headphones with a sensitivity of 98dB, applying 1mW of power would produce a sound pressure of 98dBA into the operator's ears. A normal QSO of 30 to

50dBA would require a audio power of between 48 and 68dB lower than 1mW, that is between 15.8nW and 0.158nW of audio power.
With 15.8nW and using headphones with an impedance of 1000R, we would see about 4mV AC RMS at the headphones connector and with 16 Ohms headphones, we would see about 0.7mV AC RMS.

DC Receiver Design

What does this mean in in terms of simple DC receiver design? In a gain limited design, and ignoring mixer losses etc, if we had a level of 0.158nW of power at the receiver input , this would be equivalent to -68dBm or -90uV, to produce an audio level of 30dBA.
If we also include 10dB loss for the mixer and filters, then this would be equivalent to -58dBm or 282uV at the receiver input – not very sensitive. What level could we expect to hear down to? That depends on both your headphones and your ears; a young person with excellent hearing and set of headphones with sensitivity of 98dB could hear an audio signal of 10dBA, equivalent to -78dBm or 28.2uV. A more typical older Amateur would have hearing sensitivity of about 15dBA, equivalent to -73dBm or 50.1uV
To put these figures into some perspective, a 10uV signal at the receiver input, a practical design with 10dB loss in the mixer and filters to give a comfortable listening level (30dBA) would need a minimum of 29dB of gain in the receiver.

How good are my high impedance headphones
It's difficult to measure the sensitivity of Headphones; this is because it involves your ears and your headphones together. If you have a signal generator, you can apply 1mW of power to the headphones and then measure the minimum level you can hear. For this test you will need to know the impedance of your headphones to apply the correct power level with a matched attenuator (minimum loss pad). Most signal audio generators have an impedance of 600 Ohms with the appropriate attenuator built in.

Set up the output level for 1mW into the headphones, 1 V RMS at 1 kHz for 1000 Ohm headphones. Turn down the level until you can just hear the signal and measure the attenuation in dB. From the graph above, estimate the sensitivity of your ears and add this value to the figure measured to give an estimate of the sensitivity of your headphones.
A figure more than 90 can be considered good, if this is an area that interests you, a set of balanced armature (sound-powered) headphones would be worth exploring.
Note on the use of Back to Back diodes

As a point of interest, the use of back to back diode to protect Headphones users is quite common. Typically two silicon diodes would limit the amplitude to 0,7pk-pk or 0.25 V RMS. Driving 1000 Ohm headphones with a sensitivity of 98dB would give a sound pressure level of 85.8dB, a level high enough to startle the operator, so some series resistance is recommended. The use of Schottky back to back diodes (0.25V forward voltage) with 16 Ohms headphones is also not much use. A set of standard 16 Ohms impedance headphones with a sensitivity of 98dB would produce 95dBA, loud enough to hurt.

Power Beeper

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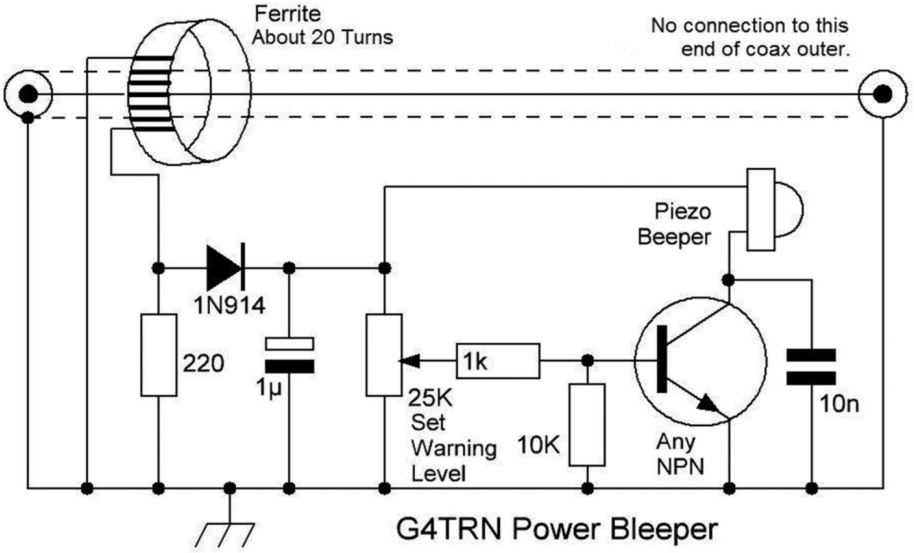
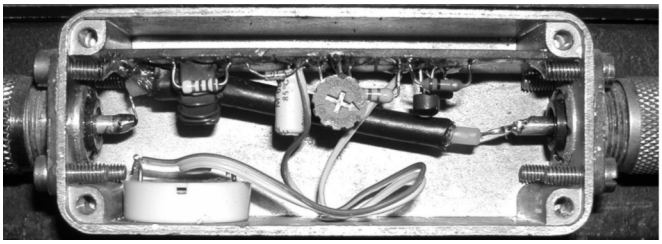
Many years ago, when I was building transverters for 4m and 6m I had a lapse of care and cooked one so effectively that the internal dummy load resistors got so hot that the solder holding them onto the circuit board, Manhattan style, melted and they fell off. Its not happened since I added this helper

All the parts came from dead boards and nothing is critical. You can have fun experimenting with the value of the 220R resistor and the number of turns on the ferrite if you need the sensitivity to be even over a wide bandwidth (say 1.8 to 30 MHz). I found it to be remarkably sensitive and effective. With a calibrated variable resistor and a dummy load on the output it could become a handy power meter.

A fraction of the tx output is used to charge the 1uF capacitor and power the piezo beeper. The voltage at the base of the transistor for any given tx power is set by the 25K potentiometer. At about 0.6V the transistor turns on and the beeper sounds. It will alert you immediately, whatever mode you using, if the level of power exceeds the limit you have set.





Simple and Inexpensive Bipolar Transistor Tester

Michael McShan, N5JKY, 626 NE 14th St. Oklahoma City, OK 73104. USA

Perhaps many of you have, as do I, a stash of various bipolar transistors that you've acquired over the years from salvaged electronics boards, grab bags, or other sources for these goodies. Quite often, I've found that the labels are unreadable or have some poorly documented manufacturer code. So, I wanted to find a simple and inexpensive tester that could tell me whether a transistor was an NPN or PNP (or indeed whether it was functional at all). The following circuit has been around for a while in various versions (1) and can be built from new parts for very little money. Mine was built entirely from my junkbox, and the most expensive component was the Altoids tin I mounted it in. Further, creating this tester also turned out to be a lesson in LEDs for me.

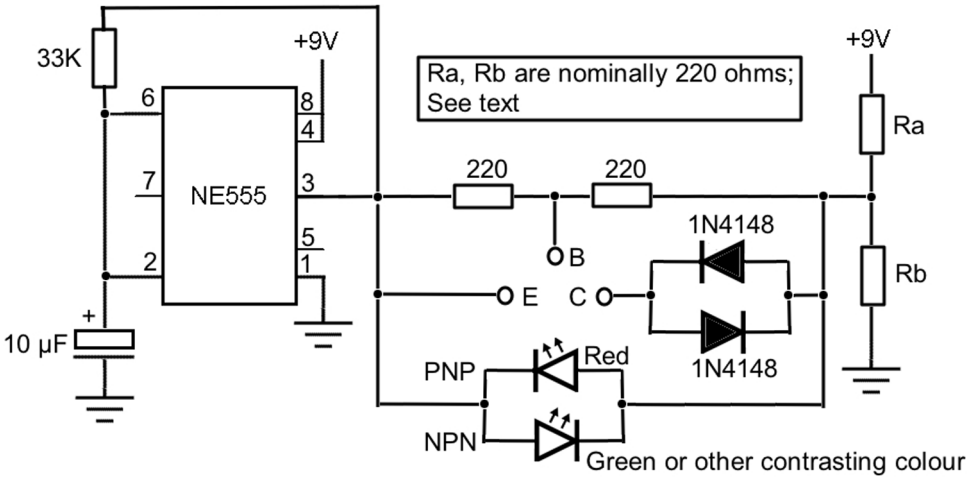
The heart of the circuit is the inexpensive and venerable 555 timer IC. My version was built ugly style on a scrap piece of printed circuit board with a couple of isolation pads cut into the copper for mounting the LEDs and diodes. I used a diamond-tipped circle cutter drill bit to create the pads; these are available Rex W1REX at QRP Maine (qrpme.com) and other sources. Layout is not critical. I started by positioning the 555 timer upside down on middle of the board. Carefully bend pin 1 so that it flat and perpendicular to the other pins and solder it to the ground plane. I also find it is helpful to mark the location of pin 1 on the underside of ICs with a drop of nail polish or paint so to prevent confusion later. Once mounted, the other parts are mounted from the IC outward. Three leads with alligator clips were attached to connect to the transistor being tested. A transistor socket or other means could be used, too.

The original circuit called for red (for PNP) and green (for NPN) LEDs; I was out of green ones so I used a blue LED that was left over from another project. When the tester is powered up without a transistor connected, both LEDs are supposed to flash in alternation, but only the red one was lighting up. I carefully inspected the circuit and found no wiring errors; so, what to do? The schematic shows that Ra and Rb form a voltage divider circuit, providing current limits for the LEDs as the 555 reverses the direction of current. It occurred to me that perhaps one LED had a larger voltage drop than the other. Removing Rb and hooking up my resistor substitution box showed that I needed to replace the 220 ohm resistor at Rb with a 100 ohm one. Now, both were flashing properly. I lashed up a test circuit with a 9V battery and 1K limiting resistor to measure the voltage drop across each LED and found that there was a 1.8 V drop across the red one but a full 3.2 V drop across the blue. A little reading on LEDs confirmed that these are typical values for these colours. So, the moral of the story is that you may need to adjust the value of Ra or Rb depending upon the LEDs from your junk box. Here are typical reported values for LED voltage drops (2):

LED colour	Typical voltage drop range (ΔV)
Red	$1.63 < \Delta V < 2.03$
Orange	$2.03 < \Delta V < 2.10$
Yellow	$2.10 < \Delta V < 2.18$
Green	$1.9 < \Delta V < 4.0$
Blue	$2.48 < \Delta V < 3.7$
White	$\Delta V = 3.5$

Using the tester is straightforward. With no transistor attached, the two LEDs will flash alternately. If a PNP is attached only the red one will flash while a NPN will cause only the other one to flash (blue, in my case). If you reverse the emitter and collector leads then both LEDs will continue to flash (swapping the leads like this can help you sort out the orientation of unknown transistor pinouts). If the transistor is open, both LED's will flash regardless of orientation, and if the transistor is shorted out, neither LED will flash. While this tester is only for testing bipolar transistors, it is a very inexpensive and handy piece of test equipment for the builder's bench. I find that I use it frequently during project construction.

(1) The circuit I adapted was from http://www.555-timer-circuits.com/transistor-tester.html.
(2) http://en.wikipedia.org/wiki/Light-emitting_diode



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

FOR SALE: 1) YAESU FT290R all-mode 2m (2 watt) transceiver. In good working order but may need SSB CIO frequencies trimmed slightly. Rear case a little distressed. Memory battery recently replaced. Microphone included. £40 plus postage. (PayPal preferred)
2) NUE-PSK Digital Modem (American QRP Club). (Very compact stand-alone modem allowing PSK-31 operation without a computer: requires only a standard computer keyboard.) Complete with instructions and two interface cables (currently wired for Yaesu FT-77 and a 9-pin din version for my h-brew trx). In nearly mint condition and is white backlight version with current software. £70 plus postage. (PayPal preferred)
Ken Maxted, GM4JMU, G-QRP-585, 0141 639 5854 and kmaxted@gmx.com

80 metre D.C. Receiver

Gerard Kelly G4FQN, 15 Dartmouth Dr. Windle, St. Helens, WA10 6BP
gerardkelly429@googlemail.com

This Direct Conversion Receiver circuit and has been constructed in part, and as a complete circuit, several times with different audio output stages. The last of the three CA3096 audio stages was included to overcome gain variations between these devices, in practice the three audio stages could be reduced to two. In all the circuits tested the emitter resistor (270R) was not decoupled, as the extra gain this produces, was not needed. There are aspects of this circuit which are less conventional. The inclusion of a radio frequency amplifier on 80m and demodulation using pulses replaces the usual oscillator and "diode-ring" circuit.

Audio Amplifier:
As is usual it needs to be a high gain/low noise circuit, the circuit shown is based on an article in RadCom Homebrew Radio by EI9GQ. The CA3096 is now unavailable, but perhaps, better suited op-amplifiers are. The use of op-amplifiers would simplify the addition of a narrow-band audio filter. The component layout used keeps all signal connections short with a reasonable space between a.f. and r.f. stages. The full constructional details of the TDA7052A audio output stage used are in SPRAT issue 142.

Demodulator:
This circuit uses pulses to demodulate the signal, and by selection of component values, it can be made to simulate a demodulator circuit followed by a high-pass filter without additional circuitry. It is low on current consumption and requires no adjustment of oscillator injection levels. After a countless number of winding sessions the number of turns for T1 was left at eight turns/coil. This restricts reception to cw, but without back-ground hum problems. Reducing this to seven turns/coil should produce a similar frequency response to that of a diode-ring circuit and enable reception of ssb. Changing the value of the 15pF capacitor did not effect audio levels, but does effect the frequency response of the circuit.

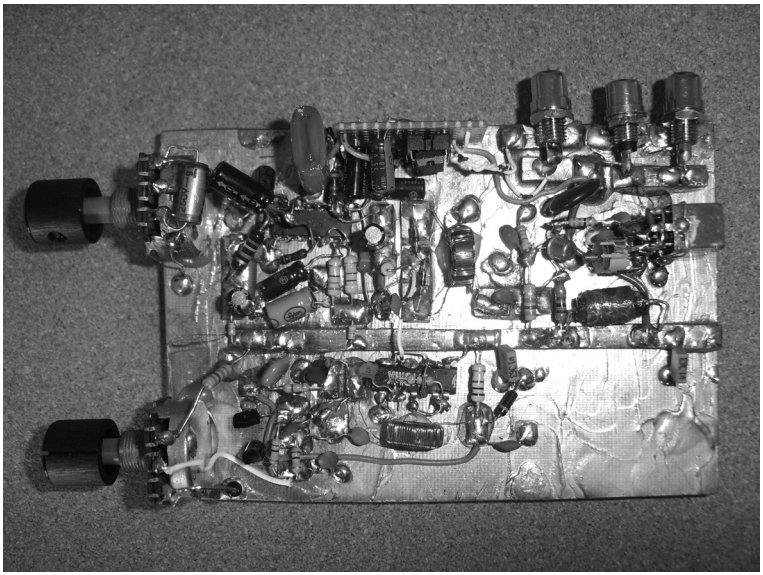
R.F. Amplifier:
Usually, not recommended for 80m, it's addition enabled the circuit to receive signals on a 2metre quarter wave. Switching to an 80metre quarter-wave (atu) to date, has not resulted in any overloading or other problems. The rfc is not critical and can be any suitable coil or wound as L1, on a FT50-43 ferrite core.

VFO:
There are simpler circuits than the one used, but this is a proven reliable circuit. Unfortunately, it uses a hand wound coil L1, since most of my components came out of a spares-box the number of turns required is difficult to specify. If you are new to winding coils, choose a wire gauge which is fine enough, around 0.19mm enam. or similar to get 40 turns on the core, with an occupation of no more than 80%. To wind the coil I first pull off the roll sufficient wire to wind the first 1/2 of the coil, say 20T, and without cutting from

the reel, wind the first half of the coil. When finished, nail varnish or similar is applied to hold the turns in place, and when dry, the remaining 20T can be added, and again the ends held in place with varnish. Using nail varnish makes the removal of turns later, if necessary, very easy. If you have not set-up a circuit using a ceramic device before, initially the components R1, R2 and the tuning variable should be replaced with a 100k pre-set connected across the supply. Once adjusted the circuit will remain stable over a wide range of frequencies around 3.58MHz. It is not difficult to select the appropriate series resistor values for your circuit. The 2V7 zener diode could be replaced by two series LED's. Three pin ceramic devices should have their centre pin connected to GND.

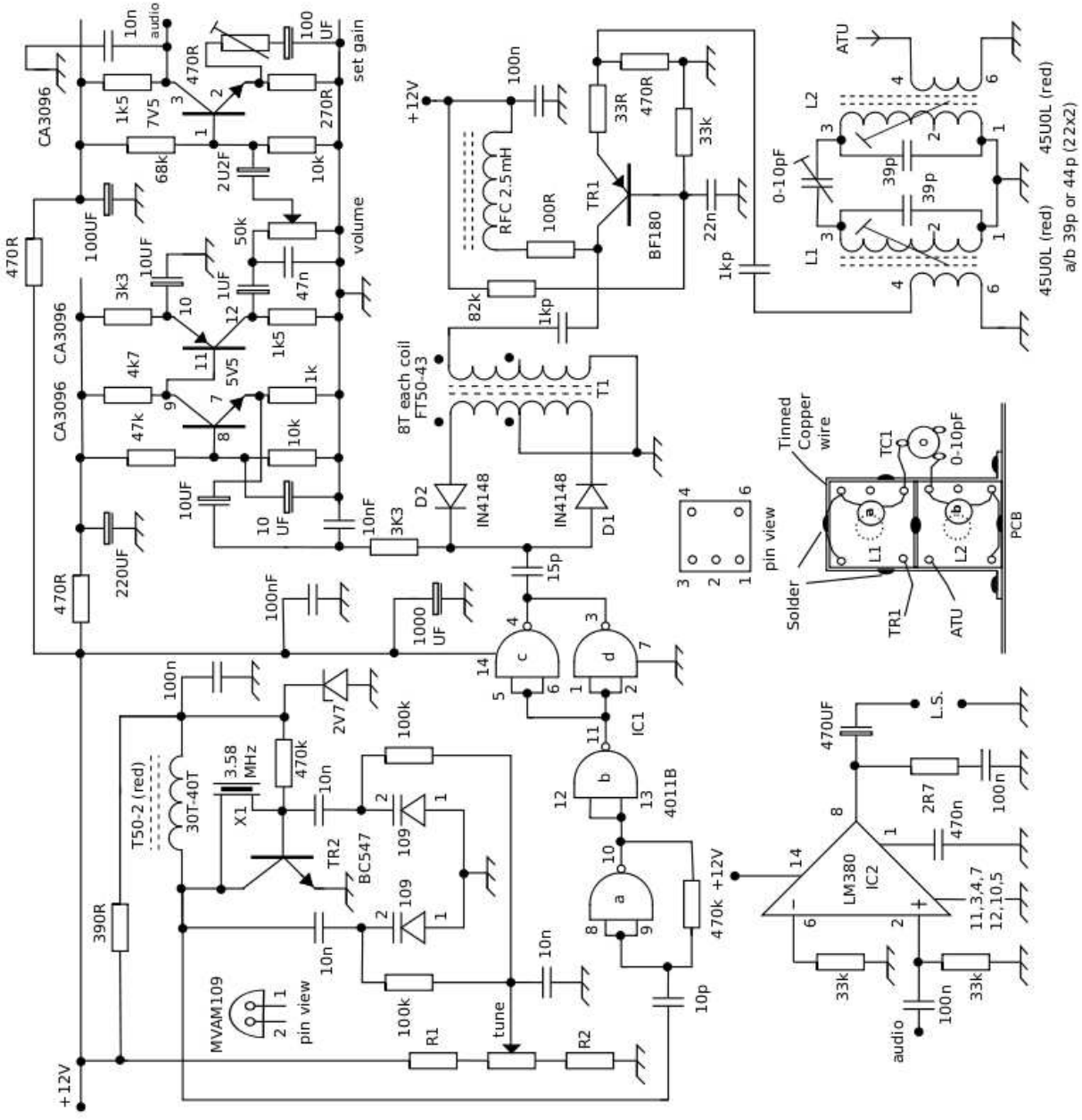
Demodulator:
T1 is wound in the same way as a trifilar coil. Start with four 30cm lengths of enam. wire and wind eight turns on a FT50-43 core (minimum gauge 26swg). The construction of T1 using 30swg enam. wire is shown in Photo. 1. Using a meter the 'start' and 'end' of each coil is pared-up, and the whole assembly is stuck down on to card to avoid errors. The last stage is to match 'start' to 'end' as required, once again confirming with a meter. Finally the coil is fitted into position on the PCB and a 'hot-glue' used to hold it in place.

The background noise so common on 80m is certainly reduced in this circuit without inhibiting the reception of cw signals, that's got to be a plus. I know of no other simple circuits which allow such control over performance. It is the intention to use this circuit as part of a Direct Conversion Transceiver for QRP operation.



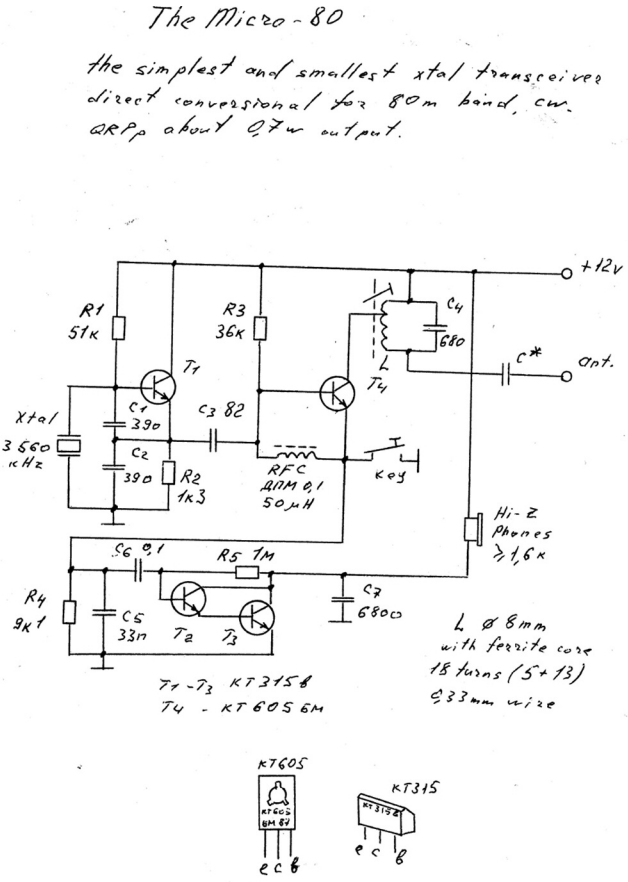
80 metre
D.C. Receiver

Gerard Kelly
G4FQN



Micro-80 transceiver – 20 years after

Oleg Borodin RV3GM (Mr. 72) mr72@club72.su



The circuit of Micro-80 was published in SPRAT # 72 in 1992. At that time it was the smallest workable transceiver in the World. The general principle is to use one transistor as TX power amplifier and RX mixer. Using only 19 components on 55 x 35 mm PCB it gives 200-300 mW output and enough sensitive and audible direct conversional receiver. The simplest xtal oscillator was used as well as the simplest two transistors audio amplifier with high Z output.

LEFT:
The original Micro-80 article as submitted by Oleg to SPRAT

First experiments were on 80 with a VS1AA antenna installed between two 5 floor buildings at 15 m above a ground level. As I designed the simplest and the smallest transceiver there was no side tone and auto RIT/XIT. So some replies I copied near zero beat tone. A variable capacitor installed in series with XTAL helped me very much. I remember I was surprised by the first QSOs with so ugly radio! A lot of QSOs in distance below 1000 km were logged on 80 and 40 m bands. Sadly, on 20 m output was less than 100 mW and sensitivity was poor also. But some European stations were logged. The best was England.

Later, a lot of any modifications were published. The famous is Pixie-2 with LM386 instead of two transistors audio amplifier (by WA6BOY) and Tiny Tornado by KA8MAV. Today I with Rex Harper W1REX (www.QRPMe.com) prepare a kits of new versions of Micro-80/4 and Micro-80/D. The

first is a 4 band VXO transceiver with 2N3866 in PA/Mixer and additional stage for low Z audio output. The second is 20th jubilee version of original Micro-80. “D” means 2012 year of Dragon, hi.

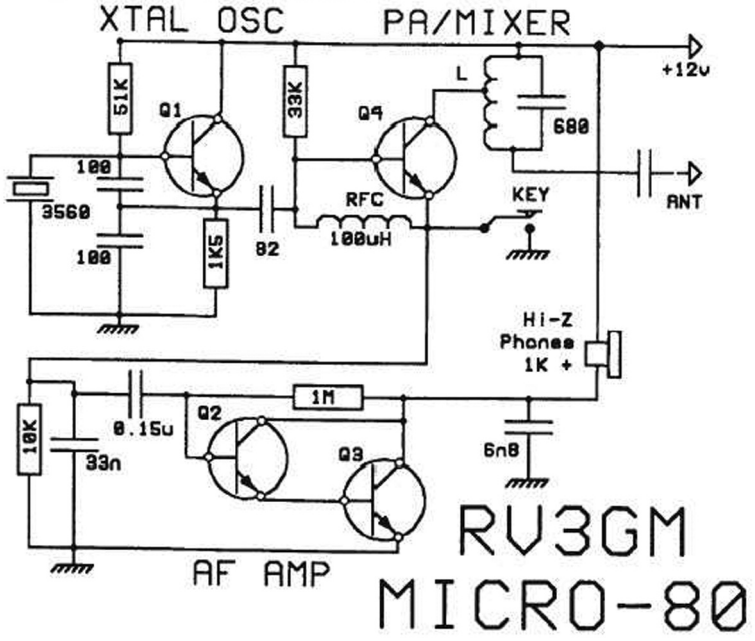
In 2012 the Radioclub “72” will organize some events devoted to Micro-80 trcvr 20th jubilee. On the web-page – www.club72.su – you can see a Micro-80 series photo album and a special log-book page for all Micro-80 users. Over all 2012 year all Micro-series tcvrs operators may highlight QSOs on the log-book page. The most valuable QSOs between two Micro-tcvrs operators as 2-way QRPp Micro QSO. Micro-series means all transceivers used one transistor as PA and mixer stage, eg Pixie-2, Tiny Tornado, Micro-80, Foxx, Dixie, Gnat, Chirpy, Flea, Lil’ Squall, XBM etc. List of Micro-series trcvrs available on Club 72 page. I’m going to operate only Micro-series trcvrs during 2012. At the current time as I type this article, my best Micro-80 QRB is 2760 km with 80 mW to 20 m balcony Delta. That was 2-way QRP QSO with Chris GM4YLN (3 watts to 3 el Yagi). I will be happy to operate everyone with Micro-tcvrs on QRP frequencies, 72!

BELOW: The 1992 SPRAT version

THE MICRO-80 MINI-TRANSCEIVER

Oleg Borodin RV3GM **P.O. Box 229, Lipetsk 43, U.S.S.R.**

Oleg offers members the circuit of his miniature MICRO-80 Transceiver which is produced in kit form by his small company Radio-S. The circuit is a simple QSK transceiver for 80 metres which could be adapted for other bands by changing crystals and L and C in Q4. The devices quoted are Russian types but any generic transistors should perform in the circuit. Q1-3 would probably work with BC108 and perhaps a 2N3866 for Q4. The rf choke is around 100uH and could be home-wound with 180 turns of 0.1mm wire on a ¼ watt resistor of high value : say over 400K. L is wound with 18 turns [5+13] of 0.33mm wire on an 8mm former with ferrite core. Oleg's suggested layout is used on a PCB 50 x 35mm. He says, 'Is this the world's smallest transceiver ?'



G QRP Valve Day November 2011

Report by Colin Turner, G3VTT

It may have been wishful thinking but I seem to have heard a lot of stations active on November 20th with at least three Parasets and a number of crystal oscillators.

Left.: This is the G4PKW transceiver for 40m. What a beauty! This uses an EL91 crystal oscillator and a 6BW6 PA. The receiver uses an untuned EF91 RF amplifier and a 12AT7 regenerative detector and audio amplifier. With this John worked 4 stations up and down the country in poor conditions. This little radio is a great credit to its constructor and operator. A mouth watering little rig!

Gerald G3MCK used his 2E26 CO/PA reduced to 5 watts output with his best DX being S52MZ and OE/S52PO. He also mentions a QSO with GB2SPY with G3ROO behind the key. Kevin G4CMZ wrote to me on behalf of the Derby Radio Club where he was active using a KW160 belonging to G4AKE.The aim was to operate from the Derby Wireless Club on Top Band CW/AM, using G4AKE's KW160. Despite the high noise level he had a couple of QSO's on 160m AM and spent time discussing the construction of a valve transmitter for next time which means I had better find a date for the next event. Kevin also informs me that the Derby Club has the use of the call GB1OOD until the end of this year and will use their other call, G2JD, to be active in the Winter Sports. Special QSL cards will be available and I guess by the time you read this you will have either heard or worked them.

G3TYB, one of my locals and a great supporter of the Valve QRP events, wrote to me to say he worked 9 stations with his 'Kent' transceiver on 80m and 40m and a further 5 on 40m with an 807. John used his 830 receiver and a 250 foot wire. He had no contacts on 15m with his 'Sputnik' transmitter using Russian rod valves unfortunately. Finally Tom G3XMM arrived breathlessly in my in box to inform me he was using a TS530S throttled back to 5 watts working myself and Roy G4PRL. Tom is hoping to find more time to operate next and he and all of you will be most welcome to the next GQRP Valve QRP Day which I am planning for **April 15th 2012** (to be confirmed).

Membership News

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

This could be your last Sprat and all you have to do to put your mind at rest is find the wrapper it came in and check your membership expiry date. If the date says “expires end of 2011” or “membership expired” then there will be no more Sprats unless you contact me or your DX representative (see the 2011/2012 handbook or www.gqrp.com).

This is also the case for UK members who believe you have paid by standing order. I have updated the records with every identifiable standing order payment.

If you are a European or DX member then you could possibly only receive three Sprats this year. There is a message indicating an underpayment on your Sprat label. More than a year has passed since we had to raise overseas rates. You will not receive the Summer Sprat (the next issue) if you sent the old amount. Once you have sent me (or your DX representative) the missing dues your Summer Sprat will be despatched. Please do not send me coins in non UK currencies, the bank do not like changing them. UK coins you send at your own risk.

G-QRP Club Sales

Graham Firth G3MFJ

Another update from Club Sales. I have now added larger polyvaricons – 295 + 295pF. They are the same physical size as the old ones (which are still available of course!), similar minimum capacitance (8 or 9pF) and they are the same price - £1.20. I hope to have some even bigger (350pF) ones eventually, but they are slow in coming from the Far East.
I have added 2 new 10mm coils to the range – 0.6uH (for 6 metres), and a large one – 125uH (top band down to the MW band).
I have diamond-coated island pad cutters again – these are slightly larger than before – 7mm o/s & 5mm i/s diameters, and they have a 2mm diameter shaft. Total length 46mm. (figures are approx). The cost is £4.50 each, and there is a picture on the sales page on the club website.
The 28.060MHz crystals are now fundamental, if you want a 3rd overtone, please say so.
Also, I have on order, 18.086MHz crystals to cover the change in QRP calling frequency.
We have finalised the circuit for the ATU, and we hope to have them available as a kit by October.
Many thanks also to those who send a little extra – especially through PayPal. PayPal is very successful, but their charges (around 4%) do cut into our small margins, so every little helps. I do not wish to go down the surcharge route and I do arrange an appropriate refund if you send too much!
As I write this (early February), in the 10 months since last April, I have dealt with over 600 orders, sent out almost 900 packets, and spent well over £1000 on stamps! This may explain why I do not remember your last order!
Finally, to repeat what I said last time – many thanks to those who order and include their membership number – it really does help, as I file all orders under this number. Club sales are really successful – for now, it is staving off any membership increases.

Antennas Anecdotes and Awards

Colin Turner G3VTT
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G3vtt@aol.com

It's Spring already and this has been an excellent QRP time for me as I worked across the pond to the US a number of times during the last Winter Sports using under 5 watts from the K2,and in one contact a three valve transceiver, on 80m. My antennas have been a 119 foot end fed wire and a second grounded version of the same antenna. I lengthened the W3EDP from 84 feet to 11p feet to give better 160m performance and tuned it against an extensive ground system using radial wires and earth stakes with an auto tuner, and recently I've switched to using the same antenna as a *grounded* inverted 'L' antenna fed at the high impedance end with the vertical section attached to the ground stakes and radial under the mast. This was once referred to as 'donkey fed inverted L' antenna by the late Brian G3UNT, nevertheless it works fine on LF and more details will follow in due course but I must say I was please to get 559 from N2KW on 80m with 5 watts late one night in early February with this unusual antenna. If you have the RSGB book 'The Antenna File' take a look at the G3NCN 'Skymiser' antenna which is a similar arrangement although with longer wires.

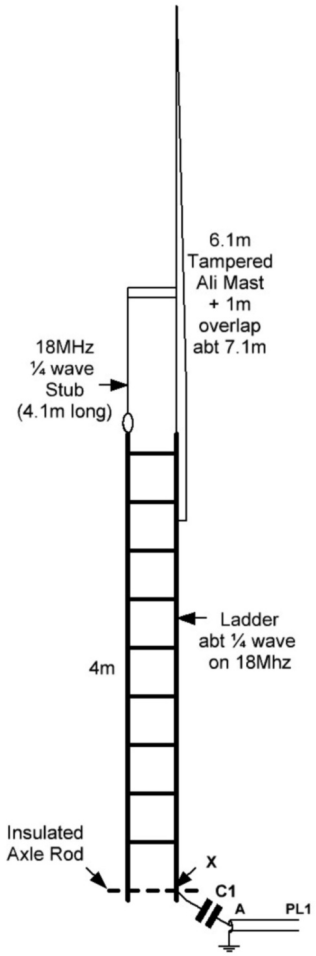
Notes on the Stealth Counterpoise System

Peter G3ORP, designer of the *'stealth counterpoise system'* described in the last issue of Sprat, has asked me to point out that the system can be made using the small coils supplied from GQRP Club sales, run by our Graham G3MFJ, and these are available by ordering them from the list on the back of your issue of Sprat. They are 'axial lead inductors' and you will need two 47 uH coils and two 100 uH coils with the smaller values used for the inner coils and the larger ones used for the outer coils on each counterpoise wire. Note on the drawing last issue the inner coils are L1 and L2 and the outer coils L3 and L4 which was unfortunately omitted. Peter also tells me that the system is designed to be connected to the *master* ground connection of the station antenna system.

Vertical Antenna – What Antenna?

Peter has also sent me details of another stealth antenna for 3 bands, 40m, 17m and 15m, using a 4m aluminium ladder with a 6.1 meter tapered mast attached to it and a tuning stub consisting of a 4.1 meter long wire for 17m (18 MHz). The antenna is a quarter wave on 40m, a three quarter wave on 15m and the stub gives resonance on 17m. The axle is an insulated rod to ease the raising and lowering of the antenna and the braid of the coax is connected to at least two quarter wave wires for each band as radials. A series capacitor can be fitted to reduce the SWR on the 40m band and is about 200pfd in value. The SWR was improved on another band 20m, when Peter put a 4.5 meter length of CT100 satellite coax cable at point 'A' on the diagram which then connects to good quality 50 ohm coax feeder going back to the shack. Peter wonders, like I do, why folks pay out lots of money for commercial antennas when you make a three band antenna using common objects and bits of wire laying around the garden. Antenna, what antenna? It's just a ladder leaning against the shed. Take a look at Peter's pretty diagram redrawn by George G3RJV on the

next page. **Note** there is an **insulator** between the end of the stub wire and the top of the ladder on the left hand side and tuning can be achieved on 18 MHz by sliding the ladder sections then securing it with stainless steel jubilee clips or hose clamps..



LEFT: G3ORP Stealth Vertical

A 160m Magnetic Tuneable Receive Antenna
(from Gert de Gooijer PA3CRC GQRP 11286)
The short waves here in Eindhoven are almost unusable due to almost continuous S9 broadband noisy electro-smog most probably caused by all kind of digital devices in the neighbourhood, modems, TV-sets, indoor-PLC networks and halogen lighting. Recently I built a 160m transceiver but although others can hear me too often I cannot hear what they are saying due to the noise. The set has an input for a separate receive antenna so leaving some room for experiments with a directional noise cancelling system. On 160m not many directional antennas are of a practical size (of course depending on budget, hi). I only know of the magnetic loop antenna as being small and directional. Furthermore, many people say noise signals are electrical in the close field so a magnetic antenna should not be that susceptible to those as on 160m that is some 150 ft around. A classic loop is still quite a huge contraption but using a ferrite rod the magnetic loop should be small. I've got a ferrite rod salvaged from an old MW radio and that I thought that should do fine on 160m. This antenna can easily be balanced and shielded from electrical fields.
Signals from such an antenna are low so you've got to use a preamp which will require a power supply. At the moment I am using a battery but since it works that well I think I shall make a power supply for it. One other big advantage is that the loop is tuned and that the Q is high although not that high when using varactor diodes. This narrows the spike noise signal presented to the mixer and a disadvantage is that you must tune the antenna when you are moving along the band. Not a problem as long as the antenna is indoors on the table next to the set but I want to put it outside. I think I've solved this problem but have not tried it yet. (see the paragraph on connections)

The Schematic
The rod-antenna does not have a lot of output so it is followed by a very simple two stage feedback amplifier. This amplifier is not optimized and it just used the parts that were on hand but it works well for me. The BFY90 transistors are overkill but I guess the club sales MPSH10, an RF-transistor, will work too. At these frequencies even a BC548 should work but I did not test that.

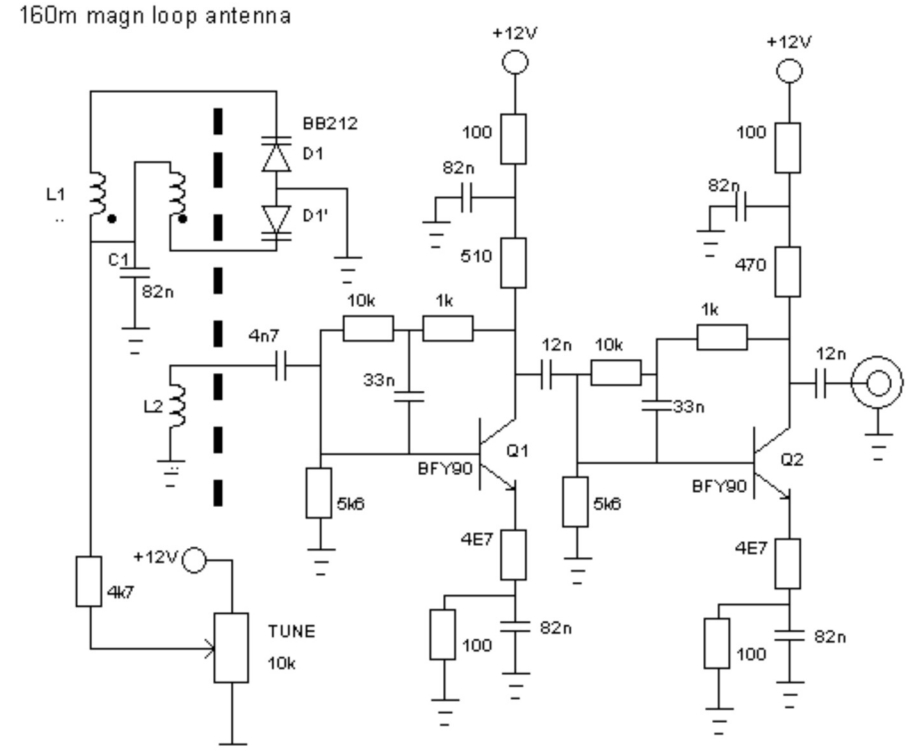
The Antenna
The actual antenna is made of some 15 bifilar turns on a 20cm long ferrite rod as L1. I do not know which grade material, certainly it is from Philips and at least 40 years old, and I think a rod out of a MW radio should work but of course you should experiment with the number of turns. The tuning is done with a varactor diode BB212 which is actually two diodes in one TO-92 style encapsulation. Two club sales MVAM109 should do the job too. Of course you can use a real mechanical variable capacitor but then it will be difficult to tune if you place the antenna away from the operation position. L2, the coupling winding, is some 5 turns.

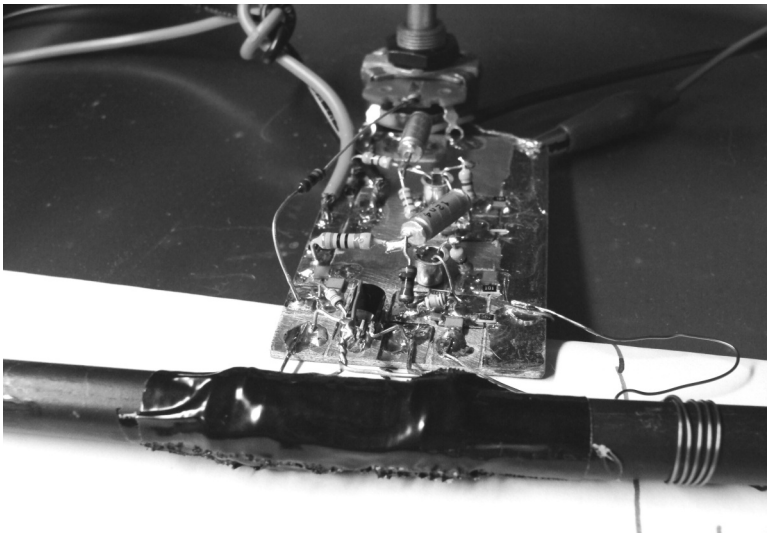
Shielding
Not much shielding was needed as it is a balanced antenna so the electrical field is cancelled. I used a copper clad PCB-board approx 1cm underneath the rod. If you really want to shield the whole thing be careful not to make the shielding all around the rod like coaxial cable. The shielding must be connected to the ground of the PCB and coaxial cable.

Connections
Coaxial cable is used for the signal and screened leads for the +12 volt supply and a signal line for the varactor tuning voltage. It is a pity that this means more cables so I thought of a way to use only one coaxial cable. I did not test the idea yet but think it should work. The idea is that it is easy to separate 1800 kHz, 2 kHz and DC. The tuning voltage has the advantage that there is almost no current. My idea is to use a audio sine wave oscillator at some, for example 2 kHz, frequency then amplify this in a TDA7052 (club sales) and superimpose this on the DC and RF on the cable using an old transistor audio-output transformer. At the antenna side you do it the other way around, rectify and filter the 2 kHz and use it as a tuning voltage.
Another simpler method is using 12V 50Hz AC for the supply and superimpose it on the DC tuning voltage but I am afraid that it will be difficult to filter the 50Hz ripple from the tuning voltage. (Bad filtering could result the signal being modulated). You cannot use too much capacitance in the filter on the tuning line since it will slow down the tuning rate (you stop tuning but the tuning voltage does not immediately stop moving)

Results
By turning the antenna there is a position where the noise it far less then in other positions. This is not a very sharp minimum (well, here it is not). For loud stations of course the antenna does not make a difference, but there are also a lot of stations where it really helps. Even a few I could hardly discern in the noise and that I can copy on the ferrite rod. Note the antenna is still on the table indoor next to the set. I wonder if putting it outside or

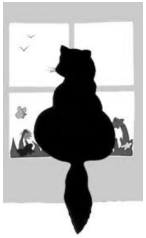
indoor under the beams of the roof will make a difference worthwhile the extra work? *Our thanks once again Gert for an excellent idea.*





The Magnetic Tuneable Receive Antenna Prototype

Awards
The following members have received the awards: **DJ0GD** 2 Way QRP 100 and Worked with QRP 270 **OE3LHB** EUCW Novice Award 100 **G4IKR** 75 QRP Countries and Master Award. Well done all.
Valve QRP If you are interested in 'real radio' why not join those of us in GQRP who still use valve or tube equipment on our next 'Valve QRP Day' which will be on **Sunday April 22nd 2012** from early until late on all bands. Just get on with your home brew or commercial valve equipment at less than 5 watts around the QRP frequencies. It's not a contest just an operating period and any CW is better than no CW so send your reports and pictures to me at g3vtt@aol.com or by post for inclusion in the next issue of Sprat by April 30th 2012



Spring? Yippee! – Antenna weather

G-QRP-DL-Treffen 2012

Das traditionelle G-QRP-DL-Treffen fuer Mitglieder des G-QRP-Clubs findet auch 2012 wieder am **letzten Wochenende im April (27/28/29) statt – in Waldsassen,** in der Nähe von Cheb/OK – unsere QRP-Freunde aus OK sind herzlich willkommen. Weitere Infos gibt es von
DJ3KK, POB 801, D-25697 Meldorf (bitte SASE) - oder auf der Homepage:
http://www.g-qrp-dl.de
Zu Vortragsthemen und Beiträgen usw. bitte Bernd via DK3WX@DARC.DE kontaktieren – vy 72 es awds
Fred,DJ3KK - Bernd,DK3WX - Oliver,DF6MS - Manuela,DL2MGP

The traditional G-QRP-DL-meeting for members of the G-QRP-Club will be held at the last weekend of April 2012 (27/28/29) in **Waldsassen near Cheb/OK** – our QRP-friends from OK are welcome.
Further infos via DJ3KK, POB 801 , D-25697 Meldorf (pse SASE) and on our homepage:
http://www.g-qrp-dl.de
For submitting lectures and articles please contact Bernd via DK3WX@DARC.DE vy 72 es hpe cu Fred,DJ3KK - Bernd,DK3WX - Oliver,DF6MS - Manuela,DL2MGP

28th Yeovil QRP Convention

22nd April 2012 at the Digby Hall, Sherborne, Dorset
Doors open 09:30 am to 4:00pm
Supported by the RSGB & RAFFA, Traders, Bring & Buy, Club Stalls
Contact Robert Farey email robert.farey@btinternet.com
http://yeovil-arc.com/qrp convention_.htm

COMMUNICATIONS AND CONTESTS

Peter Barville G3XJS, Felucca, Pinesfield Lane, Trottiscliffe, West Malling, Kent ME19 5EN. E-mail g3xjs@gqrp.co.uk

WINTER SPORTS

What a difference a few sunspots make! HF conditions were up, activity was up, and yet the number of logs received (39) was down compared to last year. Not to worry, the quality of this year's logs more than makes up for it. I find it quite interesting to see the various ways members approach the event. Some go for the KISS approach, with simple basic rigs/antennas and relaxed 80m QSOs, some aim for using as many modes and bands as possible, while others try to maximise the number of QSOs and DXCC worked. Some concentrate on 2-way QRP QSOs, whilst others do not. In many cases, of course, members have extremely limited antenna facilities and yet still eagerly await WS (and now SS) for their next fix of QRP Fun. That, surely, is the appeal of the event, with each and every log equally valuable.

This year's Honours List is: **2E0BFJ** Gary, **G0EBQ** Nigel, **G0FUW** Steve, **G0KQK** Snip, **G0KRT** Eric, **G0OTE** Eric, **G3ICO** George, **G3ILO/P** Steve, **G3JFS** Peter, **G3JNB** Victor, **G3LHJ** Derrick, **G3MCK** Gerald, **G3NFB** Jim, **G3VTT** Colin, **G3XIZ** Chris, **G3YPZ** John, **G4ARI** Tim, **G4BJM** Fraser, **G4CMZ** Kevin, **G4HMC** David, **G4XRV** Rupert, **G5CL** Ryan, **MI0BPB** Andrew, **GM0NTR** Jim, **GM3OXX** George, **GM4XQJ** Brian, **GM4YLN** Chris, **DL2BQD** Dieter, **DM4EA** Tom, **OK2BMA** Pavel, **PA0RBO** Robert, **PA9RZ** Robert, **RA3AL** Gene, **RV3GM** Oleg, **RW3AI** Valery, **AB8FJ** Ted, **W3TS** Mike, **W7CNL** Jack, and **ZL4TE** Pete. Our thanks to all for their efforts and support.

I wish I had the space to include more of the fascinating info contained within those logs, but here are some of the snippets: This is the first time **2E0BFJ** (K2/5W/Doublet) has submitted a log. **G0EBQ** says "Won't win any prizes, but had a lot of fun!". He was using a breadboard version of the MFJ Cub (900mW) and a folded half size G5RVin the loft. **G0FUW** only finished building his Walford Polden-Mendip tcvr on 27th Dec, but his highlight was working into the USA with his Cobweb and 3W. **G0KQK** reckons WS offers the opportunity for many to blow the dust off their elderly rigs, which is great. He's already looking forward to Summer Sizzler! **G0KRT** had to jury rig his W3EDP at 14ft, after it had come down in high winds. **G0OTE** continued his friendly 'rivalry' with **G0KQK**, and was another station using a Mendip-Polden tcvr. **G3ILO/P** could only put up a 16ft vertical (it's normally 33ft) on his narrow-boat, because of high winds, but still worked into the USA, A6 and CO6. **G3JNB** worked all bands 160m to 2m, and used a combination of CW, SSB, FM, AM and data modes. His best CW DX was HK7, and EA9BC with PSK31. **G3LHJ** says that he didn't find many G-QRP members, although he found the conditions fair. TG9, HK, VP9 and 5V feature amongst his log entries. He also worked K1CM running 5W and an indoor loop. **G3MCK** (running his Corsair this year) wonders where all the OK/OM boys were. "80m/40m/20m used to be full of OK/OM QRP stations!". **G3NFB** (his first log, although has taken part for several years) used an FT817 with 3W and a straight key. He ran the station from a 7aH battery, charged overnight.

Probably the most interesting QSO of the whole event was made by **G3VTT** and **W3TS**. Knowing Colin was going to be QRV on 80m with his 6V6 spy set, Mike set his alarm for 0130 local only to find the band very noisy. However, his beverage pulled Colin's signal through at RST339. Colin comments that Mike's 5W was received "with full spectral purity" with his 2 valves! Mike (Orion, 5W, 80m/40m dipole) then went on to work **G4BUE** and **GM3OXX**. Well done to all concerned!

G3XIZ says that he spent too much time fiddling, and fixing, his gear rather than just operating it. His log included 500kHz QSOs made with less than 1W ERP. **G3YPZ** worked VK5CZ two days running, including one when John was running 500mW. His impressive list of CW DX includes A6 (x2), CO6, JH4, VR2, and SSB QSOs with VP8LP and VU2XO. John was one of the few stations to have several AM and FM DX QSOs. **G4ARI** sent a wonderful picture of his QRP shack, showing his Rockmite, SW20+, FOXX3, G3XBM Micro, 22mW FETer, G3TSO tcvr, twin paddle and Curtis keyer. **G4BJM** had only one QSO, but a memorable one. He was in the car being driven (by his XYL) through France when he worked **GM3OXX** on 30m. Fraser dropped his power to 1W to match George's O/P power, and they continued to have a nice chat - K2 and h/brew centre loaded whip on the car. **G4CMZ** was pleased to work EW8DX (500mW). Kevin made several QSOs with 1w and 500mW, even though his antenna is only an inv vee dipole at 2m agl! **G4HMC** was one of 3 stations (me included) running a home made Picastar tcvr, mainly on the LF bands. **G4XRV** spent a couple of hours calling CQ on 12m and 10m but only one QSO resulted. "Better than nothing!". Best DX for **MI0BPB** was HS0, but his favourite QSO (when running 250mW) was with **W7CNL**. "With great joy" **GM0NTR** reports a few solid QSOs this year, made with his new HB-1B Mk3 tcvr (4W), Howes ATU and W3EDP. **GM4YLN** was another Picastar (as yet unfinished) user and was delighted to be called by 2 VK stations on 1st Jan. "What a start to the year!". He also worked **RV3GM** (80mW) and OH2TB (10mW).

DL2BQD worked into A6 and ZL, and had a QSO with UW5KW (200mW). "A family friendly and relaxed event" says **DM4EA,** who managed at least one QSO on every band 80m to 10m. **OK2BMA** made 54 2-way QRP QSOs and managed to 'dodge' all but one QRO station who managed to find his way into Pavel's log! **PA9RZ** found that his 1W was not enough to impress the DX, but says that it was good to catch up with old friends. Like me, he was pleased to note that the OQRP Contest did not clash with WS this year. The best DX for **RV3GM** with his 80mW Micro-80 4 band VXO 80mW tcvr was **GM4YLN** at 2760 kms. Oleg's antenna is a 20m delta mounted on his 3rd floor balcony, using 2 6m fishing rods As usual, **AB8FJ** ran his 'Get The Rigs On The Air' Winter Sports, this time with no fewer than 7 of them! There would have been more, if stations he called had come back to him. "Great fun, and very relaxing!". **W7CNL** enjoyed the improved conditions, working lots of Eu QRP stations during his single band (20m) sessions. Wouldn't we all like an FK8 in our logs? Well, **ZL4TE** achieved just that, but then he does have a slight geographical advantage! On the other hand, despite his best endeavours, it was his only WS log entry. It's summer time 'down there' and many are on holiday, or on the beach!

A notable omission from the 'soapbox' comments above is, of course, the log from **GM3OXX**. George made "his best ever total in Winter Sports", with 371 QSOs, including

PY4, ZL4, ZS6 and UU9JAN (500mW). He was thrilled to be called by VE1ZZ (The King!) on 160m which was the undoubted highlight for George. As ever, so many stations have commented on his outstanding signal (1W from a h/brew tcvr into a loop antenna), and working George is often the highlight of their particular WS. I can't imagine just how long George must have spent in font of his rig whilst lighting up the bands with his excellent QRPp signal. He was, as in previous years, a truly outstanding example for any of us to follow. **G3YPZ** John's log was also outstanding, earning him the Runner Up spot, but George is the deserving winner of the **G4DQP Trophy**. Our congratulations to all.

CHELMSLEY TROPHY
Once again, because of lack of space, we will have to wait for the next issue. However, it does give you extra time to get an entry to me!

SWISS HTC QRP SPRINT
The Helvetia Telegraphy Club has decided to cancel the event in September 2012, and probably for all subsequent years. This has come about as a result of lack of participation. "There is not much fun in taking part in a contest when all you do is call CQ and get very few responses". Let this be a lesson and warning for us all!

MX0VLP
A reminder that this is the Club's new callsign. Dieter DL2BQD has kindly suggested an attractive QSL card design, but otherwise there has been a resounding silence on this one! Surely *somebody* would be willing to become involved (and thereby help the Club) with the design, printing and handling of our QSL cards - please?

Enjoy the bands, and don't forget to send me your CZEBRIS logs!

72 de QRPeter

WANTED: Used Elecraft K3 in good condition. Steve Evans, G0EVJ, steve.evans24@yahoo.com

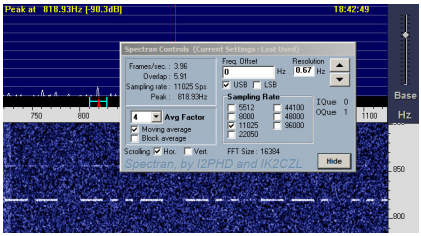
MEMBERS' NEWS

by Chris Page, N4CJ (G4BUE)

312 Quail Avenue, Sebring, FL 33870, USA
E-mail: chris@g4bue.com

G4YBU's report in the last column about being QRV as **SV8/G4HSO/MM QRP** gives me another opportunity to once again ask you not to include 'QRP' as part of your callsign (not even 'space QRP' like Peter did, as opposed to '/QRP'). Long term regular readers of this column will know it is something I have mentioned several times over the last 25 years or so. The suffix 'QRP' is not part of any legally issued callsign that I have ever been aware of. It is also bad practice as good QRP operators do not have to advertise they are using QRP by adding it to their callsign -– you never hear George operating as **GM3OXX/QRP**. Sadly, the practice has recently started creeping back in despite many well known DXpeditioners (like **G3TXF**) saying they refuse to acknowledge the '/QRP' suffix and will only log the basic callsign. That means if you check your callsign/QRP in Nigel's on-line log for one of his many DXpeditions, you will not be there! I too refuse to acknowledge the '/QRP' part of a call when I am operating QRO in contests – how can I acknowledge it? I don't know if you are using QRP, and even if you are using low power, whether it is low enough to qualify for QRP. Please don't do it. It only lowers the reputation of QRPers with the rest of the amateur radio fraternity, especially DXers and contesters who may have to struggle to copy a longer than necessary callsign in their pile-ups.

G3XBM has been experimenting using 481THz (red light) with a QRSS3 beacon on a 820Hz sub-carrier using a 700mW input high brightness LED in 100mm optics. Roger says his emphasis has been on non line-of-sight paths with best the result so far being reception over a 2.25 mile path over a local hill by bouncing the signal off the bottom of clouds (cloudbounce). There was no visible sign of the red light at the RX, yet with *Spectran* he could detect the signal well at 10dB S/N. Roger's next experiments are over much longer non line-of-sight paths locally out to around eight miles. He says, "This is a far cry from working 10m DX, but real experimentation with simply made kit". The pictures show Roger's RX (right), the TX looks almost identical, and a screenshot (above) of the received QRSS3 signal.



In February the Four State QRP Group announced a new kit, the Stand Alone VXO (SAVXO), 250mW designed by **K8IQY**, see <http://www.wa0itp.com/savxo.html >. **HB9BQB** tells us that sadly there will not be a Swiss HTC QRP Sprint in 2012 due to recent lower participation. **G4ICP** says the annual Netherlands PACC Contest in February is a 'fun challenge with QRP'. Richard had contacted 11 of the 12 Dutch Provinces during the first six hours of this year's contest, all on 40m. Motorcycle restoration and playing with PICS has taken up **ON4NIC**'s time lately at the expense of radio, but he did build a couple of fun valve receivers and purchased a FunCube Pro Dongle and Arrow 2-metre/70cms handheld yagi. After installing the necessary software on his Mac, Nick is looking forward to, "doing some AmSat stuff" in their new QTH in Dublin, where he will initially be QRV as **EI/MØNJP**. Nick will restablish his valve QRSS beacon there.

"Amateur radio is not dead!", so says **GM3OXX**. At 0621z on 30 September George was CQing on 14060kHz when **I2RTF** (of Begali keys), who he has QSO'd a few times before, called him and after chatting for 15 minutes, he discovered that Piero loved dogs. George got his daughter to post his QSL (with a picture of a dog on) off to Italy and over a week later the postman brought a parcel from Piero con-

taining a signed copy of his book (see photograph on previous page). **F5NZY** QSO'd **OD5NJ** on 17m on 5 January for a 'new one' with his 3W solar powered station.

ZL4TE's New year resolution is to use more QRP and on 18 February he was still achieving that by QSOs with CE, P2, 3D2 and VP8 with his FT1000 Mk5 "with the power wound right back". Pete is still experimenting with his delta loop made of very thin speaker wire and finds it work well on the WARC bands. He has just bought another 800 square yards of land behind his house and is, "looking at doing some major earthing once I have a bit of time". **G4CCQ** runs 5W to a 33 feet end-fed on 40m and requests stations give him genuine signal reports. Mervyn says his biggest thrill is, "Telling a station that I am only running QRP after he has said he is running a KW and a beam".

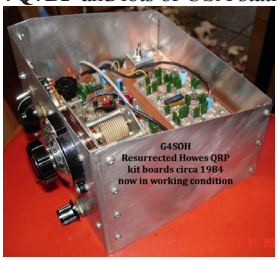
WAØITP reports <www.qrpspots.com> will be over 220,000 hits by the time this edition of *SPRAT* is received. Terry also reports the Four State QRP Group is bringing US QRPers another OzarkCon QRP conference in Branson, MO on 13/14 April. He says, "We have several new kits nearly ready for release. Several will be released before the before the conference. QRP is alive and well, is a growing segment of amateur radio, and Four State is doing all we can to promote it". **GM4VKI** says the Scottish G-QRP stand is having a hard time this year. The Magnum rally on 29 April has been cancelled but Roy and a local amateur are trying to organise a Scottish gathering in Troon on the same date, so watch G-QRP Club News for further details. There is a new rally/convention on 2 June in Livingstone where Roy will have the G-QRP Club stand, but unfortunately the Galashields Rally in October have again picked the same weekend (he thinks) as the G-QRP Convention at Rishworth, and having missed it for the last two years, Roy has decided he will attend Rishworth, meaning the G-QRP Club will not be at Gala this year. The Red Rose QRP Festival will be held on 10 June this year in Atherton, Manchester, details from **G4HZJ**. The EA-QRP Club will hold its XII meeting on 12/13 May in Sinarcas, Valencia. Lots of QRP events are planned and more information from **EA5AHN**.

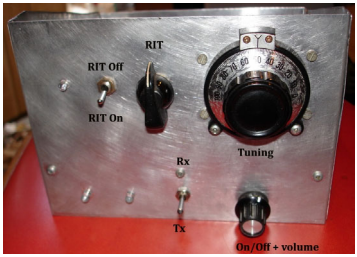
GØFUW has been building the Walford three-band Mendip/Polden rig and has already got an ARCI *1000 Miles per Watt Award* for a 20m QSO with the USA using his Cob-web dipole over the Christmas/New Year break. He says it has a nice phasing RX with 3W on 80, 40 and 20m and he just now needs to box it! Steve will be the QRP element of a mini-DXpedition to Skye 12/19 May as part of the **MXØWCB** group and hopes to take the Mendip/Polden as well as the FT817. He is happy to arrange skeds via <gofuw@tiscali.co.uk>. Finally he reports a great turn out for the 5th Bath Buildathon with nine 20m superhets built in January. The photograph above shows Intermediate students on the front two tables, most of whom are now studying for the Advanced examination in June (l to r) Richard Simpson, Mario Caves, Dave Baker, Jeff Petch-Harrison and Stephen Bassett. The remainder included guests from Portsmouth, Gloucester and elsewhere and far right is Dan, **MØTGN**, one of the instructors and Buildathon helpers.

The photograph on the left shows **F6HIQ** QRV in London last autumn with his FT-817. Using the ATX-1080 short antenna indoors wasn't very good and so he bought a pack of bamboo canes for gardeners and tied them with nylon clips to make a 15 feet pole on his daughter's balcony (far left photograph). Hervé's antenna was a 25 feet wire in L shape with 13 feet twisted around 2/3 of the pole and 12 feet horizontally strained to reach the ATU and TCVR through a window with which he logged 20 DXCC. Back home in France he made his best DX so far with **ZL2WL** on 20m SSB. Using 5W SSB and PSK into a homebrew GP antenna, Hervé now has 114 DXCC (18 two-way QRP) and 33 WAS, the best being a two-way QRP 20m PSK QSO with **KDØFDJ** in Colorado.

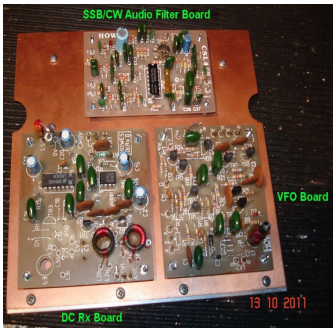
On 14 February **G3YTN** was "bouncing around the shack" after a QSO with **SM6DLY** on 30m when he received a 329 report! Roger answered Simon's CQ with his crystal controlled Hendricks DCxxB giving under 300mW through an ATU to a half-size G5RV in his loft, with the legs at roughly 90 degrees to each

another. Roger says the rig is uncased in a vice with lashed-up connections in all directions. **MØZAI** is, "still walking on air" after recently blowing up his 400mW Rock Mite 20 during its smoke test by blowing a zener diode (he brushed it with the power connector). After replacing it, Matt's first call resulted in a 579 report from **HA6OD**, just under a 1000 miles away, using his OCFD antenna. In his first FOC Marathon, **G5CL** entered the QRP Section and made 146 QSOs in four contintents, including **7Q7BP** and lots of USA stations.





G4SOH answered my request for photographs and sent in these four of the construction of his 80m QRP rig. They show (l to r) the completed radio, front panel, RX boards and underside wiring. Martyn used old Howes boards that had been lying in a draw for more years than he can remember.

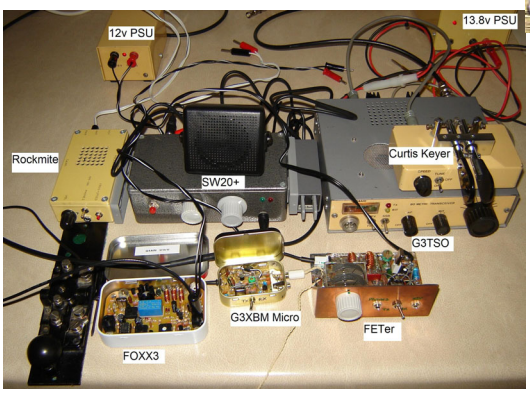


G3CWI has an OPERA beacon running on 30m set to 168uW (power measured on Boonton professional gear). The best DX by 16 January was **WD4KPD** at 3700 miles, equating to 35,400,000 kilometres per watt! "Not bad at all!" says Richard. Richard also reports **LA1KHA** going through the 500 QSO barrier in January in the PP3 Challenge using his single PP3/MN1604 as a power source. **GØFTD** has been using between 500mW and 5W with 20 feet of wire "thrown over the bedroom wardrobe" on 30-10m and receives "plenty of 599 reports every day". Andy has not used more than 5W on 6m for the last five years and says he makes "just as many QSOs as everyone else". He says, "The key is those sunspots. Even when I run QRO I struggle, and then a whiff of real sunspots and a few watts has been quite a revelation to me in the true sense. So much so that my interest in hombrewing in QRP rigs has been awakened".

Using JBOT amplifiers designed by **VU2ESE** and the Universal VXO of **G3RJV**, **N2CQR** has 're-cycled' the 17m DSB and SSB rigs that he built in the Azores during the last solar maximum, the SSB transmitter being based on a design by **G3YCC** (*SPRAT* 48). The photograph on the right shows Bill's 17m SSB station; the big box is the TX and the smaller box above is the receiver — a **W1FB** Barebones (Barbados) Superhet modified for SSB service.

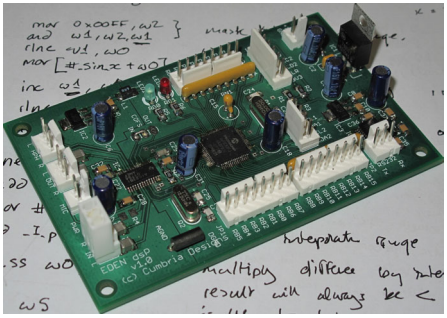
The photograph below was sent in by **G4ARI** to **G3XJS** with his log for the Winter Sports and shows the equipment Chris used during the event.

Congratulations to **DD5CF** on making his first QRP QSO outside EU on 27 December with **VY2/K6AAX** after calling in the pile-up for over an hour, using his MKARS80 and **KC8AOH** Tactical delta loop (a full-size G5RV that only takes up a third of the space) see <http://www.angelfire.com/electronic2/qrp/tacdelt.html>. Over a 24 hour period on 9/10 December **G3VTT** QSO'd **N2KW** on all the regular HF bands 10-80m with his 5W or less. On 15 December Colin again QSO'd Allen on 80m who, using his super receiving set up, copied Colin's power levels of 5W, 2W and 500mW with his K2. Colin says, "Copy was still Q5 at 500mW but only Q3 with 100mW. On 5 January **RV3GM** made a two-way QRPp 'Mi-

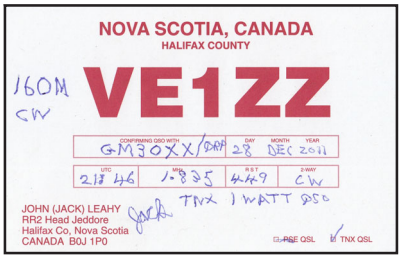


cro-80' QSO with **UA1CEG/P** using a homebrew Micro-80 TCVR running 200mW modified for 14060 kHz to a dipole. Oleg used his Micro-80/4 (four-band VXO) at 80mW to a balcony delta. RST was 559 both ways over the 636 mile path.

G4GXO has realised a long overdue New Year's Resolution (from several years ago) by tackling the subject of DSP, and after a very steep leaning curve and several headaches, now has a general purpose DSP unit working as a receive DSP IF at 15kHz. Ron tested it on HF by tacking it on to the product detector of a single conversion IF system with a wide (7kHz) crystal filter, with the carrier oscillator offset to produce the 15kHz output for the DSP. He says the results are superb, with excellent audio quality! The design is based around a dsPIC33F processor which is well supported by Microchip with a suite of free development tools. Ron hopes to be able to publish the software, hardware and a Windows filter design tool he has written, on the Cumbria Designs web-site soon. His next task is to make it transmit!



GØEBQ finally got his BITX SSB rig working on 12m after having lots of trouble with the original PA design. Nigel tried another design from *SPRAT* with equal lack of success, before trying Eamon Skelton's driver circuit from *Radcom*, which he says is excellent and really stable and clean and as a bonus, had all the parts in his junk box. The rig gives 800mW out and first report was a 57 from an EW8. Nigel has since worked all over Europe and says the 'icing on the cake' was a 55 from **A92IO**. He even tried it with his resistive SWR bridge in circuit to give 200mW out and got a 55 from a SV1 station, and has now come round to the **GM3OXX** school of thought that anything over 1W is QRO!


NOVA SCOTIA, CANADA
HALIFAX COUNTY
160M CW
VE1ZZ
CONFIRMING QSO WITH: GM3OXX/QRP | DAY: 28 | MONTH: DEC | YEAR: 2011
UTC: 2134 46 | MHz: 1.835 | RST: 449 | 2-WAY: CW
TNX 1 WATT QSO
JOHN (JACK) LEAHY
RR2 Head Jeddore
Halifax Co, Nova Scotia
CANADA B0J 1P0
PSE QSL TNX QSL

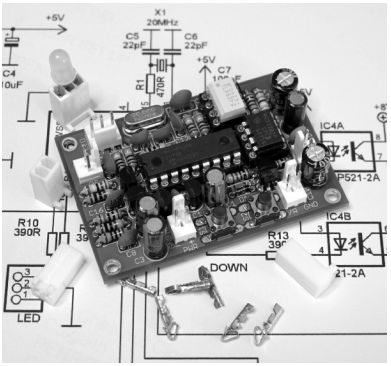
The QSL on the left confirms **GM3OXX**'s remarkable 1W QSO on 160m in the Winter Sports with **VE1ZZ**. George made QSOs with **HKØNA** and **VP6T** in January to bring his 1W DXCC up to an incredible 291. **G3JNB** fought it out with QRO CW to work **HKØNA** for a clean sweep 80-10m but got his biggest 'charge' when he found them one evening, on an apparently closed 17m band, calling CQ. A fast, 5W call on his fishing rod GP got an immediate 599! A week earlier, to his surprise, his 'Limerick Sudden' 40m RX came up trumps in the kit section of his local Shefford club's construction contest. It took **G5CL** a record two hours of calling to QSO **HKØNA** on 12m, **GM4XQJ** made it on 20m with his 5W and **G3YMC** QSO'd them on 40m with his 5W. Dave also QSO'd **TN2T** and **HU2DX** to bring his QRP DXCC up to 240 (83 in 2012).

If you are interested in Vibroplex bugs (and can read Italian) then you may want to look at **IKØIXI**'s 100 page book called *Vibroplex* published in February (photograph on left). It is Fabio's first book and covers the origin, history, collection and use of semi-automatic keys made by the famous factory since 1905, including patents, all models, serial numbers, nameplates, adjustments etc.

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

THE NEW "X-LOCK 3" KIT

Wandering VFO? Take the "variable" out of VFO for synthesiser- like stability with the newest version of the X-Lock kit!



Measuring only 36mm x 61mm, the X-Lock continuously monitors the VFO frequency and computes a correction signal to compensate for drift. Improved software and hardware now offer; ● push buttons controls for in-situ configuration, ● adjustable correction rate, ● choice of external and automatic RIT control, ● adjustable post tuning delay, ● automatic unlock during tuning, ● dual colour LED indicates programming and operation states, ● compact design allows easy installation inside most equipment. Hundreds in use around the world, visit our website for more information and example installations. The X-Lock kit comprises double sided, high quality silk screened PCB, pre-programmed processor, all components, connectors, IC sockets and a comprehensive step by step 14 page instruction manual. Just add 12v and a VFO!

X-Lock 3 VFO Stabiliser kit including VAT 20% and P&P; UK £36.90, EU £38.10, Rest of World (outside EU) £33.75 (zero VAT)

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QSL Cards from Nasko - LZ1 YE

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

Look at 'www.celticpilgrim.com' for Amateur Radio in a Lovely Place

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

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

GQRP Club Sales

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

Antenna Handbook – 2nd edition – members £6.00, non-members £10.00 plus post } £1.50 (UK); or £3.60 EU
Radio Projects volumes 2, 3 & 4 – by Drew Diamond – members £5, non-members £10 } or £5.80 DX per book

6 pole 9MHz SSB crystal filter 2.2kHz @ 6 dB, 500ohm in/out **£12 plus post** } £1.50 (UK); or
Polyvaricon capacitors – 2 gang (A = 8 to 140pF, O = 6 to 60pF) c/w shaft ext & mtg screws - **£1.20 each** } £1.60p (EU); or
– 2 gang – (both 8 to 295pF) c/w shaft ext & mtg screws - **£1.20 each** } £2.20p (DX)

Pair LSB/USB carrier crystals HC18U 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*, 18,096, 21.060, } **(ANY quantity)**
24,906, & 28,060 all are **£2.00 each** (* = also available in low profile) } £1 (UK), or
HC49U (wire) crystals – 1.8432, 3.500, 7.00, 10.106, 10.111MHz – **50p each** } £1.60p EU, or
HC49 (wire) crystals – 2.00, 3.00, 3.20, 3.579, 3.5756, 3.5820, 3.6864, 4.00, 4.096MHz } £2.20p (DX)
4.1943MHz, 4.433, 5.00, 6.00, 7.6. 8.0, 10.0, 12.00, 13.50, 20.00, 24.00, 25.00, 27.00MHz }
28.00, 32.035.50, 43.00MHz – **all 35p each** (Some of these are low profile types) } Post free
Ceramic resonators – 455kHz, 2.0MHz, 3.58MHz, 3.68MHz & 14.30MHz **– 50p each** } if ordered
Schottky signal diode – 1N5711 low fwd volts for up to vhf/uhf **20p each** } } with heavier
General Purpose silicon diode - 1N4148 10 for 10p } things like
Varicap diodes – **MVAM109** – 40pF @ 9v, 500pF @ 1v. **50p each** } max of 2 of } binders,
– **MV209** – 5pF @ 12V, 40pF @ 1V **35p each** } each per member } toroids,
SA602AN - £1.50 (note – I may supply NE or SA, 602 or 612 as available. All are fully interchangeable. } or filters.
MC1350 - £2.00 These are getting in short supply now so max of 2 per member } Use just
PICAXE-08M – 8pin - £2 each; CA741 op-amps 8pin DIL **– 5 for £1** } that
LM386N-1 - 4 to 15v, 300mW, 8pin **DIL - £0.40 each** } postage
LM386M-1 - 4 to 15v, 300mW, 8pin **SMD** [0.2" (4mm) x 0.25" (5mm)]- **£0.35 ea** }
TDA7052A - 4.5 to 18v, 1W 8pin **DIL** low noise & DC vol control – **£0.60 each** } If ordered
TA-7642 Radio IC – direct equivalent of **MK484** (& ZN414) – **75p each** } with books
2SC536 transistors (npn) fT - 100MHz, hFE-320, VCBO +40V **- 5 for 50p** } or CDs
MPSH10 transistors (npn) fT - 650MHz, hFE 60, VCEO 25V **- 8p each** } add this
2N3904 transistors (npn) fT - 300MHz, hFE-150, VCBO +40V **- 10 for 50p** } postage
2N3906 transistors (pnp) fT - 250MHz, hFE-150, VCBO -40V **- 10 for 50p** } as books
2N3819 N channel JFET – 12p each; 2N7000 N channel MOSFETs - 10p each } or CDs do not
IRF510 FETs – 50p each } travel well
10K 10mm coils – 1u2H, 1u7L, 2u6L, 5u3L, 11u0L, 45u0L, 90u0L – all 80p each } with parts.
Magnet Wire – 20, 22 SWG – 3 metres for 60p; 24, 25, 27SWG – 4 metres for 40p; }
30, 33, 35SWG – 5 metres for 30p. This is solderable enamel insulated } Postage
max of 3 sizes per member (I have to measure and wind this!) }
QRP heatsinks - TO92 – 30p; TO39/TO5 – 40p; TO18/TO72 – 60p (pics in Sprat 148) } as for
Back again – Diamond pad cutters – 2mm shaft, 7mm o/s & 5mm i/s dia - £4.50 each }
Axial lead inductors (they look like fat ¼W resistors) these are low current – a few hundred mA }
4.7uH, 6.8uH, 10uH, 15uH, 18uH, 22uH, 33uH, 39uH, 47uH and 100uH - all 15p each. } components

Toroid Cores – **priced per pack of 5 – max of 2 packs of each per member**
T25-2 – 50p, T25-6 – 60p, T30-2 – 60p; T30-6 – 70p ; T37-2 – 75p; T37-6 – 80p; T50-1 - £1.00; T50-2 – 90p;
T50-6 – £1.10; T50-7 - £1.20; T50-10 - £1.20 ; T68-2 - £1.80 ; T68-6 - £2.20; T130-2**- £1.50ea ; T130-6** - £2.00ea.
FT37-43 – 80p ; FT50-43 - £1.20 ; FT37-61 - £1.20 ; FT50-61 - £1.20; FT140-43** - £2.50 ea ; FT140-61** - £2.50;
BN43-2402 - £1.20; BN43-202 - £2.00; BN43-302 - £2.00; BN61-202 - £2.00.
Ferrite beads – FB73-101 (3.5mm dia x 3.2mm long, 1.2mm dia hole) – 40p for 5
All toroids are plus postage – up to 5 packs = £1.00UK), £1.60 (EU), £2.20 (DX). Each additional 5 packs, please add 50%
** **Except** ** **items** – they are heavy and each counts as 2 packs

Limerick Sudden kits RX (80 through 20m); TX (40m only) **£34.00 each plus post** UK - £2.50, Eu - £3.50, DX - £5.00
Sprat-on-DVD – 1 to 148. Only £4 each to members plus postage, UK - £1, EU - £1.60, DX - £2.20
Sprat Binders – nylon string type – Black with club logo on spine -16 issues per binder – **new stock** - £4.50 each plus postage
(one: UK - £1.40, EU – 2.20, DX - £3.00. More - add £1.20, £1.50, £2.50 each)

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

MINIMUM ORDER for cheque or PayPal payments is £5 For orders less than £5 – please use postage stamps (any denomination £1 or less please) - any quantity of stamps is OK, or cash. I can accept cash in GBPounds, or US$/ €uros (at the current exchange rates) – but please send securely! You can order via e-mail and pay by PayPal. Use g3mfj @ gqrp.co.uk – pay me in GBPounds and you MUST include your membership number and address please