



SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

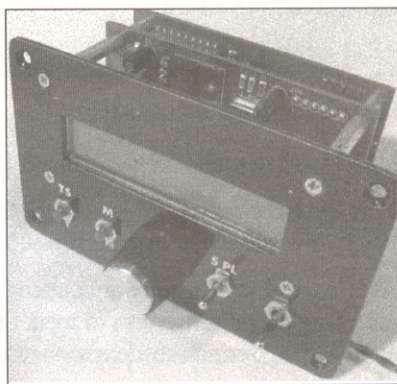
ISSUE Nr. 117

© G-QRP-CLUB

WINTER 2003/4



Our youngest member, Jessica Marsh, M3JMH,
is welcomed to the club by G3RJV



A New Club Kit
DDS VFO

Sine Wave Oscillator ~ Sherborne Surprise Receiver
Fortyhet Receiver ~ Brute Force Receiver
Six Socket Gem Transmitter ~ CP-20 Receiver ~ LEDektor
Valve Amplifier ~ Variable Power for TS430s ~ QRP+ Companion
DDS VFO Kit ~ QRP News and Events ~ Antennas-Anecdotes-Awards
Tips ~ Communications & Contests News ~ QRP Calendar 2004
SSB & Data News ~ Member's News ~ Club Sales

YOUR SUBSCRIPTION FOR 2004 IS NOW DUE
See Centre Pages

JOURNAL OF THE G QRP CLUB



© G QRP CLUB

**St. Aidan's Vicarage,
498 Manchester Road
Rochdale, Lancs.
OL11 3HE. England
TEL & FAX: 01706 - 631812
(overseas tel: +44 1706 631812)
Internet : g3rjv@gqrp.co.uk
Homepage : www.gqrp.com**

Rev. George Dobbs G3RJV

May I wish you all a contented and fulfilling year in 2004

This issue continues the entries for the W1FB Award 2003, and has emerged as another 'receiver issue'. The Award for 2004 is outlined below.

As usual the winter issue announces several QRP events for the coming year. All of them are excellent opportunities to meet other members. I have been asked to draw the attention of German readers to the Pottenstein meeting in April [see page 25].



The W1FB Memorial Award 2004

For 2004, the project is to

Design a simple Monitoring or Metering Device of practical use in a QRP Station

Please submit your design to G3RJV as soon as possible, with circuit sketch, all values and brief notes.

The project will be published in SPRAT and the winner will receive an engraved plaque.

72/3

G3RJV

EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK
Printed & Distributed by G QRP Postal Mailing

A Cascode Sine Wave Oscillator in SMD

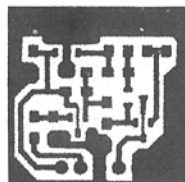
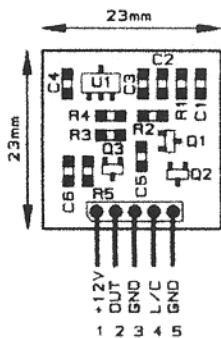
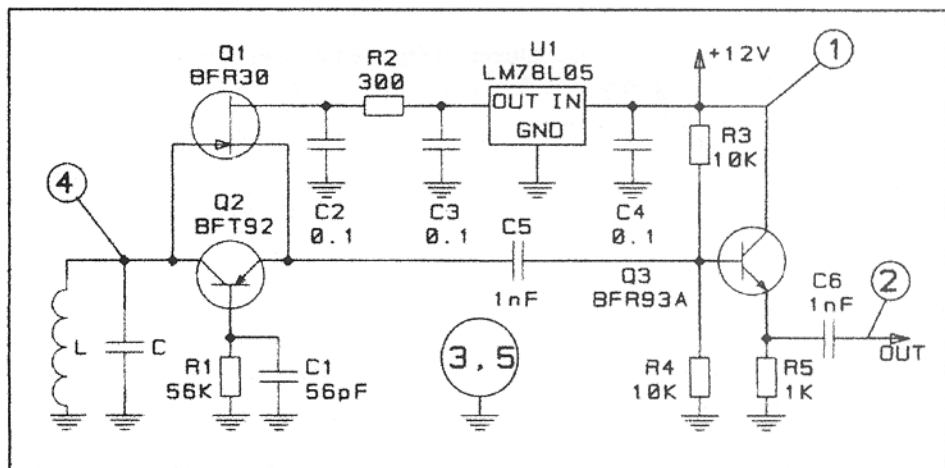
Stefan Petrov, LZ10V

Another interesting circuit and PCB from LZ10V. Stefen writes:

It is an cascode sine oscillator, suitable for LO (VFO), measurements etc. I tested it on 6 KHz untill 400 MHz. The frequency depends from L/C tank only. The frequency coverage (Fmax/Fmin) is more than 2. If you want to test it, try: Q1=2N3819, 2N4416, BF245, MPF102 etc. Q2=2N3906, BC177, BF979 etc. It is not necessary to solder U1 and Q3 for tests. Vcc= +3 to +15V

I designed a single side PCB for this LO. I used 1206 SMD parts because it is easy for soldering. It is more difficult to work with smaller ones.

For details: Send e-mail to Stefan Petrov, stefangp@yahoo.com,





The Sherborne Surprise

A simple superhet receiver for 160/80/40m CW

Gary Andrews M0CWY, 18 Vyne Rd. SHERBORNE ST JOHN. RG24 9HX

This receiver covers 22KHz of the 160m band, 45KHz of the 80m band and the complete 40m band. It is a single conversion superhet.

The VFO is a Vackar oscillator (Q101), operating above the 10MHz intermediate frequency at 11.8MHz, 13.5MHz and 17MHz. Band switching is accomplished by switching in extra capacitance for the 160m and 80m bands.

The tuning frequency range for each band is selected using trimmers VC102 (40m), VC103 (80m) and VC104 (160m). Trim VC102 first as it also affects the 80m and 160m tuning range. Q102 buffers the oscillator and provides the necessary +7dBm for the SBL-1 mixer.

The signal from the antenna is low pass filtered to remove the image frequency bands and signals at the 10MHz IF frequency. The filter is a 7 pole low pass filter, with a 7MHz cut off frequency.

Using a low pass filter rather than a bandpass filter means that the same filter is used for all three bands without any switching. The filtered signal is converted to the IF at 10 MHz by mixer U100.

Q100 and Q200 give two stages of amplification at the IF frequency 10MHz. The IF filter is a 6-pole crystal filter. I bought a batch of cheap 10MHz crystals from Farnell and selected six that had frequencies within a band of about 50 Hz. Selectivity is good and the bandwidth is about 500Hz.

The IF signal is detected and shifted to audio frequencies by the product detector U200. The audio signal is amplified by Q201,202,203 sufficiently (40dB) to drive a pair of low/medium impedance stereo headphones. Minimum discernable signal is about minus110dBm.

I used ztx304 transistors because I had some, almost any small signal NPN types could be used. If an SBL-1 is not available, it can be replaced by a simple diode mixer.

The prototype was built using ugly style construction on bare PCB material.

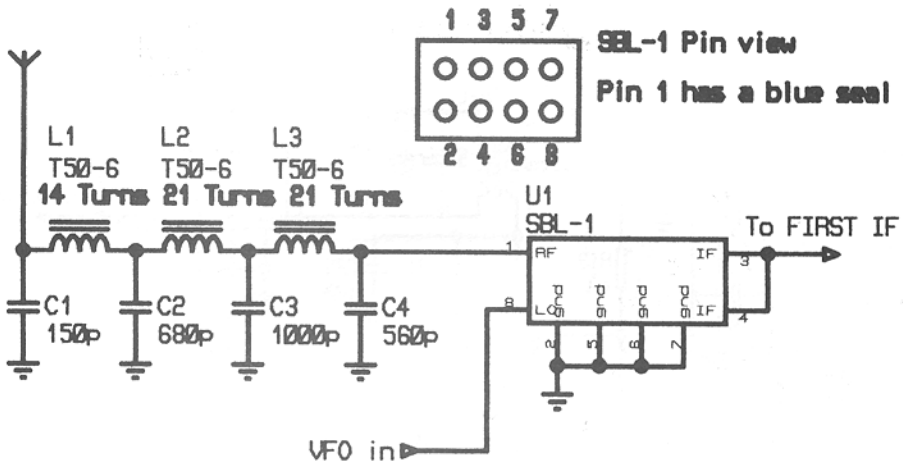


Fig. 1. RF Front End

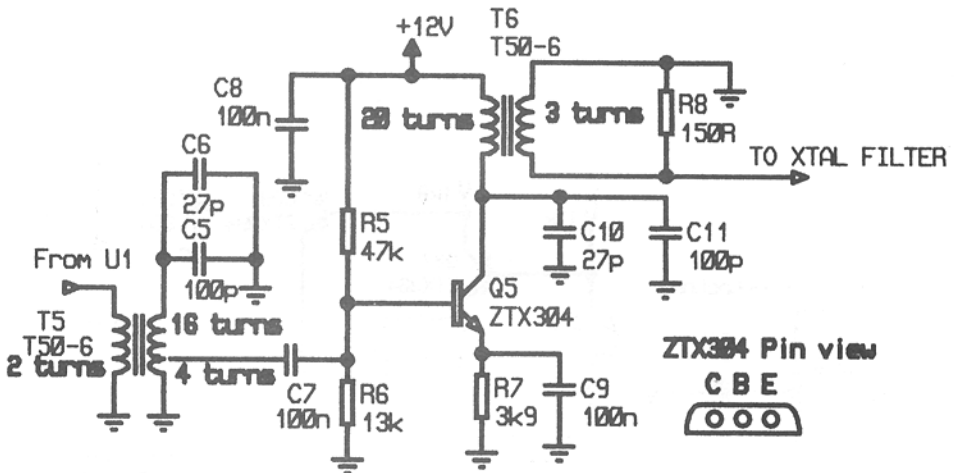


Fig. 2. First IF Amplifier

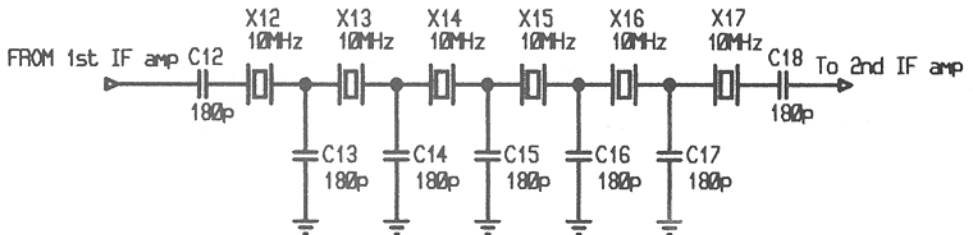


Fig. 3. Crystal IF Filter

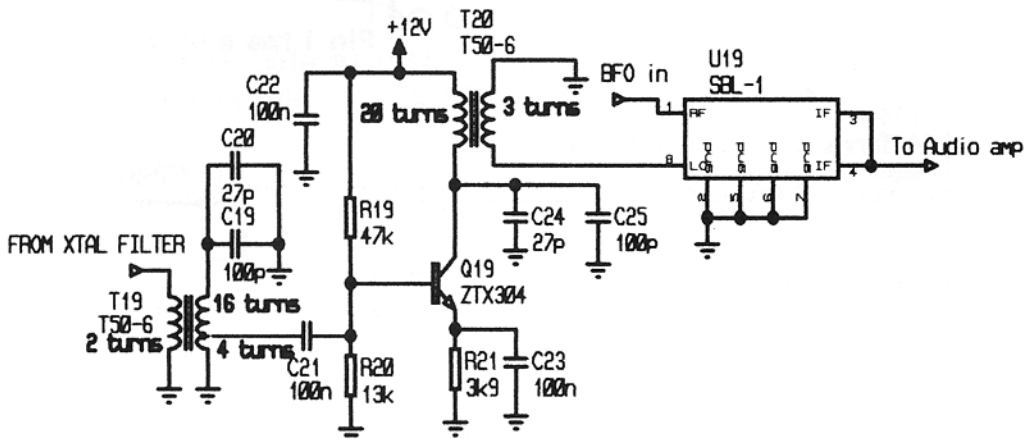


Fig. 4. Second IF amp and product detector

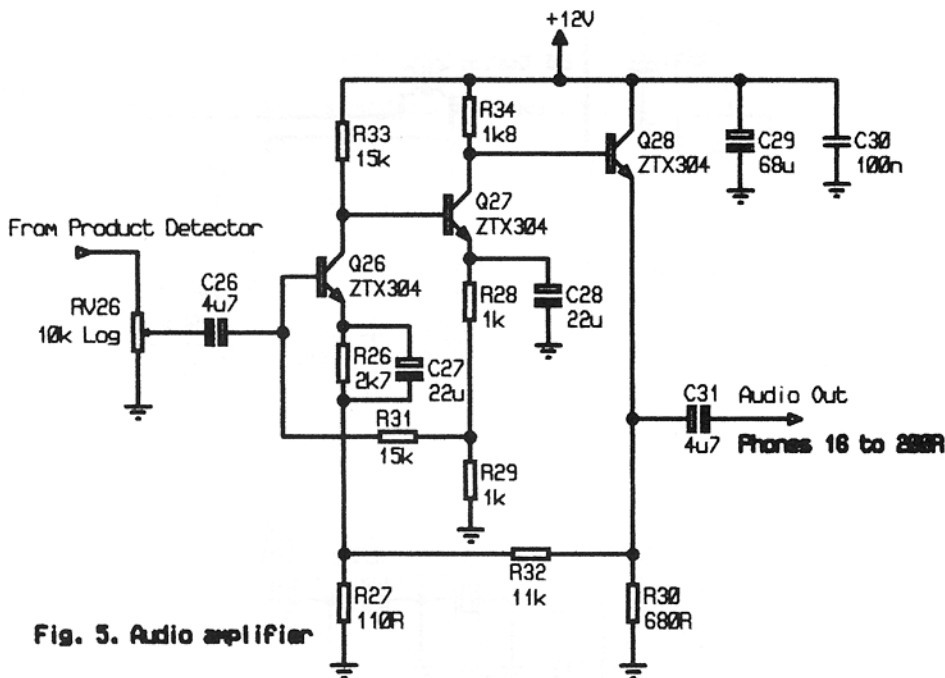


Fig. 5. Audio amplifier

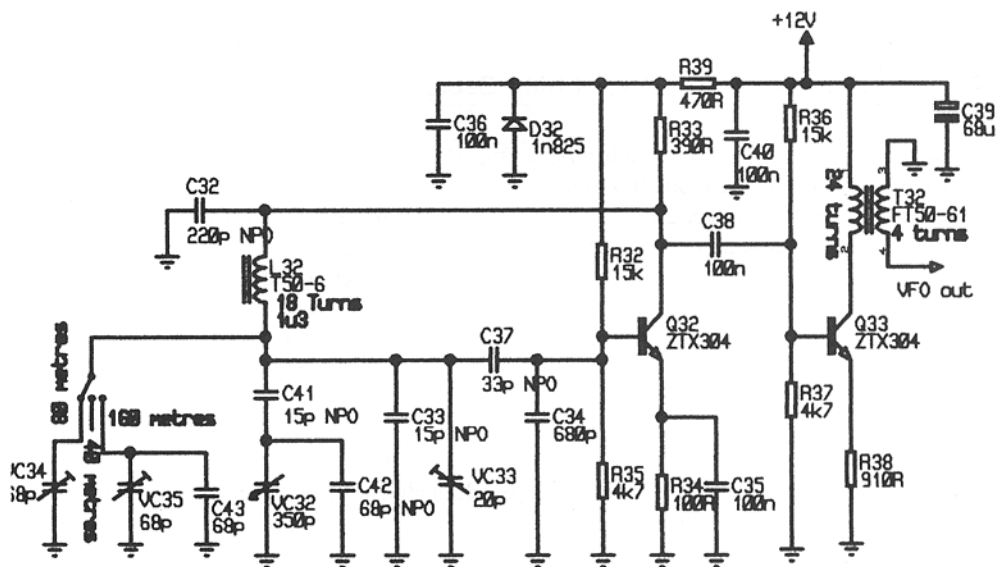


Fig. 6. Variable frequency oscillator

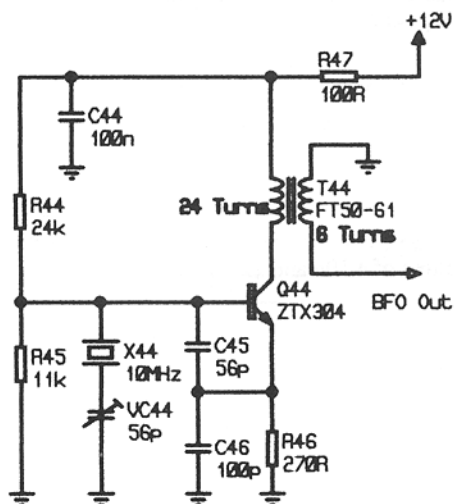


Fig. 7. Best Frequency Oscillator



WIFB MEMORIAL ENTRY

The "FORTYHET" – A Simple Superhet for 40m

Duncan Walters G4DFV, 11 King George V Ave. Mansfield NG18 5AA

The design concept was to build a simple no-frills superhet capable of good sensitivity and selectivity using available (junk-box?) components.

The crystal filter and the product detector oscillator use the common 4.433619MHz TV crystals which are obtainable reasonably cheaply from a number of sources.

No claim can be made to any originality for this design, as a number of features have been utilised from many different circuits previously published.

Although designed for use on the 40m band, there is no reason why it could not be made to operate on other bands with appropriate component changes to the front-end and first oscillator stages.

Circuit Description:

The antenna is coupled via the 1K RF Attenuator pot through a low pass filter comprising L1, L2 and associated capacitors. The addition of the extra tuned circuit including T1 provides a steep bandpass characteristic which helps eliminate commercial broadcast station overload towards the HF end of the band.

The first NE602 is configured as mixer-oscillator, with the oscillator tank tuning 11.433619MHz to 11.533619MHz. A 1N4001 diode is utilised as a varicap for oscillator tuning.

The IF signal appearing at pin 5 of the NE602 passes through the crystal ladder filter comprising X1 to X3 and enters the MC1350 IF amplifier.

The balanced output is coupled via T2 into the second NE602 connected as a product detector. Again a 4.433619MHz crystal is used, the frequency being pulled by the 60pF trimmer to the correct frequency for intelligent SSB reception.

The resulting audio appearing at pin 5 is coupled to a simple tuning meter circuit based around the 2N2222 and a 100uA meter. Audio is also coupled via a passive low-pass filter and AF Gain control to the ubiquitous LM386. The addition of a 10n and 2k7 in series across pins 5 and 8 help to reduce hiss.

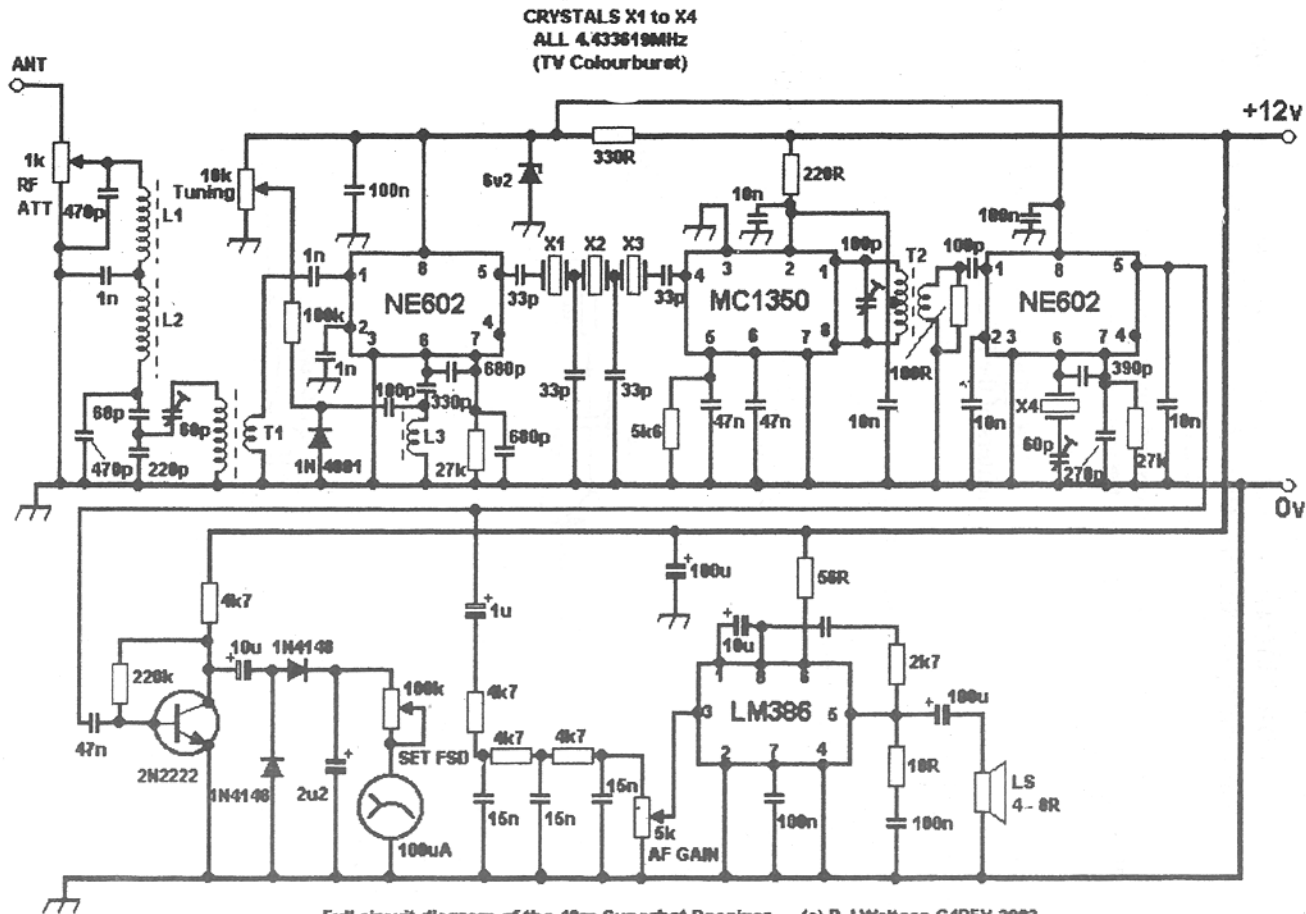
Coil Details

L1 & L2 = 13 turns 32 swg enam on T-37-2

L3 = Toko KANK3333R

T1 primary = 70 turns, centre tapped, 36 swg enam on T-50-2

T2 secondary = 3 turns 36 swg enam over centre of primary.



Full circuit diagram of the 40m Superhet Receiver (c) D.J.Walters G4DFV 2003



WIFB MEMORIAL ENTRY

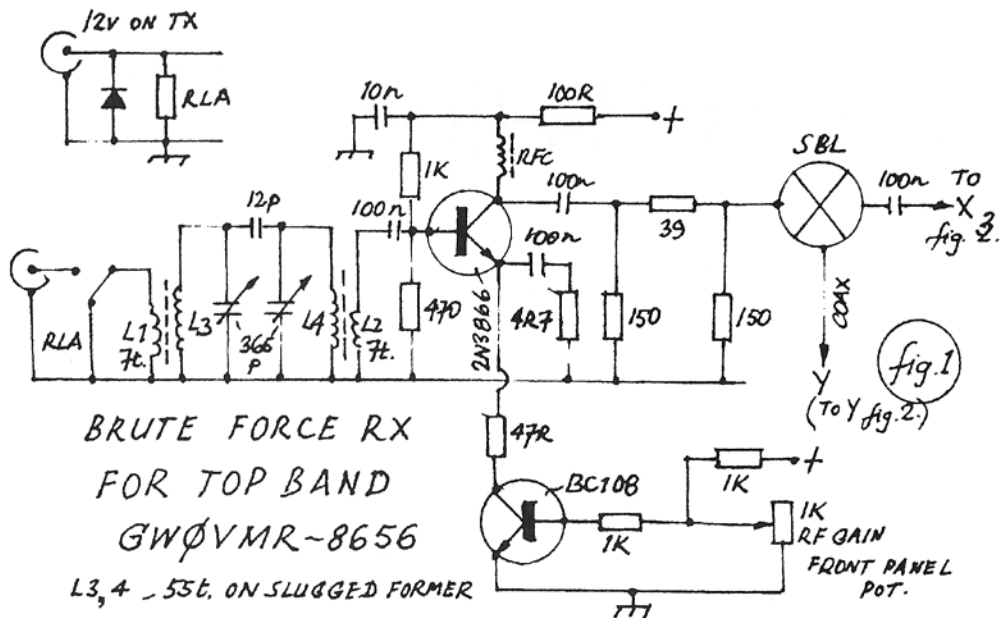
The "Brute Force" Receiver for 160m.

Pat Smith, GW0VMR, Bron Awel, Brynissa Rd. Brynteg
Wrexham. LL11 6NS.

All the classics like the HRO are just amplifiers and mixers? So I made up a receiver using "brute force". Nothing is original – most of the ideas are stolen from "Solid State Design", G3TSO and EI9GQ.

It is for CW because of the filter and so has no AGC. The gain controls are pots on the front panel to control the transistors in the emitters of the RF and IF amplifiers, so all leads are at DC and not RF frequencies.

With a suitable aerial band pass circuit and VFO, it will work on other bands. The filter will work on SSB if the capacitors are made about 25pF. The audio amplifier is from an old AM Pye Westminster transceiver.



For 160m:

L1 and L2 = 7 turns

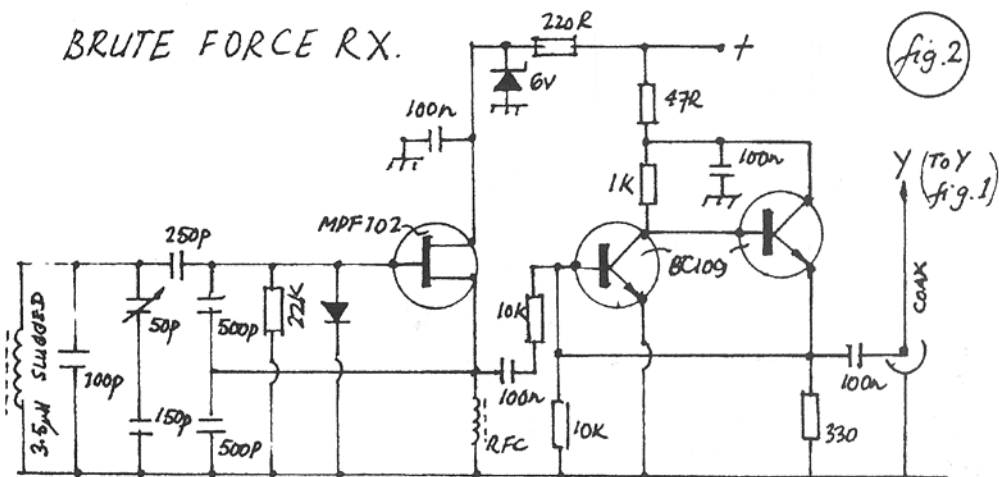
L3 and L4 = 55 turns

On ¼" diameter former with core

Brute Force Receiver

6.20 – 5.9 [approx] MHz VFO

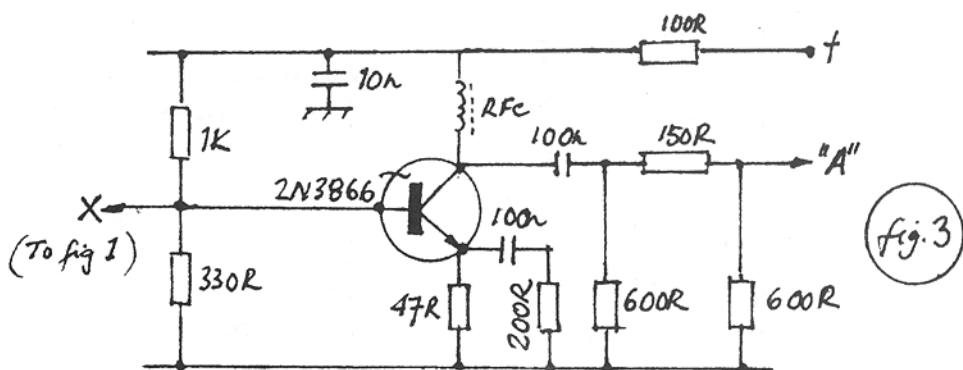
BRUTE FORCE RX.



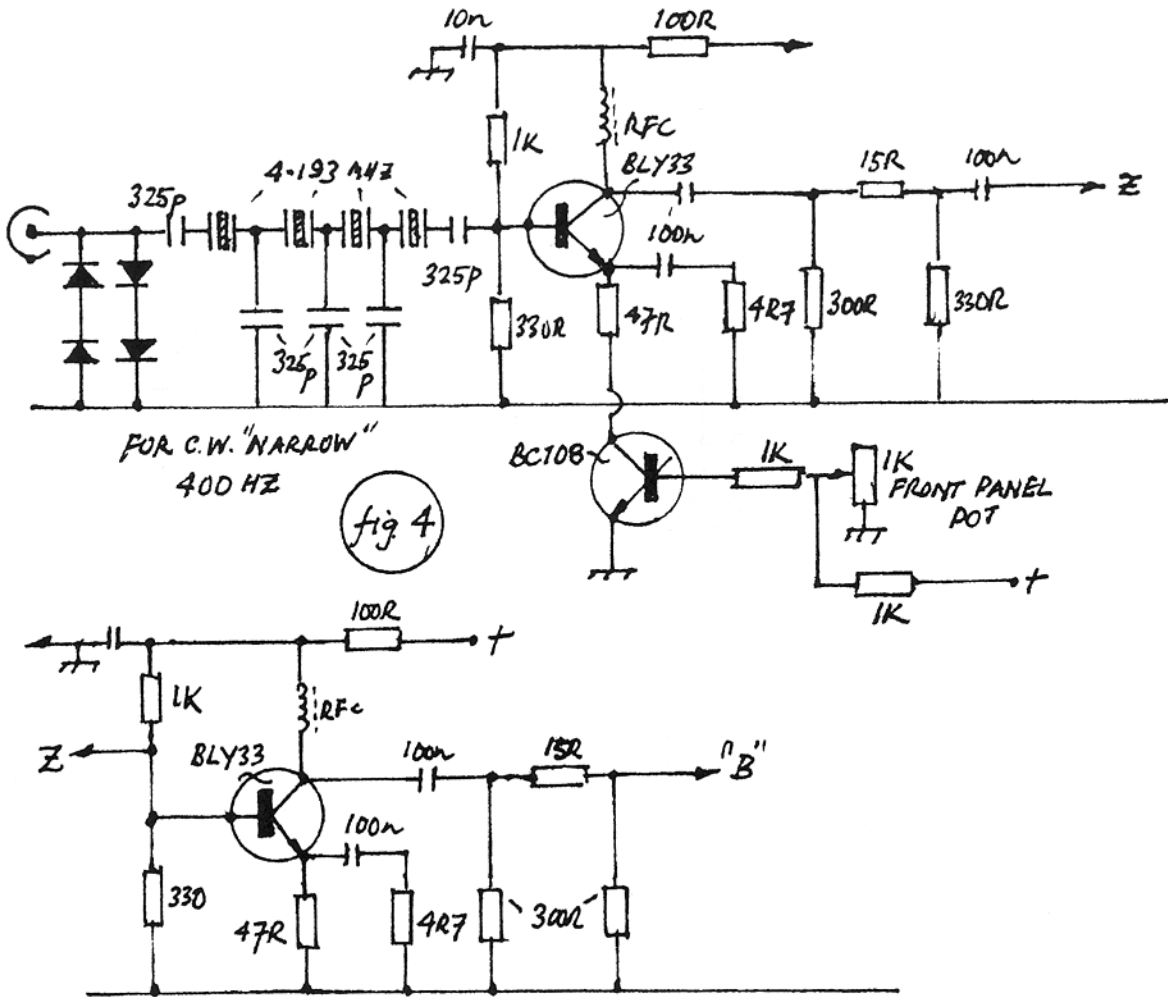
6.2 < 5.9 MHz (APP)

Brute Force Receiver

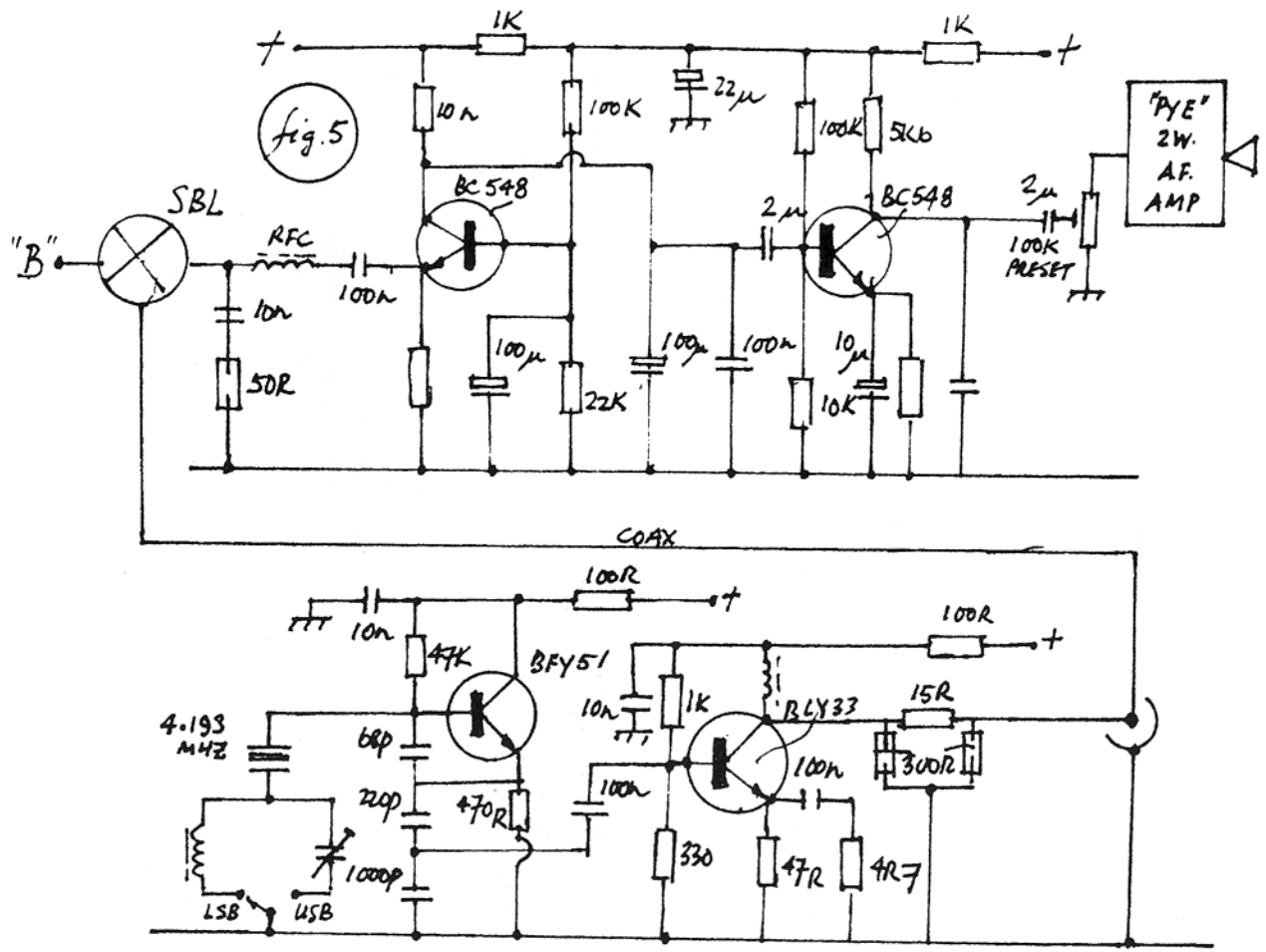
Post-mixer amplifier.



Brute Force Receiver IF Filter and IF Amplifier



Brute Force Receiver Product Detector, BFO and Audio Stages



The Six Sockets Gem - My QRP Fun Transmitter – by Arnie Coro CO2KK

Or for short the SSG...As everything nowadays needs to have an acronym in order to really become popular.

What's unusual about the SSG QRP rig ?

It's the fact that it has SIX sockets.... three of them are for the quartz crystals, all of them wired in parallel. A standard FT243 crystal socket, another one for the HC6-U types and still another one for the HC-25's, PLUS, a pair of very nice copper plated ALLIGATOR CLIPS, that will allow the user to connect any type of crystal not fitting into the above mentioned three sockets.

Don't be afraid, this can be done safely at frequencies below 15 MHz, where the SSG rig is supposed to work (actually this QRP experimental transmitter-crystal tester, was designed to operate from 160 to 20 meters).

Now for the other THREE sockets... I am sure most of you already have guessed that they are three sockets for the single vacuum tube used.

One socket is a nice standard OCTAL (I was able to obtain a beautiful white porcelain 8 pin socket from my recycling bin) the other socket is a 9 pin NOVAL miniature, and as expected the third socket is a 7 pin miniature.

So we have a relatively small aluminum chassis, with three crystal sockets and three sockets for a vacuum tube.

Now let's see how I wired them up...

Tetrodes are the tubes to use.

The three sockets were wired so that I could use several of the more popular tetrode vacuum tubes... from the classic octal based 6L6-G to the much newer 6AQ5 that goes into the seven pin miniature socket. The 9-pin socket is wired to take in the very popular EL84 and other tubes that use similar pin distribution. NO, don't worry, this rig was not intended to put widely different tubes in parallel. The idea was to be able to use (and of course test) both crystals and tubes while actually having the possibility of using the test set as a QRP transmitter. For that purpose I reviewed G3VA's Technical Topics section of RADCOM, to find the most popular single tube transmitters, ending up by duplicating the World War II " Paraset", that uses a metal 6V6 as a power oscillator. Wiring the pins of the octal, nine pin and seven pin sockets properly, the rig can be used with many different tube types, and one can obtain power outputs that will depend on both the type of tube plugged in and the power supply's output voltage.

From 150 to 250 volts for real QRP

I also designed and built a power supply for the rig. It is a very simple circuit, that can provide from 150 to 250 volts D.C., well filtered by means of two 100 mFd. electrolytics and a nice 100 mA 10 henry filter choke.

The home wound power transformer has taps on the secondary, so I can choose the voltage I want in roughly 50 volts steps between 150 and 250 volts.

Filament 6.3 volts A.C. voltage is provided by the same transformer from a generous 3 amp winding (that was the enameled wire I had at hand to wind the filament winding!!!)

The SSG in actual operation.

Place the tetrode tube of your choice into the appropriate socket, and be sure that the pins are wired for this particular tube. Place a crystal for the frequency you want to operate on one of the sockets or connect it via the alligator clips then apply heater (filament voltage) for about 2 minutes to let it warm up. Place the power supply's output tap on 150 volts.

Now, using a 50 ohm dummy load, turn the shaft of the plate variable capacitor and monitor the crystal's frequency on a receiver. The antenna loading capacitor setting is the next step of the tuning procedure, in order to find the optimum operating point, where the oscillator will start reliably when keyed, while producing good output. And that's it !!!

Disconnect the dummy load and connect the rig to an antenna ... preferably through an antenna tuner.

My SSG produced a bit more than the QRP "legal limit" of 5 Watts when using a brand new 6L6-G running at 250 volts on the plate, and with a very active FT243 crystal. It can go down to about 500 milliWatts when using a 6AQ5 with 150 volts on the plate.

The SSG also works as a handy quartz crystal tester, utility quart crystal controlled signal generator-frequency standard, and of course, as QRP transmitter that will stay on the air rain or shine, working into 1 to 1 SWR or with a 5 to 1 SWR !!! This one's final will not burn out the way some of my solid-state rigs have "joined their ancestors" like a friend of mine of Asian origin likes to say.

Of course that all safety precautions involving high voltages are to be taken, as the rig's plate and screen electrodes are operated at above ground potentials that if touched can cause serious injuries or even kill you.

Wiring the SSG is simplicity itself... decide which tube types you will like to be able to use on the OCTAL , nine pin and seven pin sockets. Look for the pinout in a tube handbook, and proceed to wire the sockets with the electrodes in parallel.

Use standard RF practice for grounds and wiring... avoid long leads, but don't be afraid of having the three crystal sockets and the three tube sockets wired in parallel... The SSG will work from 160 meters all the way up to 20 meters with most fundamental resonance crystals... and operation from 160 to 30 meters is certain almost with all crystals.

I used two 365 pF air spaced receiving type variable capacitors, one for the plate tuning, and the other for the antenna loading.

Another interesting experiment was to use a PI network tank circuit instead of the classic parallel LC, and I must say, that it also worked very well providing a more flexible antenna loading than with the LC tank and link combination.

Parts values... not critical.

Experimenting with the values of the control grid and screen grid resistors showed that the rig will work with a really wide range of resistance. The range of values of the cathode resistor was somewhat more limited. Bypass capacitors values also proved to be non-critical.

The rig uses just three fixed value resistor, three fixed value bypass capacitors, two variable capacitors and the plate tuning coil.

My SSG is usually found on 40 or 30 meters... I use several FT243 crystals on 40 and a pair of HC6-U crystals for the 30 meter band.

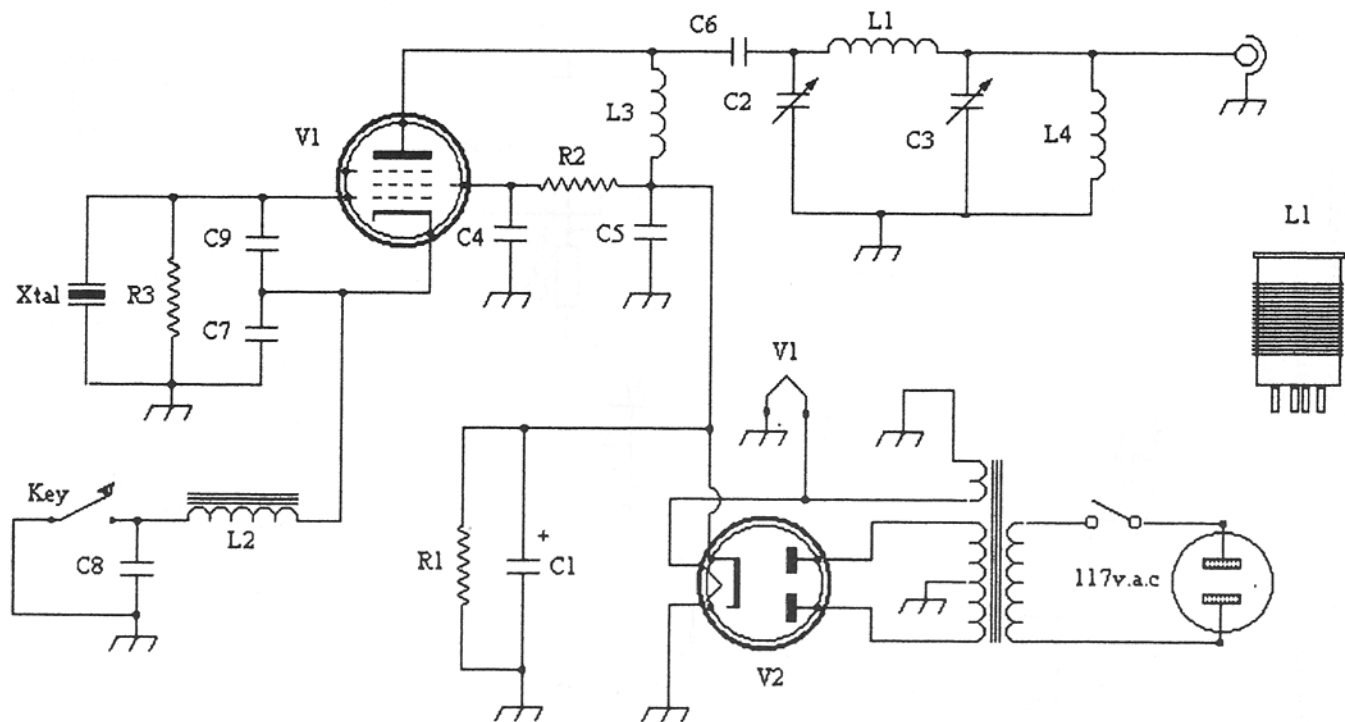
Connected to my EDZ antenna cut for 30 meters, the rig has brought in contacts on 7 and 10 MHz from halfway around the world while running around 2 watts to one of the several tetrode tubes taken from my junkbox. At present a nice EL84 is plugged into the 9 pin socket, and my favorite 10.116 kHz crystal is providing the frequency control.

The power supply is running at + 200 volts D.C. and the plate current is reading .03 amps (30 milliamps), for an input power of 6 Watts, and the measured power output is just above 2 Watts, indicating a total oscillator efficiency of around 30 percent, as expected for a power oscillator circuit.

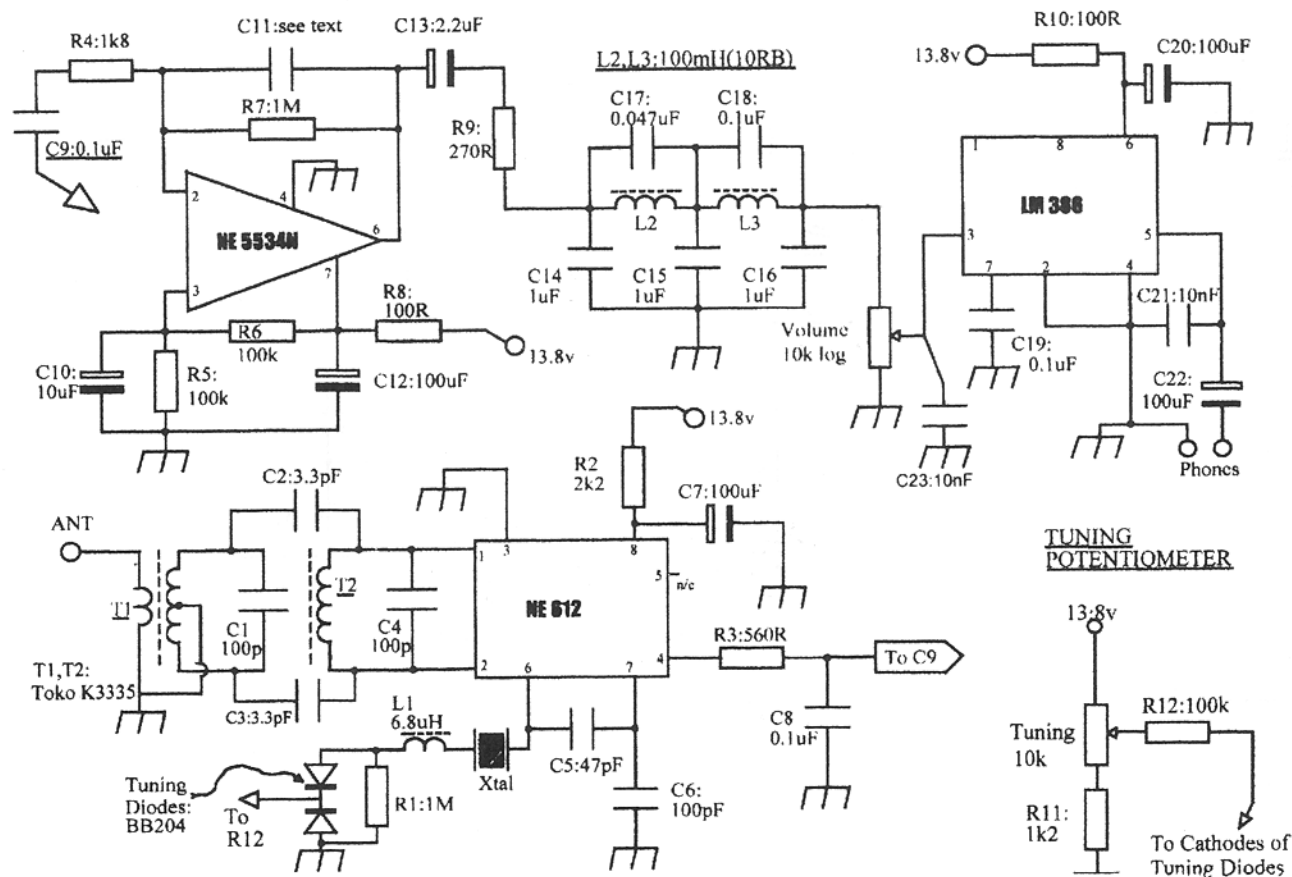
Try building your own SSG and power supply... a nice little QRP rig that achieves almost 100 percent reliability, uses recycled components and can work under the most demanding conditions without failures. This is a really rugged transmitter amigos !!!

Parts List

C1 – 20uF / 450v Elect.
C2 – 400pF Variable
C3 – 900pF Variable
C4,C5,C6 – 0.001uF / 500v
C7 – 220 uF mica
C8 – 0.001 uF / 500v
C9 - 22pF NPO
R1 – 100k, 2w
R2 – 15k, 1w
R3 – 47k, ½w
L1 – 40m: 15.5 turn #22 enamel 1.252 dia.
L2,L3,L4 – RF choke 2.5 mH
T1 – approx 300-0-300 150mA
V1 – 6V6GT
V2 – 6X5GT



The CP 20 - 14MHz c.w. receiver.



18

The CP 20 14MHz CW Receiver
 Tony Bowmaker, GØEBP, 46 Victoria Apts. Guy St. Padham, BB12 8PX

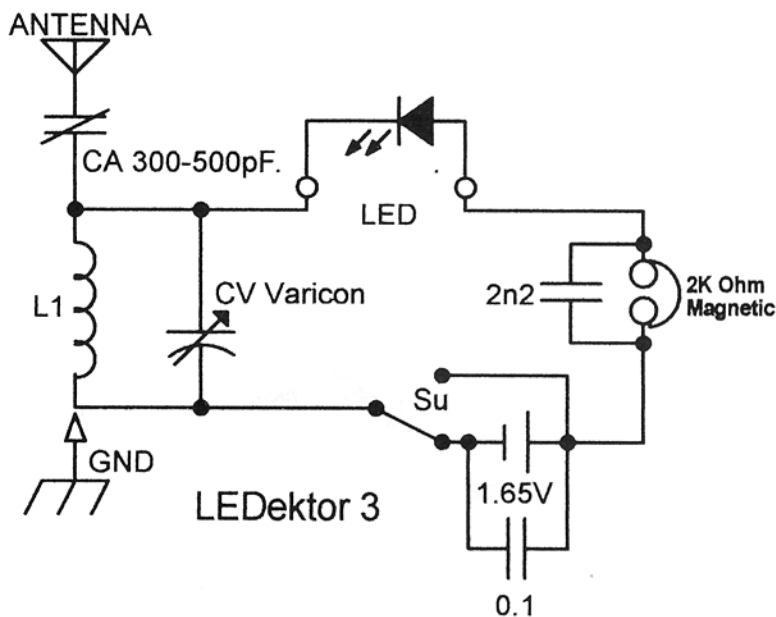
The CP 20 14MHz CW Receiver

Submitting the CP 20 Receiver circuit for SPRAT readers - Tony says:

The elliptical filter is 800Hz [CW] bandwidth and is the nicest I have ever managed to make. The LM386 is run at 20dB to avoid hiss with most of the audio gain from the pre-filter amplifier, a NE5534.

The LEDektor 3

Rudi Burse DK2RS, Zähringerplatz 2, 78464 Konstanz, Germany



A LITTLE PROJECT FOR CHRISTMAS?

I hope that others have as much fun with this version of a crystal set as I have.

L and CV are parts for the broadcast band. L : ca. 165 μ H

LED : Modern 'low current LED'

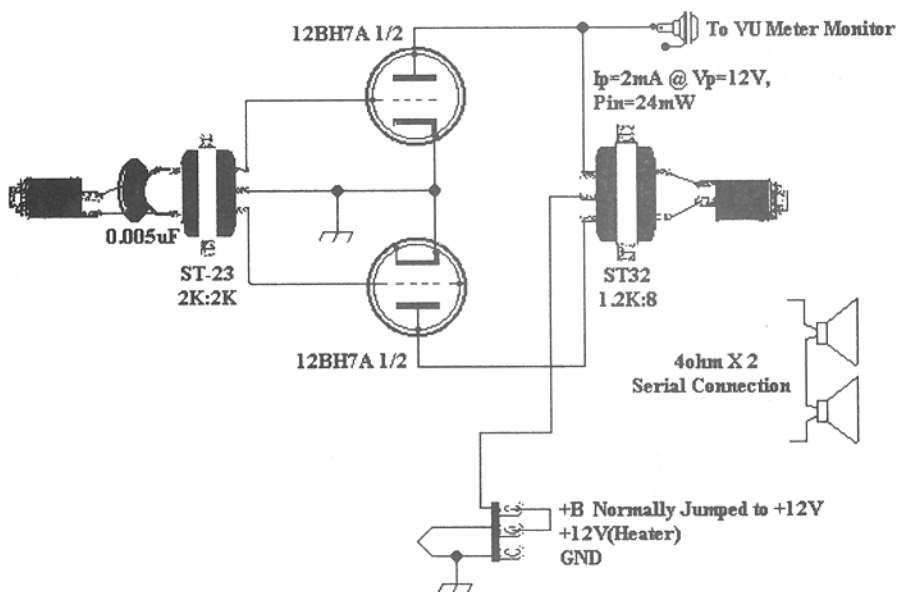
Other diodes [1N - - -] can be tested [switch Su] for comparison.

CA - Compression trimmer - set according to aerial in use.

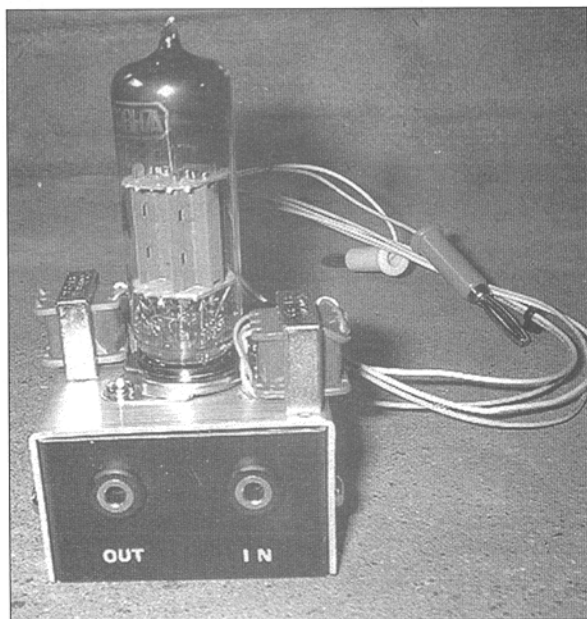
Could be substituted by a fixed capacitor [200 - 300pF]

12BH7A Single Push-Pull Audio Amplifier

Hehiko Komachi JA9MAT, 44-10 Ishize-Honmachi, Takaoka City,
TOYAMA. 933-0011. JAPAN.



Another 12BH7A project from
JA9MAT
Complete with layout details and
photograph.



Variable Power for Kenwood [Trio] TS430s

**Ken Greenough, G8BEQ / GØWBM,
2 Bexley Close, The Heath, GLOSSOP. SK13 9BG**

This modification allows the squelch control to vary the power of the TS430s from a couple of watts to full power. The squelch control still operates on FM mode but is disabled on SSB. [not very useful anyway.]

Remove top cover of transceiver. The main board on show is the IF unit. Locate socket 26, with front of set towards you socket 26 is to the left of the board about midway back to front. Cut the wire to pin 6 leaving about 3cms wire on the plug. This wire is usually brown. The wire tail from the plug has to be connected to ground. This enables SSB receive, pin 4 is ground and can be used. The brown lead you have just cut comes from the small PCB behind the squelch control. It runs to pin 6, socket 6 on this board. It is the end pin to your right looking from the front of the set. Pull this brown wire free of the harness so that you have a free lead from the plug.

Locate R211, a 1K resistor which connects the source of Q41 to ground. From the front of set.. right hand side, towards the front of the board. Cut the ground side of R211 leaving sufficient lead to solder to. The ground side should be the top end of the resistor, but check. Take the brown lead from the squelch board, suitably shortened, to the resistor. The squelch control , SSB section, is now in series with R211 and gives excellent control over the RF output level. Although the squelch control operates on FM it unfortunately can not be set independently of the power setting, so that at low power levels the squelch is set at a very high level. If operation is mainly at a certain low power level, i.e. 5 Watts for QRP or 10 Watts for the foundation licence there is a way round this snag. A 50K ohm trimpot can be connected from pin 5, socket 6, on the small pcb behind the squelch control to ground. At your chosen low power level set the squelch threshold with the trimpot.

In use, Maximum power is with the control fully anticlockwise. With the squelch pot set anticlockwise and the set in CW mode, Transmit a carrier [you will need to short the key jack] and set the carrier control for full power. You can then vary power on all modes using the squelch control. Check the carrier control setting required for different bands, it will probably vary slightly between 160 and 10 metres. The protection circuits will still operate as before but if running low power the set will tolerate poor aerial matching without using the protection circuits.

Member's Adverts:

FOR SALE: Elecraft K2 Kit untouched, can be collected in France or in Holland, at cost price transport and customs duty paid 600 Euros or equivalent in £ which will include postage to any EEC country. F6GPA - Hugues de Laistre Ba, 12 Place de la Mairie, 41600 CHAON, France. hi-ba@wanadoo.fr G QRP 5895.

WANTED: Do you have a Heathkit HW8 Transceivers to sell. Condition not important & will collect or pay for P&P. 0208 660 3043, Henry G8GAR/M3ATG.

WANTED: Manual for FT290 MkII. Harry G4BOB, 4 Woodland View, Railway Rd. Brinscall, Lancs. PR6 8PJ. 01254 - 831 510

The QRP+ "Companion"

Roy Walker, G0TAK, Highgate Barn, Old Hutton Kendal LA8 0LX

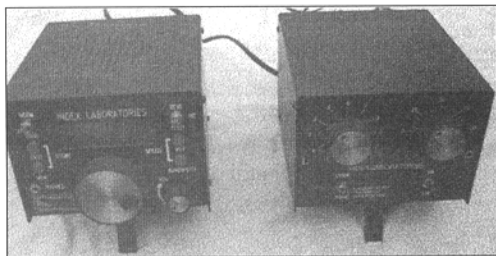
For a number of years I have been a very keen operator of the QRP+ "radio on a stick" both from my home QTH and from various /M and/P locations.

One of the drawbacks with operating with QRP rigs in general is that once the Tcvr is up and running we all start adding bits and pieces to make it perform the better. LP filters, keyers, computers, all get a look in but most of all some means of "tuning" the antenna is almost always tacked on.

Like many other QRP+ owners I have always said, "would it not be nice if it had a matching tuner". I have used my rig with MFJ, Alinco EDX-1, Kenwood AT130 and other Tuners all with great success and I know that the LDG range is also very popular. Well I now have news for many of you. There is a "companion" Matching tuner for the QRP+! Not many were made, even fewer were imported into the UK or Europe, the original cost was \$195 and once again it is a "tuner on a stick", in the same size box as the Tcvr itself.

Due to the kindness of Paul G3SEM I have been the "second user" of the QRP+ Companion for a few weeks now and would like to share my experience of the equipment with the QRP Community.

The first thing of note is that the box does not just contain a tuner it also has a noise bridge, a 12V 4Ah gel cell, and associated charging circuitry. The station is therefore complete and ready to go 'stand alone'. The tuning circuitry consists of a 2:1 transformer wound on a toroid, (to bring down the impedance to 12.5 Ohms), followed by a 12 section switched inductor, and a 365pF variable. The capacity of this variable is assisted by switched 330pF / 620pF capacitors to increase it's range. The rig has both balanced and unbalanced antenna connections. The duplicated instructions and explanation describe the tuning system as being "Based on a design developed by Dr. Ulrich Rhode". The gel Cell is trickle charged by a 'wall wart' and the box has an outlet, which enables you to power the QRP+



I have used noise bridges before today to silent tune my radio, and I must confess I have never been entirely satisfied with their operation. The bridge in the QRP+ companion is no better.

I have great difficulty in finding the 'Deep Null' in the S meter reading that the instructions promise, and the situation is not improved by tuning by ear. Using a bolt on

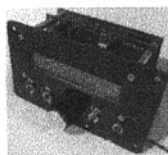
SWR Bridge between tuner and radio does however cure the problem, and a good match is obtainable on all bands on my 'G5IJ' main station antenna, and the dipoles in the loft space are also tamed quite readily. On air my first QSO using the set was with club Member Guy G3HMR all of 5 miles away in Kendal town. I did however leave him and go on to have a QSO into Sweden, which was more satisfying. I have subsequently had a good range of contacts around Europe, so the system works. Changing bands is very simple and quick. Change band on the rig, rotate the Inductor control for maximum noise, peak max with the capacitor controls, Inject a CW note and tune for Minimum SWR.

I must admit that I would have bought the 'companion' whether or not it worked, simply for its rarity, and it 'looks good' alongside the QRP+. I am however very satisfied with its convenience of operation and the ability of the tuner to match both balanced and unbalanced antennae. I am looking forward to taking it, and a light dipole, up into the hills and doing some real/M work with it in what is left of the summer.

A DDS Test Oscillator/VFO Kit

Designed by Trevor Jacobs KG6CYN

G-QRP Club kit and these notes by Graham Firth G3MFJ



Some time ago, Jay Bromley W5JAY advertised some bare bones kits (just the PCBs and a programmed processor) for a DDS oscillator/VFO to help fund a QRP event in Arkansas. He sent kits to Tony G4WIF & I, and whilst contemplating building mine I got into discussion about the kit with Trevor the designer, and in a bolt from the blue he offered us some of his bare bones kits.

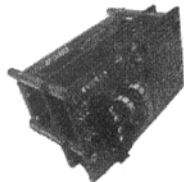
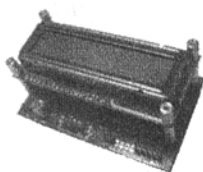
Then just as suddenly Jay donated us his unsold kits. The first job was to get all the parts for Tony's and my kits and immediately I experienced difficulty - some of the parts are just not available here. I realised that if we were to supply a kit to our UK members it would have to be a full kit. After a lot of work and much help from the other side of the Atlantic (see below) the kit is now available. Some of you may have seen (and played with!) the prototype at Rochdale.

Before you get too excited, let me say straight away that this is an SMD kit - using mainly 1206 size (0.12" x 0.06") components. There are also some 0805 capacitors (0.08" x 0.05") and the actual DDS chip is only 3/8" (10mm) long with 14 pins on each side. This is not a beginners kit! You need to be really sure that you can cope with this and have the appropriate tools. (The correct solder for SMD is included). While age doesn't help, it may help you to know that I am on the wrong side of 60 and have built 2 of these and they both worked first time! (But I do have a large bench magnifier, a decent soldering iron & tools, and bright bench lights!). Regrettably I can't offer a "get it going" service but I will help all I can if you have problems and there will also be support via the GQRP internet conference (see www.gqrp.com).

Unusually for a kit, there is an extra one of every SMD part - then if you lose one - there will be a spare (but don't lose 2!). Also included is a comprehensive construction, set-up & user manual.

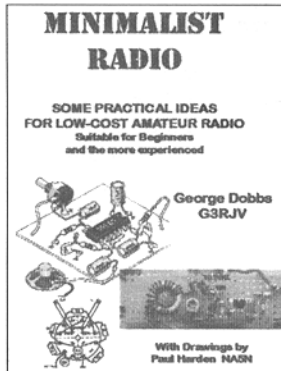
The specifications for the oscillator are as follows:

- Range - 0 to 40MHz by 1Hz steps.
- Frequency setting in 1, 10, 100Hz; 1, 10, 100 KHz; & 1MHz steps using a 24 step per rotation digital encoder.
- 2 rows x 16-character backlit LCD display.
- An IF offset setting when used in receivers or transceivers.
- Software calibration to WWV or equivalent.
- Split frequency operation and a separate CW offset.
- 51 user memories (one of which is the start-up frequency).
- All the memory settings & offsets are held in EEPROM & are permanent (but, of course, can be easily changed by the user).
- Output = 1v p-p into 50ohms (50kHz - 40MHz) plus an unbuffered (0 to 40MHz) output.



The current consumption (at a minimum of 8v) = 170mA (plus 140mA for the backlight). The kit includes all the components, the PCB hardware - all you need to provide is two switches, two push buttons - and a case to put it in. The kit will cost £55 (plus postage: UK - 60p, EEC - £1.20, DX £2.00). There are a limited number of these kits so if you want one, order it soon! You can check availability and/or order from Q-QRP Club Sales (see back page). Many of the components have been obtained from UK sources, but as this was a US designed kit, I had to get some of the parts from there and my thanks go to Bill Kelsey N8ET, Glen Reid K5FX and Dave Rogers WB4CHK for their help in obtaining these. Thanks also go to the following - Trevor Jacobs KG6CYN for the design, PCBs & processors, Jay Bromley W5JAY for passing on his spare kits, Jim Giammanco N5IB for the assembly instructions, and, last but not least, Tony Fishpool G4WIF for lots of help and encouragement.

“Minimalist Radio” by G3RJV **A Short Review by Graham Firth, G3MFJ**



Most of you will know that our leader G3RJV, gives a talk at Dayton at the Four Days in May get together in May each year. George also repeats this talk with an “Anglicised” version on his talks to UK radio clubs during the rest of the year. Last year, George’s talk was been called “Minimalist Radio”, and this year is called “Yet more Minimalist Radio”. With each of these talks, George has sold a book with the same title as the talk. The principle behind the book is that everything can be built in one evening, on the kitchen table, using a minimum of components, and one will end up with a working project. George has now decided to make these books more widely available, beginning with the first and the purpose of this article is to give a short review of this publication.

Minimalist Radio is exactly that, and it is scattered with suitable quotes and tips. After a short introduction on how to solder, he moves straight onto the first project, an LM380 audio amplifier. He shows a number of construction techniques – ugly, perfboard, Manhattan pads etc. It is also worth noting that the articles are liberally illustrated with Paul Harden, NA5N drawings. Those who have seen Paul’s work, will know just how wonderful these drawings are. After the amplifier, George moves on to a simple DC receiver for 40m, then 20m – both with a simple VFO. This uses the LM380 amplifier of course.

The last project is an OXO transmitter – built using Manhattan techniques, this time with the New Jersey QRP Club pad cutter. To follow this, are power output indicator, a LP filter for the output (there is a full set of data sheets for the W3NQN design at the end of the book) and then an SWR bridge. At the end of the book are some data sheets, the relative S meter readings versus output power, QRP frequencies, identifying components, and the W3NQN LPF tables mentioned above. This is a very useful book, some 60 A5 pages – aimed at beginners, but has information that it useful to all. The style is one we all know and love – George at his best!

Minimalist Radio is available for £6.00 post paid. EU & DX price [surface mail] €10 or \$11.00 [International Money Order or paper currency] Cheques “G. C. Dobbs” Orders to 498 Manchester Road. Rochdale. OL11 3HE.

N.B.T.V.A

The Narrow Bandwidth TV Association (founded in 1975) is dedicated to low definition and mechanical forms of ATV and introduces radio amateurs to TV at an inexpensive level based on home construction. NBTVA should not be confused with SSTV which produces still pictures at a much higher definition. As TV base bandwidth is only about 7kHz recording of signals on mini cassette is easily achieved. A quarterly 12 page newsletter is produced and an annual exhibition is held in April/May in the East Midlands. If you would like to join, send a crossed cheque / postal order for £5 (or £4 plus a recent SPRAT wrapper) to Dave Gentle, G4RVI, 1 Sunny Hill, Milford, Derbys. DE56 0QR, payable to “NBTVA”

ROCHDALE QRP CONVENTION 2004

Make a note in your diary – Saturday 9th October 2004

Pottenstein-Treffen 2004

Das traditionelle Treffen in Pottenstein fuer Mitglieder des G-QRP-Clubs findet auch 2004 wieder am letzten Wochenende im April (23/24/25) statt. 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 Beiträge usw. bitte Bernd via DK3WX@DARC.de kontaktieren
vy 72 es awds Bernd,DK3WX - Fred,DJ3KK - Klaus,DL8MTG - Franz,DJ9EO

The traditional meeting in Pottenstein/Germany for members of the G-QRP-Club will be held at the last weekend of April 2004 (23/24/25). Further infos via DJ3KK, POB 801 , D-25697 Meldorf (pse SASE) and on our homepage:

<http://www.g-qrp-dl.de>

Lecture and article etc., please contact Bernd via DK3WX@DARC.de
vy 72 es hpe cu Bernd,DK3WX - Fred,DJ3KK - Klaus,DL8MTG - Franz,DJ9EO

The BARTG PSK QRP 'Party'.

Here is a little challenge based on the G-QRP Club's Winter Sports Event.

Between 00.00 GMT on 26th December 2003 and 23.59 GMT on January 1st 2004, work as many PSK stations as you can, using a maximum of 10 watts. You can use PSK31 or 63 but no other data mode.

This is NOT a contest where the usual 599-001 reports are exchanged, but normal everyday QSO's. No need to have any special software, just your usual Digipan, WinPSK or whatever you use. There are no multipliers, just different points for different bands worked.

Points: Each QSO on 80 will be worth 4 points, on 40 and 30m - 3 pts, on 20 - 2 pts, on 17 and 15 - 3 pts and on 12 and 10m - 4 points.

Log format: It is suggested that a very simple Excel spreadsheet be made up that shows: Date - Time - Call worked - Freq - Operators Name - His QTH - and points claimed.

For example:

Date	Time	Call	Freq	Name	QTH	Pts
26/12/03	10.04	RA3AA	20	Vlad	Moscow	2
27/12/03	21.45	G3WFM	80	John	P.Bar	4
01/01/04	11.38	DL4RCK	30	Walter	Wenzenbach	3

Send your logs by Friday 16th January either as an attachment to g3ura@yahoo.co.uk or, if you want, send a paper log showing the same info to Dick, QTHR, by the same date.

Remember guys that the honour system applies here, so no saying you worked all the locals on 80m when you didn't - and no turning the wick up so that you run 50 watts just because you can hear a TU2 station that would give you DXCC on PSK!

The South Normanton Alfreton & District Amateur Radio Club (SNADARC)
in association with the G-QRP Club present

4th JUNCTION 28 QRP RALLY - SATURDAY 20th MARCH 2004

VILLAGE HALL COMMUNITY CENTRE, MARKET STREET,
SOUTH NORMANTON. Nr ALFRETON, DERBYSHIRE.

Fully Signed, Just 5 minutes From M1 Junction 28 and the A38

Amateur Radio, Electronics and Related Items – Bring & Buy and Special Interest

Group Stalls - Outdoor Flea Market (weather permitting) - Full Range Of

Refreshments Available including the Traditional QRP Rally Pie And Peas -

Licensed Bar - Prize Draw. Open to the Public from 10.00am

Due to demand from previous traders, table space is limited, so please book early -

Please contact: Russell Bradley (GØOKD) - 01773-783394 -

russel.bradley@ntlworld.com

or Mike Jeffs (MØRMJ) - 01949-876523 - mike.jeffs@ntlworld.com

Further information and directions will be posted on the Club Website

<http://www.qsl.net/snadarc/>

8th RED ROSE QRP FESTIVAL

Sunday 6th June, 2004, 11am to 4pm.

Formby Hall, Alder Street (off High Street), Atherton, Manchester.

A friendly get together, intended to promote low power amateur radio operating

and home construction. Easy access from all directions - Trade and individual

stalls. Sales of new and surplus equipment and components. Club stands,

including RSGB, GQRP - Low cost "Bring & Buy. (No sell, no pay!!) Morse

receiving tests with certificates. Sales of new and surplus equipment and

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. C.W. "Sign in". Talk in on S22

Admission £1.50p - Some tables available at £7 but please book early.

Les Jackson, G4HZJ g4hzj@ntlworld.com 01942 870634



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 recently 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 transceiver.....ready to operate.

[G0ORG worked T44, PY and TZ recently]

Leaflet with details and prices for 2004 - write to G3RJV or email g3rjv@gqrp.co.uk

QRP NEWS

Club Members Honoured by the R.S.G.B.

Simon Brown - HB9DRV/GD4ELI

'Special 90th Anniversary Award'

in recognition of his contribution to the development of amateur radio technology.

Ham Radio Deluxe and the FT-817

Commander.

Peter Halpin - PH1PH/G7ECN

'Certificate of Commendation'

in recognition of his contribution to the development of amateur radio technology.

Ham Radio Deluxe and the FT-817

Commander.

The Ham Radio Deluxe suite of programs consists of a CAT - Ham Radio Deluxe - program to control most modern rigs by Icom, Kenwood and Yaesu, plus Elecraft's K2. It offers full computer control of your radio: including satellite tracking. There is a very sophisticated PSK31 program - PSK31 Deluxe - that offers speech alarms and the ability to monitor 40 QSOs consecutively; and there is a general mapping utility - Mapper - that can display Maidenhead locator information captured by PSK31 Deluxe. Mapper will also allow you to print various maps at up to 10x10 pages.

Simon and Peter have also developed the FT-817 Commander: this is a CAT program for the FT-817 only. Of course, PSK31 Deluxe and Mapper work with this too.

All the software is FREEWARE, and available from Simon's site at www.hb9drv.ch

THE QRP WARC-SPEED DX CHALLENGE

Page 39 of RADCOM July 2003 contained details of an interesting challenge over the next year, which may be of interest to G-QRP Club members .

Two American operators, K7SS and N0AX have devised a challenge, recognising the decline of sunspot activity over the coming months. Basically, the objective is to work as many DXCC entities as possible using QRP on the WARC bands (30, 17, and 12m) during the period 0000hrs on 1 June 2003 and 2359hrs on 31 May 2004. Modes to be used are CW, phone and digital on the three bands. Participants can enter as many or as few categories as they like. There is no problem with starting now as you can just total up your QSOs since 1 June 2003 and enter them as your first totals in each category. Thereafter, you can update the totals monthly.

This is a web-based challenge, requiring no QSL cards and cumbersome paperwork. Results are submitted monthly on an honour system - no padding the totals with the ones you almost worked, and no calling using QRO and then dropping down to QRP.

Jim G3NFB, who provided this information, looked back through his log for June and found that he had only 1 QSO that would qualify. Nevertheless, he has joined the challenge and is spending much more time on the WARC bands than he ever did previously in order to make his score respectable.

The organisers are encouraging local challenges, for example in local clubs. So how about it all you G-QRPer's?

See the RADCOM reference and www.hornucopia.com/3830score for more details.

ANTENNAS - ANECDOTES - AWARDS

Gus Taylor G8PG 37 Pickerill Road, Greasby, Merseyside, CH49 3ND

USING ELECTRIC LAMPS AS RF INDICATORS

Gus Taylor, G8PG.

Background

Electric lamps have a long history of use as rf indicators in amateur radio. Indeed prior to World War 2 they were universal as rf sniffers, for indicators in absorption wavemeters, and as tuning indicators for setting up certain types of antennas. Figs 1 to 6 show a number of these uses, which will now be described in greater detail.

Figure 1,

This shows a typical "rf sniffer" circuit. By coupling the single turn coil L to tuned circuits in a TX or an ATU it is possible to (a) prove whether or not there is rf present in the circuit under test and then (b) tune it for maximum rf output, simply by monitoring how brightly the lamp glows. In a practical circuit the lamp holder can be mounted on a wood or plastic handle for ease of use.

Figure 2.

In this application the lamp and coil are mounted so that they are permanently coupled to (say) the PA or ATU output circuit to allow it to be tuned for maximum output. Switch S allows the circuit to be disabled once tuning is completed.

Figure 3

In this application the lamp acts as the indicator in an absorption wavemeter, resonance being indicated by maximum lamp glow. If required coil L can be tapped and switched to provide several frequency ranges.

Figure 4.

Way back in 1937 newly licenced 17 year old G8PG managed to save up enough money to buy a cheap hot wire rf ammeter. Sadly, no one had told him how sensitive such meters are to rf power overload, and it was soon burned out! Fortunately the main antenna was a CURRENT FED type (W3EDP) so an ordinary 15 watt electric lamp was inserted at the base of the antenna, used to tune up, and shorted out when not in use, and much DX was worked. Note the words "CURRENT FED". It will not work at the base of a voltage fed antenna.

Figure 5.

This shows how two lamps are used to tune a Windom antenna for best performance. The theoretical point of feeder attachment is worked out from the antenna manual information and the feeder is attached. Two lamps are connected at equal distances from the feeder, the feeder is moved along the antenna until the two lamps glow equally brightly, the feeder is then permanently attached and the lamps are removed.

Figure 6.

This shows how two lamps are inserted one in each leg of an "up and outer" antenna to tune it for maximum performance. If both legs are high in the air this may not be necessary

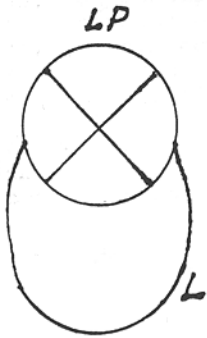


fig. 1

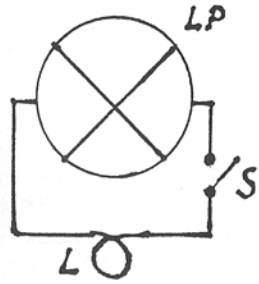


fig. 2

fig. 3

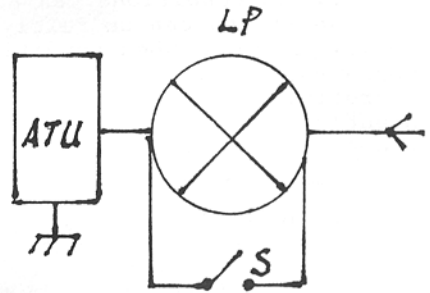
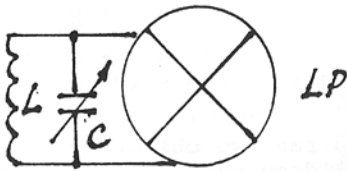


fig. 4

fig. 5

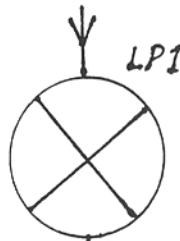
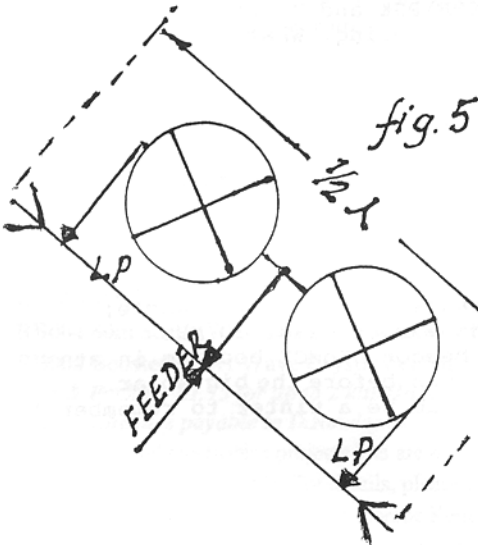
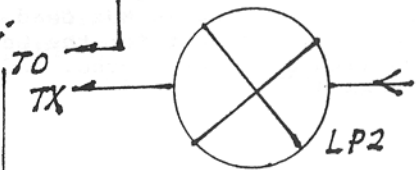


fig. 6



but if the horizontal leg is close to ground it certainly is. The method is to cut the vertical leg to formula, do the same for the horizontal leg, insert the lamps, then trim the horizontal leg until its lamp glow is the same as that of the vertical leg. In tests by that Grand OM Rockey (W9SCH) he found that if the horizontal leg was 1m above ground it had to be shortened by over a meter to bring the two halves of the antenna into current balance. (This could be an important point when using counterpoise wires close to ground, as using the theoretical length may not give resonance.)

On a sad note, Rockey, W9SCH, is now QRT because of serious health problems. One is sure we all wish him well.

COULD THIS BE THE END OF AAA ?

Despite the appeal in our last issue the input of antenna articles has been virtually nil, and Award applications are a shadow of what they were 12 months ago. The latter may be due to bad conditions, but the lack of antenna work is a different matter. Bad conditions can actually help antenna development because if you can do fairly well under poor conditions you can really go to town when conditions are good. So the ball is in your court : unless more of you send in your ideas I will very regretfully have to give up producing the AAA feature. Put bluntly, you cannot build a house with no bricks !!

(P.S. Written later. Many thanks to two the Members who have sent me info on antennas.)

CHILDRENS QRP CAMPS IN THE CZECH REPUBLIC

Congratulation to the OK QRP Club who ran two childrens QRP camps during the summer of 2003. The 32 children under 15 years old who took part built morse keys, simple radios, and power supplies, and enjoyed demonstrations of CW,SSB,PSK and MS operation.They also took part in field sports and canoeing. What a good idea!

AWARD NEWS

Hearty congratulations to the following.

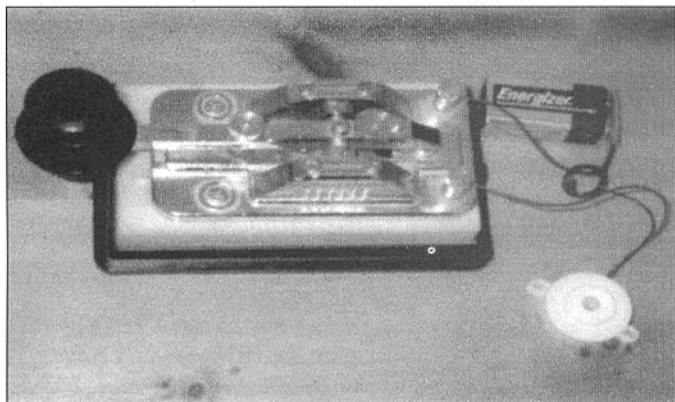
QEP Countries. 200 2Eo000 Wow !! ; 100 G4LDS all SSB,Well done !

Worked G QRP Club. 300, DJ3LR ; 220 GW4ALG ; 140;2Eo000.

The above shows that the sun and magnetic field are still very active and producing some very strange conditions. Example; 2200 one evening 14 MHz dead, 7 Mhz almost dead, 10 MHz almost dead except for the German Beacon DKoWCY booming in at 599 with an auroral echo. And that was before the big solar flares at the end of October. It could be a winter to remember !

Two Small Tips for SPRAT Readers

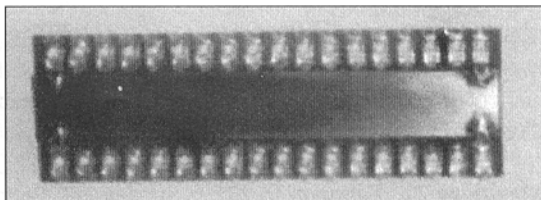
George Woodworth, GW4ZAG, 136 Wepre Park, Connah's Quay.
Flintshire. CH5 4HW



Looking for a cheap Morse Practice Oscillator, then this might be the answer. Purchased from Bowwoods Electronics Ltd for 95 pence, Piezo Sounder with built in oscillator. Just add a battery, a switch, box it or perhaps build it in a QRP rig.

TAG Board Construction

It is difficult to establish a good neat method to build small projects. There are a number of methods on the market such as the Island method and so forth. I use a tag board with a piece of PCB soldered down the centre, so that there is a common ground plane. Not the most wonderful method in the world, but far better than lots of ugly construction. It enables the easy soldering to earth from any side, IC's are glued upside down on to the ground plane, with their legs spread, allowing plenty of room for soldering.



Micro Radio Products

A range of economical easily built projects on Tripad circuit board. This offers advantages on cost.

The current range is shown below:-

New Regenerative 80m Rx now available!

RB001 Regenerative SW Broadcast Radio £10.40

RB002 AF Amplifier £5.40

RB003 MW Radio £8.50

RB004 80m SSB/CW Regenerative Receiver * New ***£11.50**

RB005 Boosted Short Wave Crystal Set (Aprox 6 - 15 MHz) £9.70

Post & Packing £1.75 for up to 2 kits (Increase unfortunately necessary due to increased postal rates.) Cheques payable to D.Rowlands. Please allow up to 28 days for delivery.

Other radio and electronics projects kits are being developed. Details will be advertised in SPRAT when they become available. For details, please send SAE to D Rowlands, Micro Radio Products Dept. GQ 7 Broomfield Road Swanscombe Kent DA1 0 0LU Tel 01322 381303 (ask for David) after 7pm or Email to Microradio@Telco4u.net mentioning SPRAT.

COMMUNICATIONS AND CONTESTS

Peter Barville G3XJS

e-mail: g3xjs@gqrp.co.uk

40 Watchet Lane, Holmer Green, High Wycombe, Bucks HP15 6UG.

The 'eagle eyed' amongst you will notice that there has been a subtle change to my email address, quoted above.

WINTER SPORTS

If you receive your copy of SPRAT in good time, you'll be too busy enjoying Winter Sports to spend time reading it! A brief reminder that the event runs (as every year) between 26th December, and 1st January inclusive. There are no rules, other than a requirement that you make as many contacts as possible using QRP, and there is no requirement to work out a points score. Put quite simply, have a QRP Ball, and send me your logs as soon as possible.

We know the usual QRP spots will be busy, but if operating on the HF bands is 'your thing', then please don't ignore the WARC bands, which are so often a rich source of successful low power contacts. You might prefer VHF and/or UHF, in which case you are equally welcome to join the fun and submit your log. Give yourself the chance of winning the G4DQP Trophy, which will be awarded to the member considered to have contributed most to the event.

CZEBRIS 2004

Why not enjoy a weekend of gentle contesting – or even a more serious foray – during the annual get-together with our colleagues from the Czech and Slovak Republics? In case you've forgotten, a brief reminder of the rules:

1600z Friday 27th February to 2359z Sunday 29th February, around the usual QRP cw frequencies: 3560, 7030, 14060, 21060, 28060kHz, +VHF/UHF if conditions permit.

Your Location

QSO With Station In

	UK	OK/OM	Eu	Non-Eu
UK :	2	4	2	3
OK/OM :	4	2	2	3
Eu :	4	4	1	2
Non-Eu :	4	4	2	1

No multipliers. Final score is total number of points scored. Separate logs for each band showing (for each qso) date, time, callsign, exchange sent/received, and a summary sheet showing your name, callsign, claimed score for each band, and brief details of your station should be sent by the end of April to G3XJS (UK entries). Non-UK entries go to OK1AJ (Karel Behounek, Na sancich 1181, 533705 Chrudim IV, Czech Republic). We are both happy to receive logs by email: "g3xjs@gqrp.co.uk" and "karel.line@seznam.cz".

SOMERSET HOMEBREW CONTEST

There will be no Somerset HBC in 2004. In its place, but at a time yet to be decided, Tim Walford is considering the possibility of organising a constructional challenge. If you have any thoughts (positive, or otherwise) on the subject, we will both welcome your comments.

YEOVIL QRP CONVENTION 2004

Details are still being finalised for the 2004 Convention, but I can tell you that the date to put in your new diary is Sunday 18th April. As before, the venue is the Digby Hall, Sherborne.

The FunRun will take place between Tuesday 23rd March and Friday 26th March, with similar rules and format as before, but Bonus Stations have yet to be chosen.

Yeovil QRP Convention Constructional Challenge 2004

To build a device using only passive components which will receive and measure the frequency of a carrier wave radiated between 3.5 and 3.6 MHz. The test transmitter will have an output of about 1 watt into an unscreened dummy load. The winner will be the one who most accurately measures the frequency.

EUCW 160m CONTEST 2004

Full details can be found at http://perso.club-internet.fr/jacar/eucw_160m.html, where you can choose from seven different languages!

The Contest will run from 2000z to 2300z on Saturday 3rd January, and from 0400z to 0700z on Sunday 4th January on CW between 1810kHz and 1840kHz.

May 2004 bring you many hours of QRP FUN, and let me have (by the end of January) any items of news you'd like included in the next issue.

72 de QRPeter

~~~~~

## **Member's Adverts:**

WANTED: HOWES kits, unbuilt, built, manuals, enclosures (especially the box for DFD5 digital display board which I have). I hope to assemble a HOWES station. Ken Ketner, Lubbock, TX, GQRP # 809, KA5ELD, email [ketner@arisbeassociates.com](mailto:ketner@arisbeassociates.com).

WANTED: grid dip oscillator preferably an old Heathkit type or transistor type.  
Chris Lee G6BQJ 01983 884958

# 2004 QRP CALENDAR

|                                      |                                                                                           |
|--------------------------------------|-------------------------------------------------------------------------------------------|
| 1st Jan:                             | Last day of Winter Sports                                                                 |
| 3/4th Jan:                           | 2000z-2300z EUCW 160m Contest -                                                           |
| 1st Feb:                             | Last Day for Winter Sports logs to G3XJS                                                  |
| 15th Feb:                            | Last Day for Chelmsley 2003 logs to G3XJS                                                 |
| 27th Feb to<br>29 <sup>th</sup> Feb: | 1600z Friday to 2359z Sunday CZEBRIS                                                      |
| 7th Mar:                             | AGCW Contest                                                                              |
| 23rd Mar to<br>26th Mar:             | Yeovil FunRun 1900-2100z each day                                                         |
| 12th Apr:                            | 1400z-2000z (Every Easter Monday) Slovak Low Power Sprint                                 |
| 18 <sup>th</sup> April:              | Yeovil QRP Convention                                                                     |
| 30th Apr:                            | Last Day for CZEBRIS logs to G3XJS and OK1AIJ                                             |
| 2nd May:                             | 1300z-1900z AGCW QRP/QRP Contest (Rules: <a href="http://www.agcw.de/">www.agcw.de/</a> ) |
| 8th June:                            | Red Rose QRP Festival                                                                     |
| 17th Jun:                            | IARU Region 1 International QRP Day Contest                                               |
| 3rd to<br>4th Jul:                   | 1500z-1500z Original QRP Contest                                                          |
| 16th Jul:                            | Last Day for International QRP Day Contest logs to G3XJS                                  |
| 9th Oct:                             | Rochdale QRP Convention.                                                                  |
| 21st Nov:                            | 1300-1700z QRP Contest Community HOT PARTY (every 3rd Sunday in November)                 |
| 26th Dec -<br>1st Jan 2005:          | G-QRP Winter Sports                                                                       |
| 25th to<br>26th Dec:                 | Original QRP Contest                                                                      |

Please advise G3XJS of any errors, or omissions.

**Don't Forget.....**  
**THE QRP CLUB WINTER SPORTS**  
**EVERYDAY – DECEMBER 26<sup>th</sup> to JANUARY 1st**  
**Call "CQ QRP"**  
**on the International QRP Frequencies**

**CW:**

1843, 3560, 7030, 10116, 14060, 18096, 21060, 24906,  
28060

**SSB:**

3690, 7090, 14285, 21285, 18130, 24950, 28360 kHz

## SSB & Data Report

Dick Pascoe GØBPS. Seaview, Crete Road East. Folkestone. CT18 7EG  
Tel 01303 894390 – Email gØbps@gqrp.com

Peter PE1MHO has decided to be vain and exchange PE1MHO for PH1PH. Peter along with Simon HB9DRV they have both been honoured by the RSGB for their work on their computer program Ham Radio Deluxe, they are always adding support for new rigs. Check [www.hb9drv.ch](http://www.hb9drv.ch) for the latest info. I should mention that this software is FREE. Pete's best PSK31 QRP DX at the moment is DU3MEL, using 5W in a 1/2-size G5RV (15m). Nicest "DX" was cracking a 40m pile-up for HB0/DL6KAC (in SSB)

Paddy VU2PEP worked MW0USK getting a report of 57 from him. The equipment was a simple homebrew QRP HF transceiver running 4W into a 2 element homebrew Yagi. Check out the rig at <http://farhan.net.co.nr/xcvr1.html>. Klaus G7RTI/M bagged OE6 with 42-52 report with just 500mW SSB from an FT817 on battery pack.

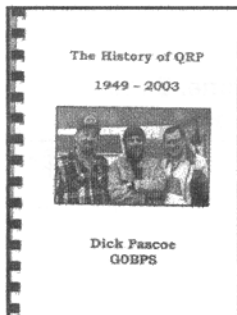
Rod G3TXA writes; It's good to see that QRP SSB operation has become popular, due to these FT 817's and 5 watts on SSB, using inverted 'V' dipoles, to be more than sufficient to make good contacts, especially using data modes, PSK31 and MFSK etc. Brian GØNSL was glad to see some of the more positive comments on QRP / SSB operation, he have only ever operated like that for his 13 years on the air, either 1 watt or 5 watts from his TS-130V's and the 40m Horizontal Wire Loop at 24 ft, so far he is up to 251 DXCC countries wkd/confd; come and try it to all the mike shy QRPer 's

Darren MW5HOC favourite contact so far is W2FU on 40M SSB running 2.5 watts into a dipole! (During a contest) worked KC1XX on 5 Watts and W2FU on the Sunday on 2.5. Boy, was he surprised to hear my power level. From the Camper van worked JQ2EHG on 15M SSB 5 watts using a mobile whip! In one afternoon worked 32 U.S states on 5 watts on 10M SSB. QRP SSB certainly does work!

Stuart K5KVH wrote; on Tuesday, 11 Nov. (Z) at 0300 Z, I took a quick tune from bottom of 20m and up. Dreadful sounds of only computer noise, strays and usual indications of AGC opening up gain on a dead band. Nothing in way of CW or digital signals at all. A typical 'Dead Band'. Then, I tuned up to the SSB portion and found Bill KI4ABT, I answered his CQ lamenting poor bands and how we were the only signals each had heard. Suddenly, I was broken by ZK1JD, Jim, in the South Cook Islands, who was hearing us both! In short order we were broken by ZL1BDQ, Stuart, North of Auckland, ZL2KOT, Keith, on North Island, N. Z., and finally by K1UFO/4, Willy, of Gainesville, FL.

Dave G0DJA has been trying PSK63 and thinks it may be better for contest work or the snappy QSO, he doubts it will take over from PSK31 though.

That's it for another month; enjoy the New Year and all that it might bring for you. Your news and views to me please at [gØbps@gqrp.co.uk](mailto:gØbps@gqrp.co.uk)



A new book on QRP

## ***The History of QRP 1949 – 2003***

By; Dick Pascoe G0BPS.

Full of details of past and present clubs, the people in the hobby and much more.

**New Year Sale Price £8.00 Inc UK postage (NON UK buyers £10.00 or US\$15)**

Also Available: Introducing QRP £5 Inc post (outside UK \$10) reprinted 'Pascoe's Penny Pinchers', £5 inc postage

Seaview, Crete Road East. Folkestone. CT18 7EG, Email Dick@trickie.com

## **'Copper Island' Construction Outfit**

Complete 262-Piece Outfit for 'Manhattan-Style' Construction,  
The Alternative "Surface Mount" Technology - Without the Eyestrain!  
No Etching With Messy Chemicals - No Drilling Tiny Holes - Simply Glue & Solder!

Outfit contains 200 x 5mm Round Pads - 20 x 8 Pin, 15 x 14 Pin, 10 x 16 pin IC Pads, 10 x Pads for KANK Series Coils, 48 Sq.Inches of Single-Sided Copper Laminate Board. Tools included: Tweezers, Adhesive, Solid Abrasive Block, Pressure Rod, Full Instructions. All You Need in a Handy Compartment Box with Hinged Lid - Just Add Your Components!

Complete Outfit Just £15.00 + £2.95 P&P, By Mail Order Only, From:-

**Mr. D. J. Walters, 11 King George V Avenue, Mansfield, Notts. NG18 4ER  
01623 465443**

[www.copperisland.biz](http://www.copperisland.biz) E-mail: [pentode@ntlworld.com](mailto:pentode@ntlworld.com)

## **SIMPLE TEST EQUIPMENT FOR THE QRPer**

*"A wonderfully useful book by G3MFJ and G4WIF*

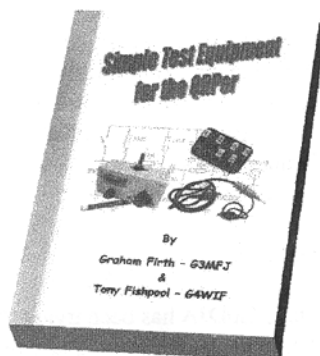
*... A must for any QRP library .. in fact, I wish I had written it!" - G3RJV*

*"Don't be mislead by the title, this book will be useful for any amateur... excellent source book"*

*- Review - Jan 2003 Radcom.*

20 projects in a 58 page book. The U.K. price is £6.00 post paid. The EU & DX price (surface mail) is £6.50 post paid.

Airmail £7.50 post paid. EU & DX orders International Money Order only. Make cheques & money orders payable to "G.Firth" and post to 13, Wynmore Drive, Bramhope, Leeds, LS16 9DQ UK - see [www.fishpool.org.uk](http://www.fishpool.org.uk) for U.S. orders.



# MEMBERS' NEWS



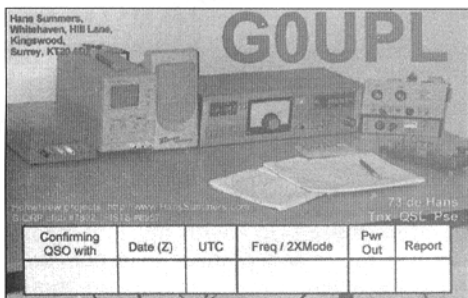
## by Chris Page G4BUE

Highcroft Farmhouse, Gay Street,  
Pulborough, West Sussex RH20 2HJ.

Tel: 01798 815711

E-mail: g4bue@adur-press.co.uk

Congratulations to **GM3OXX** on a two-way QRP QSO with Roy, **DU9/G4UNL** on 14060kHz at the end of August and to **G4LDS** for making his first VK QSO, on 15m with 5W PEP to a HQ mini beam. Congratulations also to Pete, **PH1PH/G7ECN**, who has WAC on two-way QRP SSB and DXCC on one-way QRP on 6m. Now congratulations to **GØUPL** on the arrival of baby Sara on 1 April "with a very QRO voice and requiring much attention which severely limits radio activity". Despite Sara, Hans has converted his one-valve 80m CW transmitter to 40m by adding relay switched 40m QRP crystals and a relay tap half way along the pi-network output coil. He now gets up to 10W out on 80m and 8W on 40m, although



Hans's, **GØUPL**, QSL card showing his operating position.

he says he almost always turns the power down to 5W QRP.

**GWØVSW** was QRV from Gibraltar and despite poor conditions most of the time, Carl QSO'd members Leonce, **F6CZC**; Aga, **EA8BY**, and Roy, **G4PRL** on 20m. **G4HZJ** says the 8th Red Rose QRP Festival will be held on 6 June 2004 in Manchester. Further details from Les (<g4hzj@ntlworld.com> and tel: 01942 870634). **MØCZP** has worked over 25 DXCC on 80m with 5W from his Epiphyte. Tim says, "I confirm that QRP SSB works well. The antenna is an inverted vee (ish!), 66 feet legs, from the chimney (about 25 feet) down to the fence (about eight feet) fed with RG58 and a home-made balun". He is building the K2.



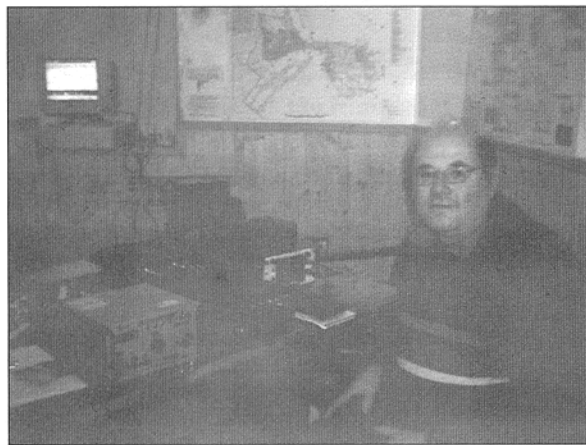
QSL card of Carl, **GWØVSW**, for his recent ZB operation.

In an effort to encourage members who have to use very poor antennas, **DL2BQD** says he "bagged a new country yesterday afternoon (13 September) during the HB9 HTC QRP Sprint. **LZ2RS** was also there proudly showing his new K1. The amazing fact is that I use a 'concrete embedded antenna', (I run a nearly invisible pale wire up from my window very close to the concrete wall and then along the flat roof only at nose level on one metre bamboo spreaders from chimney to chimney just above all these iron armament of a flat concrete roof, a large iron carpet!). Obviously I pick up all the electronic rubbish from the flats, very noisy hash. This kind of long-wire is about 12 metres up and about 20 metres long, but it works!"

Elecraft announced their new KX1 multi-band CW transceiver at the beginning of September, which they say is optimised for

backpacking and travel use. Priced at \$279, it has an internal battery, internal automatic ATU, plug-in keyer paddle and log book lamp. It measures 1.2 x 3 x 5.3 inches and unlike most other transceivers, the controls are mounted on the top. Bands covered are 20 and 40m bands and optionally 30m. Full details are on the KX1 page of the Elecraft Web site at <<http://www.elecraft.com>>. I would be pleased to receive reports from the users of the rig for future *Members' News* columns. **HB9DRV** has recently added support for the K2 to his *Ham Radio Deluxe* software. Simon's software can be downloaded at <<http://sysgem.decus.ch/hb9drv/HamRadioDeluxeBuild140.exe>>. **PH1PN** says that satellite tracking has also been added to it.

On 21/22 November **EI5EM** was the HF operator of **EI4LDF**, from the Martello Tower, Howth to celebrate the centenary of Lee deForest's wireless telegraphy experiments and demonstration to engineers of the British Post Office in 1903. Tony used QRP with his homebrew CW rig on 7030kHz to work many stations



**Tony, EI5EM, operating EI4LDF in November.**

**GW7HOC** says, "2m QRP can be great fun. I remember staying up to the early hours in the depth of winter working away until the lift had died. The next morning, my neighbour (also an amateur) moaned at me because of the noise of my rotator whining away all night. When I showed him log

of all the countries I had worked on 2m with just 2½W, he got a little envious and stopped moaning!" Referring to HF Daren says, "Contests are always good for QRP DX. We were staying near Birmingham in our camper-van. The FT-817 was in the dash and my Sandpiper 'Plug-in' was on the gutter. On Sunday I had a listen on 15m when I heard **JQ2EHG** at S9+10. On my second shout he called me back. Japan on 5W from a camper-van parked under trees on a mobile antenna! It doesn't get a lot better than that. Later, while driving home down the M50, I worked five or six USA stations. Working USA when driving along 70 MPH down the motorway is also a very nice experience!"

**JA9MAT** has built a small TX and RX which he has put on the Internet at <<http://www.geocities.jp/qrper72/wbr/wbr.htm>>. Hide says the TX is from G QRP-6 Pack kit and the RX is from the August 2001 *QST*. On 21 September he made ten two-way QRP QSOs during the JA-QRPer On-Air-Meeting on 7003kHz. **G4GZG** upgraded his K1 to a four band transceiver in the summer giving Larry 40, 30, 20 and 17m. Best results have been on 30m with **4S7NE**, various JAs and Ws all worked off his 66 feet centred at 30 feet. **N2CQR/CU2JL** is QRV from South Kensington in London as **MØHBR**. Bill likes 17m SSB with his trusty Drake 2B and the transmitter he built in the Azores. He wonders if there are any other club members in Central London( e-mail: <[meara.london@virgin.net](mailto:meara.london@virgin.net)>)?

On 5 October **M5AEF** had a QSO with **RX3BO**, in Moscow with 1W on 18075kHz. Nothing particularly remarkable about that you might think, but listen to what Robin says he was using for an antenna, "Well actually I wasn't using any antenna at all! I was just re-calibrating my FT-757 with my low-reading power meter and dummy load connected and the antenna was connected to another transceiver entirely. Even more remarkable is the 559 report I received from Anatoly. I

gave him 559 and admittedly, Anatoly struggled when another station came within a few hundred Hertz, but I was fully copied through the QRM in Moscow. I did not even have a proper key connected at the time, I was using the PTT key to send CW, amateur or what! A few minutes later I made a second contact with Anatoly, using my 1.5 wavelength antenna connected and we exchanged 579 both ways. Figure that one out!

40 and 20m with 5W or less to a parallel 40/20m inverted vee dipole with the apex at four metres. John has worked several USA stations and **ZA1A** calling 'CQ QRP' on 14058kHz in November receiving a 599 report. He has just ordered the four band upgrade kit for the K1. **LA3ZA** had his day made on 10 October when he answered **JA1KGW**'s QRP call on 21060kHz and an hour later heard him again, called him and

requested a QSY to 18086kHz for a second band. Sverre asked to try 14060 kHz for a third band (after unsuccessfully trying 12m) in one day. **JA1KGW** used a TS-130V and Sverre a K2, both at 5W The JA was using a TH11DX beam and Sverre a 75 metre horizontal loop average 10m high.

Please let me know how your winter goes, together with any pictures you have, by 20 February, please. June and I wish you and

your families a very Happy Christmas and a healthy (and good QRP) New Year.



Each year since 1996 a small team of QRP enthusiasts have attended the Iseramat Hamfest at Tullins (near Grenoble) in France. 2003 was no exception and for two days the group were able to show off their home-made QRP radios, transceivers kits (SST20, NC40, SW+), HF antennas (Isotron, magnetic-loop) and PIC 16F84 projects (CW decoder, frequency meter). The photograph below shows The GG-QRP Club Team, native of Grenoble (l to r) **F6GK, F5GQN, F6EPW, F5CFN, F5DOG** and **F5RQG**. The group thank the G-QRP Club for their logistical assistance that allowed them to build the beautiful stand shown in the picture.

**GM4SLV** is QRV with a K1 from Shetland and has worked 36 DXCC on



**Juan, EA5XQ, making an SSB QSO with his FT-817 and /P antenna!**

**Rig Broken or needs alignment?**  
Commercial/Homebrew equipment repaired & aligned  
Ten-Tec repair specialist, spare parts ordering service available

## Adur Communications

Belmont Buildings, The Street, Bramber, West Sussex. 01903 879526

### Ten-Tec Kits Now In Stock

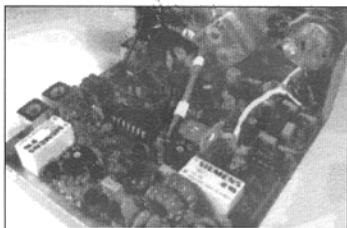
**www.g3tux.co.uk - for kits, keys QRP**

Just arrived: FT 817 'Pack It' operating manual for FT817 -  
the famous Yellow Book by VE3AYR, now in **2nd edition!**

Palm **Code Cube** keyer, slots into the back of your Palm mini paddles. Uses PK3 keyer chip.  
Another stunning design from DL9SCO. DF4ZS **RF Speech Clipper** for FT817, mounts in the  
MH31 mic. continues to sell faster than Jo can produce them!

**Wide range of FT817 accessories and aerials, +kits and keys**

Check the website for prices/ordering 73, Chris G3TUX



### Three New Kits

**The Fivehead - any single band phone  
superhet TCVR, 20 - 160m. 1.5W £79**

**The 10 Watt Linear - suits all Somerset 1.5 W  
transmitters - to 20m & small! £24**

**The AMU - T match with resistive matching  
bridge- balanced or not feeders, 10-160 £32**

**P&P £1 - see kit details on [www.users.globalnet.co.uk/~walfor](http://www.users.globalnet.co.uk/~walfor)**

**WALFORD ELECTRONICS** Upton Bridge Farm, Long Sutton, Langport, Somerset TA10 9NJ

### May the Gauss be with you!! Tesla these out today.

The force will be with you, with these very strong **Magnets**. Powerful & charged to saturation.  
30mm square 14mm thick. 10 for £12 or 100 for £60 post paid (UK)

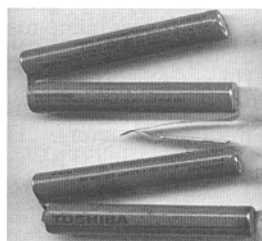
### One Cell of an offer Still available

A rechargeable battery pack containing 4 x AAA-L cells. The  
AAA-L cell is the same diameter as the AAA, but the length is the  
same as the AA cell. Therefore an ideal cost effective replacement  
for an AA cell should you, with a little ingenuity, find a suitable  
sleeve to build up the diameter slightly.

They are NiMH reportedly being of 1Ahr in capacity. A Test by  
G4XAT showed 850 mAHr.

These cells are all new, manufactured by Toshiba.

We offer as follows 4 packs, that is a total of 16 cells, for £7.00  
including UK P&P.



**Ni-Cads just arrived:-** All new branded stock retail packed.

700mAH Ni-Cad AA 12 for £10 ALSO 100mAH Ni-Cad PP3 3 for £12 All post paid (UK)

Look out for us at the rallies, or use mail order: - Sorry Magnets not available for export.

**JAB Electronic Components. PO Box 5774. Birmingham B44 8PJ**

Fax 0121-681-1329 e-mail [Peter@JAB.demon.co.uk](mailto:Peter@JAB.demon.co.uk)

**Our web site is now being built at [www.jabdog.com](http://www.jabdog.com)**

Cheque or Postal Orders (Payable to P A Thomas please). MasterCard or VISA also welcome.

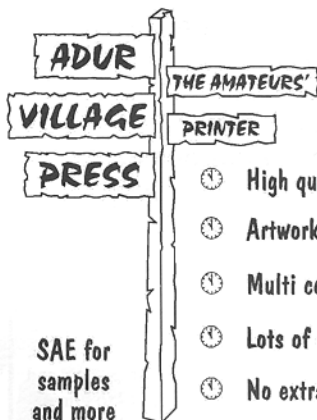


# THE SPECIALIST QSL CARD PRINTER

from

## ADUR VILLAGE PRESS

(Chris Page, G4BUE)



SAE for  
samples  
and more  
details to:-

- ⌚ High quality designing and printing but cheap prices and fast turn around
- ⌚ Artwork and proof included in the price - minimum order just 250 cards
- ⌚ Multi colour and two sided QSLs - standard thickness or thicker card
- ⌚ Lots of amateur radio clip-art available or your drawing scanned to size
- ⌚ No extra charge for coloured ink or card - guaranteed satisfaction
- ⌚ Four cheaper basic designs to choose from for contest / general QSLing



Highcroft Farmhouse, Gay Street, Pulborough, West Sussex RH20 2HJ.

Telephone: 01798 815711

VAT 620 5819 54

E-mail: g4bue@adur-press.co.uk

## Bowood Electronics Ltd

### Suppliers of electronic components

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

Catalogue available NOW Please send 41p stamp or visit our website.

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

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



Mail order only.

7 Bakewell Road, Baslow, Derbyshire. DE45 1RE.

UK Telephone/Fax: 01246 583777

# QRPproject - QRP and Homebrew International, Berlin Germany

Official distributor of

Hands Electronics, Wilderness Radio, Small Wonder Labs, OHR, DL-QRP-AG and Ulm-key.

QRP-Kits and more. All kits with Warranty of Functionality (WoF), Alignment Service,




Helpdesk (e-mail), German or English manuals, Supported by QRPeter DL2FI

Visit our homepage <http://www.qrpproject.de> or ask for free catalog

All orders can be done by e-shop system or surface mail.

**QRPproject, Saarstr. 13, 12161 Berlin, Germany.**

Tel: +493085961323. Fax: +493085961324 e-mail: [sales@qrpproject.de](mailto:sales@qrpproject.de)



## Morsum Magnificat

Of interest to all CW operators, whether veteran or novice, this unique bi-monthly magazine provides an invaluable source of interest, reference and record relating to Morse telegraphy past, present and future. Annual subscription (6 issues) is £15 to UK, £17 to Europe, £20 world-wide, or send £2.50 for a sample issue. All cheques payable to Morsum Magnificat.

Published by The Niski Partnership, The Poplars, Wistanswick, Market Drayton, Shropshire TF9 2BA.  
Tel: 01630 638306 - Fax: 01630 638051 - Email: [zyg@morsemag.com](mailto:zyg@morsemag.com) - Web: <http://www.morsemag.com>

## I-Q Electronic Design

69 Angus Close, Chessington,  
Surrey. KT9 2BN

### QUARTZ CRYSTALS

400kHz/£3.95

455.2kHz/£1.75

1MHz/£2.95

1.4MHz/£9.95

2.00MHz/£2.95

3.560MHz/£3.50

4.00MHz/£0.25

4.194304MHz/£0.10

4.9152MHz/£1.70

8.9985MHz/£2.95

9.0MHz/£2.95

9.0015MHz/£2.95

10.7MHz/£1.54

11.0592MHz/£1.60

11.155MHz/£3.50

Parallel resonance 30pF Load C. HC49 package

P & P £1.50 + 17.5% VAT

~Crystal & Ceramic Filters ~Yaesu crystals

~Matched crystals, filter applcn, 9MHz & 10MHz +/- 50Hz £18/8 units

~1.4MHz USB/LSB Filters £15.00. ~10.7MHz 10kHz Filters £10.50

Xtal Circuits, Applications Booklet £5.00. Ceramic Resonators, Applications Booklet £3.50

Tel: 020 8391 0545, Fax: 020 8391 5258, email: [vincent@jakomin.fsnet.co.uk](mailto:vincent@jakomin.fsnet.co.uk)

## KEYSOLAR SYSTEMS

4 GLANMOR CRESCENT  
NEWPORT  
GWENT NP9 8AX  
TEL/FAX 0633 - 280958

### Small Scale Solar and Wind Power

New Range of P.V. Modules with 6 & 10 yr Warranty. DIY Wind Generator Plans & Parts

Book and Booklets on all types of Power Generation and other projects

Ring or FAX for special offer PV Plates and details of our range of "repaired" modules

For Info Sheets enclose SAE SPRAT Size + 38p stamps

*"Nice rig, shame about the dial..."*

Enhance your project with an FD-01 digital display from Cumbria Designs! 100MHz operation, User definable IF Offsets and Multiplier factors, Delta Mode, S-Meter, Bar Meter, Backlight, Mode indicators and much more...

**Rx 50.250,00 MHz**

■■■■■■■■■■■9+ 40 USB

For details visit [www.cumbriadesigns.co.uk](http://www.cumbriadesigns.co.uk) or SAE: Cumbria Designs, The Steading, Stainton, PENRITH, Cumbria, CA11 0ES, UK

# Practical Wireless

THE UK'S BEST AND ONLY INDEPENDENT AMATEUR RADIO MAGAZINE

## Radio Basics

Rob Mannion G3XFD's simple circuits

## Carrying on the Practical Way

by SPRAT's own Rev. George Dobbs G3RJV

## Tex's Tips and Topics

Tex Swann G1TEX/M3NGS looks at helpful hints and topics

Plus all your regular favourites including:

- Amateur Radio Waves
  - Bargain Basement
  - Club News
  - Keylines
  - News
  - Radio Scene
  - Valve & Vintage
- and much, much more!

SUBSCRIPTIONS (UK&WORLDWIDE): +44 (0)8702 247830. E-mail: [joan@pwpublishing.ltd.uk](mailto:joan@pwpublishing.ltd.uk)

## Two Way QRP QSL Labels and Blank G-QRP QSL Cards

**QRP Labels:** Black Lettering on Gold with Club Logo : 200 labels £2. Post inc.

**Blank QSL Cards:** You complete your address and call. Blue lettering on white card, 5.5" x 3.5". 100 cards £4. Post inc. Sample from :

M.L. Prickett [Max] G3BSK, 260 Haslucks Green Road, Solihull, West Midlands. B90 2LR.

Cheques: "M.L. Prickett" [The G QRP Club benefits from each order]

# GQR Club Sales

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

HW handbook by Mike Brice – new edition. £10 } plus postage per book: UK - £1.35;  
GQR Club Antenna Handbook. £5 } EEC - £3.20; DX - £3.80

6 pole 9MHz SSB crystal filter 2.2kHz @ 6 dB, 500ohm in/out £12 } plus postage: UK - 50p;  
6 pole 9MHz CW crystal filter 500Hz @ 6dB, 50ohm in/out £12 } EEC - 80p; DX - £1

Polyvaricon capacitors – 2 gang (A = 8 – 140pF, O = 6 – 80pF) cw shaft ext & mntg screws £2 } plus postage

Pair LSB/USB carrier crystals HC18U wires - [9MHz ± 1.5kHz] £6 pair } (ANY quantity).

Colour TV crystals – US (3.579MHz) 25p each } 30p (UK),

4.096MHz crystals /2<sup>12</sup> = 1kHz) – 20p each, SA602AN - £1.75 } 60p EEC,

Ceramic resonators – 3.68MHz – 50p each – limited quantities } 80p (DX)

Varicap diodes – MVM109 – 40pF @ 9v, 500pF @ 1v. 75p each – max of 2 per member } All post

CA741 op-amps 8pin DIL – 5 for £1; CA3046 quad transistor array – 5 for £1 } free if

IRF510 FETs £1.25 each; Electret mic inserts – 10p each } ordered

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

BFX29 transistors (pnp) T-100MHz, hFE-125, VCBO-60V) – 5 for 50p } heavier

MK484 radio on a chip - £1.00 inc postage & circuit diagram. } items

Toroid cores – Priced per pack of 5 – max of 2 packs of each per member

T37-2 – 65p; T37-6 – 75p; T50-2 – 90p; T50-6 – £1.10; T68-2 – £1.80; T68-6 – £2.20

FT37-43 – 70p; FT50-43 – £1.20; FT37-61 – £1.00; FT50-61 – £1.20

Plus postage – up to 5 packs = 30p (UK), 50p (EEC), 75p (DX); 5 – 10 packs = 60p, £1, £1.50 etc.

Please note some slight price adjustments on these. (The packs may have the old prices on them!)

Sprat on CD (1 to 109) – £10 inc postage.

G-QRP Club mouse mats £3.50 each inc post UK £4.00 EEC & DX

MAR-4 RF amplifier – 8dB gain at DC to 1GHz! £1.75 each inc postage – Limited stock – one per member!

Calling frequency crystals

(watch crystal size – very low power) – 3.560, 7.030, 10.106, 18.096, 21.060, 24.906, 28.060. These should be used in very low power circuits – they are tested before dispatch & no returns can be entertained. Also, HC49U wires – 7.030MHz. All £2 each, plus postage as for IRF510 Very limited stock – one of each frequency per member.

Binders for Sprat – the original 'nylon string' binding type back in stock again! Black with club logo on spine £3.75 each plus postage (one: UK – 75p, EEC – £1.50, DX – £2.00. More +60p, 75p, £1 each)

Back issues of SPRAT are still available as previous ads

## New Items

HC49U crystals for all CW calling frequencies – 3,560, 7,030, 10,106, 14,060, 18,096, 24,906, & 28,060 – £2.00 each (at the time of writing these are ordered, and I expect them to be here by the time this issue hits the streets!)

DDS kit – see article – again, at the time of writing, most parts are here and all are ordered – these should be here very soon.

More toroids: FT37-7 - 0.75p, FT50-1 - £1.00, FT50-7 - £1.00, FT50-10 - £1.20; BN-43-2402 - £1.00 per pack of 5 (all plus postage as toroids above) – limited stock – max of 5 per member

NB I am temporarily out of stock of the Drew Diamond book, also, I am out of stock of MC1350 & 7.2MHz resonators (no more supplies expected), and 14.060 miniature crystals (it could be 4 months before I get any more of these)

To keep within second class postage limits, orders may be sent in more than one package!

Cheques and payable to G-QRP Club. Sorry, but cheques in Euros are uneconomical to us due to bank exchange charges! Visa/Mastercard. Please quote full card number/expiry date. We can only send the goods to the card owner's registered address. Sorry, we do not accept Debit Cards such as Switch or Connect.

UK members only – to help reduce our bank charges, please can you use cheques/credit cards only for orders over £5. For orders less than £5 – please use postage stamps (any denomination £1 or less please)

We can also accept cash in GB Pound, or US\$, or Euros – but please send securely!

You can order via e-mail to [g3mfj@gqrp.com](mailto:g3mfj@gqrp.com) and if you wish to send credit card details over e-mail, you can send them, split into two parts (for security), to me, via my two different ISPs – [g3mfj@gqrp.com](mailto:g3mfj@gqrp.com) and [g3mfj@gqrp.co.uk](mailto:g3mfj@gqrp.co.uk)

You can check availability (or even order) on (+44) (0)113 267 1070 (But please do not expect my family to be able to discuss club sales matters or take orders!!).

If, with your order, you give me an e-mail address, this allows me to inform you of any problems with supply.