SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

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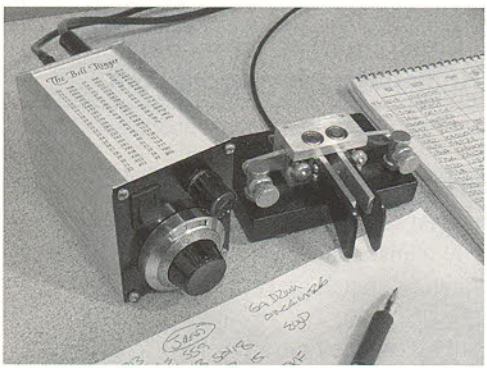
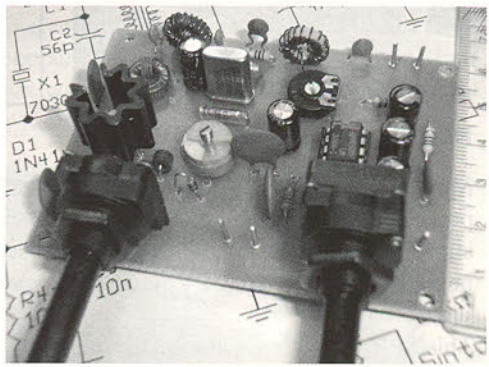


The "Bell Ringer"



The "Flea"

Two of our four minimalist transceivers featured in this issue

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JOURNAL OF THE G QRP CLUB

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Rev. George Dobbs G3RJV

May I wish all SPRAT readers a happy and fulfilling year in 2009. I am still in the process of settling into retirement and a new home. At the moment it all seems rather strange but the adjustments are being made. Those adjustments have not yet included a new picture for this page – much smaller workbench .... much greyer hair!

This SPRAT was not planned as a themed issue but by chance I have received four articles on low component count QRP transceivers; each is different and each is interesting. I thank all our SPRAT authors and invite any member to submit their current or favourite projects to share with our readers. We can accept most formats. If you would like a blank MS Word page formatted "SPRAT style", just send me an email request.

72/3

G3RJV

The W1FB Memorial Award 2008/9

For 2008/9, the project is to **Design a piece of Test Equipment of practical use in a QRP Station**

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

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

Printed & Distributed by G QRP Postal Mailing

AN ULTRA-SIMPLE 80M CW TRANSCEIVER

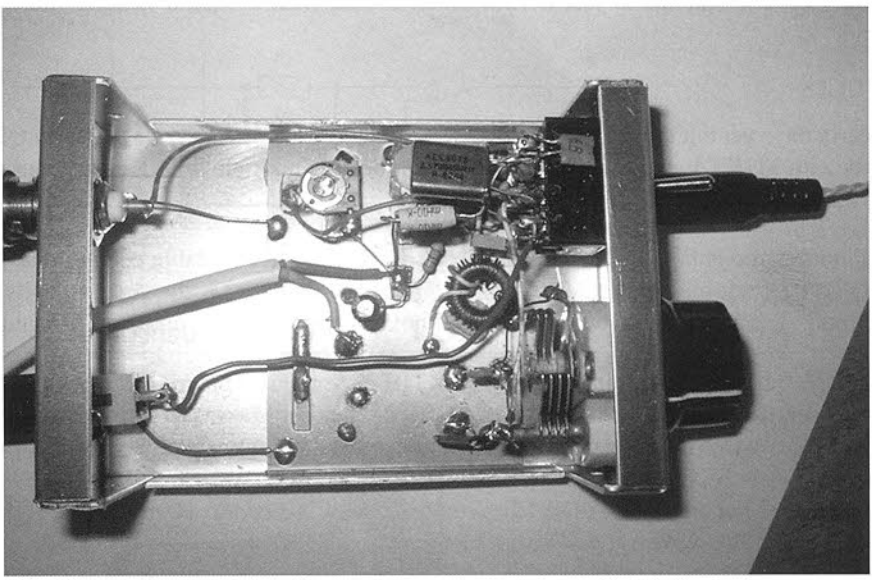
The FETer uses just 14 parts!

Roger Lapthorn G3XBM, 37 Spring Close, Burwell, Cambridge

INTRODUCTION

Some years ago a beautifully simple circuit for a 40m CW transceiver by **W2UW** was published in SPRAT magazine. This design inspired me to have a go at an even simpler version for 80m using just 14 parts apart from the morse key and crystal earpiece. You'd be hard pressed to get the parts count lower and achieve solid and reliable local (and maybe some DX) communications.

The circuit shares a single MPF102 FET between a very simple regenerative RX and a QRP (low powered) crystal oscillator. RX and TX switching consists of a 4 pole 2 way switch which changes over the antenna and all 3 connections to the shared FET. I just used "ugly" construction on a piece of single sided copper clad board with the FET mounted on the back of the switch. The small aluminium box was obtained from Maplins. Other parts can be obtained from Maplins or other amateur radio suppliers.



RECEIVER

Feedback is provided by the tap on the main toroid winding. You may need to optimise this but start with the tap point as shown. A single turn antenna winding is over-wound on the main coil. Regeneration is set by C3. Once regeneration is set to just oscillate it won't need readjustment unless you change the power supply volts or antenna. The band tuned is set by choosing values of C4 so that the variable capacitor comfortably tunes across the

80m CW band. In my case the RX tunes 3.48 to 3.62MHz with a few hundred pFs of fixed capacitance at C4.

The receiver is quite remarkable for something this simple: mine measures around -100dBm sensitivity (about 2uV) for a usable signal level in the earpiece and picks up plenty of European CW and SSB stations at night. It is important to mount the circuit in a metal box and to keep all the tuned circuit parts rigidly mounted to aid frequency stability as with all receiver variable frequency oscillators.

NOTE: This simple receiver will radiate a small carrier on the frequency to which it is tuned (because it is set to be just in oscillation), so avoid using this when operating in close physical proximity to other 80m CW stations.

TRANSMITTER

On TX, I adjusted and fixed the value of C1 so that the oscillator started reliably with a 50 ohm load. In my case 68pF was optimum. Observing on a scope, R3 was adjusted from zero until maximum RF output was obtained, in my case about 18mW. Most people will use an ATU between the output and antenna, but a low pass filter is recommended if not. By the way, my antenna is just a 15m random wire with a central heating radiator as ground.

RESULTS

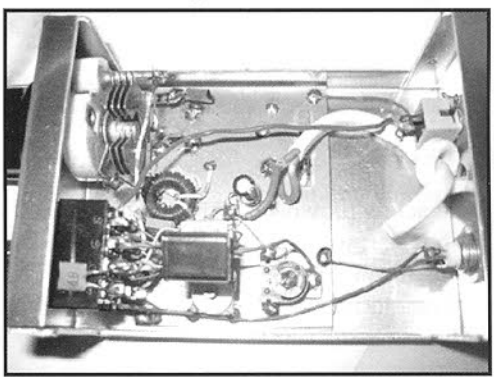
It is early days yet but two solid local two-way QSOs at RST599 and one two-way QSO at **18kms** with M1KTA suggest very many more miles are possible with a quiet band and a clear frequency even with this very low power.

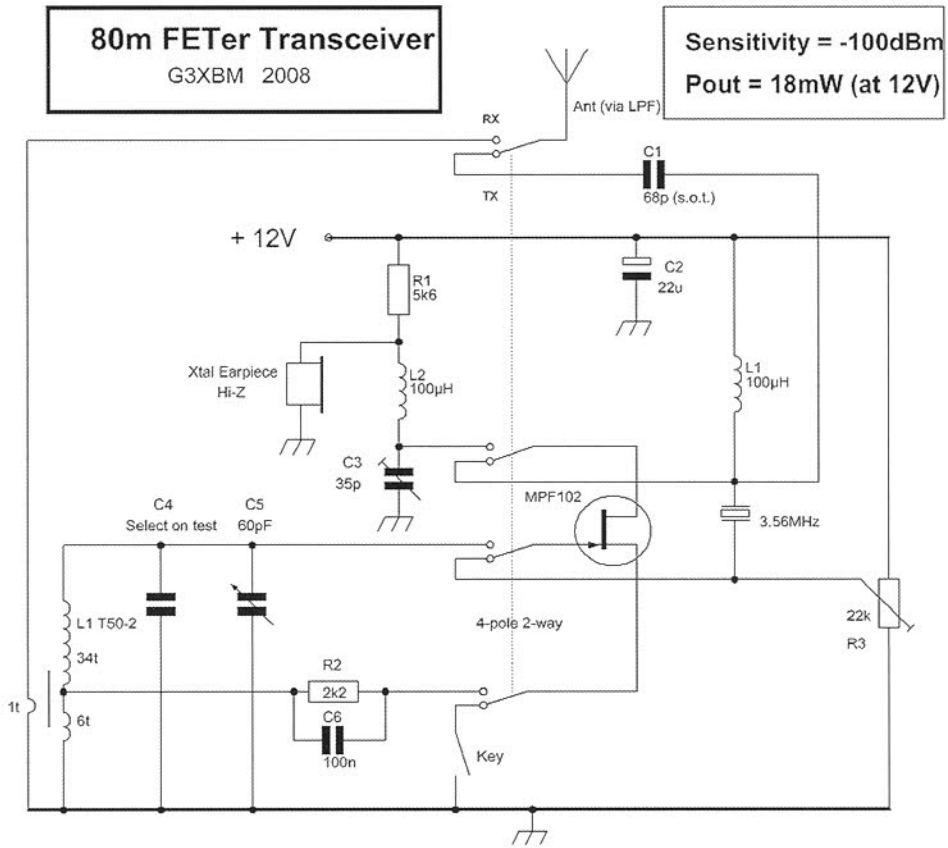
What amazes me is how well this little circuit works: the RX is stable enough and not at all fiddly. It is, all things considered, remarkably sensitive. On TX the signal reports have been good. Even buying all parts new it will not cost you much more than a fish and chip supper.

For me, this sort of circuit is the *ultimate* QRP challenge. Making and using it has been *real* fun. Check my website and blog pages for latest developments and news of further contacts.

http://www.g3xbm.co.uk

http://g3xbm-qrp.blogspot.com/





USING THE HENDRICKS BITX20A ON 17m - UPDATE

Nigel Flatman G0EBQ FLATMANCHICKEN@aol.com

This seems to have proved of interest to BITX constructors, though the initial reduced 5 watt output may have put some people off trying it. I have (thanks to Dan N7VEs suggestion) increased the output to 10 watts, by wiring a 0.1uf capacitor across the 2.2ohm resistor R7 in the driver-this will need to go under the board. A fully updated and amended version of the article is available on the Yahoo BITX site, under files/BITX17 article; the site is essential reading for anyone with an interest in any version of this superb rig.

I still have a few sets of crystals available if needed at £5 plus 75p post for the set of five.

Sackcloth and ashes!

The transistor in my little transmitter tester in the last issue of SPRAT should read BC182, not BC212, which is a PNP, whoops.

Apologies for any smoke that may have been raised.

First prize for observation to Peter Howard who kindly alerted me to my 'senior moment'.

73, Steve, G0FUW

THE FLEA, A 40m CW MINIMALIST TRANSCEIVER

by Joan Morros, EA3FXF
ea3fxf@lleida.org http://ea3fxf.googlepages.com

In the 1996 ARRL HANDBOOK Spanish edition appears an article about the transmitter designed by Dennis Monticelli AE6C named "Cubic Incher" that Spanish editor translated as "TX PULGA". "Pulga" means flea.

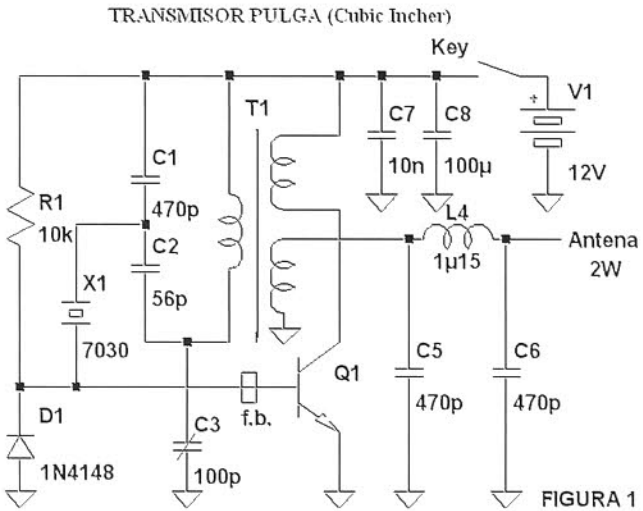


FIGURA 1

Transmitter

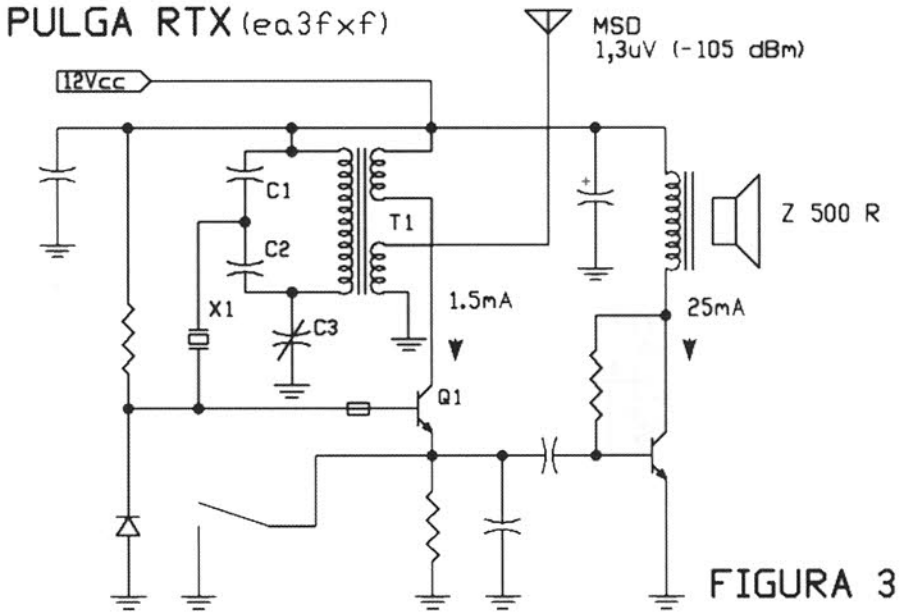
It's a nice and small CW transmitter that gives from 1.5 to 2 W, depending on the used transistor. The adjustment is done by trimming C3 in the feedback network. Looking for the maximum output on 50 Ω antenna, and listening the best manipulation with a receiver. This has to appear crystalline, without humming's or frequency deviations. See figure 1.

Variations of Vcc It tolerates well, and works fine with 6 V. The consumption at 12V oscillates between 250-400mA, according to the used transistor. For Q1, I tried the 2SC2988 and 2N5909 giving 1,8W. The 2N3866 works well and gives 1W.

Receiver

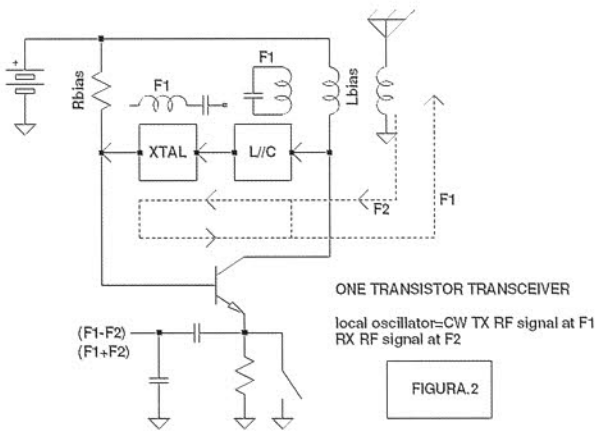
With few modifications, it is possible to transform the FLEA TX, into an excellent receiver and become a true transceiver, the FLEA TRX. See figure 3.

The emitter of the Q1 transistor is grounded through a resistance when the manipulator is unkeyed. A capacitor in parallel filters the RF and we can get a small audio/IF signal from this point. The resistor lowers the amplitude of the radiated signal.



Theory of operation

See figure 2. The signal from the antenna is coupled to a high Q tuned circuit, T1//C3. Then we reduce the impedance with C1/C2. Then the signal crosses the quartz crystal X1, working as a filter, and attacks the base of Q1 where it is mixed with the local oscillation also controlled by X1.



See figure 5.

The audio is extracted from the emitter. It could be obtained from the collector too, where additional amplification would be obtained. After a brief filtrate, the audio signal attacks a LM386. If we put the pin 8 to ground through a diode, we mute the audio when the key is down. C18 establishes "delay" of reception.

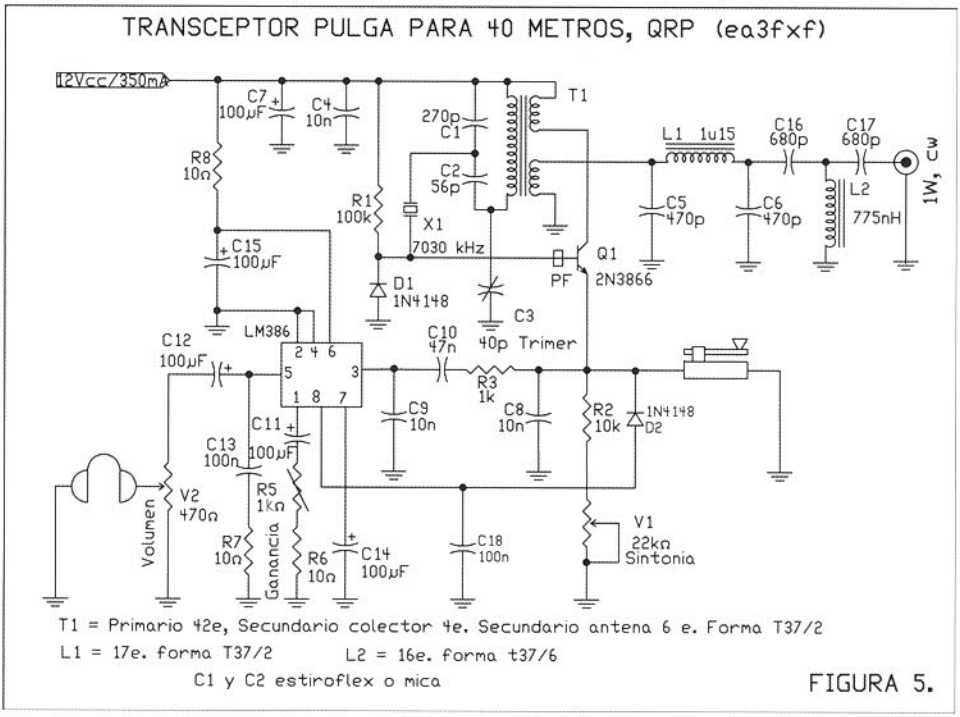


FIGURA 5.

Alignment

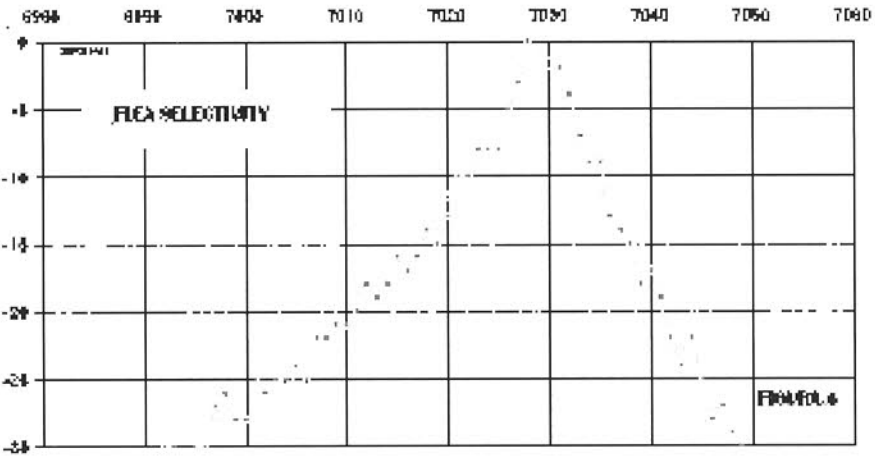
In TX is very important to connect a load of 50 Ω, or one good antenna. If we transmitted accidentally without antenna we can forget Q1. In reception, the transistor 2N3866 works fine. With a 8Ω earpieces and the antenna connected, we must leave the V1 completely turned to ground, and increase the capacity of C3, slowly, until we hear the basic noise of the band and signals. When we are transmitting the power must be near the maximum. For better manipulation C3 can be altered, but the reception point will also move. These adjustments are easy and intuitive. The oscillation frequency in transmission and reception will be different in about 1 kHz. With the V1 potentiometer it's possible move the Rx syntony in, approximately, 1 kHz, we can change the tone of the signals and, even, eliminate some of them outside the band of the filter.

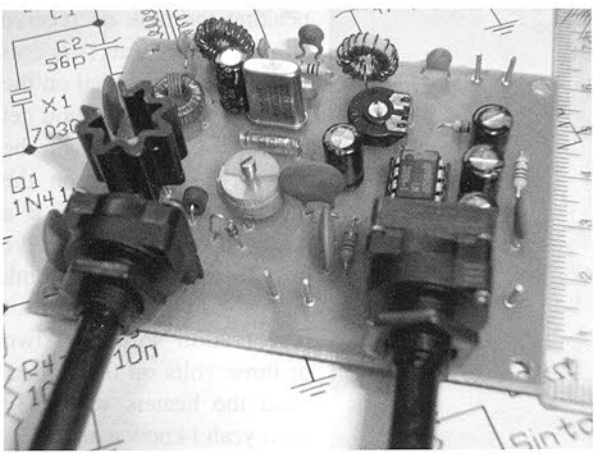
Conclusion

The amount of signals received with this simple apparatus is surprising. It does not have the quality of a commercial receiver, but it is much more effective than its minimalist homonyms that I have tried: PIXIE, CURUMIM, DIXIE...

Get PCB, SPICE files and other resources at http://ea3fxf.googlepages.com/flea

PERFORMANCE		
voltage	12	V
current	400	mA
power DC	3	W
number of components LCRQU		
TRANSMISION		
power	1	W
second harmonic		dBc
RECEPTION		
minimal detectable signal, MSD	-109	dBm
dinamic range, DR	102	dB
selectivity -3dB (see figure 4)	5	kHz





A MINIMAL ART TRANSCEIVER
The one and only "6V6 Mk V" uses only 19 Parts

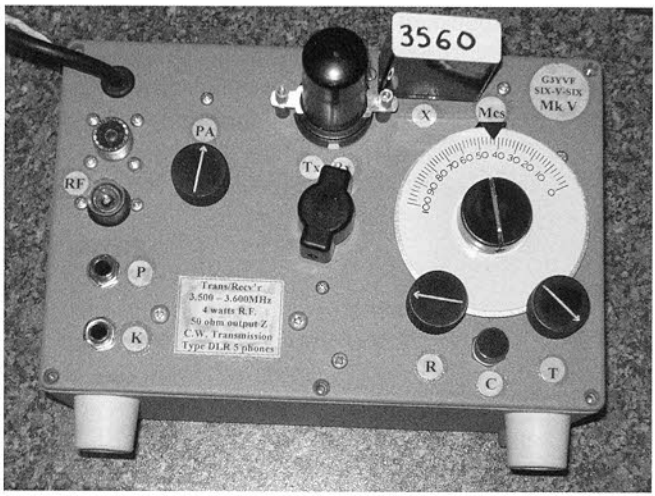
Geoff Wooster, G3YVF, Random House, 8 Marine,
St Mary's Island, Chatham. ME4 3LA

Don't try this unless you have a set of balanced armature type DLR 'phones as they are really sensitive. You will need roughly a 40 to 1 audio transformer to feed the phones or you will loose sensitivity and be disappointed with the results. You will notice that I robbed a Class D Wavemeter for parts like the audio transformer and dial assembly etc. You can do the same as they are cheap at rally's...a fiver should get you one and they are a gold mine of parts.

Simple or what? It might look it.... but note that it is a Mk V because it took that many builds to get it right. I urge you to follow these tips if you decide to have a go at it.

1. Keep the rx and tx tank coils apart as they interact badly if closer to each other than 4" i.e. opposite sides of the valve.
2. Keep the transmit/receive switch just below the valve holder and keep the xtal the same side of the valve as the rx coil.
3. Short out the xtal on receive or else!
4. Hopefully with the above layout followed there will not be too much coupling between the two coils (and overload) and you will have to fit the 0.5pf (SOT) cap to increase received signals strengths.

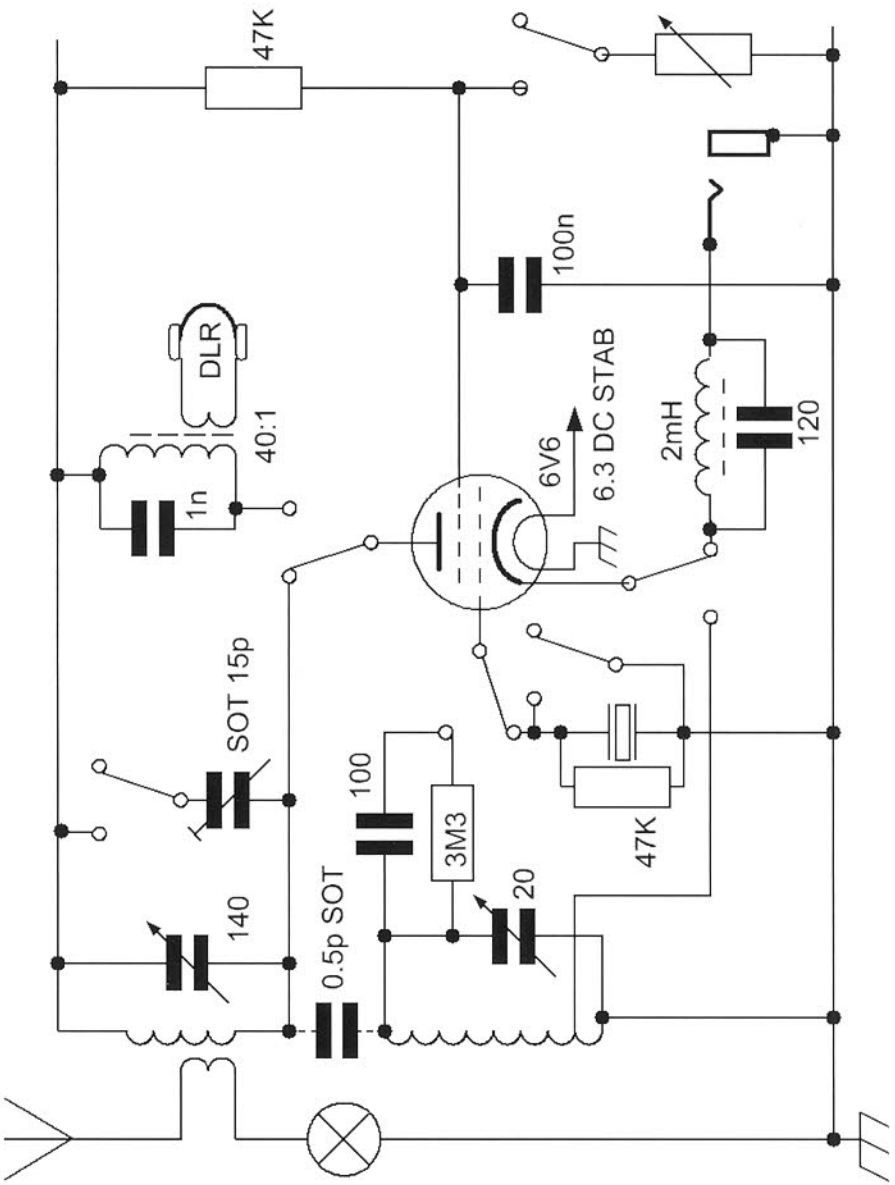
The 1n can be dispensed with if you directly connect the 140pf tank cap to the anode. Fit it if you don't mind one more part. The 15p trimmer (SOT...select on test) is adjusted carefully on receive for max signal strength BUT only after the tx is tuned for max output and of course only after the rx is tuned to the tx frequency exactly. This trimmer cancels out the different residual capacities between transmit and receive.



Once adjusted, correctly peaking the tank on receive should also mean it is correctly tuned for a xtal on the same frequency....if you get my drift! It only needs to be set once, anywhere on the band will do. The 6V6 is a really good detector valve despite what you may think and slides in and out of regeneration with only two or three volts on the screen. Feed the heaters with 6.3v dc....yeah I know a bit tricky

but worth it as any residual traces of hum will vanish.

If you are really clever you can get the dial to read 3.5 to 3.6 exactly....in 1Kcs steps, like what mine does ! ..... Good eh? Wait till you try it!



A Voltage, Current or Hybrid Balun?

Ha-Jo Brandt DJ1ZB, Eichenweg 7, D-84160 Frontenhausen. Germany

The question what type of balun would give best results to feed a symmetrical transmission line is still under discussion. In commercial antenna tuners voltage baluns were employed first. For the time being, however, the current balun seems to become more popular. But recently I received a report that even a fully symmetrical antenna tuner (symmetrical L circuit) has shown some unbalance under certain tuning conditions. But after simulating the pros and cons of voltage and current baluns using the old ARRL Radio Designer I have achieved good and reproducible results employing the hybrid balun proposed by ZS1AN [1;2]. Here I want to describe a variation of his design employing a homebrew asymmetric antenna tuner to feed my 80 m lazy quad loop.

Simulation of the voltage balun has shown that it will give perfect balance to a floating load, even rather independent of its resistance. Its drawback, however, is that asymmetric loads will cause asymmetric line currents. On the other hand the current balun would be an excellent choke against asymmetric currents but has another drawback which I have not seen clearly expressed elsewhere before: For optimum balance its inductivity has to correspond to the resistance of the load at the end of the feed line! Whilst an inductivity of about 10uH at 1.8 MHz would be sufficient to balance a load of 50 ohms, simulations show that at least 1000uH would be necessary for a load of 5000 ohms on the same band. 5000 ohms might be realistic for the low bands if the feed line would end with a voltage maximum. But such a high inductance current balun would probably work on the low bands only. On the higher bands self resonances may occur, due to the capacity between windings. My simulations also confirmed that there is no advantage in placing a balun at the 50Ω input of an asymmetrical tuner, as had been predicted earlier by W7EL [3]. A low inductivity balun of about 10uH would only work properly if the feeder had also low impedance at its end, but if the feeder end would show a voltage maximum, the same high inductance balun of 1000uH at 1.8 MHz would be necessary at either the input or the output of an asymmetrical tuner. Therefore, as grounding the case of the tuner will provide more safety the output balun should be preferred in any case.

ZS1AN's hybrid balun is a combination of a voltage and a current balun (fig 1). Each type of balun is used for the purpose it serves best. The voltage balun balances the load and is protected by the current balun against asymmetric currents generated by either an asymmetric load or radiation of the antenna into the feed line. The current balun merely works as a common mode choke in this combination, without any requirements to balance the load, and therefore its inductivity can be kept at reasonable values even for the lower HF bands in most cases. The use of two separate

toroids is comparable to the construction of a 1:4 current balun and therefore should not be not be regarded an extra expense.

The inductance of the 1:4-voltage balun, 2 x 17uH for each coil (summing up to 68uH when measured at the symmetrical outputs), is not very critical and will work on all HF bands (those who prefer a 1:1 trifilar balun of about 3 x 7uH may also do it). For the common mode choke a compromise has to be sought to achieve sufficient inductivity for the low bands but not too much inductivity for the higher bands, to avoid coil resonances. I have obtained good results using a common mode choke of 2 x 20uH to feed a lazy quad loop with a circumference of 84 meters and a feeder length of about 7 meters for all bands from 3.5 to 28 MHz. AWG18 teflon litz wire was used for both baluns.

These experiments have shown that the inductance for the common mode choke can be made considerably higher than proposed by ZS1AN. Thilo Kootz, DL9KCE, who at about the same time tried to balance his 2 x 23 meter dipole for 1.8 to 10 MHz either needed a hybrid balun consisting of a voltage balun of 2 x 4uH combined with a common mode choke of 27uH, or a single current balun of at least 200uH. For the 200uH (and later even 500uH) current balun Thilo was employing a rather new ferrite material 4W620 [4] combining low loss and a high AL of 852!

Additional worst-case simulations including an unbalance of up to 4:1 have indicated two points: The inductance of a single current balun is depending on load resistance and frequency, but not on the grade of unbalance. The inductance of a common mode choke of a hybrid balun is always smaller but depending on load, frequency, and the grade of unbalance. Feeder lengths presenting high impedance loads to a hybrid balun may need common mode chokes of up to 300uH at 3.5 MHz in cases of high unbalance.

Therefore such critical feeder lengths should be avoided if feasible. Otherwise a second common mode choke with lower inductance might become necessary for the higher bands. On the other hand the author has measured an impedance of 1800 ohms across the ends of his feeder at 3.5 MHz but the system works fine with a common mode choke of 20uH only; therefore those high unbalances used in the simulations may seldom be encountered in practice.

Current symmetry has always been controlled by inserting bicycle bulbs (6 V, 3 watts) or radio dial bulbs (7 V 0.3 A) with sockets into the feed line. In general the nominal resistance of these bulbs should be considerably lower than 50 ohms, the estimated minimum feeder impedance. RF power needed may vary between 20 watts and 100 watts depending on the line impedance at the feed point. This is not QRP, of course, but still the easiest way to control the balance of a feeder.

The Ferroxcube 4C65 Ferrite may be replaced by the FairRite material 61 employing the proper number of turns, depending on the AL value.

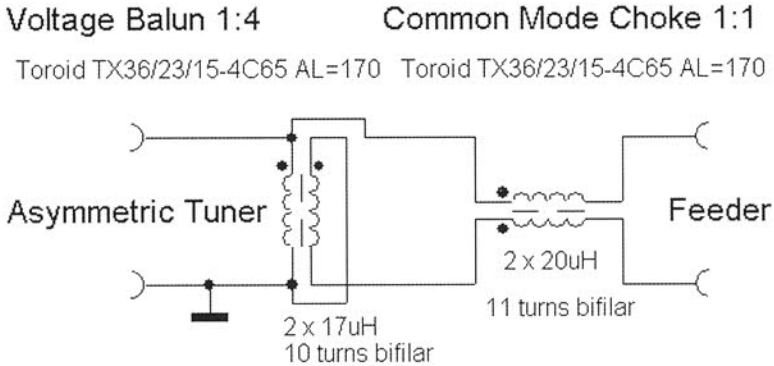


Fig 1: Hybrid-Balun used by DJ1ZB

References:

[1] Andrew Roos, ZS1AN: A Better Antenna-Tuner Balun; QEX Sep/Oct 2005.

[2] www.qsl.net/zs1an/

[3] http://fermi.la.asu.edu/w9cf/articles/balun.pdf

[4] www.wuerth-elektronik.de website also available in English and French. In spite of having dimensions like a toroid, for unknown reasons the toroid mentioned is listed under "EMI suppression axial ferrite beads", Order Code 74270097. Origin of the 4W620 ferrite is unknown, perhaps in the Far East.

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

FREE - to a good home - you only pay postage! SPRAT numbers 64 to 135, missing issues 67, 68, 70 and 84. Telephone Chris, M0PSK on 0151-924-1525 or email chris.m0psk@gmail.com."

WANTED: AKD HF-3 Short Wave Receiver in good working order. Please state price and postage. John D. Noble, 35 The Queen Mother Court, Borstal Road. Rochester. ME1 3JF

Don't Forget the Winter Sports!

Everyday – Dec. 26th to Jan. 1st – (Reports to G3XJS, address page 32)
Call "CQ QRP" on the QRP meeting frequencies:
CW: 1843, 3560, 7030, 10116, 14060, 18096, 21060, 24906, 28060
SSB: 3690, 7090, 14285, 21285, 18130, 24950, 28360 kHz

Z Match Modification

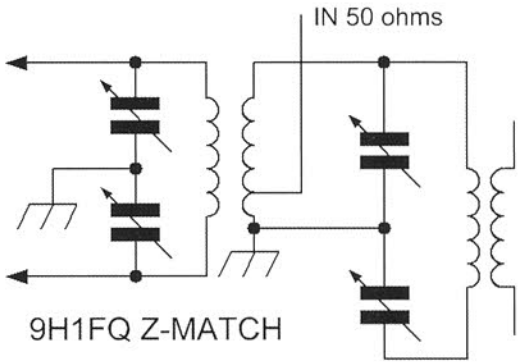
Based on the RSGB Handbook (1964) Circuit
Paul Debono, 9H1FQ, 65 Triq Il-Hafur, ATTARD BZN 03. MALTA

Take the original Z- MATCH as appeared in the RSGB Amateur Radio Handbook (1964 edition), with three capacitors.

1] Eliminate the input capacitor, and take the input directly to a 2.5 turn tap on the LF coil.

2] Fix a 500+500pf rx type capacitor across output link of the LF coil, with the centre of the capacitor earthed, this is your output for 80 to 10 m.

3] Disregard the HF coil, but leave it in circuit.



(Ref. RSGB Amateur Radio Handbook 1964)

Yeovil QRP Convention 2009

The 25th Annual Yeovil QRP Convention will be held in the Digby Hall, Hound Street, Sherborne, Dorset on Sunday the 26th April 2009. Doors are open at 10.00 am.
The usual programme of talks, Speakers include G3RJV, Traders etc.
Information from M0WOB, phone, 01935 414452 E.mail yarc-contact@tiscali.co.uk

13th RED ROSE QRP FESTIVAL.

Sunday 7th June 2009 from 11am to 4pm at the Formby Hall, Alder Street (off High Street), Atherton, Manchester. M46 9EY. This is a friendly, annual event, to promote low power amateur radio operating and home construction.
Features - Easy access from all directions, Trade and individual stalls, Club stands, including RSGB, GQRP, Low cost "Bring & Buy, 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. Talk in on S22
Admission STILL £1.50p - Some tables available at £7 but please book early.
Les Jackson, G4HZJ g4hzj@ntlworld.com 01942 870634

Radio Projects for the Amateur. Vol. 3.

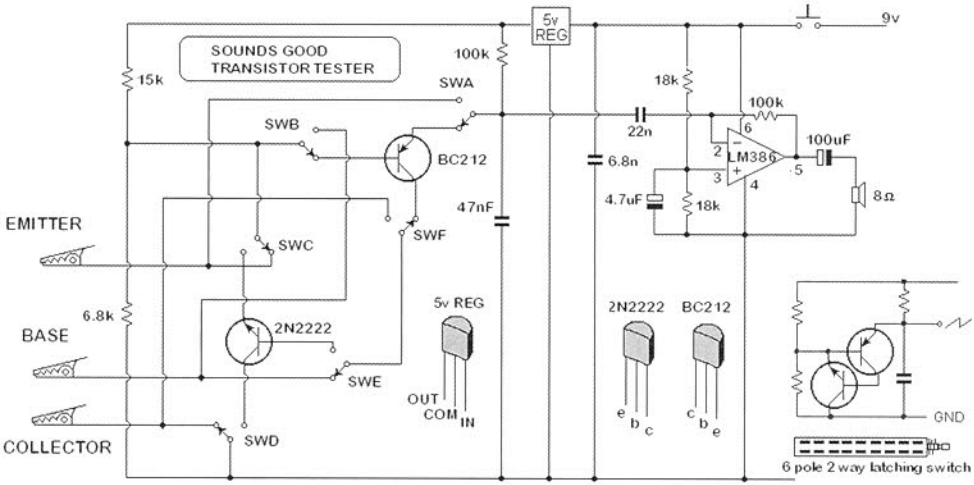
By Drew Diamond, VK3XU.

Drew has very kindly allowed the G-QRP Club to reprint this book. Members price - £5
To order, see Club Sales on the back cover.

WIFB MEMORIAL ENTRY

Sounds Good Transistor Tester

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



This circuit is of a sawtooth audio frequency oscillator and uses an NPN and a PNP transistor on purpose so that if one or other is substituted for another one of the same polarity it can be tested and proven to the alright if a "Sounds Good" audio tone from the loudspeaker is heard. The 6 pole 2 way with rearranges the circuit to enable crocodile clips to connect up the transistor under test. Alternatively a simpler circuit could be built without switches if both transistors are fitted in sockets and either one is exchanged for the one being tested. This has the advantage of making the circuit a complete audio oscillator as well.

The Bell Ringer

Michael Rainey AA1TJ [mjrainey@gmail.com]

Here is a variation on the theme of the simple *Pixie* transceiver. In my version two 2N7000's form a push-pull PA with an output power in the neighborhood of 1.5W. This same transistor pair is used as a single-balanced product detector in a direct-conversion receiver. While *The Bell Ringer* has a higher component count than the *Pixie*, it covers 60kHz of the 20m band with break-in operation, sidetone and an audio filter.

Circuit Notes

QSK Time-Delay

Key-down immediately turns Q5 on and Q4 off in order to disable the receive frequency-offset and mute the receiver. The transmitter turns on five milliseconds later. On key-up, the transmitter turns off straightaway. Twenty-five milliseconds later Q5 turns off and Q4 turns on.

Switch, SW1, is mounted on the front panel. In use, this switch is opened and the frequency is tuned to zero-beat with another station. The switch is then closed and VR2 is adjusted to offset (lower) the receive frequency by approximately 600Hz.

Tx Keyer

This is a familiar integrator-type transistor keyer/shaper designed by Roy, W7EL. The 2SB941 was a junk box find. Most any power or audio PNP device having a reasonable Beta and rated for a minimum of one or two amps of collector-emitter current will work here.

VXO

I used a variable capacitor instead of a varactor for some weeks in my prototype. If this is your preference, please delete the circuitry to the left of X1 and insert your variable capacitor between the left-hand-side of X1 and ground. In my prototype 389pF was required to pull the 3.58MHz ceramic resonator (X1) down to 3500kHz, while 235pF would produce 3515kHz. My receive-offset circuit at that time consisted of a diode-switched trimmer-capacitor in parallel with the main tuning cap.

While the mechanical variable capacitor worked well, my aim is to build this circuit into a fairly small package for portable work. With this in mind, I exchanged the variable capacitor for a MVAM109 varactor. A compact, turns-counting, ten-turn potentiometer from my junk box produces an average tuning rate of 6kHz per turn. A simple calibration chart will be affixed to the top of the radio. Here's a chart of the output frequency verses the reverse bias measured across my varactor.

- 14000kHz 1.16Vdc
- 14010 2.00
- 14020 2.71
- 14030 3.30

- 14040 3.81
- 14050 4.27
- 14060 4.71

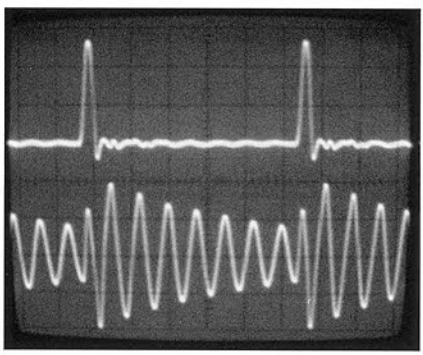
The tuning-rate is approximately twice as fast at the top of the range than at the bottom of the band; not bad for a varactor-tuned VXO. It helps that we're only pulling the ceramic resonator a maximum difference of 15kHz. I ended up tuning my prototype for a frequency span of 14.010 to 14.071MHz.

Pulse Generator "Clapper'

The VXO output signal clocks the monostable multivibrator at U2a. The 3.5MHz sinusoid at U2a, pin 3, measures 2.1Vpp, and rides on a DC potential of 2.0v in my prototype. The value of C10 may have to be adjusted to produce an output pulse width of approximately 17nS on U2a, pin 5.

28 MHz "Bell"

At L1 and L2, I used two slug-tuned inductors (~250 to 500nH) taken from my junk box. These inductors ought to have an unloaded Q of at least 100 or better. Divider, R8/R9, provides a DC bias of 2V.



The upper trace of this oscilloscope snapshot shows the impulse at U2a, pin 5. The lower trace shows the (x8) ringing response as it appears at the top of inductor, L1. The upper trace vertical scale is 2V/division. The lower trace vertical scale is 500mV/division. The horizontal time-scale is 50nS/division on both traces. The filtered, 28MHz signal appearing at L2 has a fairly constant amplitude of 800mVpp.

Push-Pull PA/Single-Balanced Mixer

T1 is a trifilar-wound binocular core that I found in my junk box. Each winding measures 4.6uH.

While I haven't used zener diode over-voltage protection at each of the 2N7000 drains in my prototype, I do intend to use them in the field version of this radio. At present, I'm careful never to key the PA stage without a proper load attached to it. Transmitting with a 50 Ohm load; I measure 30Vpk at the drains. Key-down with no load may or may not exceed the maximum drain voltage; nevertheless, zeners are inexpensive protection. A conservative builder would also include heat sinks at Q2 and Q3.

Input/Output BPF

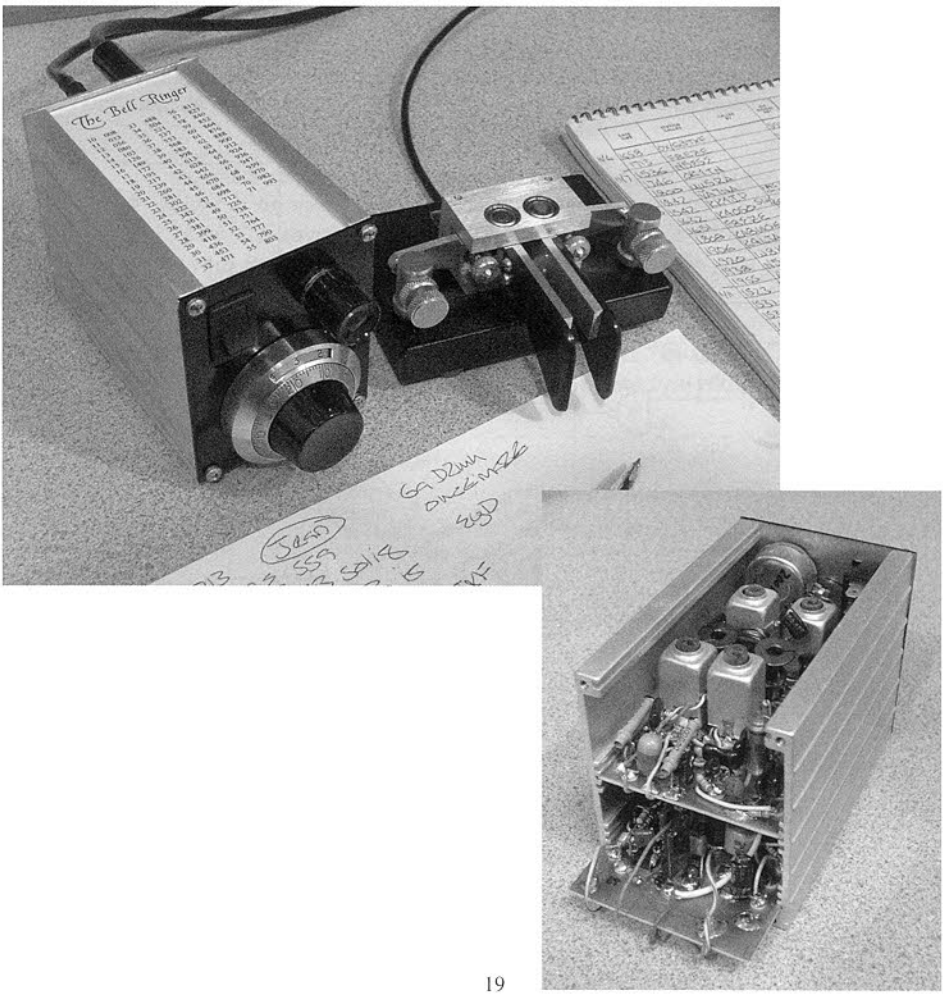
One doesn't often see a double tuned bandpass filter follow a PA stage (although here is one example). However, this circuit works well at the 1.5W power level so long as we rate

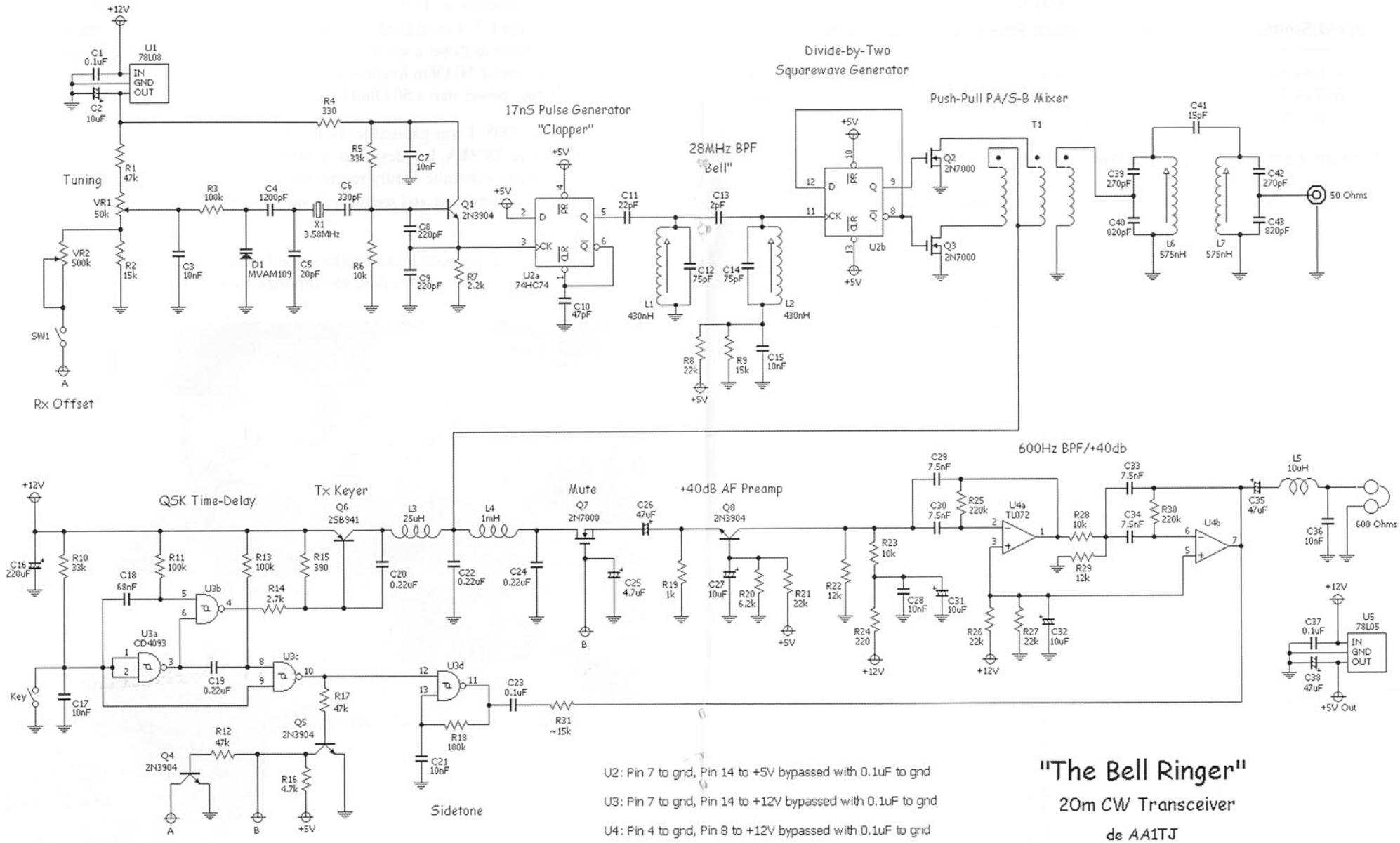
the capacitors for the peak expected voltage (~36Vrms) and insure that the inductor cores aren't driven into saturation. For maximum output power it's important that we use high-Q inductors at L6 and L7. I used plastic-former, slug-tuned inductors from my junk box that are similar in design to those used at L1 and L2. I pre-tune this bandpass filter using a signal generator and a 50 Ohm load resistor. Final adjustments were made for maximum transmitter output power into a 50 Ohm load.

In late October, 2008, I was pleased to locate an older, German, cousin of The Bell Ringer. Wolfgang, DG0SA, has designed an 80m transceiver, *"Nach dem Prinzip des "Pixie"*," that bears a definite family resemblance! I ought to mention that Wolfgang maintains a most interesting and useful web site: http://www.wolfgang-wippermann.de

Initial Results

As of 10/16/2008, it has been seven weeks since I made my first contact. To date, I've made a total of 195 QSOs and worked 45 countries with *The Bell Ringer* driving an end-fed wire antenna.




Divide-by-Two
Squarewave Generator
17nS Pulse Generator
"Clapper"
28MHz BPF
"Bell"
Push-Pull PA/S-B Mixer
600Hz BPF/+40db
QSK Time-Delay
Tx Keyer
Mute
+40dB AF Preamp
Tuning
Rx Offset
Sidetone
50 Ohms
600 Ohms
+5V Out
U2: Pin 7 to gnd, Pin 14 to +5V bypassed with 0.1uF to gnd
U3: Pin 7 to gnd, Pin 14 to +12V bypassed with 0.1uF to gnd
U4: Pin 4 to gnd, Pin 8 to +12V bypassed with 0.1uF to gnd
"The Bell Ringer"
20m CW Transceiver
de AA1TJ

dBm chart

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

From time to time we want to know what that dBm is in volts or watts, without having to ponder or calculate this chart will save time, for peak-to-peak values multiply peak by 2. Some of the figures are rounded to give a neat appearance.

Note: These are for a 50 ohm system or load termination.

dBm	V rms	V peak	Power
+53	100.0	141.40	200 W
+50	70.7	99.97	100 W
+49	64.0	90.49	80 W
+48	58.0	82.01	64 W
+47	50.0	70.70	50 W
+46	44.5	62.92	40 W
+45	40.0	56.56	32 W
+44	32.5	45.95	25 W
+43	32.0	45.25	20 W
+42	28.0	59.39	16 W
+41	26.2	37.05	12 W
+40	22.5	31.82	10 W
+39	20.0	28.28	8 W
+38	18.0	25.45	6.4 W
+37	16.0	22.62	5 W
+36	14.1	19.94	4 W
+35	12.5	17.68	3.2 W
+34	11.5	16.26	2.5 W
+33	10.0	14.14	2 W
+32	9.0	12.73	1.6 W
+31	8.0	11.31	1.25 W
+30	7.10	10.04	1 W
+29	6.40	9.04	800 mW
+28	5.80	8.20	640 mW
+27	5.00	7.07	500 mW
+26	4.45	6.29	400 mW
+25	4.00	5.66	320 mW
+24	3.55	5.02	250 mW
+23	3.20	4.52	200 mW
+22	2.80	3.96	160 mW
+21	2.52	3.563	125 mW
+20	2.25	3.182	100 mW
+19	2.00	2.828	80 mW
+18	1.80	2.545	64 mW

dBm	V rms	V peak	P watts
+17	1.60	2.2624	50 mW
+16	1.41	1.9937	40 mW
+15	1.25	1.7675	32 mW
+14	1.15	1.6261	25 mW
+13	1.00	1.4140	20 mW
+12	.900	1.2726	16 mW
+11	.800	1.1312	12.5 mW
+10	.710	1.0039	10 mW
+ 9	.640	.90496	8 mW
+ 8	.580	.82012	6.4 mW
+ 7	.500	.70700	5 mW
+ 6	.445	.62923	4 mW
+ 5	.400	.56560	3.2 mW
+ 4	.355	.50197	2.5 mW
+ 3	.320	.45248	2.0 mW
+ 2	.280	.39592	1.6 mW
+ 1	.252	.35633	1.25 mW
0	**.225**	**.31815**	**1.0 mW**
- 1	.200	.28280	800 uW
- 2	.180	.25452	640 uW
- 3	.160	.22624	500 uW
- 4	.141	.19937	400 uW
- 5	.125	.17675	320 uW
- 6	.115	.16261	250 uW
- 7	.100	.14140	200 uW
- 8	.090	.12726	160 uW
- 9	.080	.11312	125 uW
- 10	.071	.10039	100 uW
- 11	.064	.090496	
- 12	.058	.820120	
- 13	.050	.070700	
- 14	.045	.063630	
- 15	.040	.056560	
- 16	.355	.501970	

Ultimate QRP - "Total Power"

Tadashi Okubo JH1 FCZ (Chairman JA QRP Club)
56-12, Miyakojimachi, Sakura City, Chiba pref. 285-0016, JAPAN

QRP's objective is generally considered to be "how far can your signal go with minimal power?" To use today's parlance, it is "energy efficient communication". In this sense, "Minimal Power" points to the "transmitting power". Take a 10W transmitter and reduce the output to 1W using an attenuator. That is technically a "QRP" but it feels less than satisfactory.

The obvious next step is to limit the amplifier power, i.e. use a transmitter that is only capable of 1W of output power. Where do you get such a transmitter? Well, you make your own, of course. This is the "usual QRP".

But can you go one step further? As an expert QRPer, you may feel real QRP requires the total energy consumption of the transmitter to be "minimal". To achieve this goal, you may have to create a circuit of your own. Some aerial / antenna R&D may also be required. Now that's "superior QRP" - or is it?

What about the receiver energy consumption? Nothing's been done about that yet. We must overcome this issue to be a "true QRP". Even amongst QRPers, it hasn't been common to consider the power consumption of a receiver. But surely, communication requires transmitters and receivers. We must limit the total power consumption - completely energy efficient - to achieve

"**Ultimate QRP**".
JARL QRP Club has been awarding "1000km / Total Power" prizes to members who achieve 1000km or more per 1W. It is calculated by dividing the total distance achieved by total power consumption (total power consumed by ALL equipment used including the transmitter, receiver and any other peripheral equipment such as heating for vacuum tubes, keyers, counters, computers, etc)

2009 "Ultimate QRP" competition in 144MHz (2m) FM mode has been designed to proliferate this concept of "Ultimate QRP" and at the same time, to provide R&D incentives in the area of VHF / UHF.

It is also hoped that this competition will help globalise our QRP Club – by inviting the members of other renowned QRP Clubs around the world to participate in this competition. JARL QRP Club has celebrated its 50th anniversary in 2007. In this time, we have made a number of achievements in transmitter, receiver and in antenna developments. We must share these achievements with the rest of the world.

If successful, we plan to expand the competition to 21MHz SSB mode in 2010.

Antennas Anecdotes Awards

Colin Turner G3VTT
30 Marsh Crescent, High Halstow, Rochester, Kent ME3 8TJ
G3vtt@aol.com

I write this piece in mid October after attending the GQRP Club Convention at Rishworth near Halifax in Yorkshire. This was a new and successful convention venue and the organisers should be congratulated.

I would like to thank all of you who attended my seminar on ***'Antennas for Restricted Spaces'*** and for your questions, encouragement and your ideas. It is with **your** ideas that Sprat continues to be the successful radio magazine it is and I would like to encourage you to keep your ideas and experiences rolling in and ……..get on the air with QRP.

To that end I hope to work as many as possible of you as I can in the Winter Sports from December 26th to January 1st. Look out for George G3RJV as well. He has a new W3EDP with 17 foot counterpoise at his new location. The first contact with QRP? – the USA!

No Counterpoise Antennas?

Two 'no counterpoise antennas' are offered this month. Normally the thought of 'no counterpoise' makes me nervous but two of our members seem to have had some success. Why not try them and let me know how you get on for next time?

Antenna 1

Nigel G0EBQ has informed me of an antenna he has experimented with. It consists of 25 feet of twin wire with for the HF bands and a 50 feet piece of twin for 40m and above. I'll let him tell you more about it.

'I was interested to read about this antenna in Peter G3LDO's column in Radcom. I originally saw this sold on EBay (but is no longer) by the Immel Corporation of the USA as "a no counterpoise QRO-QRP antenna". It was given a favourable review in 'Eham. Net' although Peter says the review is not now available. Whilst not a "miracle antenna" it is good general purpose design especially for those with limited space.

It is, as Peter described, 25 ft of twin lead or speaker wire with one side chopped off at 12.5 feet and it covers 10-20m. Double these dimensions to 50 feet and it will cover 40m to 10m though Peter says he has used the half sized version on 40m.The difference to the Radcom version is that this one is tuned as a long wire to an unbalanced atu with the shorter length to earth. The original appears to be used with a balanced atu.

I have made my own with ordinary twin lead and have been using it for the past year from our holiday apartment in Alcossebre, Spain with a copy of the MFJ Cub transceiver and an NiMH battery at less than 1W output to an Emtech ATU.

The antenna is just slung over the bathroom window shutter and hung down from there and though we are on the 4th floor, which helps, I can easily work round Europe. The best DX is Ukraine and Finland and have worked several EU QRP stations though no members. My operating has been casual in the early evenings.

It is such an easy and cheap antenna to make especially for portable working and I am surprised more people have not tried it. Best regards from Nigel G0EBQ GQRP 3375.'

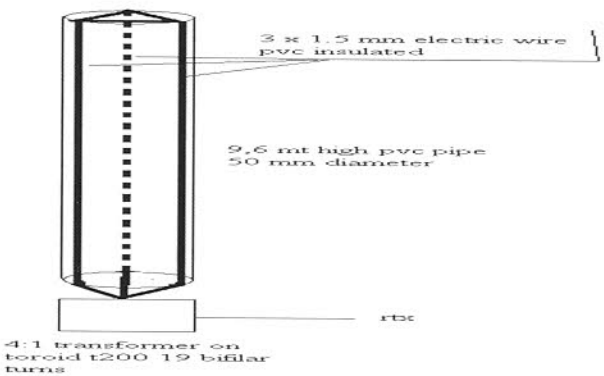
Has anybody else tried this antenna? It seems to be a version of the J pole or Zepp arrangement. When I get time I will try this down the beach in the usual portable location but if you have any experience of it please let me know. It seems a simple idea for those with restricted space or portable operation.

AN HF FLAT SWR ANTENNA

The second antenna comes from an Italian member Marco IK0VSV who has developed a 'Rybacov' antenna from local parts.

Antenna 2

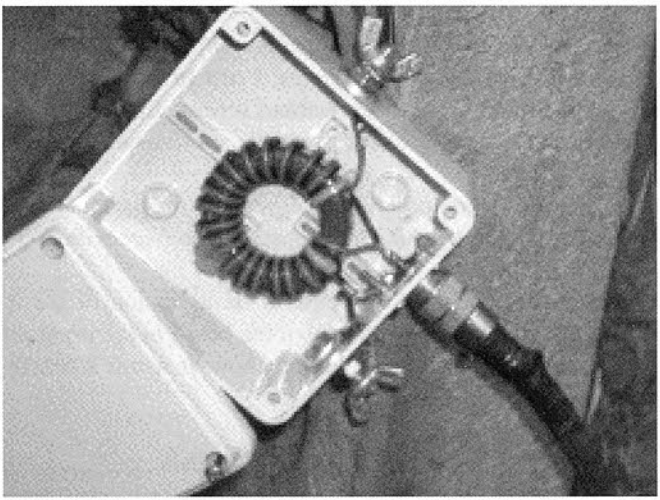
Marco writes *'I built this antenna following a project published several times in various magazines. The original antenna is 9.6 meter high fibreglass rod (or other insulated material such as electric PVC pipes) with a 4:1 impedance transformer at base. Normally this antenna works well on the 7 MHz and upper frequencies but not on 30m and 80m where the SWR is quite high, typically 3:1 or more.*



In my design the rod is the support of 3 wires of the same length connected together at the base at the input side of the 4:1 transformer and upper side to widen its bandwidth. The coil uses 19 bifilar turns of insulated wire on an Amidon T200-2 core. The photograph tells the story.

With some surprise I obtained an SWR of 1:1 on 29 Mhz rising to 1.6 : 1 on 3.5 Mhz. On 160m the SWR rose to 7: 1. It was practically flat over the whole HF spectrum and

maybe if the wires length were increased the 160m band could be workable. In the drawing the wires are taped on the rod by forming a sort of "cage" around the rod..



G3VTT Thanks for the design Marco. This will be certainly cheaper to build than some of the well know all band verticals. I wonder how the SWR will be affected if a short counterpoise was connected to the 'ground' lug on the transformer box?

Which wire do you use?

Des GI3XZM has written some notes about finding suitable antenna wire.

Recycling not only saves money – its ethical. Over the last couple of years I have done quite a few experiments with large wire antennas using second hand 18 swg wire obtained free in the following way.

Many old microwave ovens reach municipal dumps or recycling depots. If your local one has a notice saying "Items deposited here become Council property – removal will be treated as theft" give the supervisor a bottle of plonk. The primary winding in these units contains about 70m of 18 swg copper wire and with care this can be quickly removed. Without care you can waste a lot of time and gets some nasty cuts.

With a screwdriver dismantle everything until you have the transformer. If the primary winding has a more golden colour than normal enamelled copper wire it may be aluminium which is useless. If in doubt scratch the wire and hope for copper.

The transformer laminations will be of the E *and* I *types with a weld joining them fortunately only on the outer edge of the join. Grip the back of the* E *type in a vice and make a hacksaw cut through the corner of the* I *laminations going in at 45degrees reaching the unwelded junction of* E *and* I*. Drive and old chisel into the cut until you break the other weld and the* I *laminations fall away.*

Now loosen the vice so that the bobbins are supported by its jaws and using a heavy hammer and a 16mm bolts like a drift drive the core into the vice and out of the bobbins. The bobbins should not be damaged as they are cast in resin. Using heavy welding or gardening gloves remove the wire but be careful as the resin comes off in razor sharp shards. Spring off the primary winding end and secure it down the garden and with a brush handle through the bobbin walk to the other end of the garden being careful to watch for any flying splinters.

To remove any final resin put one turn of wire around the brush handle and walk the length of the wire with the bobbin. If with your gloves the wire does not feel clean repeat this procedure and then wind your wire onto a 5 litre paint can. You can then start the other length of wire down the garden until you have all the wire you need.

The secondary has about 1km of 26 swg on it. I have miles of it - any ideas?

Thanks to Des. I think he could have added 'then erect a GM3OXX style large horizontal loop provided you have the space'. Wire of this short would be suitable for ground radials although they may need replacing every few years.

Awards

Nigel M0DBO 6855 has recently contacted me with a new Members Worked award so he now has '20 Members Worked QRP All Mode'. He also has '50 Countries Worked' confirmed – well done.

George GM3OXX has just received a new certificate for his 1560 'G QRP Members Worked' award. Simply amazing work with just a thundering one watt to an impressive high large loop.

There have been no further submissions for the G3MCK 'Worked All British Counties Award' received up to November 2008 so in the next issue of Sprat we will see just how many members took part in Gerald's scheme.

Finally

During 2009 I am giving away a beautiful chrome single lever paddle donated by George G3RJV for the best antenna or antenna measurement device idea submitted to AAA. The paddle is a very rare 'CT' make with wooden finger plates that would grace any operating bench. It is currently gracing mine and needs a new home.

Please let me have your ideas next year. I trust you all had a Happy Christmas and I would like to wish you all a safe and prosperous New Year.

COMMUNICATIONS AND CONTESTS

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

As ever, I can't be sure whether this edition of SPRAT will arrive before Christmas, and therefore before Winter Sports, or whether you'll already be too busy on the bands (filling your Winter Sports log) to have time to open the wrapper. Whichever it is, Season's Greetings and a Very Happy New Year to you all.

Winter Sports has long been the most popular QRP event of the annual calendar, but FOC have decided to introduce a brand new event in the hope of encouraging participants from a wider field than previously, and I hope this invitation reaches you in good time for you to reserve the date in your 2009 diary:

INVITATION TO CW AND QRP CLUBS, from Colin G3VTT

I am writing to all fellow CW operators, whether QRP or QRO, to inform them of a Straight Key or Bug Key Activity Day they may be interested in joining.

FOC has recently decided to have a change in its ethos and be more outward looking and engage more with fellow CW operators. To that end the Club has decided on the following event early in January 2009. Quoting from our regular Newssheet publication: "After talking to a few members at the FOC Birdlip Annual Dinner about the 'Camelback' Begali key offered as a raffle prize and asking if there was any interest in the traditional pump key on the FOC Reflector, I have received numerous positive replies from three Continents regarding a Straight Key Weekend early in 2009. The 3rd January 2009 has been suggested as fairly free with no major contests on the bands, and so you are duly invited to operate on the 80m, 40m and 30m bands with your straight key, bug key or any other mechanical keying device – I leave it up to you!

The timing will follow the BWQP event and start at 0000z and finish at 2359z, although I suggest the following preferred operating times: 0700z - 0900z, 1100z – 1300z, 1400z – 1700z and 2000z – 2300z to cater for Dx contacts.

To promote our new ethos of CW club interaction I am going to inform FISTS and G-QRP of our activities so it might be a good idea to get some practice in before then!"

Colin G3VTT, President FOC 2008/2009.

Even with such short notice I hope G-QRP members will welcome the opportunity to take advantage of FOC's kind invitation to join their event, but please remember to send your logs (and comments) to Colin, G3VTT.

CZEBRIS 2009

This is one of the long-standing events in our calendar and has, in the past, been very popular with members, attracting good support. In recent years, support has declined and at least one

member has suggested moving the date, partially to avoid potential clashes with other contests, and partially to take advantage of better evening 20m conditions later in the year. Any change of date would have to be co-ordinated with our OK/OM colleagues, of course, but if you have a view please express it by dropping me a line. In the meantime, you might like to keep in mind that fewer entrants make the possibility of you making a winning entry that much higher!

So, in the hope that I will have sparked a little more enthusiasm for this relaxed and enjoyable event, here is a reminder of the rules:
NB I have specified 27th Feb to 1st Mar in order to avoid major CW contests during the weekend of 20th-22nd Feb, but have been unable to communicate with Karel OK1AIJ to confirm the dates with the OK QRP Club. I will continue with my efforts and publicise any changes on the G-QRP Reflector.

1600z Friday 27th February to 2359z Sunday 1st March, 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. Your final score is the 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 OK1AIJ (Karel Behounek, Na sancich 1181, 633705 Chrudim IV, Czech Republic). We are both happy to receive logs by email: "g3xjs@gqrp.co.uk" and "karel.line@seznam.cz".

CHELMSLEY TROPHY 2008
I can really only repeat what I said at this time last year, and underline my suggestion that you go through your logs and submit an entry: Logs need to be with me by 10th February - details are to be found in the Members Handbook. This tends to be poorly supported, so please give it a go – you might win!

2009 YEOVIL QRP CONVENTION
At the time of writing, I do not have any information with regard to this event, or the associated FunRun. My suggestion is that you drop a line to Gary 2E0BFJ: g.swain@tesco.net

20th HOMEBREW & OLDTIME EQUIPMENT PARTY
Hal DJ7ST has kindly sent me full details of results from the Nov 2008 Party, which I will be happy to supply to any member upon request.

Items for inclusion in this column of the next SPRAT should be sent to me by the beginning of February. No doubt my postman will be kept busy delivering your Winter Sports logs (!), but don't forget you can also send them via email. Enjoy your radio, and have plenty of QRP FUN.

72 de QRPeter

2009 QRP CALENDAR

1st Jan	Last day of **Winter Sports**
3rd Jan 0000z-2359z	**FOC Party**
3rd Jan 2000z-2300z, 4th Jan 0400z-0700z	**EUCW 160m Contest**
1st Feb	Last Day for **Winter Sports logs** to G3XJS
10th Feb	Last Day for **Chelmsley 2007 logs** to G3XJS
27th Feb 1600z to 1st Mar 2359z	**CZEBRIS**
8th Mar	**AGCW QRP Contest**
13th Apr 1400z-2000z (Every Easter Monday)	**Slovak Low Power Sprint**
20th Apr to 24th April	**EUCW / FISTS QRS Party**
26th Apr	25th Annual **Yeovil QRP Convention**
30th Apr	Last Day for **CZEBRIS logs** to G3XJS and OK1AIJ
21st May 1900-2300z (Each Ascension Day)	**7th QRP-Minimal Art-Session**
7th Jun	13th **Red Rose QRP Festival**
17th Jun	**IARU Region 1 International QRP Day Contest**
16th Jul	Last Day for **International QRP Day Contest logs** to G3XJS
5th Sept	**HTC QRP Sprint**
24th Oct	**QRP Mini-Convention**
15th Nov 1300-1700z	QRP Contest Community **HOT PARTY** (3rd Sun in Nov)
26th Dec - 1st Jan 2009	**G-QRP Winter Sports**

(Please advise G3XJS of any errors, or omissions.)

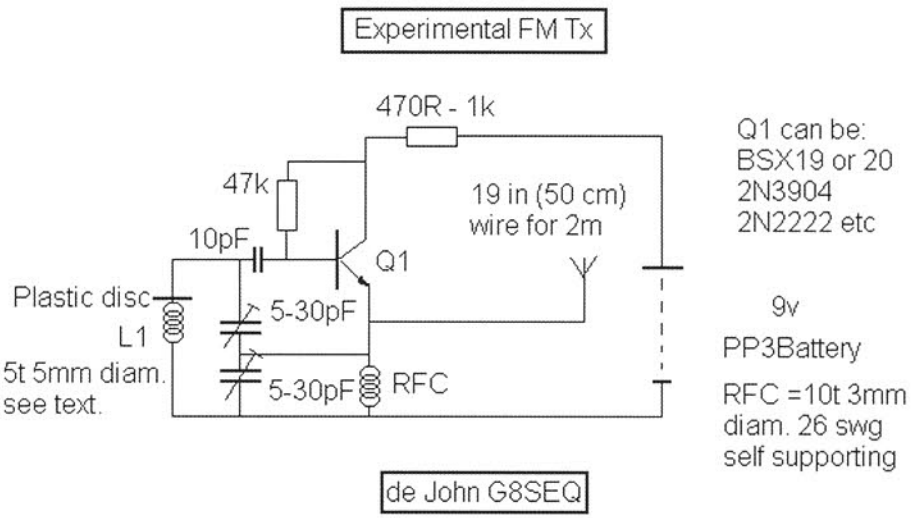
VHF Managers Report

John Beech G8SEQ 124, Belgrave Road, Wyken, Coventry CV2 5BH.
Tel. 07858 777363 e-mail: John@g8seq.com

Having seen Roger (G3XBM) and Miguel's (PY2OHH) minimalist approaches to HF Tx reminded me of my VHF efforts some years ago.

FM Tx

This design is purely experimental – just for fun! I wouldn't advocate it as a serious Tx for reasons given below. Here it is:



What's the plastic disc for? It is the microphone diaphragm! This is glued directly to the oscillator coil. The latter is a self supporting coil made from 22 – 26 swg wire. There is room for experiment here with wire type eg. copper, steel, beryllium-copper or brass.

How does it work? Well basically it is a Colpitt's oscillator. There are plenty of texts about explain how these work so I won't elaborate. The diaphragm picks up sound waves and vibrates the coil longitudinally. This causes changes in the inter-turn capacitance of the coil, thus altering the circuit constants. The net result being frequency modulation (FM) on the fundamental frequency.

The drawbacks: as it is a free running oscillator, the frequency stability is poor. (This could be improved by using a crystal with the coil acting as a frequency pulling device, but a tad expensive for a Sunday afternoon experiment!)

The other major drawback is there is no means of electronically controlling the AF bandwidth of the audio signal or the peak deviation. Possibilities include experimenting with different thicknesses of diaphragm (increased mass) and springiness of the coil to introduce some high frequency damping. Alternatively some soft sponge could be placed in the coil or fitting it in a sponge/fibre lined enclosure. (I haven't tried this) The deviation/microphone sensitivity can be controlled by changing the area of the diaphragm. I used a disc of about 20 mm diam. in the original. Some ball park figures for L1:

4t 5mm diam, 26 swg = 2m
7t 5mm diam 26 swg = 4m
10t 5 mm diam 26 swg = 6m
I used some single strand wire stripped from some telephone cable originally.
For the diaphragm, try a piece of plastic from a blister pack or PET bottle. I've also tried a thin piece of copper foil soldered directly to the coil, but this also electrically loads the circuit and shifts the frequency down.
Power output? Haven't a clue! DC in is about 10 mW so don't expect more than 5 mW o/p.

The new G-QRP Mini-Convention 2008

A short report by Graham G3MFJ

Now the dust has settled from our venture in Rishworth, here are a few comments. We tried to make it as near as possible to how it has been in past years – and I think we succeeded. The hall is 2 or 3 times bigger than George's church hall, and whilst the lecture theatre is not the impressive Victorian Church in Rochdale, it is right up-to-date with modern technology, and comfortable seats. There was plenty of room for chatting, and there were the usual tables for tea/coffee & eating the traditional pie and peas. We had a couple of extra traders – plus a couple more who booked space and didn't turn up! Next year we will have a better system.

We have had lots of praise from those who attended, however, for the three of us that organised it, it was a lot of work, and if we are to do it again next year, we will need more help. Our thanks go of course to the guys who helped, the club members (and wives) know who they are, and we are very grateful to them. Neither could we have managed without the Halifax Club members who worked tirelessly all day, but we do need more help. I have already got a volunteer to organise and run a raffle, and another who has offered to organise the traders. The "honesty box" table of items from an SK ham and items from Gus' collection worked well and made a nice contribution to the running costs of the event. Perhaps we should do that again.

We would like to have some sort of "buildathon" next year – the school has some wonderful laboratories and I have a "kit" man on standby to provide a suitable project, but I need someone to run it – any volunteers?

I have also had a number of useful suggestions over the club email list, but are there any members reading this who can offer suggestions, or help?

Please send George or me your suggestions – and offers of help. If you wish to speak on the phone, my number is 0113 267 1070, and I will call you back if you want a long chat. The date of the next Mini-Convention is **Saturday 24th October 2009**

MEMBERS' NEWS

by Chris Page, G4BUE

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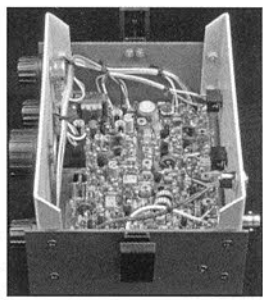
Pulborough, West Sussex RH20 2HJ
E-mail: g4bue@adur-press.co.uk

Congratulations to **G3YMC** on being presented with the Don Cameron **G4STT** Memorial Award for 'achievement in low power communications'. Dave was attending the RSGB's HF Convention at Wyboston on 11 October and the award came as a complete surprise to him. This is an RSGB award and previous recipients are **G3RJV**, **G3WGV**, **GM3OXX** and **GØUPL**. Dave says, "This award is a special made version of the Norcal 20 transceiver in a brass box and looks quite nice. I have resisted the temptation to power it up and connect an antenna, but assume it would get me quite a lot more QRP QSOs! There seems very little about the Award on the Internet and I propose to put something about it on my web-site, <http://www.davesergeant.com>. Is anybody familiar with its history? I vaguely remember it mentioned in *RadCom* some time ago but cannot find anything, and it doesn't appear to have been mentioned in *SPRAT* either".

GØFUW says a second *Bath Buildathon* will be held 17 January 2009 and the Brendon DSB transceiver from Tim Walford's Somerset range of kits has been chosen. Contact Steve at <G0FUW@tiscali.co.uk > for more details. Steve has continued working on his **G2DXK** transceiver and says, "A slight diversion to explore an alternative IF strip found me building the Hands RX1 from *QRP Basics*. If anyone would like a copy of my PCB layout they are welcome. It works well on 20m, is quite stable and has plenty of audio. I have added AGC from **G4GXO's** fine Belthorn IF module <http://www.g4gxo.cwc.net/belthorn_ssb_if_module.htm>), and now have the pleasure of steady audio and a 'dancing needle' S meter. I am now back at work on the **G2DXK** to apply what I have learnt".

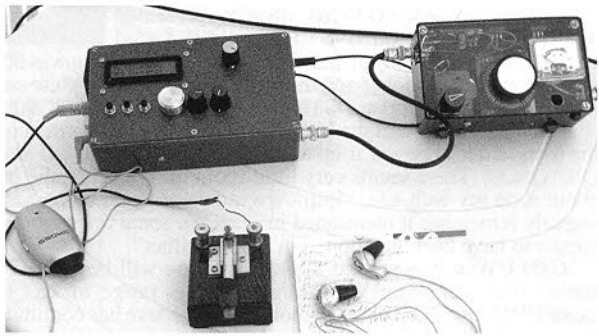
NorCal announced their newest kit at the beginning of October, the 2N2/XX (right), which is a single band transceiver designed by Jim, **K8IQY**, and available in three bands for 40m, 30m and 20m, see <http://www.norcalqrp.org/nc2n2xx.htm>. The kit is a PCB based design with all parts included. The case is custom made from Ten-Tec and is the popular design with the latches on the side for easy removal of the top so you can show off your work! The kit is $125, plus shipping, and there is one run of 500 kits only.



GØBON built the Norcal 20, a DDS VFO signal generator based on **WB2V**'s design and the 2N2/40 rig this summer. Ivan says, "After mending my doublet in November I put out a CQ on 14060kHz with the Norcal 20 at 4W and had a reply from 4E2WU, 559 each way and my best DX so far. I am absolutely amazed what can be achieved with QRP. Pictures for the above construction projects are on my blog, <http://g0bon.blogspot.com/>". **G4ICP** writes on 16 November, "I have just been listening to the **IZ3DVW** beacon on 7039.6kHz at fair strength. According to the web-site, <http://www.qsl.net/iw3fzq/Beacon-area.html>, the power is 100mW to an inverted vee.

Gian, **I7SWX**, says that NXP (founded by Philips) have just made their *RF Manual*, 11th Edition available for download at <http://www.nxp.com/acrobat_download/other/discretes/nxp_rf_manual_11th_edition.pdf>. **G3XBM** draws our attention to <http://ea3fxf.googlepages.com/flea> which he says is an amazing ultra-simple rig from **EA3FXF**. On 21 October Roger made a QSO with **M1KTA** with his own ultra-simple rig, the FETer (18mW and regenerative receiver), at 11 miles distance on 80m. He says, "Dom was perfect copy on the regen receiver when running 500mW to his FT-817 and another 10dB lower would have been ok, see his blog at <http://www.m1kta-qrp.blogspot.com/>. So far, there are five QSOs in the log with the FETer, see <http://g3xbm-qrp.blogspot.com/2008/10/2nd-qso-with-feter-80m-micro-ri>".

G3XBM also draws our attention to a 'Seven parts QRP TX' by **PY2OHH** at <http://py2ohh.w2c.com.br/trx/curruira/curruira.htm> and **G4GXO** to the "Minimalist Transceiver' by **VK2ZAY** at <http://www.vk2zay.net/article/156>. Ron says, "This one employs FM, is not crystal controlled and operates at VHF. Little more than a novelty perhaps, but nevertheless an interesting example of the art of minimalist design!". **VU2RQ** says, "A few years ago **JH5ESM** did some work using the TA7358 for a DC receiver. Here in India my friend **VU2HMY** has developed a five-band SSB/CW transceiver using the TA7358, details at <http://shipwreck.yi.org/documents/projects/homebrew/vu2hmy_2K8_All_band_SSB=-CW_XCVR.pdf>". **ON6WJ**, **OE6WTD** and **DL2BQD** have all built the PFR-3 at the same time recently and Dieter says, "The rig is easy to assemble if you know how to hold a soldering iron".



GØVXG sends the picture (right) of his CW QRP rig and power/SWR meter that he used on 30m this summer as **EA6/GØVXG** in Son Parc Menorca. Richard says he had some reasonable contacts but no DX. The rig is home built and designed (most of the circuits from *SPRAT*), power is 5W and he was using a wire dipole suspended from three bamboo poles. **M5CHH** says **M1KTA** found some 28SWG coloured copper wire used for stringing beads while browsing a local craft shop with his wife, that is also ideal for making multi-winding toroids. Clive says it is supplied in several colours in 24 yard lengths on cotton reels at £1.25 each, tinning was easy and the insulation is very good. He bought it at his local branch of Craft Central and see it is supplied by Impex Creative Crafts of Wembley, Middlesex, <http://www.impexcreativecrafts.co.uk/>. Craft Central also sell 24SWG coloured wire in 50 feet coils for £1.99 a pack.

After being QRT for some years, **MØAWN** got his Hands GQ Plus out and found it had gone deaf on all bands. Chris, who was one of the first to build this model with Sheldon constantly giving a helping hand in its development and construction, was told by Sheldon to reload the software. The snag is it is on a 3½ inch floppy disk and he has lost the programming lead. Chris asks if a kind member can program it for him and also give it a 'once over' (he is willing to pay).

GM3OXX says that even if a band sounds dead, trying calling CQ on the QRP QRGs. George did that on 12 September and after the first CQ, **ZS6BTY** running QRP answered him, followed by **KØZK** QRP, **PY6EMC** and **KZ8G**. Referring to the supposed poor band conditions, he sent the photograph (below right) of some of his QSL cards from QSOs this autumn, mainly on 20m. On 30 September he QSO'd **AH2L** on 17m for only his second Guam station. **GM4XQJ** is another member who put out a CQ on 14060kHz and then saw on the *Skimmer* that he had been heard in the USA. Brian was running 500mW and says, "What a great way to see/hear that your CW signals are getting out".

IKØIXI has put a video on *Youtube* about his homemade QRP SSB/CW transceiver at <http://www.youtube.com/watch?v=A0ljPmTC-UE>. Fabio thanks his son, Luca, for making the video. **G4OEP** has made some tests using PVC cable for HF feeder and has written up the results on his web-site at <http://g4oep.atspace.com/pvc/pvccable.htm>. Andy says, "They indicate that in short runs at HF, PVC cable is likely to be completely acceptable". **IV3YNB** has a blog about homebrewing on his web-site at <http://www.iv3ynb.altervista.org>. Matteo regularly translates the Italian postings to English.

On 1 September **MI5MTC** QSO'd **IWØBNW** in Rome on 20m while running 5W CW with his Nor-cal 20. Mick says, "The antenna was an untidy loop about 200 feet long fed with twin-feed, and its highest point

about 33 feet and sort of sloped south to southeast. When conditions are ok, it seem to get lots of Italians". On 4/5 October a special event RU-QRP Club station **UE3QRP/3** was QRV at Zvyozdny Gorodok, near Moscow to celebrate the 51st anniversary of the first Sputnik launch; also **UA9LAK/UN7** was QRV on QRP from the Baykonur Space Port, Kazakhistan.

G3YMC made his "first venture into the strange world of Sprints" on 9 October. Dave made 39 QSOs with 5W from his K2 and said, "After keep telling myself not to send 599 like it flows off my tongue, I quite enjoyed it". **G3JFS** QSO'd **VK4EMM** on 40m at 0800z on 11 October in the Oceania CW Contest, and then **VK7GM** at 0810z. Peter was using 5W to an end-fed wire. **G3KJX** planned to be QRV 10 November/8 December as **CT1/G3KJX** on the QRP CW QRGs and PSK31. Brian is hoping for more QSOs than his previous trip.

Les, **GW3PEX,** sent the photograph on the right of his equipment and (below) an enlargement of the Picastar II by **G3XJP** and the Epiphtye by **VE7QK**.

F5NZY has erected his Spiderbeam 40 feet fibreglass pole in Normandy and recently discovered the CobWebb antenna, see <http://www.g3tpw.co.uk/index.html>. Steph would like to hear from members using this antenna. Recent QRP QSOs with his Hexbeam on HF include PY, LU, CX, JA, UA9/Ø, 5N, S79, 7X, VQ9 and V5 and **W6PU** in New Mexico on 40m on 11 November. Steph says, "As an avid NCDXF listener, I note there is never a beacon I can hear with its 100W that I cannot hear with 10W". **GØEBQ** has been almost exclusively on 17m SSB with his Hendricks BITX modified for that band and has QSO'd 4Z, 7X, CN, 9K and the **TO5DX** DXpedition to FJ. Nigel says, "I'm not a DX chaser and just take it as it comes, 17m is a terrific band for QRP and is now open most days. I musn't neglect my CW though!".

G3XBM made his first QSO on 502kHz on 21 October. Roger says, "The transmitter was certainly unusual: an old Farnell LFM4 audio/LF generator tuned to 502kHz putting out 20mW, with a CW key in the RF output lead then (crudely) matched with a ferrite rod matching network to my 49 feet long end-fed wire and central heating ground. The ERP will have been around a few microwatts at best, but two miles away the slightly chirpy signal was copied reasonably well by **MØBXT**. A simple one watt transmitter on 501-504kHz into the same, very far from optimised, antenna system would certainly span 5-10 miles or so and be good enough for local contacts. Incidentally, the **SK6RUD** beacon on 500.3kHz was a good signal this evening".

That clears the files once again. Many thanks to all the contributors; without them, there would not be a *Members' News* column. Please let me know how your winter goes, including your entries in the QRP sections of the many winter contests, and photographs of what you have been building, etc, by 20 February please?

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 } £1.00 (UK); £2.30 EU
Radio Projects volume 3 – Drew Diamond – members £5, non-members £10 plus post } DX - £3.90 per book
6 pole 9MHz SSB crystal filter 2.2kHz @ 6 dB, 500ohm in/out **£12 plus post** } **plus** postage
Pair LSB/USB carrier crystals HC18U wires - [9MHz ± 1.5kHz] **£6 pair** }
SA602AN - £1.75, MC1350 - £2.00, IRF510 FETs - £1.25 } **(ANY quantity)**
LM386N-1 - 4 to 15v, 300mW, 8pin DIL - **£0.40** }
MAR-4 RF amplifier - £1.50 } 60p (UK),
HC49U (wire) crystals for all **CW** calling freqs – 1.836, 3,560, 7.028, 7,030, } £1.20p EU,
7.040, 10.106, 10.116, 14,060, 18,096, 21.060, 24,906, & 28,060 - **£2.00** each } £1.70p (DX)
HC49U (wire) crystals for DSB on 40m – 7.159MHz - **£2.00 each** }
HC49U (wire) crystals – 10.111MHz – 50p each } If
HC49U (wire) crystals – 3.5795MHz, 3.6864MHz, 4.1943MHz, 10.0MHz, }
13.50MHz, 32MHz – 30p each } ordered
Miniature crystals (watch crystal size – very low power) – 7.030, 10.106, }
18.096, 21.060, 24.906 & 28.060 – limited quantities - **£2.00 each** } with
Ceramic resonators – 455kHz, 2.0MHz, 3.58MHz, 3.68MHz & 14.30MHz – 50p each } heavier
Polyvaricon capacitors – 2 gang (A = 8 to 140pF, O = 6 to 60pF) c/w shaft ext & mtg screws - £1.20 each }
Schottky signal diode – 1N5711 low fwd volts for up to vhf/uhf **20p each** } max of 5 } items
Varicap diodes – **MVAM109** – 40pF @ 9v, 500pF @ 1v. **75p each** } max of 2 } use that
– **MV209** – 5pF @ 12V, 40pF @ 1v **35p each** } per member } postage.
CA741 op-amps 8pin DIL – **5 for £1** } plus
2SC536 transistors (npn) fT - 100MHz, hFE-320, VCBO+40V - **5 for 50p** } 10%
MPSA92 transistors (pnp) fT - 50MHz, hFE-40, VCBO-300V - **5 for 50p** } of this
} postage

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

T37-2 – 75p; T37-6 – 75p; 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
FT37-43 – 80p; FT50-43 - £1.20; FT37-61 - £1.00; FT50-61 - £1.20;
BN43-2402 - £1.00; BN43-302 - £2.00; BN61-202 - £2.00
Ferrite beads – FB-73-101 (3.5mm dia x 3.2mm long, 1.2mm dia hole) – **40p for 5**

Plus postage – up to 5 packs = 60p (UK), £1.20p (EU), £1.70 (DX); 5 – 10 packs = £1.20, £2.40p, £3.40 etc. (please note – if you order 2 packs – you will probably get all 10 in one pack)

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 – £1.00, EU – £1.80, DX - £2.40. More – add 80p, £1, £1.20 each)

Back issues of SPRAT are still available at 50p each. I have most issues from 78 plus a few earlier ones. UK Postage is 1st magazine – 50p, each additional magazine add 40p.

Sprat-on-CD V3 – 1 to 132 (see Sprat 132) – members price - £5 plus post UK - £1.00, Eu - £1.20, DX - £1.70

I have sold out of the large toroids and the 9MHz CW filter no more are expected.

Please note - I only have stock of the above items – I do not sell anything else. Anything in previous advertisements not shown above is out of stock – if it becomes available again – it will be in the next magazine.

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

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

Visa/Mastercard. - **Due to insurmountable problems, we have now ceased to accept credit card payments – sorry to anyone this affects – if it really stops you buying from the club, or paying your subscription - please contact me and we will sort something out.**

If ordering multiple items, enclose the highest postage charge plus 10% of the rest please.

MINIMUM ORDER for cheque or PayPal payments is £5

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You can order via e-mail to g3mfj@gqrp.co.uk Pay by PayPal please.

PayPal is very successful – if you can use it, please do – it is easy! Send the order to Paypal using g3mfj@gqrp.co.uk - show clearly what you want with the payment – pay in GBPounds please - and include your membership number!