SPRAT

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DEVOTED TO LOW POWER COMMUNICATION

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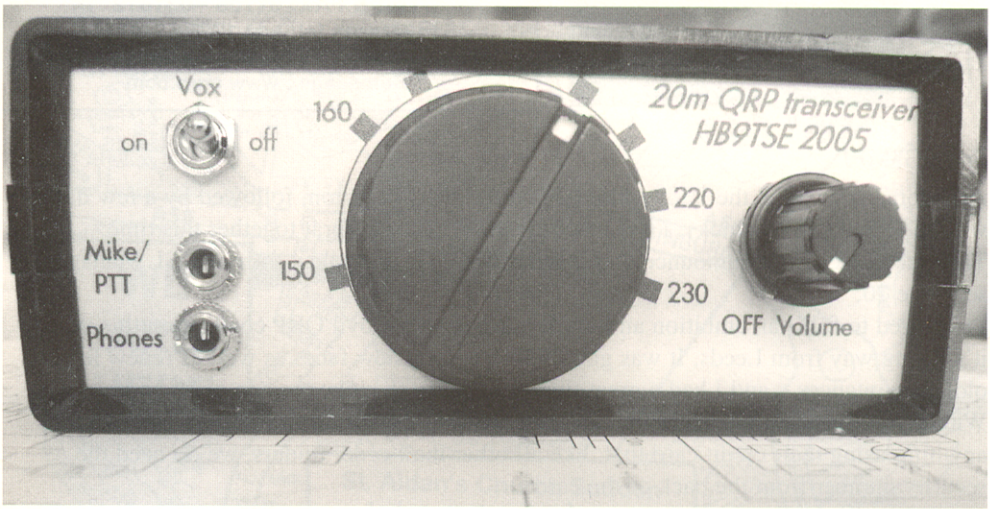

HB9TSE 20m QRP SSB TRANSCEIVER

Mini-Convention 2005 ~ Weak signal QRSS ~ Stability of W8DIZ ref
Measuring audio distortion ~ 50MHz to 28MHz converter
Scanning using a 555 ~ VHF WX converter for 817
The Micromountaineer ~ Simple 20m SSB transceiver
Small Wonder Labs DSW kit ~ Another ATU system
Headphone amp ~ Plug-in coils ~ Variable ceramic oscillator
Parley-vous QSO? ~ No interface PSK31 ~ Simple dummy load
Antennas-Anecdotes-Awards ~ Useful CD tip
Communications & Contests ~ Member's News ~ Club Sales

QRP Mini-Convention – Rochdale – 7th October

JOURNAL OF THE G QRP CLUB

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From G3MFJ

As George is away in the USA making his usual trip to Dayton, followed by a few days with the monks in Kentucky, I have the honour of putting Sprat together this time.

The club is pleased to announce that Dave, GM3VTH, has taken over as QSL Manager – see page 20.

I managed to fulfil an ambition and make a trip to the Yeovil QRP convention this year – it's a long way from Leeds. It was good to meet some new faces as well as renew lots of old acquaintances – and I had a great time. I must try to make the trip again soon.

With my new treasurer's hat on, please can I remind those of you who pay the club for anything using their credit card that, like all other mail-order traders, we do need the security number from the back of the card.

72/3

Graham

The W1FB Memorial Award 2006

For 2006, the theme is **Shack Accessories**

Submit any design on this theme – those little [and large] useful extras that help to run your 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.

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THE G QRP CLUB
MINI-CONVENTION
SATURDAY 7th OCTOBER 2006
ST. AIDAN'S HALL SUDDEN ROCHDALE

ADMISSION £1 - DOORS OPEN 10am – TALK-IN S22
LARGE SOCIAL AREA - LECTURES ON QRP SUBJECTS
BRING & BUY - SURPLUS - JUNK - COMPONENTS - KIT TRADERS
FOOD & DRINK ALL DAY - INCLUDING THE FAMOUS PIE AND PEAS

LOCAL ACCOMMODATION: The Royal Toby Lodge - Tel: 01706 - 861861.
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Extreme Weak-signal QRSS experiments

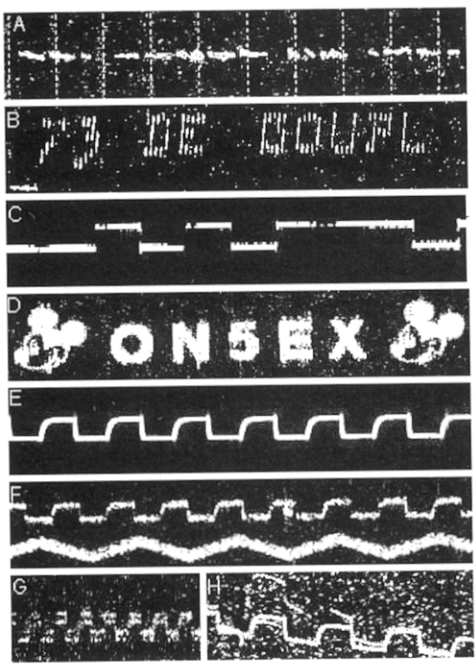
Hans Summers G0UPL, Unit 202/203 BDC, 52 Upper St, London N1 0QT
http://www.hanssummers.com Hans.summers@gmail.com

What on earth is QRSS?

We QRPers know that when conditions are less than ideal, aerials imperfect, QRM abounds or we simply want to use very low power, CW can get through better than SSB. The main reason for this is that the bandwidth occupied by a CW transmission is much less than SSB, so we use narrower filters. Less noise therefore accompanies the wanted signal, thereby improving the signal to noise ratio (SNR). Take this a step further by reducing the speed of CW still further, increasing the dits to 10 seconds length (just 0.12 words per minute!) and the bandwidth is now a fraction of a Hz, with massively improved SNR.

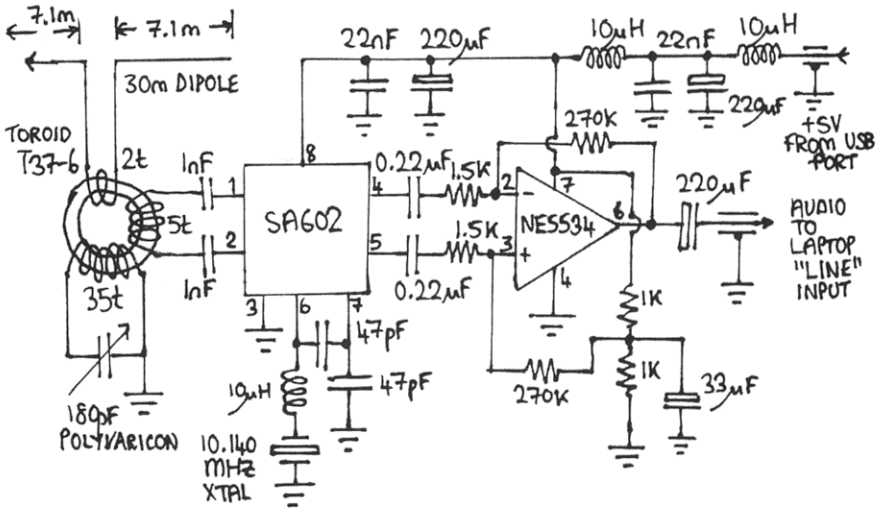
Computer software (for example ARGO, see http://digilander.libero.it/i2phd/) is usually employed to perform a Fourier transform and plot the results on the screen in real time. Scrolling gently leftwards, with signal intensity in each frequency "bucket" represented graphically by pixels on the vertical axis of the screen, the message gradually appears. A variety of transmission modes (see below) are possible for beacon and QSO operation, using small frequency shifts of a few Hz. But remember, QRSS is not for the impatient!

QRSS test results can be very impressive with very low powers: earlier this year David VK6DI copied a mere 500uW on 30m from Larry WB3ANQ at an 11,557 mile distance! Other tests between VK6JY and VK6DI spanned 240 miles with only 50nW on 40m.



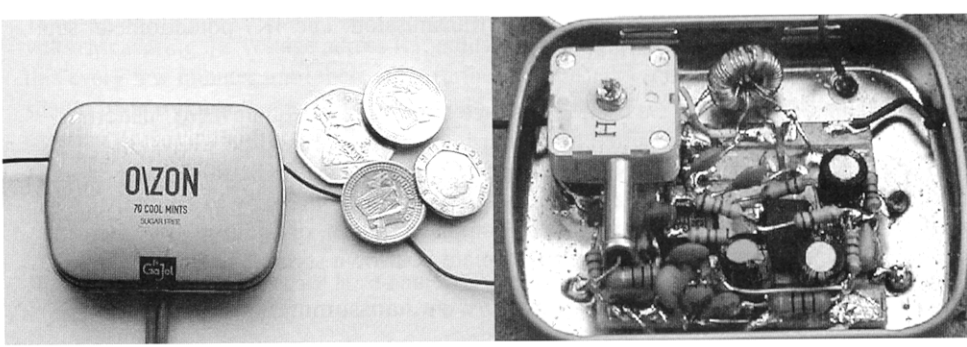
A: Plain QRSS morse, with 10s "dots". "G0UP" copied by Wolf DL2WRJ.
B: Slow-Hellschreiber, "73 DE G0UPL" copied by Heinz OE5EEP
C: Part of an "L" in FSKCW rcvd by Christian DL6JAN (unknown sender)
D: Mickey Mouse cartoon and callsign sent by ON5EX using PC sound card, rcvd by Johan SM6LKM
E: G0UPL's pattern (see later) as received by, ahem, err, G0UPL!
F: G0UPL (upper trace) and the triangular waveform of Larry WB3ANQ, received by Mike ZL4OL
G: Ionospheric doppler effect on G0UPL pattern received by Pierre ON5SL, causes a split trace
H: Mobile with my receiver (see later) receiving my transmitter (see later) 20 DX miles across London, with reflected signal from a passing aircraft

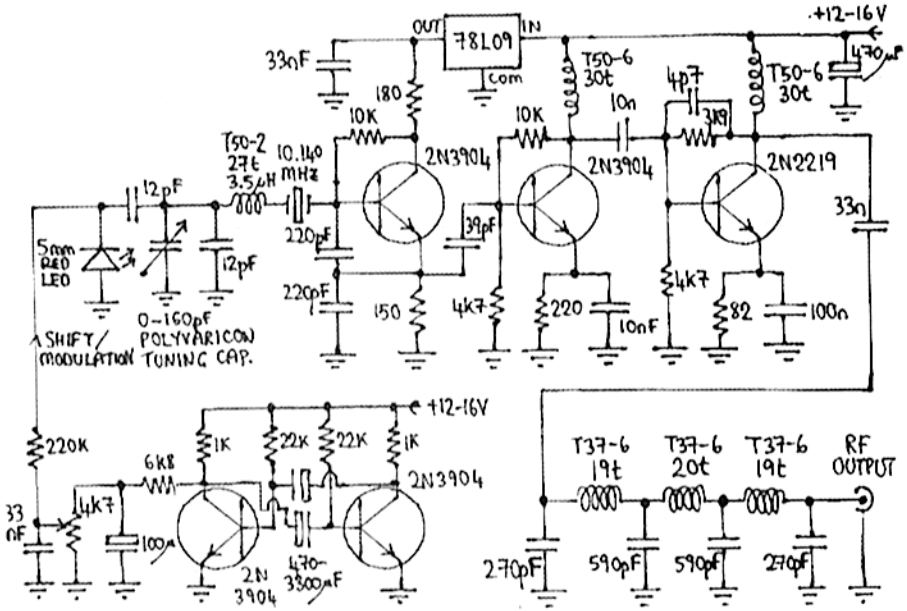
There is an active group of experimenters called "QRSS Knights", concentrating mainly with test transmissions rather than QSOs, on 30, 40 and 80m (contact on5ex@pandora.be to subscribe to the email forum). The 30m centre of activity is 10,140,000 – 10,140,100 Hz and suitable crystals are available from Peter DL6NL (dl6nl@aol.com). The following 30m QRSS projects are simple yet surprisingly effective!



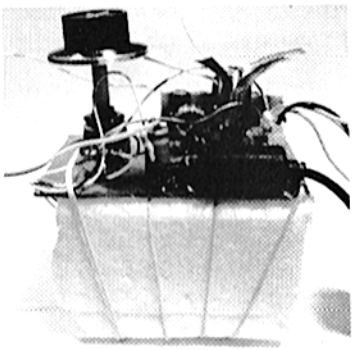
A simple 30m QRSS receiver

This simple crystal-controlled direct conversion receiver is capable of surprisingly good performance. It was based on a receiver built by Paolo IZ1KXQ, who in turn was inspired by an article in October 1997 QST by Daniel N1YBT. The differential architecture renders it highly immune to broadcast breakthrough. It is powered from a computer's USB port, which provides 5V (red and black wires of a standard USB cable). I filtered this through two 10uH inductors to remove any trace of computer noise. Other low noise single-supply (5V) op-amps e.g. TL071 would also suit. Screened cables carry power and audio to/from the computer. I built mine "ugly"-style in an O\ZON mint tin hung directly at the dipole centre. With a laptop, 14.2m of dipole wire and two conveniently spaced trees you have an effective and portable QRSS monitoring station!





A simple 30m QRSS transmitter



Any old transistors from the junkbox can be used for this simple transmitter with classic line-up of oscillator stage, driver and power amplifier, derived from work by Peter DL6NL and Colin G6AVK. Mine delivers 360mW to an indoor attic dipole and has been copied by 38 stations, including VK6DI, WB3ANQ and ZL4OL! I used a 2N2219 PA with a heatsink fashioned from a scrap of brass shim. In use it gets barely detectably warm. I built the transmitter "ugly" style, and enclosed the crystal oscillator in a polystyrene box (scrap packaging and rubber bands!) to reduce thermally induced drift.

The 3.5uH series inductor and a polyvaricon (AM radio) variable capacitor allow slight tuning of the crystal frequency. A 5mm red LED acts works well as a varactor (varicap) diode and permits frequency modulation of the transmission. The 4K7 potentiometer sets the amount of shift: 5Hz is about right.

A simple astable oscillator can be used to produce a distinctive "squarewave" pattern (a fast 12 wpm CW ID could be inserted at regular intervals by keying the +12V line). 2500uF capacitors will provide a cycle of about 20 seconds. The 6K8/100uF integrator action causes the edges to become a little rounded, which is a nice way to uniquely identify the transmission. Another choice of component values, or addition of perhaps a diode, could shape the waveform differently. Create your own style!

Further information and references at: http://www.hanssummers.com/radio/qrssjb

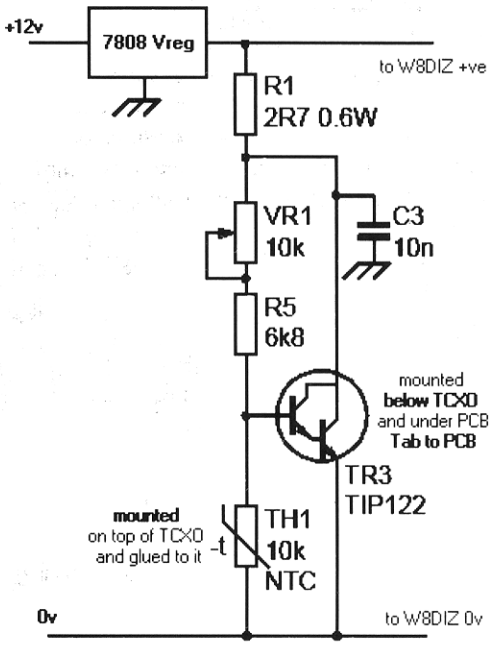
Improved Frequency Stability Mod for the W8DIZ frequency standard

Mike Waterfall G8NXD, 12A Boskenna Rd. Fourlanes, Redruth. TR16 6LS

This mod came about as I was trying to match some crystals to within 10Hz for use in a filter but I couldn't get repeatable results.

The test set-up was a W8DIZ VCXO standard oscillator used as the reference in a homebrewed frequency counter and a test bench crystal matching circuit. Every time I tried to measure the crystals frequency it was different so I put it down to poor oscillator design in the test bed.

However, on borrowing an Off-Air Standard to drive my counter I discovered that the W8DIZ oscillator was drifting by about 6Hz at 10Mhz which was causing me the problem. So I watched the W8DIZ standard for a few days and I quickly discovered that it was sensitive to ambient temperature even though it was fitted in a sizable chunk of polystyrene insulation. The cure is simple and very worth while. It is now drifting by less than 0.1Hz at 10 MHz, certainly less than I can measure with my counter.



I simply added a proportional oven onto the VCXO. The circuit is very simple, cheap and maintains the VCXO at about 35 deg C irrespective of ambient temperature. The TIP122 is glued under the PCB, and directly under the VCXO with the tab against the PCB. The thermistor is glued to the top of the VCXO. The rest of the circuit was built on a bit of veroboard

When everything is built and ready for power-up, wind VR1 to its maximum value and apply volts. Measuring the voltage across R1, adjust VR1 for a drop of 100mV. Continue doing this every few minutes until there is no further change, now the entire "oven" assembly should be at a stable temperature of about 35 deg C and the VCXO now unaffected by exterior temperature effects.

Obviously this can be used with crystals too, as in the Pic-a-Star project, from where I got the idea and the circuit, thanks to G3XJP and G3NHR.

Note from G3MFJ – sorry, we have now sold out of the W8DIZ kit and no more supplies are expected.

Measuring Low Levels of Audio Distortion

Dr. Andrew Smith G4OEP

The traditional way of measuring total harmonic distortion (thd) in audio equipment is to drive the system with a very pure sine-wave source, and then use a deep notch filter at the output of the item under test to remove the fundamental signal. All that remains then is harmonic distortion plus noise, which is measured on a suitably calibrated voltmeter. If the test is done twice, with and without the sine wave input, noise can be separated from thd by simple numerical subtraction. This technique has stood the test of time, but depends on the availability of a suitable filter. If thd is to be measured down to less than 0.01% the filter must attenuate the fundamental to a level below 1 part in 10,000, which is a very stringent requirement. J Lindsley Hood gives an example of a suitable circuit in his book 'The Art of Linear Electronics' [1]; it is dauntingly complex, and probably does not achieve this level of attenuation.

An alternative technique described here depends on a Fourier transform audio spectrum analyser running on a pc. The software is *Spectrum Lab* by Wolfgang Buescher (DL4YHF), and it can be downloaded from his website [2]. This is a splendid piece of software which turns out to be ideal for this application.

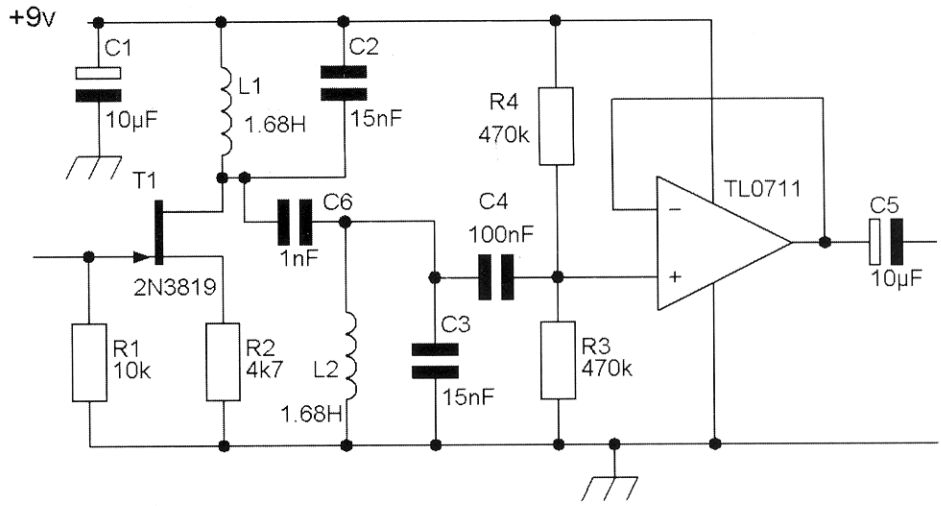
When I first explored this system I was aware that success depends on a number of crucial factors which could limit the lowest level of distortion that could be measured. Limitations of this kind could, perhaps, make the technique useless for measurements on truly hi-fi systems where distortion of 0.01% is nowadays considered as measurable, and worth knowing about.

Firstly, a signal source of very high spectral purity is required. The level of distortion present in the signal source must be comparable to that introduced by the system under test if it is not to mask the distortion which is to be measured. Secondly, the same very high level of fidelity is required in the pc's sound card, and in the software. The dynamic range of DL4YHF's software display looks promising on the screen (120dB, or 0.0001% in terms of voltage), and the noise level with my sound card is less than -100dB (0.001%), so initial impressions were good. But what about the distortion in the sound card, and the signal source? All hinged on whether it would be possible to reduce displayed harmonic spikes to below -80dB (0.01% voltage).

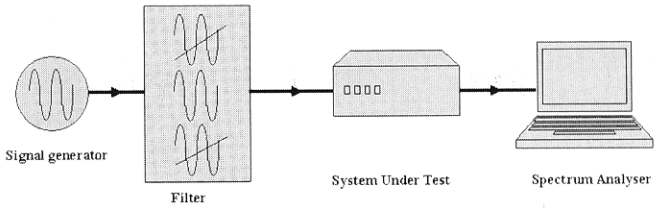
I have two signal generators in the shack, one a home-brew Wien-Bridge design, the other the GQRP club direct digital synthesiser (DDS). The DDS has better performance, and showed harmonics in the –60 to –70dB range. Clearly this was not good enough, but was an encouraging first attempt. The next step was to improve this performance by adding a filter tuned to the fundamental (1kHz was chosen) to reduce the harmonics further. This could be done with an active low pass filter using op-amps, but I chose a simpler route.

Fortunately I had two 1.68 Henry ferrite-cored inductors handy, and made up the circuit shown. This is a double-tuned bandpass filter designed for a very narrow pass-band of about 20Hz. The FET drives the first tuned circuit with a high impedance, necessary for high Q, while the op-amp buffers the 2nd tuned circuit with a high impedance load for the same purpose. Signal level is adjusted for 1Vpk at the output. The result is shown below, and is very satisfactory. Only odd harmonics are present (the 5th can just be seen), and are both

below -90dB (0.003%). There are odd spikes below 1kHz, and at 4.4kHz, which probably come from the sound card, but these are irrelevant to harmonic content.



The final system is as shown below. When setting the system up care must be taken to adjust the signal levels at various parts of the circuit in order to avoid over-driving either the filter or the sound card; harmonic content increases dramatically if either is pushed too hard. Similarly, the distortion introduced by the system being tested is often dependent on the signal level applied to it; discovering this characteristic is part of the test. A potentiometer volume control is useful at the input to the sound card.

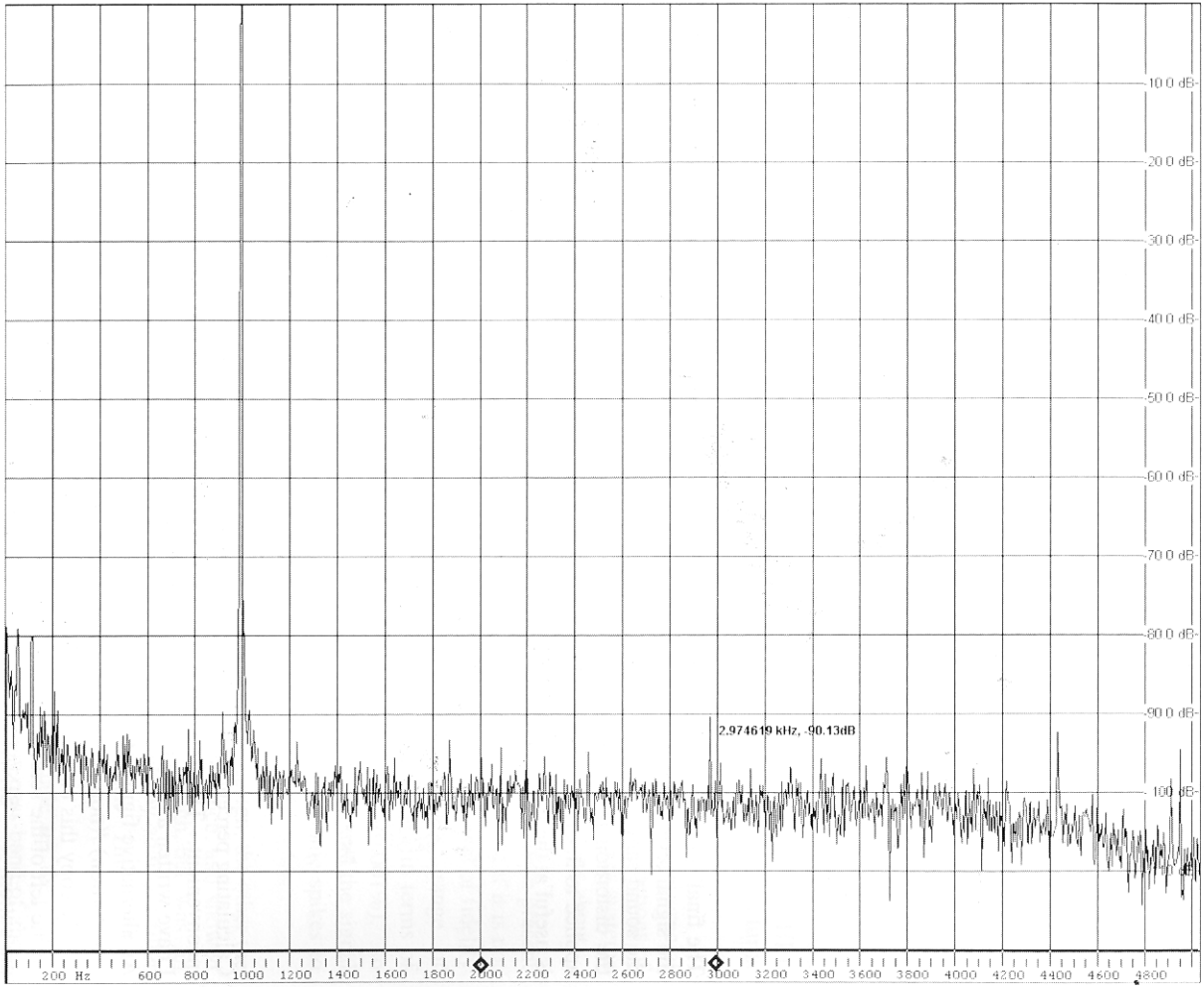


Calculating percentage thd from the measured harmonic spurs (h_2, h_3, h_4, h_5) is a little inconvenient. The formula is :- thd% =100*{10^(h_2/20) +10^(h_3/20) +...}
I have written a little Basic program to do this, which can be downloaded from my website [3].

An alternative figure of merit for an audio system is SINAD, defined as the ratio (signal + noise + distortion) /(noise + distortion), expressed in dB. Spectra Lab can calculate this directly; simply copy this code into the *Variable String Expression* field of one of the function buttons on the left of the screen, and the SINAD value wil be displayed continuously as the caption of the button - "SINAD="+str("00.00",sinad(#1,1000,100,1))+" dB"

References:

1. Butterworth Heinemann, Oxford, 1993
2. http://people.freenet.de/dl4yhf/spectra1.html
3. http://g4oep.atspace.com


10.0 dB
20.0 dB
30.0 dB
40.0 dB
50.0 dB
60.0 dB
70.0 dB
80.0 dB
90.0 dB
100 dB
2.974619 kHz, -90.13dB
200 Hz
600
800
1000
1200
1400
1600
1800
2000
2200
2400
2600
2800
3000
3200
3400
3600
3800
4000
4200
4400
4600
4800

50 MHz to 28 MHz Converter

Victor Besedin UA9LAQ, 625015 P.O. Box 1310 Tyumen. Russia

I would like to share with you a converter design to place between the antenna and a 10 metre receiver to cover the whole 6 metre band. It has improved selectivity and uniformity of transfer function across the whole band. It has straightforward construction and is economical as far as power consumption is concerned. The converter uses FETs permitting sharp characteristics of the band pass filters (BPF) which consist of shunt and series tank circuits – this fact provides minimal fading of the useful signal within the BPF range.

The whole territory of ex-USSR is covered by transmitters of the band 1 TV channels. 6 metre the most exotic amateur band is situated between image and sound carriers of channel 1 and is spoiled in cities (where there are frequently strong TV channel 1 transmissions) all with image signal components. Our city has this bad interference and the authorities do not permit transmitters in the 6m band.

The use of BPFs lessens the blocking effect on the receiving system converter-receiver by the image-carrier (max disturbance) and sound carrier (min disturb) functioning at frequencies: 48.75 and 56.26±0.15 MHz, respectively [reference 1]. They contain the majority of the power of the TV signal. Circuitry with improved dynamic range is really necessary but this goes against the requirement for power supply economy... Some measures were undertaken to improve the dynamic range (FETs, small gain of the front-end amplifier and the BPFs) but the economical variant was chosen as the most suitable for portable (and indoor) conditions. Taking away of the blocking effect will permit reception of signals where there are functioning TV transmitters, in between the TV signal components. The TV signals can be decreased by use of directional antennas, by use of spatial selection [reference 2], or by simple increasing the distance between TV transmitter and 6m receiver – remember: the field strength decreases faster than the distance is increased – doubling the distance from the TV transmitter decreases the TV signal by 4 times. The converter is supplied by a 9V battery, ideal to use in portable conditions.

The converter consists of: front-end amplifier – A1, mixer - U1, quartz-generator (crystal controlled oscillator) – G1 and BPFs – Z1...Z3 (Fig.1).

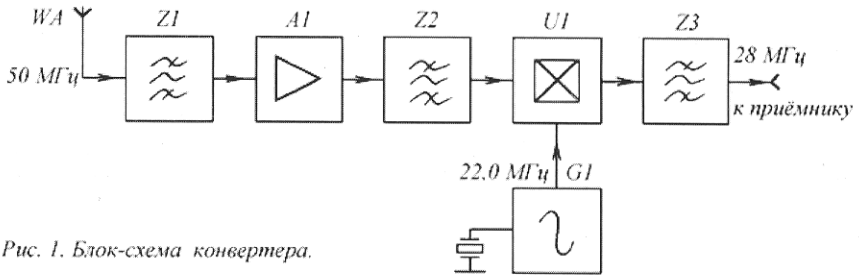


Рис. 1. Блок-схема конвертера.

Fig.1 Block diagram of the converter

The converter's circuit is shown in Fig.2. The 6m signal comes from a matched antenna to XW1 socket and goes to the tap of L1 in the first BPF L1,C2,L2,C3,L3,C5 (the rod or spiral antenna is connected to the "hot" end of L1 via C1 when being used portable).

The filtered BPF signal comes to the 1st gate of dual gate MOSFET, VT1 and amplified goes to the second BPF C7,L4,L5,C9,L6,C11 analogous to the first. The signal then goes to the first gate of the MOSFET VT2 functioning as a mixer, LO voltage is fed to VT2's second

gate. The LO uses a n-FET VT3, it's frequency is lower than the received signals, the IF lies in the amateur 10-m band (28.0 to 29.7 mc), which is common to most amateur receivers. The 3rd BPF L7, C13, C16, L8, C17 is tuned to this IF. The output-to-receiver IF signal from the tap on L8 via XW2 and coax cable is fed to the receiver's input to further process the signal.

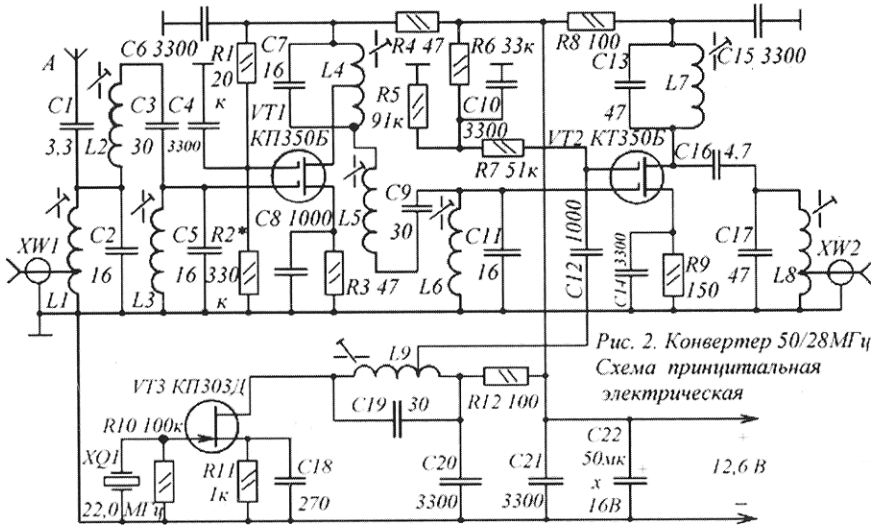


Рис. 2. Конвертер 50/28МГц Схема принципиальная электрическая

Fig. 2 Circuit schematic of the converter

The local oscillator (LO) uses VT3. The parallel resonance crystal ZQ1 is connected to the gate chain of the n-FET, the tank-circuit L9,C19 is tuned to 22 MHz. Resistors define the DC bias levels. Capacitors of more than 1000 pF are blocking. _8, _14, _18 help to obtain the desired gain on HF, _1 and _12 couple the parts of the unit, all the rest belong to tank-circuits. All the resistors are of 1/8 (1/4) Watts type, caps in tanks and everywhere are disc, tube or flat ceramic, except C22 – this is an electrolytic oxide type. MOSFETS are low power VHF 2-gate FETs (__350, __306 – rus.), VT3 is equivalent to the MPF102 (__303, __307-rus.). XQ1 is an overtone quartz resonator of 22.0 MHz.

The coil formers used are taken from a Hungarian FM radio type FM-164, the sets contain the cores (5 mm outside dia.) with VHF ferrite cores, screens and plastic former inside them. All coils are wound turn to turn without interval with enamelled wire: L1, L3, L4, L6 contain 10 turns of 0.41 mm wire, L2, L5 – 40 turns of 0.2 mm wire, L7, L8 - 9 turns of 0.31 mm wire, L9 – 20 turns of 0.31 mm wire. L1 and L8 do have taps at 2 turns, L4 and L5 – at 5 turns from the "cold" end of the coil. Every coil has it's own screen soldered to the printed circuit's upper foil.

The converter is constructed as in reference 3. The components are mounted on a double sided printed circuit (Fig.3) 140 _ 40 x 1.5 mm. The pins not connected with common ground are entered from the printed circuit top. All pins connected to the common ground are connected through holes with short wires and soldered, the "common" pins of components are soldered to upper foil of the circuit board (all except the common ground connections under the tank coils).

The holes in the printed circuit of 5 mm dia. are for the coil former mounts (having no other fixings), they are useful for tuning the tanks from both sides and good for extracting any broken ferrite cores.

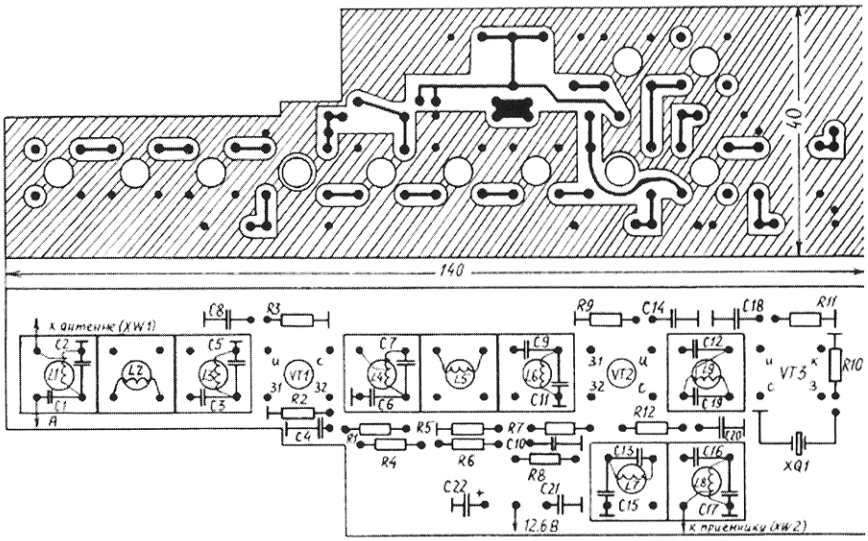


Fig.3 Printed circuit

The transistor cases of VT1 and VT2 are put into 5 mm holes situated between the tank circuits, these holes are slightly enlarged with a drill of greater diameter so as not to short circuit the MOSFETs' cases to ground. The corner cut-out from the printed circuit (Fig.3) is used for the battery, it should be encased so as not to touch the parts of the converter. When soldering MOSFETS to the printed circuit wind thin bare wire over the pins just under the cases to short circuit them against static electricity. After you've soldered the pins, take the wire away. Mount the transistors last after resistors, caps and coils have been mounted. If you want to correct the number of turns on L3, L6 or L4, L7 you have to short circuit to ground the MOSFET gates or drains by wire first and only then to unsolder the coils. R2 for setting the drain currant is desoldered first from gate 2 then from ground and soldered again in reverse sequence. This method prevents the MOSFETs from damage during mounting.

The adjustment must be started after checking the circuit board for short circuits and mistakes. Turn the converter on. Drain current of VT1 is to be set to 2mA by means of R2 at a supply voltage of 12.6V. The unit is then connected to the main 10m receiver. The gain of the front-end amplifier is set by the tap on L4. The nearer the tap to the pin connected to L5, the more gain, the problem is the amp stability. A small ferrite bead put onto VT1 drain pin or a series resistor of 1 to 47Ω will help to eliminate any instability. The converters consumption is 4.5mA at 12.6V and 3mA at 9V (good for portable use!). It starts to function at a supply voltage of 4.5 V, the frequency is stable because the local oscillator (LO) circuit is independent of supply voltage, only the output voltage is changed. The converter amplifies the signal by 3 times (at 12.6V) and only replicates the amplitude of the signal (gain = 1 at 9V) that's why the sensitivity of the main receiver must be high. The converter can be simplified by cutting out the front-end amplifier, the antenna will be connected then to the tap of L4 as it is done on L1. The "cold" pin of L4 is then connected to common ground.

The dynamic range of the converter will increase, but uniformity of transfer function and gain will be decreased. The dynamic range will be more than 60 dB [ref. 4].

The converter can be used with transceiver type UW3DI or the equal in block-diagram without the local oscillator. The LO voltage is supplied to the mixer of the converter from the LO of the transceiver [ref. 5, 6] via C12. A receiving range of 500 kHz is possible (50 to 50.5 MHz) but

then no BPF can be used at the converter output - instead it will be the function of the RX input circuit.
The tank circuits are best tuned with a characteristics meter showing the shape of BPFs to get a flat shape and common characteristic across the desired band. The 3 tank BPFs in combination as used in the converter have minimal signal attenuation of in-band signals, they can be used for improving of characteristics (real sensitivity and selectivity) of any other existing receiver equipment. The receiver (a homebrew one) used in these experiments with the 50/28 MHz converter is similar to that from the KRS-81 transceiver [ref. 7].

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TELFORD HAMFEST 2006: A NEW AMATEUR RADIO EVENT

Following the demise of the 2006 Telford Radio Rally, Telford & District A.R.S. have organised an alternative event, co-ordinated with the famous Ironbridge Gorge Trust Museum's Staff at "ENGINUITY" in Shropshire. A date has been announced – Sunday 1st. October 2006.
Since the original Telford Rally has been cancelled this year and the old group disbanded, The Telford & District A.R.S. have picked up where the Telford Rally left off, setting out to offer many features focusing on Amateur Radio past, present and future at this historic technology site.
"Enginuity" is a fantastic 'Hands on Technology Centre', which invites visitors of all ages and interests to roll up their sleeves and get involved !
Several of the key organisers of the Telford Radio Rally together with the Committee and club at TDARS are behind this new venture in Telford. The new site has been chosen because it offers more than just a radio rally venue, which gave the Telford Rally its past high reputation. The venue is in the beautiful Ironbridge Gorge at Coalbrookdale, a World Heritage site which is a great attraction in its own right, and visitors will be able to take advantage of a discounted admission charge to the "ENGINUITY" Technology Centre right next door.
It is just a few minutes journey south from the M54 at Telford and from other trunk roads. The postcode is TF8 7DQ for those who rely on gps or Internet navigation.
Above all, the organisers want visitors, their families and exhibitors to have a really great day out. More information can be obtained via www.telfordhamfest.co.uk , or by contacting Martyn G3UKV, QTHR at ukv@ukv.me.uk .

Scanning using a 555 timer

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

Scanning using smoke and mirrors .... oh and a 555 timer chip!

On a chatterbox 160m receiver I use this circuit to make the receiver scan either the top 100kHz or the bottom 100Kcs as selected by the tuning dial. The front end was too far out of tracking to allow coverage of the whole band hence it was divided into two sections 100kHz wide.

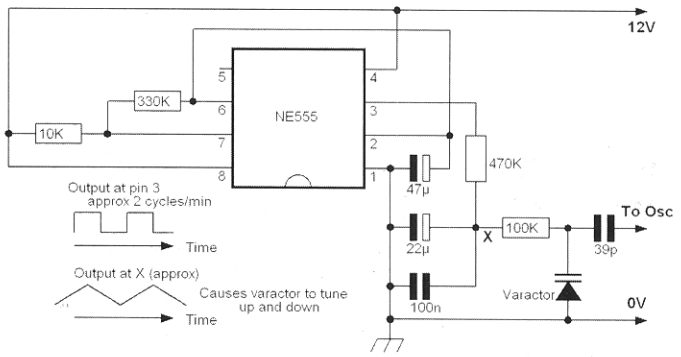
By setting the receiver dial to 2MHz the receiver tunes down to 1.9 and then back repeating the cycle about every twenty or so seconds. If I set the dial to 1.9 the receiver tunes down to 1.8 and then back.

It is amusing because visitors to the shack know an receiver is being tuned around but it takes a while for them to realise it's being done automatically!

How is it done? A 555 timer is used to produce a square wave output at a very low frequency...approximately two cycles a minute. When the output is hi a 22uF capacitor is charging through the 470k....this rising voltage is used to swing a varactor. When the output voltage goes low the capacitor is discharged by the timer and so the varactor swings the other way! It does to!

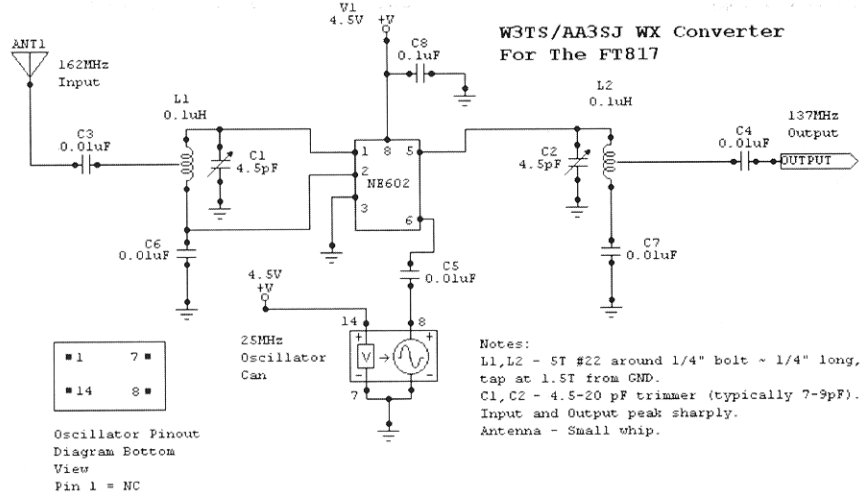
Play with the values and all sorts of things can happen to the tuning range and rate.

I have only built it the once but I have no reason to believe it is not repeatable. None of the values are critical, try it and look at the output of the timer even if you don't apply it to a receiver. I have used power rectifiers in place of varactors and they may have use here, if I remember correctly in the Chatterbox I used a BB212.



VHF WX Converter for the Yaesu FT817

Mike Michael (W3TS) 129 Church Lane Halifax, PA 17032
and Ed Kessler (AA3SJ) 950 Woodside Station Rd. Millersburg, PA 17061



Introduction

Many have lamented the fact that the diminutive Yaesu FT817, despite its many features, lacks the tuning range to monitor the NOAA weather channels. Here is a simple converter to enable the FT817 to tune 162 MHz signals. Sensitivity and gain are quite adequate and most of the parts can be gathered from a modest junk box.

The Converter Circuit (see above)

Received 162 MHz signals at the antenna are filtered through a simple L/C tuned circuit and routed to a NE602 mixer IC. The mixer subtracts the 25 MHz signal provided by a 25 MHz clock oscillator (Digikey Part CTX211-ND, or equivalent). The resulting 137 MHz signal output is again filtered and routed to the FT817. Three AAA batteries provide the 4.5 volt supply. Only a short antenna is needed. AA3SJ used a 6" whip for the prototype converter. A builder is not confined to the mixing scheme presented here. Indeed, many others will work, but the tuned circuits will need to be adjusted accordingly, and one needs to be careful that the sum or difference frequency (whichever one wants to use) does not fall on a noisy or busy area of the spectrum.

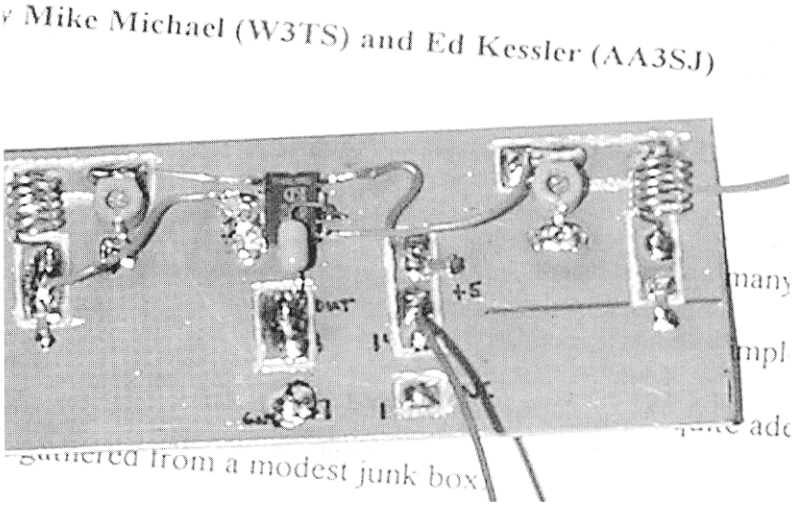
Putting it Together

The prototype was built using "ugly construction" methods. Small pads were cut into the board for the input/output filters, the four-pin oscillator and for VCC using a Dremel and a small diamond burr. L1 and L2 consist of 5 turns of #22 bare copper wire wound around a 1/4" bolt. Each coil is approximately 1/4" long, and should be about 0.1uH, and is tapped at 1.5 turns to match the input and output impedances. The tuning capacitors, C1 and C2, are 4.5-20pF trimmers. Similar capacitors can be used as long as the minimum capacitance is around 6pF. Trimmers which have a greater range can be used but, since the tuning is sharp, the greater range will make peaking the circuit more difficult. Small holes were drilled through the pc substrate to match the pinout of the oscillator which was mounted on the bottom of the board.

Testing and Using the Converter

The output of the converter is attached to the front BNC antenna port on the FT817 using a short piece of RG174 coax (the rear antenna could also be used, but be sure to setup up the transceiver appropriately). Attach a 6" cliplead to the antenna input of the converter. Tune the FT817 to 137 MHz with the MODE set for FM and connect the battery to the converter. In areas of minimal RF noise there will be only a slight change in receive noise when the converter is turned on. Tune to one of the local NOAA frequencies, remembering that the frequencies now correspond to 137 MHz, i.e., 162.55 MHz is now 137.55 MHz and so on. When a weather station is heard, peak L1 and L2 for maximum signal strength. When satisfied that the circuit is working properly, house it in a enclosure of your choice. A 3PDT switch can be used to toggle the converter in and out of the antenna line and to turn 4.5V on/off, allowing for transmit and receive operation on the ham bands via the front antenna connector.

This is a photograph of the prototype converter built "ugly style." The oscillator can is on the bottom of the board. SMT capacitors by-pass capacitors were used on the board, but leaded components will work as well.



Performance

Performance was compared to a small Radio Shack Weather Radio that the author used regularly. Signals that were often inaudible on the Radio Shack radio came booming in at 10dB over S9, using the FT817 and the converter. Many other weather stations were also received that had previously been too "weak" for the weather band radio as well as for a handheld transceiver which has wideband receive. The W3TS/AA3SJ converter is a useful homebrew project with a high level of satisfaction that even beginners can construct.

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

WANTED: Valve types 6SK7 X 4 glass or metal 6V6GT X 2. Rev Adrian Heath, G4GDR, 227 Windrush, Highworth, SWINDON. SN6 7EB

INFO WANTED: I am looking for mods for the FT817, how to expand frequency coverage up to 174 MHz, pse email to marco.eleuteri1958@libero.it (IKØVSV)

FOR SALE: Unwanted Gift. FT817NO, Collins CW Filter, Batteries etc. £300. Dave Logan, G4EZF. 27 Shaw St. Mottram, Near Hyde. SK14 6LE

The Micromountaineer Revived

Richard Newstead, G3CWI, 89 Victoria Road, Macclesfield, SK10 3 JA

Many years ago, Wes Hayward W7ZOI developed a little radio for portable operating called the Micromountaineer. It was described in the classic book "Solid State Design for the Radio Amateur". The design was republished in a somewhat updated form in QST in 2000 and is referred to in the ARRL book "Experimental Methods for RF Design" (sure to be another classic). Wes has a page on it at his web site (http://users.easystreet.com/w7zoi/mtnr4.html). In essence the design is a simple one with a DC receiver, a crystal controlled oscillator and a 500mW transmitter. It's a CW only design and perhaps Wes will forgive me if I suggest that it sacrifices performance for simplicity?

A "kit" for the Micromountaineer is marketed by Kanga (http://www.bright.net/~kanga/kanga/). I use the term kit cautiously as it's not a "paint by numbers" product. You get the PCB, Wes' QST article and a bag of components. I bought one some years ago and never got round to building it, primarily because I felt that the performance trade-offs would lead to a slightly disappointing result for 7MHz use in Europe (Wes originally designed it for 10m operation). In the intervening years, various things have happened to revive my interest in this kit. Firstly 2002 saw the launch of the Summits on the Air programme (http://www.sota.org.uk) secondly we saw some 5MHz frequencies released for use in the UK and finally the sunspot maxima has passed us by. How are these things related and what do they have to do with the Micromountaineer? Let me explain.

Summits on the Air has become a hugely successful award programme that now runs in many countries across the world. My own interest is in activating hilltops on HF CW (I like a challenge!). Since most people chasing the award are based in the UK and my activation times are in the middle of the day, I have tended to use 40m. However, since we are now well past the sunspot maxima, inter UK communications on 40m cannot be relied upon – the Critical Frequency does not always reach 7MHz. [the Critical Frequency is the highest frequency that is refracted back to the ground at a vertical angle of incidence, i.e. the signal goes straight up and returns straight down. There is a band of frequencies that are below the Critical Frequency but above the frequencies at which D layer absorption becomes significant, that are good for local communications using Near Vertical Incidence Skywave (NVIS)]. The Critical Frequency almost always reaches 5MHz even in a sunspot minimum. 5MHz is also a very quiet band and has defined channels and thus the shortcomings of the crystal-controlled Micromountaineer should not be an issue here. So how do we get it going on 5MHz.

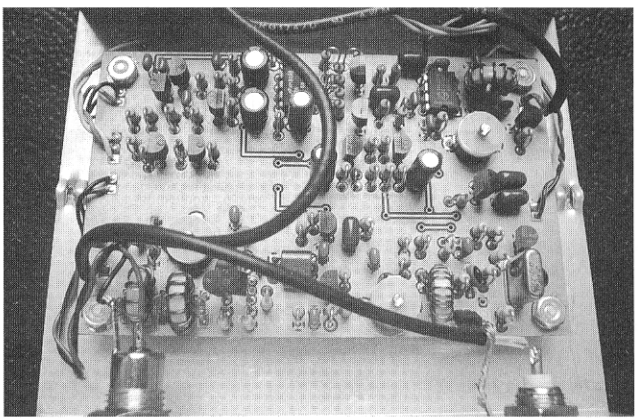
There are two methods; the first and perhaps most common is the "cut and try" method. This has little to recommend it. The second method is infinitely more satisfying but sadly is often alien to the radio amateur. This is the "design method". If designing circuits sounds like hard work, adapting the Micromountaineer is a great place to start. It's a very simple design and there are just a few things to change. This article is not going to tell you the component values to use as I don't want to deny you the fun of the design but I will give you a few clues about what to do.

The transmitter output is via a 5 element Chebyshev filter and it also provides a 100 Ohm to 50 Ohm impedance transformation. Any ARRL Handbook will tell you how to design the basic filter; choose a cut-off frequency of about 30% above your operating frequency and a ripple of 0.1 to 0.5dB. You can do the filter design online too (http://www.wa4dsy.net/filter/hp_lp_filter.html).

The impedance transformation is best accomplished using a Smith Chart; these are less fearsome than they look! The easiest way is to use a Smith Chart computer program – I used MicroSmith which is available from the ARRL and also comes free with "Introduction to Radio Frequency Design" (Hayward, ARRL). Design your coils using the excellent software aid for toroid design at the QRP Pops web site (http://www.qrp.pops.net).

There are also some tuned circuits to alter. In doing this you will need to consider the impedance of the circuits at resonance and try to redesign them so that they resonate at the frequency that you want and have roughly the same design impedance. There are two coupling transformers – think about whether these will need redesigning or not (clue – one is used in an identical form at 10m and 40m).

Overall the process is easy enough and the reward should be something that works first time with no need to adjust anything. If yours works; congratulate yourself – you have done some good engineering. If it does not work, don't lose heart – hopefully you will have learned something and you can always fall back on "cut and try".
Good luck!



THE KANGA-US KIT: The MicroMountaineer (Revisited) - $58
Kanga US,
3521 Spring Lake Dr.
Findlay, OH 45840. USA
phone [001] 419-423-4604
email: n8et@kangaus.com

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

FOR SALE: Walford Electronics Antenna Matching Unit assembled £15, BRENT CW TCVR 80m. 1.5w assembled £25, ZETAGI DL50 Dummy Load £10, C57 Frequency Meter £25, SAMLEX Power Supply regulated 13.8v 6A £15, CALRAD 65-285 SWR meter £10, Morse Key WT 8 amp £10, MAPLIN GCSE component pack £10, Practical Wireless magazines Jan 2005 up to now £10, Books on test equipment, aerial systems, project building, coil design, maths & calculations, multi meter, soldering £1 each. Soldering irons, solder, connectors, leads Bonus items nil charge to buyers of above. Buyer to collect, North Herts, Tel 01462 681796.

Membership Secretary News
Tony – G4WIF

- Club Representative for the Netherlands.
- Sprat Labels.
- Standing Orders.

We are always grateful when we have a local volunteer to act as representative for their country and we are exceedingly grateful to Erik van Wette PA3GVF for his hard work on behalf of the club. Erik's work commitments are now such that he regretfully needs to step down from his club role. If there is a Netherlands based volunteer that would like to take this on, then please get in contact with me at g4wif@gqrp.co.uk. Obviously to do that you will need email access and a reasonable command of English. Until further notice, would Dutch members contact me with any membership enquiries. I will post up to date information on the club website www.gqrp.com

Hopefully, the new method of labelling Sprats will have ensured that all members received a correctly address Sprat. Please contact me if you have experienced any problems.

Whilst we appreciate standing orders, they must be paid on January 15th as that is when we expect to see them on the club bank statements. No other date during the year is acceptable. If you fill in the form which we supply each year to set up a standing order then send it to your bank. Please do not send it to the club.

Changes in the Club QSL Bureau

The G QRP Club now has a new QSL Manager
Dave Coutts, GM3VTH, 29 Barons Hill Avenue, LINLITHGOW. West Lothian, Scotland, EH49 7JU. email – gm3vth@gqrp.co.uk

ALL CARDS FOR THE BUREAU SHOULD BE SENT TO GM3VTH AT THE ADDRESS ABOVE.

Please help to speed up the service by following the following dispatch procedure:

1. Put the receiving station's membership number on the TOP RIGHT HAND CORNER of the card.
2. Sort cards in **ASCENDING NUMBER ORDER.**
3. Do not include cards with no number or for non-members.

Please note that this is a service to members only !

In future -
All QSL cards will be sent out at regular intervals in February, May, August and November, in stamped addressed envelopes, supplied and paid for by the Club.

We no longer need to receive any Member's stamped-addressed envelopes.

Our sincere thanks to Bob Hudson, G4JFN, who has run the bureau with such efficiency for so many years, and our hearty thanks to Dave for taking over the task.

A SIMPLE 20M QRP SSB TRANSCEIVER

Robert Seiler HB9TSE, Rte de Geneve 9A, 1291 COMMUGNY, Switzerland

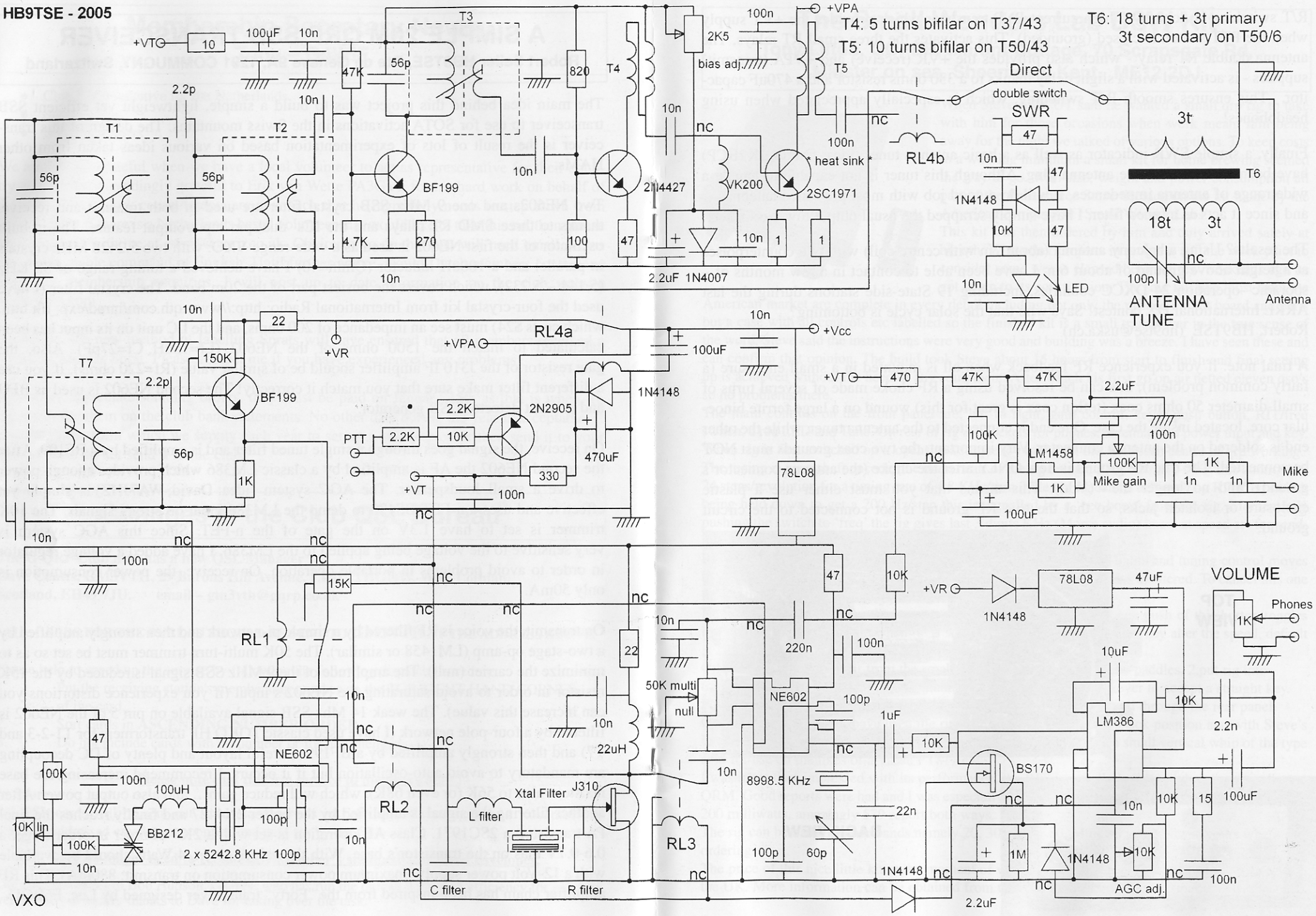
The main idea behind this project was to build a simple, lightweight yet efficient SSB transceiver to use for SOTA activations in the Swiss mountains. The design of this transceiver is the result of lots of experimentation based on various ideas taken from other HAMs.

Two NE602s and one 9 MHz SSB crystal filter are used in both transmit and receive, thanks to three SMD RT relays and the ICs' dual-pin input/output feature. The in-built oscillator of the first NE602 is used as a wide-range VXO: with two 5.2428 MHz crystals in parallel and a 100uH inductor (Qmin=40) I have achieved a tuning range of 88 KHz (5.144 – 5.232), which covers the busiest part of the 20m band. The crystal filter (I have used the four-crystal kit from International Radio: http://www.qth.com/inrad/exp_filt.htm, which costs $24) must see an impedance of 200 ohms, and the LC unit on its input has been calculated to match the 1500 ohms of the NE602 (Lf=10uH, Cf=27pF). Also, the gate resistor of the J310 IF amplifier should be of similar value (Rf=220 ohms). If you use a different filter make sure that you match it correctly! The second NE602 is used as BFO and product detector/DSB generator.

On receive, the signal goes through a single tuned filter and is amplified by a BF199. After the second NE602 the AF is amplified by a classic LM386 which provides enough power to drive a small loudspeaker. The AGC system (idea: David, WA7JHZ) is simple yet effective and uses a n-FET BS170 to damp the LM386 input on strong signals. The 10K trimmer is set to have 1.3V on the gate of the n-FET. Since this AGC system is very sensitive to the voltage being applied to the LM386, I have added a voltage regulator in order to avoid problems in portable operation. On receive, the power consumption is only 50mA.

On transmit, the voice is RF filtered by a simple pi-network and then strongly amplified by a two-stage op-amp (LM1458 or similar). The 50K multi-turn trimmer must be set so as to minimize the carrier (null). The amplitude of the 9 MHz SSB signal is reduced by the 15K resistor in order to avoid saturating the NE602's input (if you experience distortions you can increase this value). The weak 14 Mhz SSB signal available on pin 5 of the NE602 is filtered by a four-pole network (I have used classic TOKO HF transformers for T1-2-3 and T7) and then strongly amplified by a BF199. Careful layout and plenty of DC decoupling are mandatory to avoid auto-oscillation but if it occurs, I recommend increasing the base resistor value to 56K (or even 68K), which will reduce gain... and also output power. After another filtering the signal is amplified by the buffer 2N4427 and finally reaches the final PA transistor, a 2SC1971. Class AB operation is set with a 2K5 trimmer in order to get a 0.6-0.7V bias on the transistor's base. With the values given, 4 Watts should be available with a 12-Volt power supply (maximum power consumption on transmit: 880mA). This RF amplifier chain has been inspired from the "Forty" transceiver designed by Luc, F6BQU.

HB9TSE - 2005


T4: 5 turns bifilar on T37/43
T5: 10 turns bifilar on T50/43
T6: 18 turns + 3t primary
3t secondary on T50/6
+VTO
10
100uF
10n
T3
47K
56p
820
T4
2K5
bias adj.
100n
+VPA
T5
Direct
double switch
SWR
3t
T6
2.2p
T1
T2
56p
56p
BF199
10n
2N4427
VK200
2SC1971
* heat sink *
RL4b
47
10n
1N4148
10K
47
LED
18t
3t
nc
100p
ANTENNA
TUNE
Antenna
4.7K
270
100
47
2.2uF
1N4007
1
1
22
+VR
+VPA
RL4a
+Vcc
100uF
T7
150K
BF199
2.2p
56p
1K
2.2K
2N2905
PTT
2.2K
10K
330
470uF
1N4148
78L08
+VT
470
47K
47K
2.2uF
100K
LM1458
100K
Mike gain
100n
1K
1n
1n
Mike
1K
100uF
15K
RL1
NE602
100uH
BB212
2 x 5242.8 KHz
100p
RL2
L filter
Xtal Filter
J310
C filter
R filter
RL3
22
50K multi
null
22uH
220n
100n
NE602
100p
1uF
8998.5 KHz
22n
100p
60p
1N4148
2.2uF
BS170
10K
LM386
10uF
2.2n
100uF
10K
15
100n
1M
1N4148
AGC adj.
VOLUME
Phones
1K
1N4148
78L08
47uF
+VR
VXO
10K lin
100K
47
100K
10n
nc

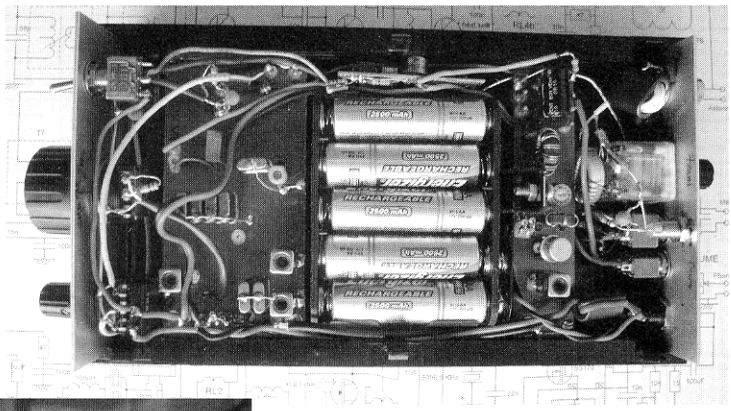
R/T switching is done by a high current PNP transistor which provides the +VT supply when the PTT switch is closed (grounded). This activates the three small RT relays. The antenna double RT relay - which also provides the +VR (receive) and +VPA (transmit) supplies - is activated with a slight delay thanks to a 330 ohms resistor and a 470uF capacitor. This ensures smooth R/T switching, which is especially appreciated when using headphones!

Finally, a simple SWR indicator as well as a basic antenna tuner (idea: Guido, IK2BCP) have been added before the antenna plug. Although this tuner is not capable to handle a wide range of antenna impedances, it will do a good job with most pre-tuned antennas... and since it acts as a tuned filter, I have simply scrapped the usual output low-pass filter!

The results? Using a balcony antenna (about 2m with centre coil) with two counterpoises at a height above ground of about 6m, I have been able to contact in a few months of – sporadic -operation 24 DXCC countries, including 19 State-side stations during the last ARRL International DX contest! Says who that the solar cycle is bottoming?
Robert, HB9TSE (hb9tse@uska.ch)

A final note: if you experience RF feedback when all is mounted in a small enclosure (a fairly common problem), this can be resolved using a RF choke made of several turns of small-diameter 50 ohms coax (teflon coax is great for this) wound on a large ferrite binocular core, located inside the case. One end is connected to the antenna tuner, while the other end is soldered on the antenna connector. Very important: the two coax grounds must NOT be connected! The true RF ground is now ONLY after the choke (the antenna connector's ground), and no longer the – (Vdd). This means that you must either use a plastic enclosure or isolated jacks, so that the true RF ground is not connected to the circuit ground.

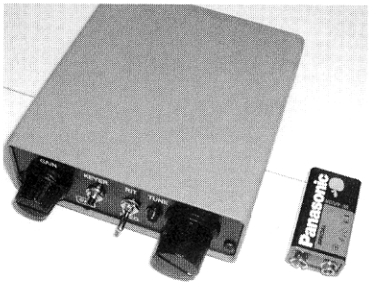
TOP VIEW



BACK VIEW

The Small Wonders Lab DSW Kit

Tony Lifton, GØPEH, Marant Cottage, 70 Scrapsgate Rd, Minster on sea, Sheerness, Kent. ME12 2DJ



When Steve MØCUT said he wanted a small qrp rig to take with him for those occasions when work meant him being away for the night we talked of various options. To keep costs to a working minimum a small kit for home brewing seemed the way to go. With size, weight and power consumption all part of the final choice Steve decided on the kit made by the American company of 'Small Wonder Labs'.

This kit was then ordered by him and duly arrived safely at his qth. With other projects in progress and the work edict to consider some weeks elapsed before a few weekends ago he got down to its construction. The said kit, like most from the American market are complete in every detail including not only the printed circuit board and parts but a case with all controls etc labelled so the finished kit is a small transceiver in the true sense of the word. Steve said the instructions were very good and building was a breeze. I have seen these and can confirm that opinion. The build took Steve about 15 hours from start to finish and final setting up is achieved without the need of any equipment. After which his first go on air netted eleven qso's so no problems there.

The main controls on the front panel are, left to right, gain control, keyer push button, RIT/freq switch, a red LED and Tune. On rear of rig are sockets for phones, antenna, and power input and key. When rig is first switched on it opens at a frequency of 7.040, the American centre of qrp working.

The tuning is via a shaft encoder the main heart of the rig being a PIC16C622A-04/P. this control has 24 steps/revolution for a tuning rate of 4.8 KHz/turn. Fine tuning can be achieved by RIT/freq switch being held down to get a 200 Hz/step this is signalled by a 'bee-boop' from the rig. Momentarily pushing the switch to 'freq' the rig gives last 3 digits KHz (Morse audio) in cw at speed set for sending, see later.

RIT is engaged when switch is moved upwards when the red LED lights and tuning control moves the received signal in 50 Hz steps whilst the transmit frequency remains unaltered. To cancel this one moves the switch up again and LED goes out.

Keyer speed is effected by the keyer push button, to set the speed, one push of this button toggles through the small menu and when 's' is sent in cw touches of the paddle key alter the speed, default is 20 wpm and the range is from 5 to 50 wpm.

Other items one can select from the small menu are, 1. Reversal of the paddles, 2.put rig into transmit mode to operate an auto or manual ATU. 3. Configure the keyer to accept a straight key.

Power out is adjustable from 0.1W to 4W. Using the drive pot accessed through the rear panel.

Over the last few days I have used the rig with my G5RV from my shack position and with Steve's intention to work with minimum extras, I used it in my garden with a small vertical whip of the type sold for use on the likes of a Yaesu FT817 etc.

I was more than impressed with its performance, the RIT especially helpful in dodging the adjacent QRM. Good reports were had and I was especially pleased to work an EC2 station that was using just 200 milliwatts, amazingly 579 report both ways.

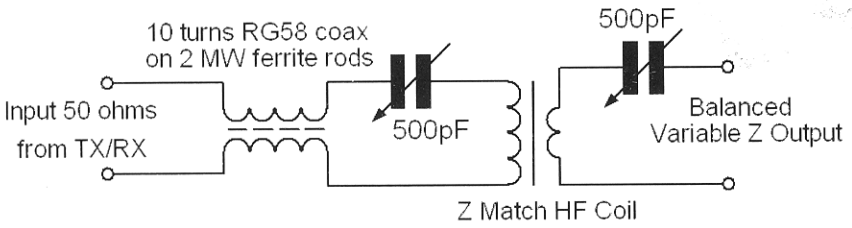
The rig can be had for other bands namely 20, 30, 40, or 80, Mtrs. so the choice is yours when ordering.

The price of this nice little kit at the moment of writing is $160. This equates to a little over £90 in the UK. More information can be obtained from their web site at http://www.smallwonderlabs.com/

Another Antenna Tuning System

Paul Debono, 9H1FQ, 65 Triq Il-Hafur, ATTARD BZN 03, MALTA

Putting the balancing transformer at the input rather than the output of the tuner will reduce losses considerably, which is of paramount importance for QRP. Originally I used an ex R7 vertical 1:1 transformer, but had other uses for it, so I decided to go for a cheap, yet effective alternative transformer.



40 - 10m Balanced Tuner

Just take a MW transistor radio ferrite rod, split it and superglue them. Then wind 7 turns (for 40m-10m) of RG58 coax - you have a 1:1 transformer ! Rather than using the classic T configuration, I decided to experiment with a classic Z Match HF coil, and the result was a very broad tuned ATU that can match most impedances.

The coil is 5 turns each, 14 s w g wire tightly wound, each turn spaced 1/4 inch . The primary winding 2.6 inches and the secondary 3 inches diameter. If you like to include the lower bands, try increasing the coax turns to 12, and use the LF Z Match coil, which is the same dimensions but 8 turns for the primary and 6 turns for the secondary. This has not been tested though, as my main interest is 40-20-15 meters.

NEW . . . . HAMCALC version 84, released 17 MAR 2006

HAMCALC is free software for WINDOWS or MS-DOS containing over 300 "Painless Math" computer programs for radio amateurs and professionals, used worldwide as a design, reference and learning tool since its introduction in 1993. Most of the programs can be run in either Metric or Imperial/USA units of measure. Contains much information not readily found in current popular handbooks and literature. Easy to install, use and understand by non-technical hobbyists.
HAMCALC is no longer available on CD but authorized copies can be downloaded free (1.2 MB zip file) on the internet from < www.cq-amateur-radio.com>. Click on HAMCALC at the bottom of the left side of the CQ home page.

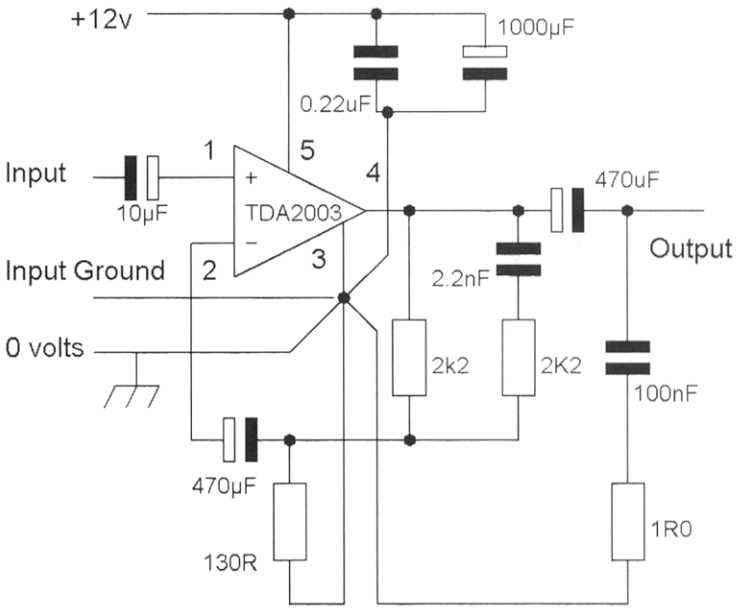
73, George Murphy VE3ERP

High Performance Headphone Amplifier

Dr Andrew Smith, G4OEP, 15 Dyrham Cl. Henleaze, Bristol, BS9 4TF

This very simple circuit is based on the TDA 2003 chip, and gives excellent performance equal to the very best commercial designs costing hundreds of pounds. The manufacturer's data sheet for the TDA2003 gives a distortion figure of 0.15% at 4.5W output, and a voltage gain of 100, but in this application the voltage gain has been reduced to 18 by increasing the overall feed back ratio, and the power output is reduced to about 10mW. As a consequence the harmonic distortion is reduced to 0.006%, a very low figure indeed. Gain has been set at this level to suit my Sennheiser HD25SP earphones, with the amplifier driven from a nominal 200mV source. A 10k log pot can be used as a volume control if required. Note that to avoid instability problems a rigorous single-point earthing scheme should be used. The common earth point should be as close to pin 3 as possible.

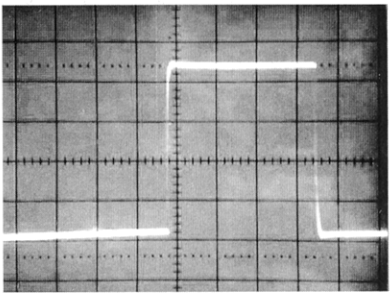
The power supply can be increased up to 18v, allowing a higher output power at the same distortion level. This might be appropriate if less sensitive headphones are used.



The spectrum shows noise and distortion relative to a 1Vpk output at 1kHz, this being a very loud signal in the Sennheisers. The second harmonic is at -90dB and the 3rd below -88dB. This corresponds to a total harmonic distortion figure of 0.006%. Noise is shown as being below the -100dB level, but with a hum spike at -84dB.

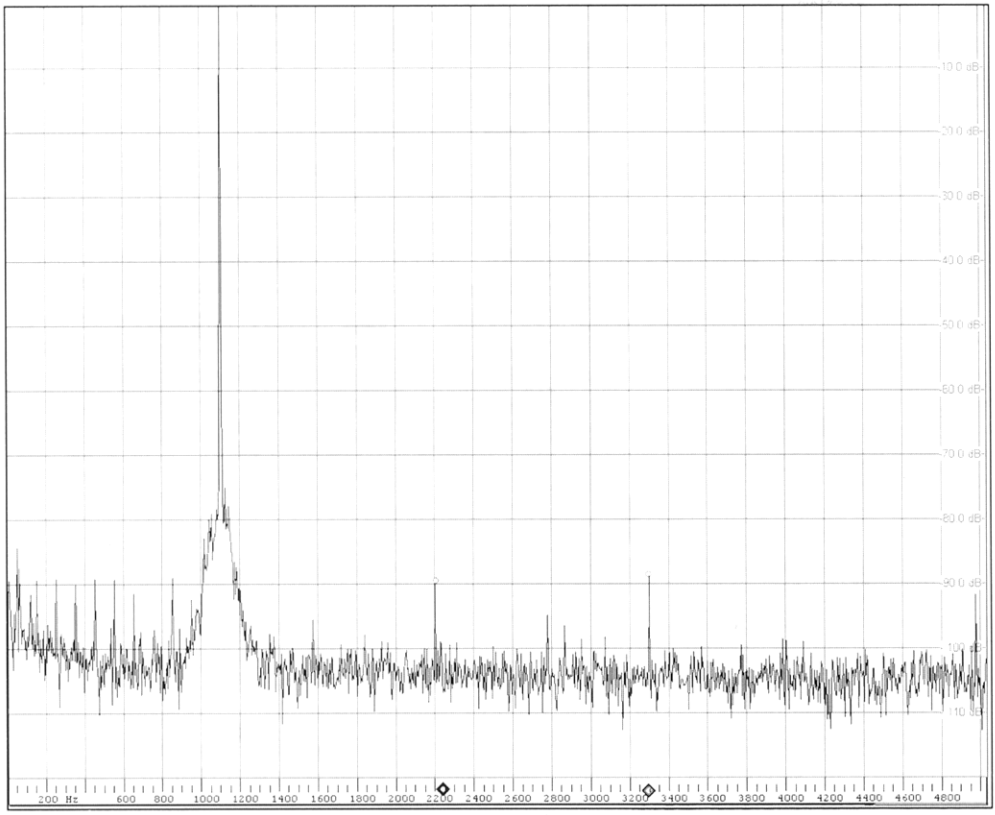
The transient response to a 1kHz square wave is also shown. There is no sign of ringing, overshoot, or any transient distortion beyond that implied by the finite bandwidth of the amplifier.

The bandwidth has 3dB points at 10Hz and 50kHz. All performance figures were measured with the headphones attached.



Objectively the performance of this amplifier is faultless, and it also sounds sweet as you would expect. It starts up quietly, and will not deafen you or blast your expensive phones with a large charging transient. In short, it is highly recommended, particularly if, like me, you feel that objective performance is a good starting point for the appraisal of an audiophile product.

The spectrum analyser software is Spectrum Lab by Wolfgang Buescher (DL4YHF) [1].



References

1. http://people.freenet.de/dl4yhf/spectra1.html

How to make 'Plug-in' coils.

David Smith G4COE, 54 Warrington Rd. Leigh, Lancs. WN7 3EB

The idea came whilst rooting about for some 'long lost' component, 'a good radio amateur' never 'clods' anything out (I really should say throw – I'm from Lancashire see), I came across some old plastic solder tubes I saved, 5 pin DIN plugs flashed before my very eyes as they fell from the shelf and "hey presto", all we wanted now was copper wire, old transformers, coils & relay's – "me never clods anything away", it's as if someone switched a halogen lamp on with far too much voltage. I immediately thought of the 'Plug-in' Denco coils of ages past when 1 valve radios were the 'norm', how sadly missed.

So here we go.

The former can be any insulated tubing, plastic, fibreglass, paxolin or even test tubes, but you do have to be careful with water pipes, some may appear plastic but can be very lossy and no good for RF. An easy way to find out is to put a cup of water in the microwave and a piece of the pipe on the other side of the plate, when the water starts to simmer 'switch off' and if the plastic is warm then it's no good – might as well wind the coil on a 'tin can', don't 'clod' it, use it as an air vent on your 2KW linear.

A diameter of 0.5" is about right, avoid anything smaller, some might want a coil with two windings or want one with three windings if reaction is used, a tap for the antenna or feedback could also be used.

The connectors that can be used are endless, audio DIN plugs, B9A valve base plugs or old octal valves...eh, why not? Wrap the valve in newspaper and give it a 'good crack' with a hammer, with gloves on remove all the gubbins CAREFULLY – there's your plug, mount the former pack and fill with epoxy, even a mic. socket will fit into to these solder tubes; do remember to make the connections before fitting using the same pins for each coil, keeping a note helps. Once fixed leave 24 hours to harden, the windings could be varnished or enclosed in heat-shrink sleeves, Denco coils were left uncovered. The windings are all close wound in our case.

As a rough guide, reaction a tenth of the total number of turns, feedback can be a link or tap quarter way up from earthy end for our Hartley oscillator

So with a 100pF tuning capacitor and a 22pF fixed placed across the coils would give us the following approximate coverage, the 22pF could be replaced with a variable and used as band-spread or fine tuner,

Range	Coverage MHz	L uH	Turns	Wire swg
1	1.7 – 4.0	70	88	36
2	4.0 – 9.4	13	25	36
3	8.3 – 19	3	12.5	22
4	13.0 – 31	1.2	6.5	22

All windings close wound, a very thin strip of masking tape on the former can help to hold the windings in place, keep the leads on the main winding as short as practical.

A Variable Ceramic Oscillator for 20m Phone

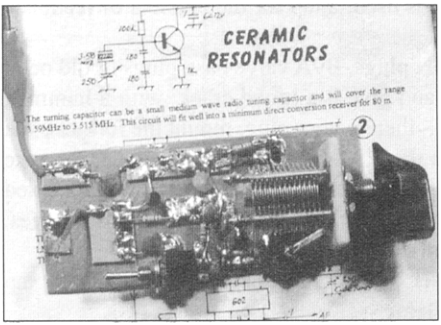
Bill Meara, M0HBR, N2CQR, CU2JL, 100 Drayton Gdns, London SW10 9RJ
meara.london@virgin.net http://www.qsl.net/n2cqr

I'd been in search of more wiggle room for the VXO in my HB 20 meter DSB transceiver (see web site for pictures). Graham Firth and the G-QRP Club Store provided just the thing: Ceramic resonators at 14.3 MHz.

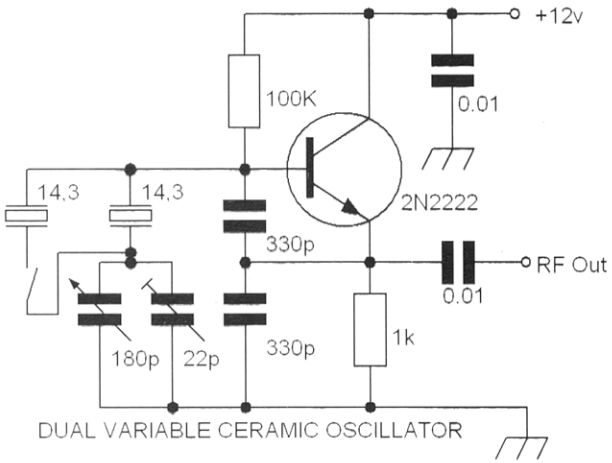
Ian Macpherson's article in Sprat 73 provided the inspiration for the circuit. With just one resonator in the circuit, and using a 100 pF air variable, I got a pleasing 31 kHz (14274-14305) of variation across a very useful portion of the 20 meter phone band.

During one of our morning (UTC) chats on ECHOLINK Mike, KL7R, suggested that I try two ceramics in parallel. I was very pleased to find that this shifted the entire frequency range up about 30 kHz (14301-14330). Wow! With a simple switch and two 50 pence resonators I was getting 56 kHz of coverage.

I quickly took the crystal oscillator out of the rig and replaced it with the "two ceramics and a switch" circuit. With a 180 pF air variable I got about 58 kHz of variation, with more overlap between the two ranges than I'd had with the prototype, so think the 100 pF air variable might be optimal.



You might have to play with the values of the feedback caps to get it running cleanly: on the prototype I used 330 pF caps, but in the rig I had to reduce the cap going to the base to 100 pF. This circuit could be used as the heart of a DC receiver for listening to the SSB gang, or in a simple DSB rig like Dick Pattinson's Wee Willy (Sprat 124).



Parlez Vous QSO ?! - Simple Language Website Goes Live...

Steve Seabrook, MØECS, 29 Gadby Rd. Sittingbourne. Kent. ME10 1TJ

The *Parlez Vous QSO ?!* website is now up and running at:
http://web.onetel.com/~stephenseabrook/
The site has over 100 common English 'QSO' phrases translated into German, Spanish, French, Italian, Czech, Dutch and Polish. Individual, downloadable Word files contain each language set. Aimed at CW and digital mode operators there are no pronunciation problems. There are also language specific 'Notes' files containing information on etiquette, special characters, links to on-line dictionaries and more.
Clearly set out in a simple style, users can readily navigate from 'downloads' to the extensive 'FAQ' section. It's friendly and fun to use, while the language files have been meticulously prepared and re-checked by native speakers of European countries. There are no adverts, no pop-ups, just the languages!
Site author, Steve M0ECS, said, "This really is a work of mutual co-operation in the true spirit of amateur radio. Over a dozen amateurs from 8 countries worked together to produce the language files. They did a great job." A number of GQRP members took part in the project. "Getting started on the air in a European language could not be simpler and the 'Language Tips' section guides you all the way."
So, log on the site, warm up the key and have a go!!
For more information contact Steve, M0ECS, by email at PVQ1@theseabrooks.com or via packet address: M0ECS@GB7COS.#31.GBR.EU.

NO INTERFACE PSK31

John Beech G8SEQ 124 Belgrave Road Coventry, CV2 5BH
Tel. 0247 627 3190 or johng8seq@ntlworld.com

While I was demonstrating PSK31 to a Foundation Licence student, using a Laptop and Ham Radio Deluxe I unplugged the interface and turned the volume up on the FT-817 so the student could hear what PSK31 sounded like. I was somewhat bemused to see that the PC was still picking up the signals! Then the penny dropped — the built in mic on the laptop was picking up the audio from the loudspeaker (I normally operate muted). Having realized this, I then tried transmitting by holding the mic over the Laptop speaker and keyed it up. It worked.
I wouldn't recommend this technique in a noisy environment, but is very useful in one of those "oh B*****er - I've forgotten the patch lead" situations".

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

FOR SALE: PYE PFX-4M handheld with speaker-mic and two batteries. £30 + postage. Tom Williams M3EHA, 110 Brindley Ave. Winsford. Ches. CW7 2EG. Tel: 01606 597342

A SIMPLE DUMMY LOAD

Walter Farrar, G3ESP, 1 Barnsley Road, ACKWORTH, WF7 7BS

Do you want a dummy antenna for use when adjusting your QRP transmitter?
Look no further! There's at least one in every household: it's called an electric light bulb, the filament of which presents a suitable load.
In normal use the filament of a 240-volt / 100 watt- bulb has a (calculated) resistance of 576 ohms, but switched off and cold the resistance is about 42 ohms (measured). A QRP transmitter output connected to the lamp can produce a slight glow, and the resistance (which increases with temperature) will become more than 42 ohms, but probably not more than 100 ohms.
In Europe the mains voltage is generally 220 volts, so a 220V/100W lamp will have a (calculated) resistance, when hot, of 484 ohms, and the cold resistance will be less than 42 ohms. In America, with 110 volts, a 100-watt bulb has a (calculated) resistance of 121 ohms and the cold resistance will be significantly less than 42 ohms. I don't have any European or American bulbs to try out, but any of the types should do. Such dummy loads may not be purely resistive, and may not offer 50 ohms to the transmitter, but at least they will prevent damage to the output circuit of the transmitter.

Homebrewing Supper!

Walford Electronics recently hosted their second Somerset Supper on the eve of the 22nd Yeovil QRP 2006 Convention – diners from all over the UK and Europe brought their home brewed offerings for display and informal judging. Sixteen items were exhibited in the White Hart Inn, Sherborne, with a huge range of technology being demonstrated – from dead bug to almost professionally made PCBs, using valves to microprocessors.

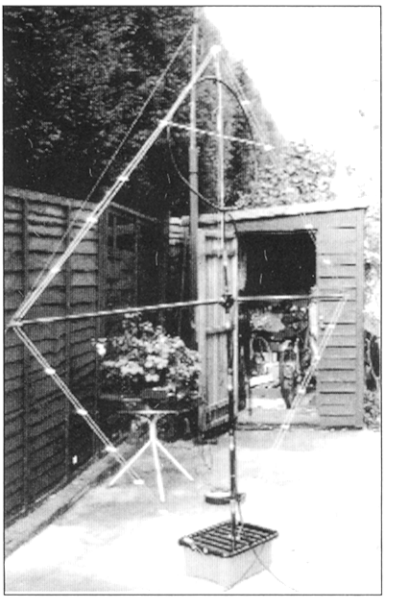
Steve Hartley G0FUW, author and columnist for Radcom's Newcomers News, took a keen interest in each project and then presented the trophies. Bob Woolridge G7LNJ was presented with the first prize – an appropriate bottle of Somerset cider brandy for his masterpiece - an oscilloscope made from a World War 2 surplus radar tube surrounded by lots of glowing valves! Although Bob was willing to demonstrate it, no suitable power source could be found for any of the signal sources also on display! Jim Gailer G3RTD earned high praise, and the runners up prize, for his surface mount DDS based signal source for 2m satellite working. Tim Walford G3PCJ who hosted the event, commented that 'He was delighted to see such an excellent range of ambitious projects'. There was much discussion in the bar late into the evening by this keen group of constructors and a good time was had by all!
The provisional date for the 23rd QRP Convention is April 15th 2007.

ANTENNAS – ANECDOTES - AWARDS

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

A Loop Antenna for 3.5 and 7MHz

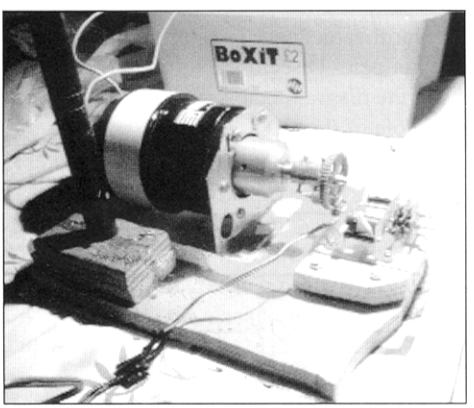
by Derek Love G0DRA (4 St Chads Road, Lichfield, WS13 7LZ)

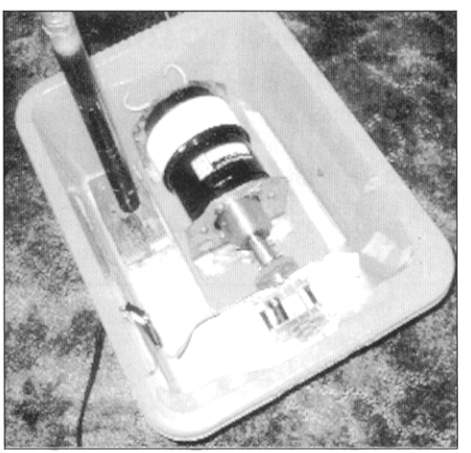


This is a two turn, diamond quad-shaped loop, fed via a Faraday coupling coil made from coaxial cable. It is tuned with the aid of a 1,000pF vacuum capacitor which is operated from a gearbox turned by a small electric motor. The loop lightweight support frame is made from lengths of 20mm plastic electrical conduit tube pushed into a central 4-way electrical junction box. See right.

The two turns of the loop are made from PVC covered multi-strand copper wire. They are each approximately 20ft 6in (6.25m) in length, and are connected in parallel at the tuning capacitor. They are spaced from each other by three T pieces inserted into the ends of the conduit pipes, drilled with holes 1in (2.5cm) apart. If necessary additional spacers cut from C plastic and drilled with holes 1in (2.5cm) apart can be fitted. The loop is tuned with the aid of a 12V motor which operates a pair of reduction gears, one attached to its gearbox and the other attached to the vacuum capacitor. The capacitor, gearbox, motor and its power supply are mounted in a large plastic box. See pictures below. This box also contains a base mount for the vertical member of the loop frame, the weight being sufficient to hold the loop upright when it is used INDOORS. More substantial anchoring and much more careful waterproof would be required if it is to be mounted outdoors.

The motor and gear wheels were bought at a local model shop, but obtaining the vacuum capacitor involved some work at local radio rallies and reading of radio magazines until one was found. These two pictures show the arrangements inside the plastic box.





The coupling loop is made from a length of coaxial cable long enough to reach back to the rig, the last 4 ft (1.22m) of which are formed into a coupling loop by soldering the inner conductor to the outer screen (see the first picture). As it has not been possible to fully waterproof the system so far, it is mounted in my loft and orientated so that it fires roughly east and west. The gearing gives a very slow tuning rate. The original tuning was carried out with an MFJ antenna analyser with the rig SWR meter being used once the setting for the two bands was found. On 7MHz a bandwidth of 30kHz for an SWR not exceeding 1.5:1 was obtained, the equivalent bandwidth on 3.5MHz being 20kHz. As stated above, the loop is not rotated, but positioned so as to fire into Europe. On 7MHz it gives good EU results and is also good into Ireland off the back. On 3.5MHz it gives good results to the UK.

A Second G0DRA loop – outdoors and HF

This one is an outdoor delta loop covering 14, 18 and 21MHz. The total length is 48 ft (14.63M) of wire, plus an open wire feeder to the shack, where it is fed via a Z-match. The top is secured to a fibre-glass spar, which is hoisted on to a fibre-glass mast. The whole assembly is very light and can be raised and lowered quickly if required, the two ends of the lower section being secured to guys. It works well. (Readers with a nautical interest will see here a radio version of the Junk rig beloved of single handed yachtsmen. The design also seems to offer other useful possibilities for /P operation – G8PG)

AWARD NEWS

QRP Countries

100 G3JFS Nice work indeed.

Worked G-QRP Club

1520 GM3OXX

George does it again – and all with 1 watt of CW. Really great work, especially during a period of low sunspot activity. Well done laddie!! !!

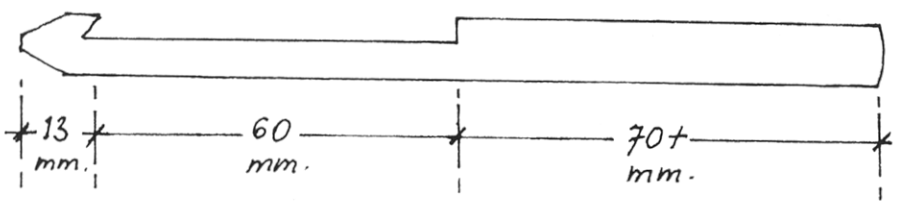
Sincere apologies to QRP Master I2IAL whose call was wrongly given as I2DMN in our last issue.

72 de G8PG

A Useful CD Tip

Bev Brandon G4TDU, 8 Moor Park Ave. Rochdale. OL11 3JG

Have you had problems getting a CD-ROM out of its cardboard sleeve?. Here's a very simple solution using a barrel from a discarded ball point pen. Discard the refill and file the pen body away for about one third of its diameter as in the diagram below, making the cut nearest the point angled so it will hook into the centre hole of the CD.
Easy to make, costs nothing and works great, and with no finger marks on your CD-ROM.



COMMUNICATIONS AND CONTESTS

Peter Barville G3XJS, 26 Hever Gardens, Bickley, Bromley, Kent. BR1 2HU. E-mail g3xjs@gqrp.co.uk

As we move into summer we can only hope that good weather will make up for (what I suspect will be) a period of very poor conditions. Nobody can be sure at the moment, but we are probably close to the bottom of the current sunspot cycle, so let's hope that the coming months and years will see the big improvement we all hope for. Some even say that the next cycle is forecast to be one of the best ever. We shall see, but soon may it arrive!

I imagine regular readers of this column are a little fed-up with me going on about poor conditions leading to poor support for Club contests and activity periods. Whilst I'm sure that prevailing HF band conditions do nothing to encourage activity during these events, I am also quite sure that we all "could do better"! Although Winter Sports is an extremely popular event, and well supported, it is unique amongst Club events in that respect. So much so, I sometimes wonder about the wisdom of continuing with any others. If you have strong views, I would be pleased to hear them, but I will be far more pleased and delighted to see more log entries for our future events. None are too demanding of time, or resources, but all offer the chance to put some QRP life into the bands, have plenty of fun, and (who knows?) maybe even walk away with a trophy. Have a look at the QRP Calendar (published in each Winter Sprat) and mark some appropriate dates into your diary. Oh, and you will also need to work a few stations (no hardship, so far), and then send me your log (the boring bit, maybe).

If you're not sure of the rules (dates etc) for any Club event, have a look in the Members' Handbook, and/or Sprat. Depending when you see this, your first opportunity is likely to be the IARU Region 1 **INTERNATIONAL QRP DAY** on 17th June. What more can I say!

Which brings me to the **CHELMSLEY TROPHY 2005** and **CZEBRIS 2006**. I received only one entry for each, which is a really disappointing level of support. However, my thanks to Nigel, **M0DBO**, for his interesting Chelmsley log, and details of his antenna experiments throughout the year. He started the year using an inverted vee (50ft each leg, centre at 30ft), but when it blew down in September he put up a temporary wire, 65ft long and wrapped around the garden at a height of 15ft. (with radials for each band also wrapped around the garden). But in October, Nigel bought a 9m fishing pole and used it to support a delta loop, which worked well, but was unstable in strong winds. He took it down before it broke, and turned it into a home made vertical by running a 34ft length of wire down it, with the last few feet turned into a wide-spaced coil at the base. The antenna was mounted 9ft above the ground with 4 34ft, and 4 15ft radials, all 7ft above ground. Fed with twin cable via the balanced terminal of his atu, the antenna tuned 40m to 10m. Nigel says that he has never owned a commercial antenna for the HF bands, and so wonders how his "Heath Robinson" type antennas compare. I suspect they work at least as well as anything you can buy Nigel, and have the added advantage that they have cost you little but have been far more fun, and instructive.

Alex, **G4FDC**, was the sole entry for **CZEBRIS** this year, and although he had to contend with poor conditions (here we go again!), and the inevitable QRO stations who answered his "CQ QRP" calls, he still managed a total of 25 valid QSO's (and 66 points) with his TS-120V and 25m sloper. Alex made 2 QSO's on 80m, 12 on 40m, 5 on 20m and 6 on 30m.

My thanks go to Alex and Nigel for supporting the events, and the deserved congratulations from us all for their success.

Rather than simply list the results of the **19th Original QRP Contest**, I thought you might like to see the following details, supplied by Hal, DJ7ST:

"Here you will find a first result representing the participation related to DXCC countries (participants/mill. inhabitants when >3 entries were sent in)"

DL	1, 6	More than 250 logs from 24 DXCC countries mark the 19th
OK	1, 3	OQRP-Contest's success. It really seems that the participation
OH	0, 98	of DL stations is fixed to 50%. Outside DL the leadership is
OE	0, 75	still with the OKs QRP enthusiasts .
OZ	0, 96	There are remarkable changes after these positions. Like a bolt
ON	0, 8	from the blue the hams from OH gained enormous success.
PA	0, 53	So did ON and OE. PA fell back again remarkably. There
HB9	0, 42	were no faint ideas some 20 years ago that EA, F and even I
I	0, 16	would overtake the G-hams' activities.
F	0, 14	Where have the stations been from SM and SP this time?
EA	0, 13	At the moment statistics hardly show a rising participation in
G	0, 12	UA land due to the many inhabitants there, but you get
UA	0, 06	a feeling that the QRP scene is really growing and changing.

"What rigs did they use? Every time we check the results of the OQRP contest the question arises - among others - whether there is a decrease of homebuilding activities. I can reassure you, don't be afraid: NO!"

"Again the FT-817 is the very top leader and even increased to roughly 20% of all rigs. Especially in the East of Europe nearly all new gadgets are FT-817 ones. On the one hand the bestseller K2 could keep its position, on the other hand the QRP+ seems to drop completely out of sight. What's the matter? Again the ELBC by DJ3KK is the highlight among the non-commercial rigs." Hal's list of rigs used during the contest is far too long to include here, but I can supply details if you drop me a line (addresses above).

So, that about wraps it up for another issue. Enjoy the summer, with the /P opportunities it brings, and enjoy your QRP – whatever the conditions! The deadline for the next SPRAT is the end of July – in the meantime have QRP FUN.
72 de QRPeter

MEMBERS' NEWS

by Chris Page, N4CJ (G4BUE)

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

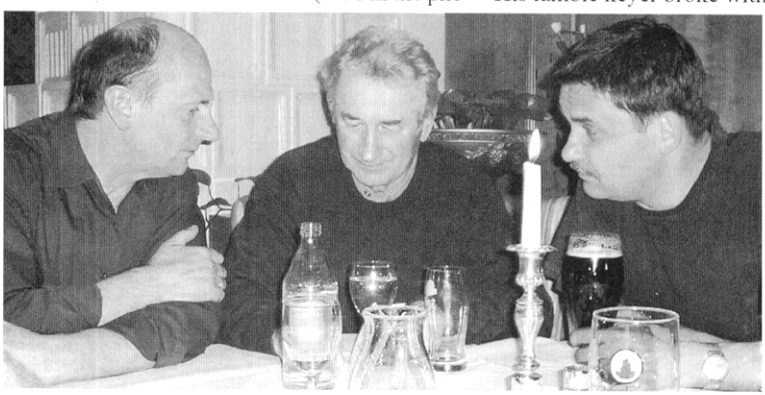
A sad e-mail from **K5BOT** QSP'd by **K5NT** was received on 22 March reporting the death of Fred Bonavita, **K5QLF**, in San Antonio, Texas on 20 March following a stroke. I first met Fred in 1984 when George, **G3RJV**; George, **GM3OXX**, and I made the first QRP 'pilgrimage' from the UK to the USA to attend the ARRL Convention in Houston, Texas. Thanks to his efforts and those of Ed, **K5BOT**; Dave, **K5NT**; Leo, **KC5EV**, and Adrian Weiss, **WØRSP**, that was the first time that QRP forums had been held at a major USA convention and led to the highly successful QRP forums at Dayton and the current Dayton FDIM QRP program, which have been regularly attended by UK QRPers ever since. Fred will be sadly missed by the USA QRP fraternity and our condolences go to his family.

QRPers from OE and G attended the annual meeting of the DL-G QRP branch organised by **ÐK3WX**, **ÐJ3KK** and **ÐF6MS** (l to r in the photograph at bottom of page) and held in Waldsassen, Germany 28/30 April. Presentations were given by **ÐH6RAE**, **ÐL2BQÐ**, **ÐF6MS**, **ÐL2AVH**, **ÐJ3KK**, **ÐK3WX**, **ÐL2BZE** and **ÐL4JAL**. A lot of home-brew equipment was on display, reports **ÐL2BQÐ** and **G3NFB**, and after the final Sunday session, everyone agreed that the first meeting in Waldsassen was a big success. Dieter and Jim say the 2007 Meeting will be held 27/29 April in Waldsassen again.

G4KIR writes, "Space probe Voyager 1 was received by the AMSAT-DL Group on 31 March with the 20m antenna in Bochum. The distance was 14.7 billion kilometres. How about the above for a QRP record?". Welcome back to **GØIBB** who has been away from amateur radio for 15 years. Gerry says so much has changed but he is glad to see the G-QRP Club is still going strong. He is currently living in Eire and will be QRV as **EI/GØIBB**. **G3ROO** was QRV 19/26 April as **SV9/G3ROO** and left his QRP rig for **G3PÐL** to use until he returns to the UK in June. Pete has been QRV on 17 and 30m as **SV9/G3PÐL**. **N8ET** will be QRV from his sailboat on Lakes Huron and Superior for most of July and Summer and will be looking for QRP QSOs. Bill will also be activating many of the lighthouses during the trip.

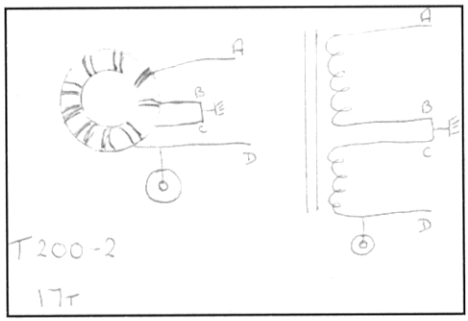
Congratulations to **GM4XQJ** for working **VU4AN/VU3RYE** on 20m CW on 19 April. Brian will be QRV from CT4 in June and EA8 in November. **WB3AAL** finished tuning his ground mounted Butternut HF9V antenna with 120 radials in May and has put the results on the Internet at <www.wb3aal.com>. **GØBON** QSO'd ZB on 80m with his Brent transceiver and C3, TA, TK and 2 x QRP QSOs on 40m with his SW-40 built last year. Ivan is currently building the 30m GM47 minimalist superhet TRX from **ÐL2YEO**'s website at <www. qrp4u.de/index_en.html>.

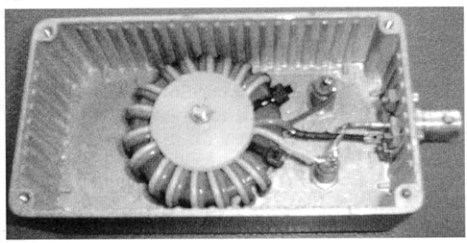
GØCWM was QRV at Praia Da Rocha, Algarve in mid-November with his homebrew 5W CW transceiver to a 40m half-wave vertical dipole suspended from a fishing rod 12 floors up. His iambic keyer broke within two weeks and an emergency one was made from a wooden clothes peg and drawing pins for the contacts, and an elastic band for tension. Mike says the standard of his CW was not so good and even though he made some QSOs with it, he got his old key sent out from home arriving on 21 December. As of 19 February he had



made 97 QSOs including all of Europe, 7X, VE and USA stations. Mike was planning to return to the UK in mid-April. **G3XBM** asks if anyone has worked DXCC hand-held on HF? Roger says his limited experience using the FT-817 with quarter-wave base loaded whips and the Miracle Whip a few years ago suggests it should be possible, even on SSB, but he doesn't recall reading of anyone doing it. **M1RAL** also believes it is possible and has 32 DXCC with his FT-817 and Miracle Whip.

GM4YLN took his newly built K2 to visit **GM3OXX** to see how it would perform on George's big loop. Chris worked **STØRM** and ZA on 20m and 7X on 15m and came away happy. They had to use a 4:1 balun so the automatic ATU in the K2 could tune the loop with its 400 ohm open-wire feeder. On returning home, Chris made a similar balun to use with his own loop which is also fed with 400 ohm open-wire feeder, (see diagram and photograph below).





ƆF2PƆ will be QRV 7/17 October mostly at night while on holiday in Tenerife as **EA8/ƆF2PƆ** with his fishing rod antenna. The antenna is about 80 feet long for 20 and 30m and he uses a shorter wire for the higher bands. Manfred wonders if other members have been experimenting with inverted verticals and would like to share their experiences about performance when fed at the top?

G4GƆR has built a replica of the Whaddon Mk7 (Paraset) transceiver with help from Terry, **GM3VQJ**, and Peter, **G3GGK**, who are also Paraset builders. Adrian also thanks Chris, **G4AJA**, for the first 'on air' tests and "His wonderful and invaluable valve tester", and **G3YNT** who supplied a 6SK7 needed to complete the valve line-up. Adrian says the Paraset is a difficult rig to operate on 40m due to a lack of bandspread, but the first contact was with an ON4 station proving the war time operating distance and that 40m, although difficult on today's bands, was possible then. The next few QSOs were on 3560kHz and he asks members to listen out for him "Pounding the miniature brass of the built in Paraset key". Adrian says the Paraset gives about 4W on 40m and 3.5W on 80m and he will be glad to help anyone else who decides to build one.

GØPSE built the Elecraft K1 and describes it as a "fantastic rig". Tom had his first QSO on 9 February and by 4 March had made 50 DXCC with it, all 5W on 20 and 40m. **G3YMC** has worked 1001 band slots on QRP CW since he got his K2 in 2002. Dave worked **V44/AA1M** on 30m on 7 March for number 1000 and then just after worked **WP3C** for another new band slot. Overall he is on 207 DXCC and between 1 January and 7 March 2006 worked 94 DXCC and 254 band slots from 588 QSOs, finding 30m to be a great band for QRP since he put up a sloping dipole. **GØKYA** urges QRPers to keep an eye on 20m after sunset. In March Steve worked **KG4WW** with 100W and **ZF2AH** with 5W CW to his two element MQ1 Minibeam, but says both stations were just as strong (S9) on an indoor dipole and a W3EDP.

G4ELZ planned to be QRV 24/31 March as **EA8/G4ELZ/P** from a holiday location in Tenerife with his FT-817, 20m dipole and a short doublet for other bands. **WB3AAL** attended the Atlanticon 2006 QRP Forum at the end of March and thanks everyone who made the arrangements for an enjoyable weekend. I QSO'd **YI/WƆ8CRT** in mid-March from Florida (I was using 100W) and Neil later sent me an e-mail saying he uses 5W QRP from an IC-703 to a 40/20m inverted vee at 33 feet. He says that once his call gets spotted on the DX Cluster, power doesn't seem to matter. **EA5/G3PTO** continues to find the DX in Spain and in mid-April reported working ZL on 30m, **SO1R** on 20m CW, and CX, PY, FR, 9J, VU and ZS on 15m PSK-31. **GØGQK** regularly makes PSK31 calls on 30 and 17m with very little to show for it. Mel says what little DX activity there is comes and goes very quickly and you have to be quick to work it. **M5FRA** says a lot of DX is using digital modes. Colin recently worked **3B9FR** and **VQ9LA** on RTTY.

GØUCP feels that "Contests are a gift to QRP. How else would you get the patient attention of expert operators with super directional arrays?". John wrote this just after the CQWW WPX SSB Contest when he worked CN, W1, 3 and 4, 8P and 9M2 all on 20m SSB with 10W PEP to a

small loop made of copper-clad board mounted horizontally in the roof space. On the other hand **M5FRA** wrote in response, "John, 'patient attention' in a contest? Sorry mate but you were just another rapid fire number to them and I would bet you got 59 from all of them. If you really want to test your loop try non-contest stations and ask for real reports". Do you agree with John or Colin? **G4LØS** enjoys SSB contests with his Cobweb and 8W PEP. Chris says, "That's one way to work new countries. Most big stations need points so they will try to pull you through. I worked VE3, CN and 9M on 20m and VE1 first call on 15m". **G3XBM** says, "Working ZD8Z on 15m QRP SSB with a simple low wire antenna was a nice surprise, especially as it was a new country for me".

GØUCP's idea for using copper-clad board for his loop comes from **7N3WVM** at <http://www.qsl.net/7n3wvm/mag-loop.html>. John's loop has a circumference of 244cm and is made by joining two lengths of single sided board between 9.5 and 11mm wide, and has two air spaced variable capacitors. **OK1IAK** also uses a small loop antenna he recently built. Vojtech's is a one metre diameter circle made from 13mm diameter semirigid. It tunes very sharply on 30m and he gets a very nice display of sparks on the capacitor while transmitting more than 3W as a bonus! His first loop was built from 1mm thick wire and a plastic capacitor, no sparks, and tuning was much less critical than by the semirigid version. However, it was useless on transmitting but quite useful on LF as it is quiet.

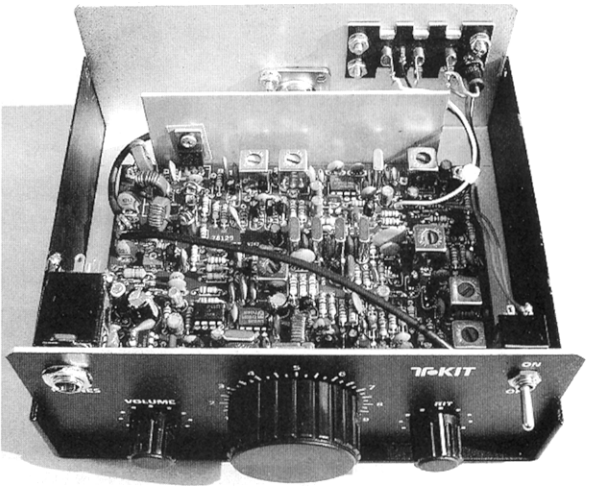
M5FRA finished building the DC-40 kit at the end March and says it is working well with a 7030kHz crystal with no shifts and 1W out, plus a reasonable receiver. **G4KKI** has been "playing around" with the Pixie II on 40 and 80m and has started an Internet Yahoo Group for the Pixie. Bill invites anyone with an interest in the Pixie to join at <http://groups.yahoo.com/group/pixie2>. **WA2NTK** was bitten by the QRP bug about a year ago and now has a website describing how to build his 5W valve transmitter, <http://home.stny.rr.com/wa2ntk>. Ralph says the rig has a small number of parts and is very easy to build. **WA3WSJ** has details of his Skunker Vertical on the Internet at <http://www.wa3wsj.com/AreaWSJ.html>. **G4ØFV** has built the Ten-Tec 1320 20m transceiver kit for /P summer operation (see photograph alongside). Duncan says it is a simple transceiver to use and puts out 3W with full QSK. Within hours of building it, he had QSO'd **UR3IFY** using a doubtet. Duncan has a new QRP website at <http://www.freewebs.com/g4dfv>.

Our sympathy to **GM4CXP** who suffered a detached retina two years ago and whose sight has deteriorated to the extent that he is now registered as blind. Derrick will probably retire on medical grounds later this year and says the good thing is that he will have more time to "play radio" and make more QRP trips to EA8. He has just built a 'fishing pole' version of a $^5/_8$ wave vertical for 10m and put it in the garden with the base about five feet AGL along with three quarter-wave radials. QRO (70W) QSOs with DL and LA show it works and Derrick plans to make QRP CW, SSB, FM and PSK31 QSOs with his FT-817 with it.

M1KTA has been QRV on QRP CW this year with QSOs on 160-20m and is now searching for QRP QRS QSOs on 17-10m. Dominic is also QRV on 4m using a **OZ2M** transverter to FT-897 IF at 28MHz and will now be operating all modes from JO02BD using a vertical dipole and a four element Yagi. For three weeks in August, he and his wife will drive from VE7 to VE3 and he will be QRV CW/SSB QRP on the HF bands plus some VHF and UHF /M and /P. Dominic hopes to complete his ATS-3 to use with a homebrew modular vertical made from 15mm copper pipe and brass plumbing fittings, a top a six feet telescoping whip and 2½ inch air wound coil with taps for multiband operation. A full description could follow for SPRAT if there's any interest?

Thanks to all the contributors to this column. Please let me know how your summer goes, what you've been building, who you've been working, your opinions on anything to do with QRP (what you think about contests!) and any DX trips you plan in the autumn or winter. We will be back in the UK for the summer on 8 June.

Thanks and 73 de Chris, N4CJ (G4BUE)



GQRP Club Sales

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

GQRP Club Antenna Handbook - £5
HW-8 Handbook - £10
} plus postage per book: UK - £1.45; EEC - £3.20; DX - £3.80

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

Pair LSB/USB carrier crystals HC18U wires - [9MHz ± 1.5kHz] £6 pair } plus postage

Crystals – HC49/U wire - **3.575MHz 3.579MHz and 3.582MHz - 30p each** } (ANY quantity)

SA602AN - £1.75, MC1350 - £2.00, IRF510 FETs - £1.25 } 40p (UK),

MAR-4 RF amplifier - £1.50 (limited stock) } £1.00p EEC,

HC49U (wire) crystals for all **CW** calling frequencies – 1.836, 3,560, 7,030, 10.106, 14,060, 18,096, 21.060, 24,906, & 28,060 - **£2.00** each } £1.30p (DX)

HC49U (wire) crystals for DSB on 40m – 7.159MHz - **£2.00 each** }

Miniature crystals (watch crystal size – very low power) – 3.560, 7.030, 10.106, 18.096, 21.060, 24.906 & 28.060 – limited quantities - **£2.00 each** } All post free if ordered with heavier items

Ceramic resonators – 3.58, 3.68MHz & 14.30MHz – **50p each**

Varicap diodes – **MVM109** – 40pF @ 9v, 500pF @ 1v. **75p each** } max of 2
– **MV209** – 5pF @ 12V, 40pF @ 1v **25p each** } per member

CA741 op-amps 8pin DIL – **5 for £1**

2SC536 transistors (npn) fT-100MHz, hFE-320, VCBO+40V - **5 for 50p**

MPSA92 transistors (pnp) fT-50MHz, hFE-40, VCBO-300V - **5 for 50p**

MK484 radio on a chip - **£1.00** inc circuit diagram.

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

FT114-43 – 80p each (for postage – 2 counts as a pack of 5)

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 = 40p (UK), £1.00p (EEC), £1.30 (DX); 5 – 10 packs = £0.80, £2.00p, £2.60 etc.

Sprat on CD (1 to 109) - £10 inc postage (UK); +50p (EEC); + £1 (DX).

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 – 80p, EEC – £1.50, DX - £2.00. More – add 55p, 80p, £1 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 – 45p, each additional magazine add 20p.

NB I am out of stock of the Drew Diamond book, also, I am out of stock of mouse mats (no more supplies expected). All the DDS kits are gone.

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 Euros are uneconomical to us due to bank exchange charges! Visa/Mastercard. Please quote full card number plus expiry date & security number. We can only send the goods to the card owner's registered address. Sorry, we do not accept Debit Cards such as Switch, Visa debit, or Connect.

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Please do not expect my family to be able to discuss club sales matters or take orders – I will have to withdraw this facility if members keep calling and expect my wife, or my children, to know the characteristics of an SA602 – or even know what one is!!! You will have to call back when I am in.