



SPRAT

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DEVOTED TO LOW POWER COMMUNICATION

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Peter, US1REO, operating from the QRP Raft
'Humming Bird' on the Ukrainian River Desna in July

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

You may have noticed that this issue is one sheet smaller than usual. This is because, for the first time ever, I was short of technical articles. There are some pending but I could do with some more to refill the in-tray. I would like to retain the SPRAT style of articles with short, pithy, text backed up with diagrams. Please bear in mind that the format (A5 page size) does restrict the complexity of single diagrams but breaking up larger diagrams works well.

So if you have a favourite project, however simple, or a favourite circuit that works well for you, please share it with other members. We can accept most electronic formats or hand drawn circuits with scribbled notes.

I look forward to hearing from you



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.

Binaural-effect Headphone Amplifier

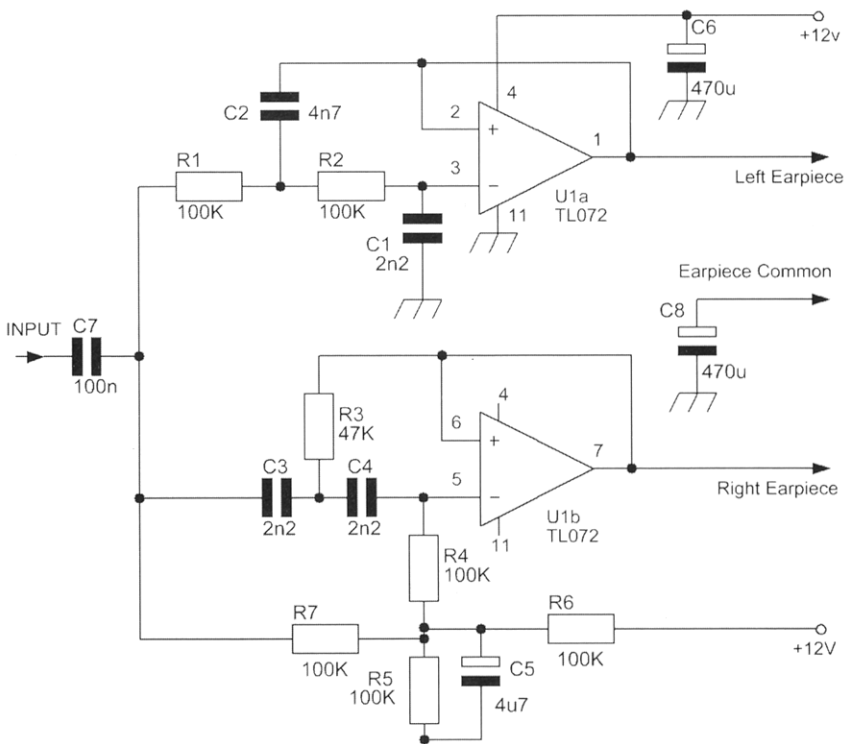
Easy listening for Morse signals

Ian Braithwaite, G4COL, 28 Oxford Ave. St. Albans, AL1 5NS

This unit is 12V (or lower) powered, plugs into a transceiver or receiver headphone socket, and, in headphones or earphones, brings to life Morse code (cw) signals appearing within the receiver bandwidth. It is especially useful in helping the listener discriminate between several signals in the several kilohertz bandwidth of an SSB (or wider) filter.

Single signal reception through narrow filters can of course make it possible to hear a weak station among a number of strong ones. My 250Hz Inrad filter which I fitted to my IC703 does an excellent job. The snag is that after a while, I find the sound rather lifeless, and often prefer the livelier sound of cw through the SSB filter fitted as standard. Adding this binaural unit produces a "stereo effect" which improves readability.

It works by separating the audio spectrum so that bass frequencies appear mainly in one earphone and treble in the other, and drives headphones and earphones commonly used with modern portable audio equipment. The result is an interesting sound field, which assists the brain's already formidable ability to distinguish sounds, different pitch signals being at different apparent positions.



The circuit, shown in figure 1, was developed as part of an on-going mono-band cw transceiver project, but spun out into a self-contained shack accessory. The input signals are fed to one ear via a two-pole high-pass filter, and to the other ear via a complementary low-pass filter.

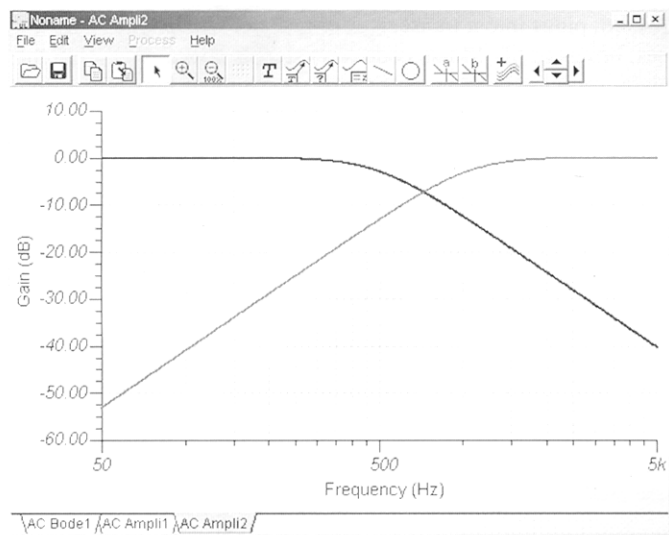


Figure 2 shows the frequency responses of the filters with the values given. The crossover frequency, giving equal signals in both ears, is around 700Hz. There is a dip in the overall output here of 7dB, but this has not proved perceptible, let alone intrusive, in listening.

The measured standing current draw is 4.1mA from the 12V supply. More modern lower current op-amps can be substituted if desired.

Component list:

R1	100k
R2	100k
R3	47k
R4	100k
R5	100k
R6	100k
R7	100k
C1	2n2
C2	4n7
C3	2n2
C4	2n2
C5	4u7 16V
C6	470u 16V
C7	100n
C8	470u 16V
U1	TL072

The resistors and frequency-determining capacitors C1 to C4 should be 5% tolerance or better. None of the resistors dissipates more than a minute amount of power so tiny surface mount type could be used if desired. Similarly, the non-electrolytic capacitors could be surface mount ceramic, though I used leaded ceramic plate types. The electrolytic capacitors should be rated for at least 16V dc.

Operating at audio frequency with low frequency devices, construction is not at all critical, and you can use your favourite method. Figure 3 shows my complete unit, housed in a small plastic box. It uses a piece cut from my favourite prototyping board which has a matrix of holes on 0.1 inch pitch, a ground plane on one side and individual pads on the other. Its manufacturer's part number is RE201EP-DS and RS stock code is 518-4046.

The components are pushed through the board from the ground plane side, soldered to the pads, and leads cropped. Wiring between pads is done with fine single tinned copper wire strands taken from 7 strand hook-up wire, or insulated wire from a wiring pen where wires cross. As the image shows, either knots or nylon cable ties were used to strain-relieve the power and signal wires to the outside world.

Since working impedances are low, screened cables are not necessary, and I used hook-up wire or the power and pairs of wires taken from ribbon cables for the signals. A 3.5mm plug was fitted to the input lead, and a 3.5mm in-line socket for the headphone output.

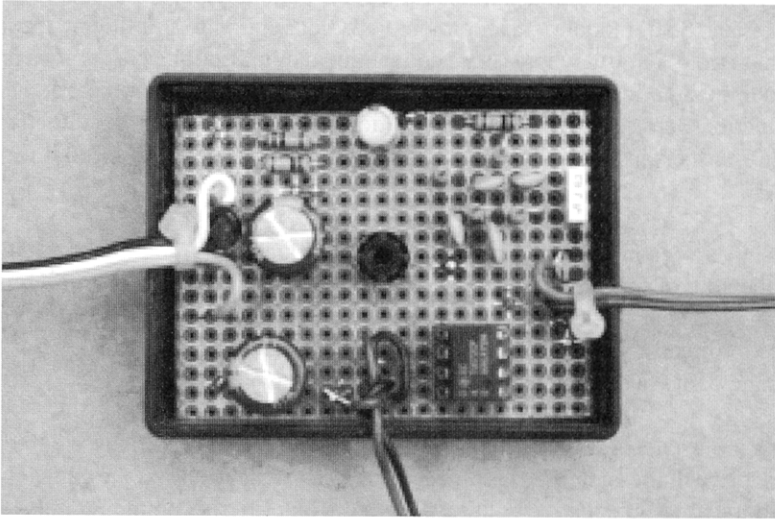


Figure 3: complete unit

Readers may be interested in some impedance measurements made on a selection of earphones and headphones: cheapie headphones, 32 ohm 75uH: Virgin Atlantic headphones, 263 ohm: Sennheiser HD450 headphones, 68 ohm: Sennheiser MX500 earphones, 300 ohm

The unit works with all of them, and nothing beefier than the op-amp is needed. The MX500 earphones are normally used.

Another way of producing a stereo effect is to impose a time delay difference between the ears. I still have a bucket-brigade delay line I built many years ago for experiments, and was able to compare the two.

The bucket brigade device produces an interesting enough sound, but I was surprised to conclude it wasn't actually any better than the simple circuit given here. I should also mention that I initially tried an all-pass phase shifter which produced very little effect despite using more components.

Please experiment: for example you might like to try a different crossover frequency, or sharper filtering, or use switched-capacitor filters to give an effect which can be varied. In any case, I hope you enjoy the sound this little circuit produces.

A 19dB BI-LATERAL AMPLIFIER WITH 37dB GAIN CONTROL RANGE
Ron Taylor G4GXO, The Steading, Stainton, PENRITH, Cumbria CA11 0ES
ron@cumbriadesigns.co.uk

Here is a variation of a familiar and useful circuit popularised in the late 1970's in the G4CLF Plessey SSB module. In common with conventional amplifiers, the bi-lateral amplifier has two ports. But whereas in a conventional amplifier one port is always an input and the other the output, with a bi-lateral amplifier the direction of amplification and hence the port functions, are set by the supply conditions. The ability to set the direction of gain is useful in transceiver circuits where a bi-lateral stage can be used on both receive and transmit.

In this design a second FET has been added to produce a Cascode configuration. This increases the gain of the stage by about 6dB and provides a second gate which is used to set the gain. Note that this Cascode form is similar to a dual gate mosfet, in fact it should be possible to directly substitute a dual gate mosfet for both FETs in this circuit to obtain a higher stage gain – although care will be needed to ensure stability.

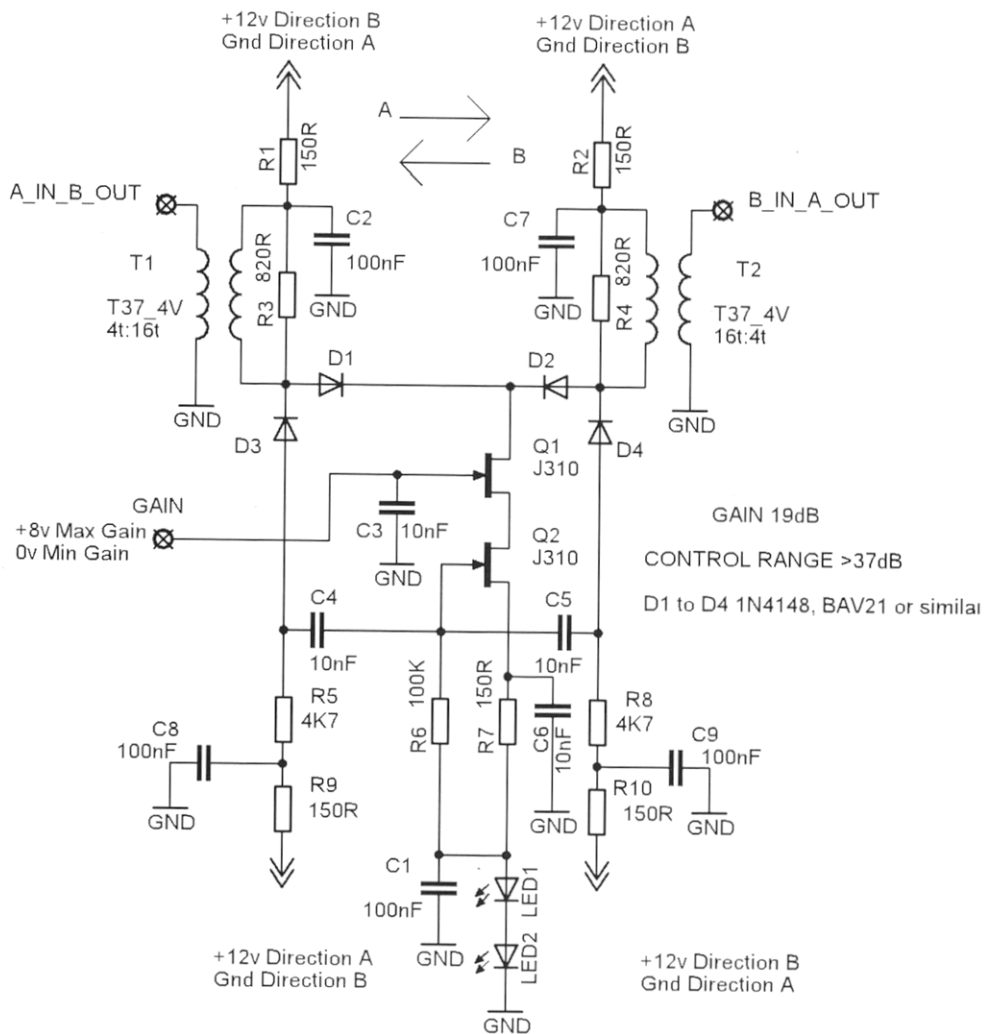
Two LED's are used to lift the amplifier's common point to about 3v above the zero volt rail. (Four or five diodes could be used instead of LED's). This allows the gain control voltage applied to Q2 to go negative with respect to the amplifier's common point significantly increasing the gain control range.

With the components shown, the control range is around 37dB. To operate the amplifier at fixed gain the Q2 gate voltage can be set by a resistive divider, about 6v will produce maximum gain. Alternatively, the gain could be made adjustable by using with a small 10K pot to set the gate voltage or in a receiver application the gate voltage could be set by an AGC system. Always ensure that the gate is tied to a control voltage and is not allowed to float.

The input/output transformers are wound on FT37-43 toroids, small binocular cores or improvised binocular cores made from ferrite beads could also be used. Resistors R3 and R4 together with the turns ratios of the transformers set the input impedance and are the dominant factor for defining the output impedance.

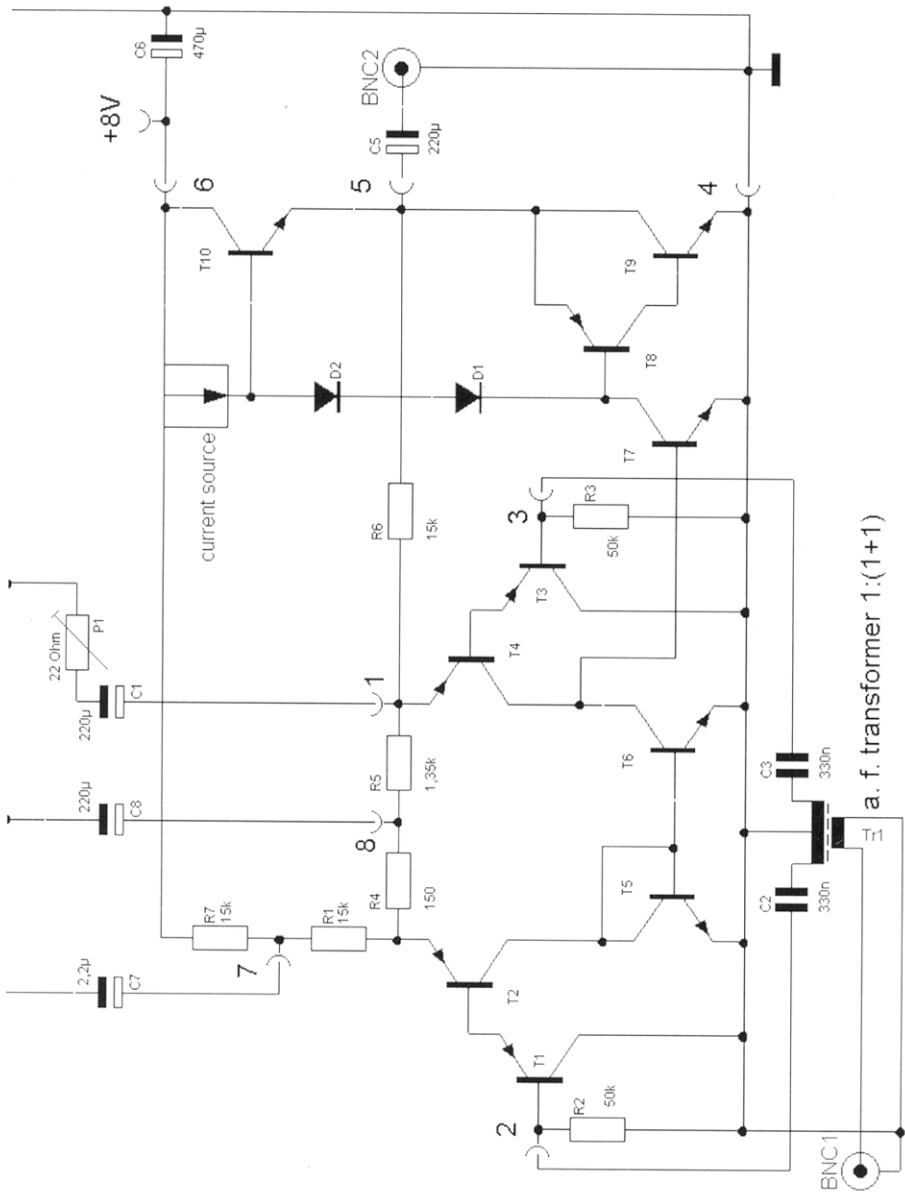
With the values and winding ratios shown the input/output impedances will be about 50 Ohms. Other values are easily accommodated by scaling the R3/R4 and T1/T2 turns ratios. Note that if R3/R4 are set higher than about 1K then the steering diode resistors R5 and R8 will start to influence the input impedance.

For circuit clarity, the four supply connections used to set amplifier direction are shown separately. The A and B arrows illustrate the gain directions for the two supply conditions shown against each supply connection.



More A. F. Gain from the LM386

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



LM386 test circuit for more gain

A recent discussion in the DL-QRP-AG forum has focussed on some drawbacks of the well known SST QRP transceiver family, especially the problem of low audio output in case of external environmental noise in portable operation and the extremely loud CW

monitoring tone with the a. f. volume control at its maximum setting. Another aspect has been that the sensitivity of the ears of some operators may have declined over the years so that more gain from the LM386 final amplifier would be desirable, preferably without the need for an additional preamplifier. As in several amateur radio applications the LM386 is driven symmetrically directly from both outputs of a NE/SA602/612 this symmetrical drive should be retained by an improved circuit.

Test setup

The test setup in Fig. 1 shows the internal circuitry of the LM386 from the National Semiconductor datasheet, driven symmetrically by a signal generator and a transformer. The output is loaded with 8 ohms. In the normal way internal resistors R4, R5, and R6 determine the amplification factor of the LM386. If R5 is bypassed by a high capacitor, the gain is 200 or 46 dB, otherwise 20 or 26 dB. To achieve maximum gain it should be clear that any audio signals in the feedback path had to be removed as far as possible.

To realize this, the first step is to block pin 8 by capacitor C8. This leaves R4 as a residual feedback resistor for transistors T1/T2, but this has to be accepted. If pin 1 is also blocked by capacitor C1, total gain will be more than 70 dB, but the output sine wave form may be debatable. In this case it is advisable to add a small resistor P1 in series to capacitor C1. This will introduce some feedback again, and with just 5 ohms for P1 amplification will drop to about 66 dB but the output sine wave will be more acceptable. Blocking pin 7 will also increase the gain by a few dB. Usually capacitor C7 is recommended for reducing residual hum of the power supply for the prestages of the LM386 only. When selecting the blocking capacitors it should be taken into account that the dc voltage from pins 1 and 8 to ground is about 1,3 V and from pin 7 about half the supply voltage. This allows rather small capacitors to be selected for this modification. Lower capacitances than given in fig. 1 will decrease the gain at lower audio frequencies.

Meanwhile I have been informed that a similar solution has already been published in www.intio.or.jp/jf10zl/LM386.htm. It is not suited for a symmetrical drive, however, but the basic ideas to achieve higher gain are obviously the same.

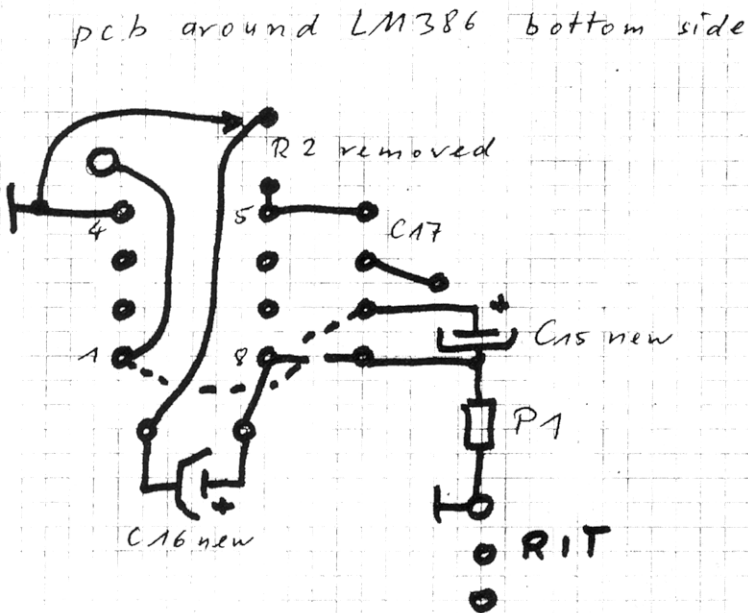
Some publications mention a rather high internal noise level of the LM386. This proposal to increase the gain will also increase the noise, of course, which may not be acceptable if volume is controlled ahead of the LM386. Therefore it is recommended to control the gain either by Potentiometer P1 or at the output of the LM386, as it is done in many amateur applications.

Special procedure in case of the SST

I had the chance to try out this modification on the SST-40 of DK5RY. Because of the small space between the bottom of the case and the pcb it became clear that it would rather be impossible to solder the additional capacitors to the bottom side of the pcb, as I had planned originally. Two capacitors on the component side of the pcb have to be removed first to get space for the new components needed. Here are the steps for the modification; the components addressed are according to the component list of the SST:

1. Remove resistor R2 (or just break it using a pair of pliers)
2. Interrupt the lead from pin 8 of LM386 to capacitor C15 on the bottom side of the pcb
3. Remove C15
4. Remove C16
4. Solder a capacitor 100 to 220 uF into the holes of former C15. The polarity must be such that the positive pole is connected to pin 1 of LM386 (via a lead on the component side of the pcb).
6. Solder a capacitor 100 to 220 uF into the holes of former C16. The polarity must be such that the positive pole is connected to pin 8 of LM386.
7. Connect the negative pole of new C16 to pin 4 of LM386 (You may use the lead from C16 to former R2 for part of this connection).
8. Solder resistor P1 from negative pole of new C15 to ground (using the grounded terminal of the RIT potentiometer, for instance). P1 may be isolated by using "spaghetti". You may decide by listening what amount of amplification versus distortion You can tolerate. If You want maximum amplification, "P1" is simply a wire.

Fig. 2 shows the pcb leads around the LM386 on the bottom side of the pcb, for better orientation.



Concerning the extreme loudness of the monitoring tone at full audio

There is no easy way to solve this problem of the SST. When controlling the operation of the AGC it became apparent that the LM386 is unable to deliver sufficient AGC voltage when loaded directly by 16 ohms (2 x 32 ohms headphones in parallel). The simplest solution would be to increase the gain of the LM386 to its maximum, so that there would never be a need to turn the volume control to full audio. Another solution would be to insert a resistor of about 82 to 100 ohms between output capacitor C17 and volume control R3, with LED D9 remaining directly connected to C17. A piezoelectric headphone would also allow the LM386 to deliver sufficient AGC. Other recommendations given were to connect the headphones in series instead of parallel or to connect the paralleled headphones via an external audio transformer to increase the load for the LM386.

Some Notes on the LM386

Paul Harden NA5N, PO Box 757, SOCORRO, NM87801, U S A

In the official National data sheets and application notes, they have a scheme of using a resistor and capacitor in series, running from the LM386 output pin (pin 5) to the gain bypass pin (pin 1), forming a low pass filter. With the gain bypass cap in place between pins 1 and 8, they recommend $R=2K$ and $C=10nF$ for a “bass boost” response, or to enhance the gain below about 300Hz. With some experimentation, making R larger, you could raise the roll-off to 700Hz, or whatever. However, I have fiddled with this and found the effects to be fairly minimal below about 2KHz, that is, using the LM386 in CW QRP rigs with 500-800Hz favoured range of interest. Such a scheme does help the roll-off over 2KHz, which can eliminate a little bit of noise in the earphones. Remember, the gain bandwidth of the LM386 is around 300KHz, so such schemes are really intended to clamp the gain (low pass) for well beyond the audio frequencies. But for audio frequencies below around 2KHz, I have found the addition of these two components (R and C) not to be worth the effort. You can shape a far better low pass response by inserting the R-C on the input pins as a low pass filter.

If your question involves “can I configure the LM386 as an active low pass filter,” that is, with feedback R and C’s from the output back to the input as any common op amp configuration, the answer is no. Well, at least not recommended. In most op amp active filters, you use the op amp merely to make up for the loss in the passive components, so seldom use gains much over 1. In fact, most active filters, the op amp is really acting as an “emitter follower.” In the LM386, the minimum voltage gain is 20 (pins 1 and 8 left open) and 400 if a 10uF cap is placed between pins 1 and 8. This is way too much gain, and the RC feedback network forming the low pass filter basically converts the circuit into a nice oscillator.

If your requirements are to form a low pass filter with some specific shape (frequency roll-off point and sharpness), I would recommend doing so with 2-3 stages of passive RC or LC components before the LM386. This will be fairly lossy, but the LM386 also has plenty of gain to make up for it.

A short antenna for the SEM35

An inexpensive mobile whip screw-on antenna for man-pack use (SEM35)

Gert de Gooijer, PA3CRC, St. Adrianusstraat 81, 5614EN Eindhoven,
pa3crc@PeopleSkills.nl

Some history

The need for portable use of 10m or 6 m FM originates from the wish to communicate between foxes during 2m fox hunts. Not the official ARDF kind of hunts, but more the kind night-hunts like usual in scouting, etc. The common portable rig does not work here because of the simple fact they are 2m hand helds and thus completely block in the vicinity of the 2m AM fox. The 70cm-band is also useless; we tried it, but in the wet bush you do not communicate over more then 1 km with a 70 cm portable. Note, we are talking about a fool proof link and not about "Yes it works" and two feet further "Hey you are in a dip, cannot hear you...". Reliable, predictable communication. Of course, GSM would work, but we hams also have our pride...

That's why we switched to 10m FM some years ago. 10 watt into wire dipoles, wrkd fb. But setting this up at dark rainy nights, set, battery, 10m dipole, coax, the fox-TX, the fox antenna, all takes to much time. Then we read about the SEM35 ex-army German vhf man-pack. About 8 kg, internal battery, synthesised from 26...69 MHz, rugged and easy to use. Ideal for our purpose. Outputs abt 1.8 watt (spec 1W). The RX is very sensitive. The set accommodates a 50ohm antenna (BNC) and a short or long whip on a screw terminal with internal auto ATU. The price? Below 50 UK excl battery and antenna, incl P&P. We bought three units. They worked perfectly right away, good receiver, preselection and ring mixer. They even work one beside the other when one is at 28.1 and the other at 29.6 MHz ! No spurious what so ever, like with the older PRC25/77 family. The internal switching power supply regulates very well. Output and sensitivity are constant over a 10 to 30 volt input range!

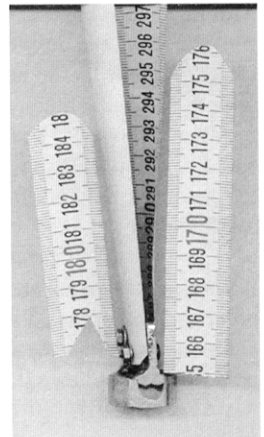
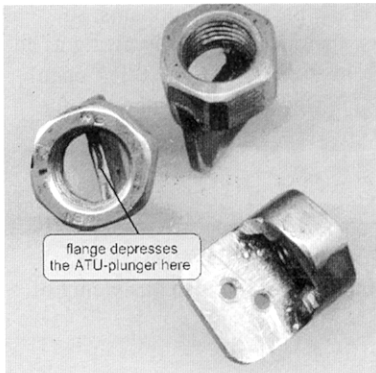
One drawback, the antenna had to come from an other supplier, and they asked some 20 pounds for it incl. freight. Sure, the German army payed a lot more for those antennas back in 1968, but my budget is not at their level. Time for some home brewing.

The antenna

Like with the PRC25, the original whip antenna is made of several layers of flexible steel tape, and is abt 91 cm long. On the set there is a screw for the antenna, and there is a plunger in the center. This operates the tuner.

When fully depressed by the nut on the antenna, the antenna tuner switches to the short whip.

The screw terminal on the set is metric, it accommodates an M16 x 1,5 nut. The suffix "1,5" indicates fine pitch, and those are not very common. A specialised shop will have them. Do not buy just a M16 nut! For the antenna itself I bought one 8 meter long

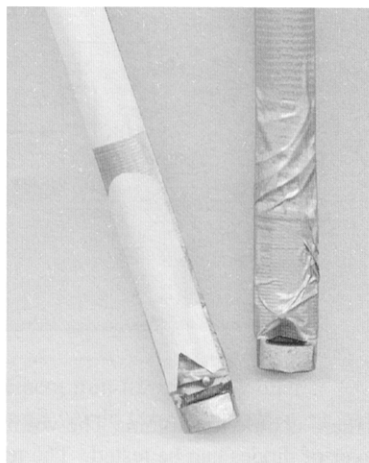


retractable steel measuring tape, approx 25mm wide. This was OK for making 3 antennas. The antennas are not made in the same way the original ones were constructed, because it turned out to be very difficult to drill nice round holes and cut sleeves in the thin steel tape. So these have only two layers of tape, and they are mounted with the hollow sides facing each other.

The difficult part for me was welding a flange on the nut and cutting the height of the nut so that the flange would depress the plunger for ATU the right action. So a friend did this. Drill two holes in the flange. (photo) It is better to make the flanges somewhat longer than I've done. Then, cut two pieces of tape abt. 95 cm long and two others of 8cm. (photo) This can be done with a good pair of scissors. Lay one end of each of the long tapes on the flange and copy the hole onto the tape. Press the two holes in each tape with a sharp nail, so that you can screw the tapes with M3 screws and nuts on the flange. Screw one tap on the flange and screw the contraption on the set. For tuning to the right length ask a friend with a 10m or 6m rx with S-meter to monitor the field strength a km away while you cut the tape cm by cm. (An SWR meter will not work, it isn't a 50ohm system) Of course you will cut away to much, but that's OK. Cut the other tape to the length where your friend had the highest field strength and mount both tapes on the flange. The complete antenna will have the right length now. You can make the sharp edge on the top a bit more round for safety. The right order is: screw, plain washer, tape1, screw cup washer, flange, screw cup washer, tape2, plain washer, nut. (photo) Do not forget the screw cup washers, like I did on one antenna! Somewhere in the field the contact between the tape and the tapes failed. So did the radio contact. Those screw cup washers are important, as is cleaning the surface of the tape from paint for ensuring good contact. The plain washers are for spreading the forces over a somewhat greater area of the tape, preventing too much strain on the holes. Then lay the two small pieces of tape at each side of the joint and use heavy duty scotch tape to secure it to the antenna. (photo) This helps to decrease the stress on the joint when the antenna gets a blow when passing under a branch of a tree. Also use some scotch along the length of the antenna. Then pack the complete antenna in scotch tape. Otherwise the steel tape will cut you. Now you will have a very sturdy antenna. Not that flexible as the "real one", but you can bend it if you like during transport and it will stay up in position when in use.

Results

Well, in the bush results were still a bit disappointing I'm afraid. On a photo you see Gert at the Dutch radio amateur camp site going for a walk to test the rig. Behind you see the bush. Later at night we had 2.5km range with no real difference between 6m and 10m. Still this was a lot better than 430MHz and it was much less critical for position ("flutter"). We noticed no difference with the set on the back as a man-pack or posed on the ground. (Although the latter feels more comfortable, the set is abt. 10 kg incl 3Ah battery) Attaching a 1/4 wave ground radial did not change a lot. We will have to investigate this further. Are vertical antennas a bad idea with all those vertical trees? Should we go back to the horizontal dipoles?



More power is out of the question. 2,5 km with 1.8 watt would make 7W for the wanted 5km range. Too much battery drain. Nice thing is that you can walk and talk.



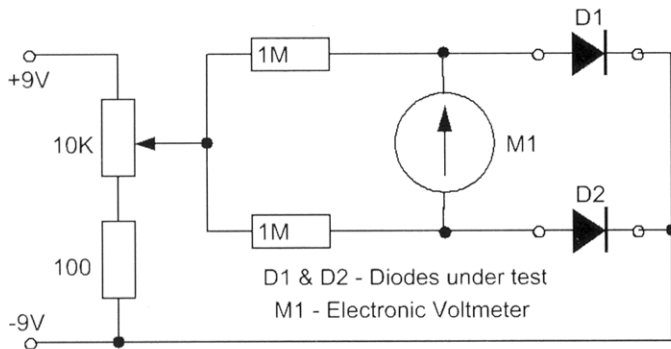
So does the antenna really work as it should? Back home from the Dutch radio camp I looked a bit mistrustfully at the set with antenna and wondered how the army deals with this. And right then the squelch opened and I heard LY3W calling CQ at 29.600 (June: Es-season). I took the set, held it at the second floor at the window facing North East and we had a QSO, with a 1,8 watt FM portable set!

So this antenna is OK. And if you get a chance to lay your hands on such a nice SEM35, do not hesitate! It is a piece of fine German craftsmanship, ideal for local 10m and 6m QSO's and incidental portable use.

Diode Matching

Marco Eleuteri, IK0VSV, Via Della Caselle 22, I-6059 TODI (PG). Italy

This is a simple instrument for matching pairs of diodes.



There is little to explain. The voltmeter reading must be as close as possible to zero. Any pair of diodes can be tested. The tester can be built using ugly construction.

Taming a Noisy Soldering Iron

Tony Fishpool, G4WIF, 38 James Rd. Dartford, Kent. DA1 3NF

I recently took a chance on a special offer from Maplin Electronics where one of their solder stations was reduced to more than half price. At £12.99 I thought “what is there to lose?” – the distance selling regulations in the UK allow anything to be sent back right away if you don’t like it.

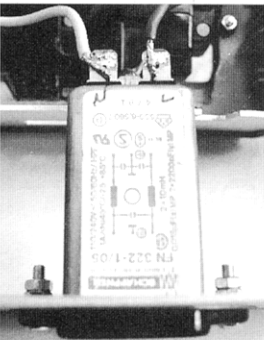
While I was waiting for delivery, Ian G3ROO and I were chatting and he told me that one of the local guys had one and it radiated RF like mad. It duly arrived and when I plugged it in and the shack IC725 sounded like a buzzsaw. “Nuts” (I thought) and then I wondered if it was radiating or simply getting down the mains supply?

The station RF portable detector (Superdrug £2.99 radio) was pressed into service and it proved that the soldering iron switch mode power supply was making a heck of a racket - especially when set at low temperatures - but it wasn’t radiating it especially badly.

I have a huge 240-240v isolating transformer and that proved the theory. By connecting the iron to the mains via the transformer the noise went away entirely. Ian wondered if one of those IEC (kettle lead) sockets with filters (shown below) would be as effective. Well I didn’t have one, but fortunately the junk box of Ted G0ULL did. And I can report that it worked very well indeed.

When I mentioned this on the GQRP Internet conference, Clive M5CHH reported these filters were also known as Schaffner IEC socket or a PI filter IEC socket.

Below you can also see the filter built into a box to supply two filtered mains outputs. So far the “special offer” soldering iron has performed very well and the filter makes it extremely quiet.



The above will hopefully serve me until I can find a replacement iron for my old Weller Solder Station. If anyone has an EC1201 they want to part with would they please drop me an email to g4wif@gqrp.co.uk

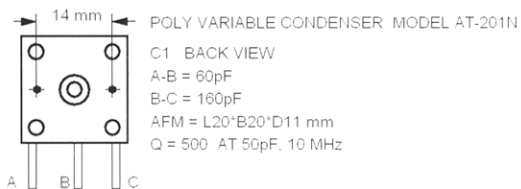
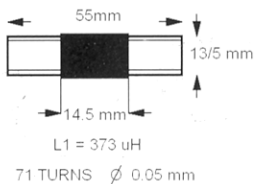
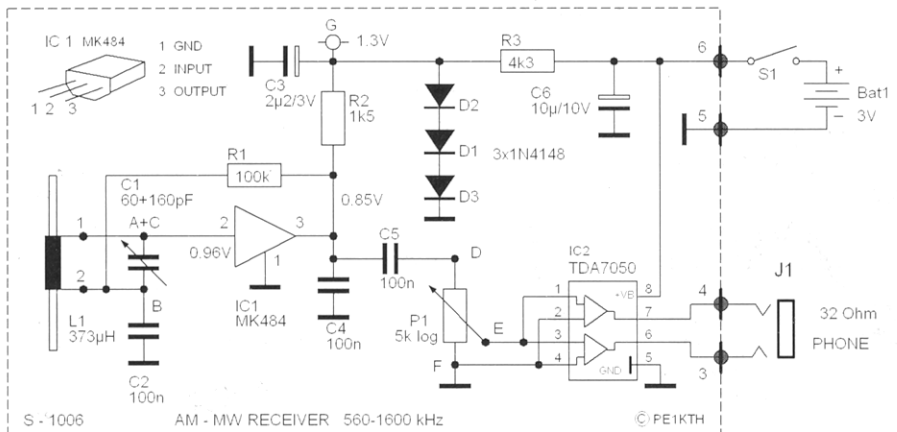
A Beginners AM Receiver

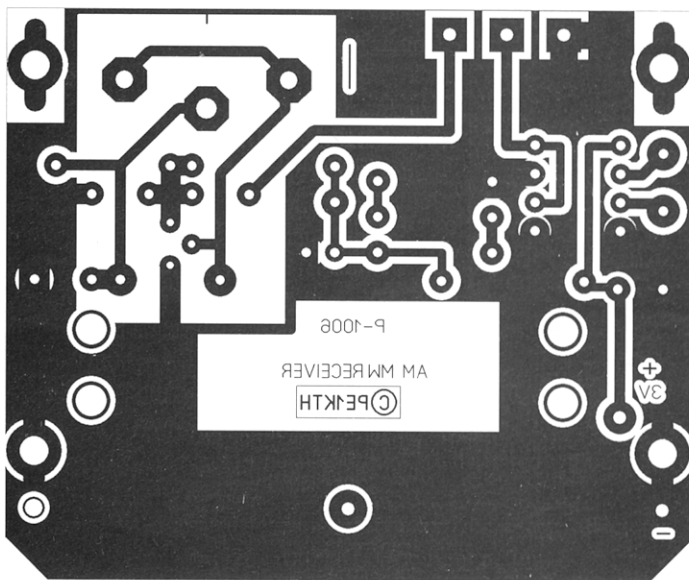
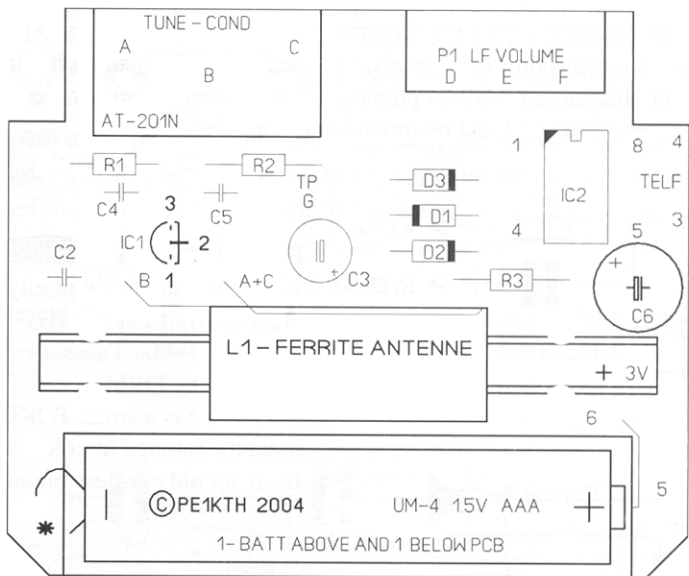
Joris van Scheidelen PE1KTH, De Were 5, 3332 KC Zwijndrecht.
The Netherlands. kthkit@xs4all.nl

Joris offers a nice little project for a children's gift or a project for radio construction training.

The club sells the MK484 for only £1.

A PCB layout is offered. Readers must scale it for their own use.





KISS Test Equipment

Paul Debono, 9H1FQ, 65 Triq II-Hafur, Attard BZN 03, Malta

I have recently salvaged scores of Crystals, screened coils, IFTs, and other useful components from discharged cordless phones, TV, and other consumer electronics. I had the problem of identifying and testing unknown components.

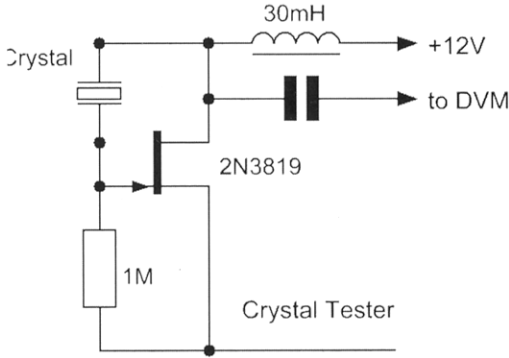
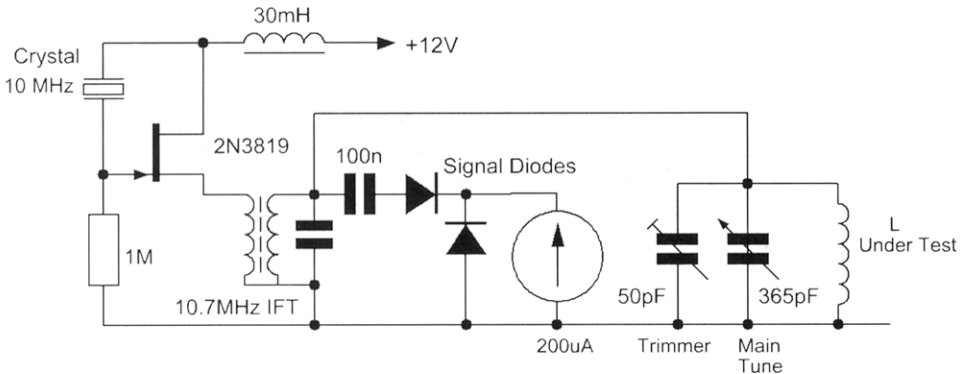
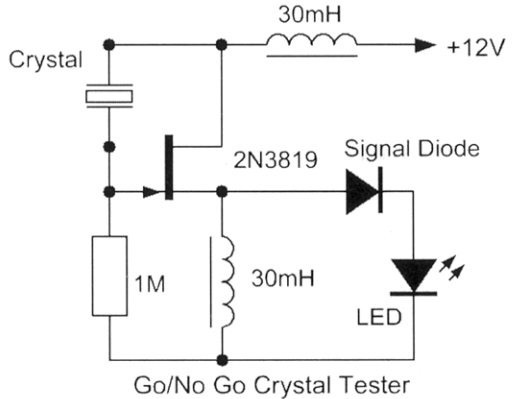


Figure 1 shows a barebones oscillator, which despite its simplicity I could test crystals from 90Khz (B7G glass) to well beyond 30Mhz. There is enough output to drive any DVM.

The choke is a small TOKO type fixed inductor (orange in colour) salvaged from an old cordless phone PCB.

Figure 2 has a LED to indicate a go/no go status of marked crystals.



Always based on the same circuit, is Figure 3, a simple, but effective micro inductance meter. A 10MHz crystal will give a range from 1.5uH to 15uH. The IFT at the source of the 2N3819 is detuned to 10MHz to kill harmonics, and thus will ensure correct readings. A 32 MHz crystal will give a range from 0.15 to 1.5 uH for VHF coils.

However, you will need to change the coil at the source of the FET, to tune to 32 MHz. The trimmer will compensate for crystal tolerance & calibrate the main tuning capacitor. There is no need to put a variable resistor on the meter, as the peak output is normally 150 uA. Calibration is by means of known Toko fixed coils.

Initially you should disconnect the variable capacitor and coil under test, then tune the 10.7 MHz IFT to peak the meter. It should peak to about 150uA.

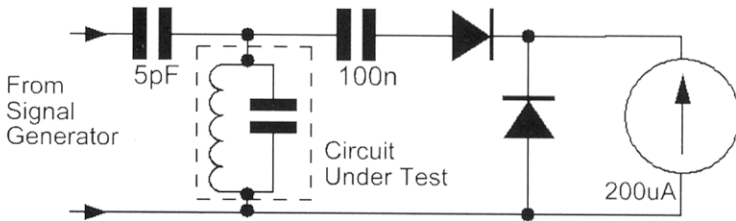


Figure 4 is a simple means of checking resonance of a parallel tuned circuit. First adjust the output of the signal generator, by connecting the output to the 0.1uF capacitor, excluding the tuned circuit under test and the 5pF capacitor. Get a decent peak. Then connect the setup as shown, change the frequency of the signal generator, until you get a peak, then read off the frequency at the signal generator. It is surprisingly accurate!

The choke on the 10 MHz oscillator can be reduced to 30 **micro** henries, or less. However for the crystal tester, figure one, it has to be 30 **milli** henries, otherwise, it will not oscillate down to 90 **K**hz

The 2N3819 reminds me of the EF91 (6AM6) valve, which works in any configuration, in which other devices fail!

A visit to the Russian QRP Club

Dick Pascoe G0BPS Seaview House, Crete Road East, Folkstone, CT18 7EG

Early in 2006 I received an invitation from Oleg RV3GM to visit their annual gathering at a place called Ugra, about 350Km south west of Moscow. The invitation read 'get to Moscow and we will look after you'. The flight was booked for the 27th – 31st July inclusive.

After delays I arrived in Moscow to be greeted by Oleg and Dean KH6B from Hawaii (Who I had known from Dayton). Quick greetings and then out to the waiting mini-bus. Five hours later we arrived at the campsite set in the forest about one mile from the nearest road.

About 20 Russians greeted us and they quickly showed us to the camp table where they had been waiting to enjoy their evening meal with us. I should mention that at this time we were running about two and a half hours late, partially because of my late flight!

The next morning I was greeted by the sound of rain, voices chatting and the generator starting. It was obviously time to get up! The camp was set in an area of about 100m square with tents scattered about. Each tent seemingly with its own wire antenna spread above in the trees. The Ugra River wandered past about 100 metres to the north.

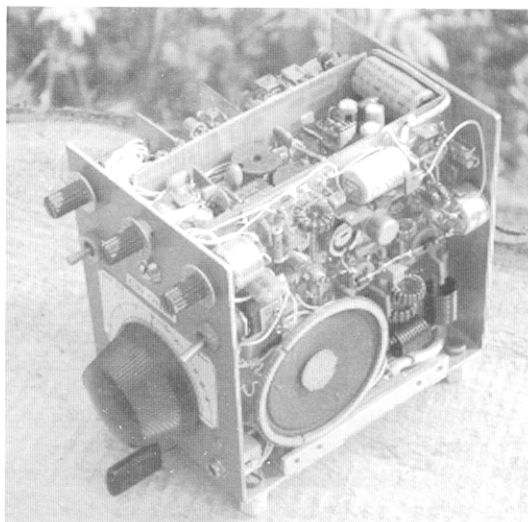
The first job on Friday morning was for Dean and me to go to the local government offices so they could check our visas. A thirty minute drive to the town and then a two hour wait whilst they got all the right papers sorted. The young woman handling our papers had never seen a foreigner before and wasn't absolutely certain of what to do! My own helper Stan UA3LMR proving to be a real boon. Russian bureaucracy overcome, we were able to return to the camp and enjoy the weekend.

Several stations were set up around the camp with the clubs main station being in a small tent. The call signs RU9QRP/3 and UA9QRP/3 being available for use. I tried calling several times on 14.285 but to no avail, we also tried 14.060 but no UK stations were heard. After tuning around a little I heard a GM who, after a brief chat complemented me on my command of English! I then told him my home call!

The Radio's in use in the main shack tent were two Elecraft K2's and an IC703. The antennas were a large doublet hung up in the trees and also a 'Robinson R33' two element beam (www.rquad.ru) up at about ten metres. This is a Russian version of the Spider antenna and it seemed to work very well.



The food supplied for us was local and was very filling, potato with fish, with meat, with salad. Yuri RA3LCW loved fishing in the river and would come back with a carrier bag of small fish. These would be washed, descaled and thrown whole into the boiling potatoes. The other main dish loved by them all was cabbage, boiled down with a tin of chopped tomato's and a chopped onion. Saturday was lecture day, with lectures by Dean and I and others, the highlight being a fascinating talk about Tesla by Professor Vlad RA3AAE. [See left] I was able to follow the lecture given in Russian as Val, RW3AI gave a running translation.

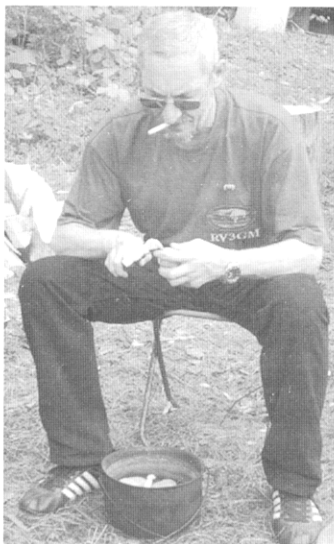


Sunday was contest day with several stations setting up small homebrew transceivers with a maximum of 500mW output. Dean was paired up with Oleg and I was paired with Val, my translator. He quickly set up the station, a homebrew transceiver putting out just 300mW with a DC receiver. The one hour contest started with Val asking me to 'get lost!'. I sat and read my book whilst he won the contest for us!

[Left - 20mCW rig from Oleg EW6CM]

In all there were about 40 hams at the camp with wives and children. I learnt that the average wage in the Ugra region on Smolensk Oblast was just £30 per week;

[Right - Val RW3AI winner of the contest]



[Left - Oleg RV3GM has to help out too]

Monday morning was time to leave and head for the airport with

Val RW3AI, firstly to his apartment for a shower and a meal and then the flight home.

I arrived in Russia to be greeted by two friends, Oleg and Dean [see right] I left behind many, many more friends. Wonderful people that had welcomed us both with open arms.



A Balanced ATU with the Balun First

George Burt, GM3OXX, Clunie Lodge, Netherdale By Turriff,
Aberdeenshire. AB53 4GN

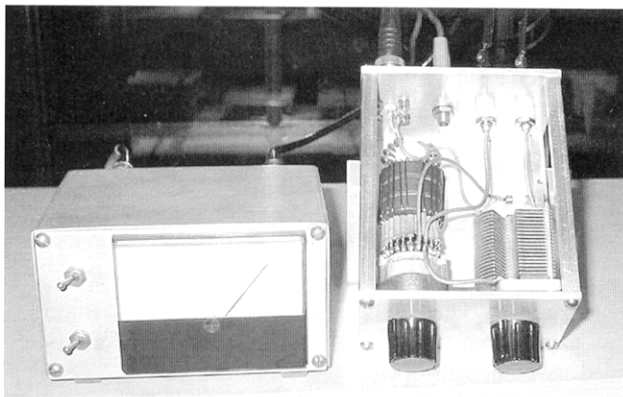
My good atu broke down after 20+yrs of non stop service during the winter sports, after repairing it I decided to build a simpler balanced atu, even thou I have four other atu's. And as I had used a circuit by G4FHU's, from tech topics of June 1992 before, in which he uses a one to one balun before the atu circuit, I made a quick lash up using an 8 uh roller inductor and a 500pf variable capacitor and a balun wound on the first big toroid that came to hand. It worked great but only covered the HF bands, then remembering that I had bought an MFJ-16010 atu at a junk sale (it's a lw tuner) all I did was to put a one to one balun in the input circuit and fit 4mm output sockets on the back panel, it worked great tuned my delta loop on all bands but top band, then I put in an extra toroid and switch to allow it to cover top band, again worked fine, but as the toroid band switch only had 12 poles on it, the next thing was to rewind the toroid in fact it's three toroid's glued together and fit a 1pole 24 way ceramic switch giving better matching and also covering top band with one switch. See the diagram on how to wind the coil.

The following inductances were obtained.

Coil shorted .051uh stray inductance-.148uh-.355uh-.655uh-1.033uh-1.507uh-2.145uh-2.929uh-3.846uh-4.949uh-6.197uh-7.619uh-9.081uh-10.65uh-12.51uh-14.49uh-16.76uh-18.84uh-21.55uh-24.77uh-27.77uh-32.47uh-41.25uh-121.9uh, note these are rough figures.

On winding the balun I used a toroid from a old hf rf board about 2 inch in diameter, first using two single wires and then had trouble keeping it from unwinding, so I then converted it to single piece of PTFE silver plated miniature coax, type RG178/BU its great stuff to use as I does not melt when you solder it, also its makes winding the balun easy, I ended up with ten turns of coax, if your going make this atu to handle a lot more power then better to use a bigger grade of coax, you will need a bigger toroid to get ten turns on it. But it's good enough for my one watt or any qrp level. The atu only took a few hours to make but then I had to make a wee box to put it in and that only took one day Hi.

If you want to make a much better version of this atu then you can find details in an



article by Zachary Lau-KH6CP in the 1992 ARRL HAND BOOOK. For details about balun's the books by W2FMI of TRANSMISSION LINE TRANSFORMERS and BUILDING AND USING BALUNS AND UNUNS, these will answer all your questions about baluns.

Battery Charger Chip

Peter Vaughan G4TCQ 1 Pound Piece Cottages, Main Rd. Hallow, WR2 6PW

I came across the following I suppose by accident. Having recently purchased a caravan and installed both 240V and 12V supplies I was looking for a suitable battery charger that could be left connected during say a weeks holiday without having the worry of 'cooking' the battery by leaving the charger permanently connected. Most 12v power supplies for caravan use have no facility for automatic control of charging voltage and current I set about finding a suitable circuit.

Referring to an old 'RadCom' I thought I had found the ideal circuit, constant voltage charger with current limiting. This was OK but no facility for automatic reduction to float voltage following full charge being achieved. Control was via manual charge/float switch.

Sheldon Hands pointed me in the right direction suggesting I check the Farnell catalogue for a suitable IC.

What I found was a purpose made sealed lead acid battery charging IC, the UC3906 manufactured by Unitrode. (5.58+VAT from Farnell)

Although designed primarily for sealed lead acid batteries, the IC can be used to automate the charging of any lead acid battery. The IC has 4 stages of charging ensuring safety during charging and maximum battery life.

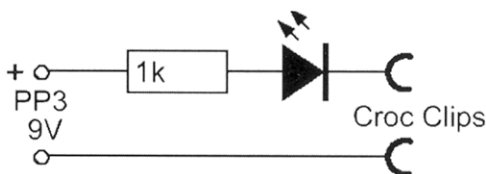
The only design parameters required are to select suitable values for overcharge and float voltage together with current limit value. Resistor networks are calculated from the above parameters with the output from the IC controlling an external power transistor/s to provide necessary charging current.

Unitrode have IC data sheets and an excellent application note (Unitrode web site) containing all the information such that even a true amateur like me is able to build a charger. I have designed a layout based on strip-board with the pass transistor mounted on the heatsink of the case.

It occurred to me that not only will the charger be of use in the caravan but also for charging my small 2 Amp/hr sealed lead acid battery for portable QRP use.

The Simplest Test Item?

Richard Witney, G4ICP, 36 Dapifer Dr. Braintree. CM7 3LS

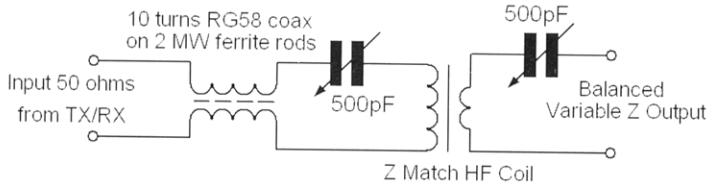


One of the simplest and most useful items of test equipment I have is a simple continuity tester. It is simply a 9 volt PP3 battery + LED + series resistor + 2 croc clips all in a 35mm film canister. Simple and eco-friendly because I used an old smoke detector alarm battery that had bleeped for replacement but is still OK for years in the tester.

Another Antenna Tuning System

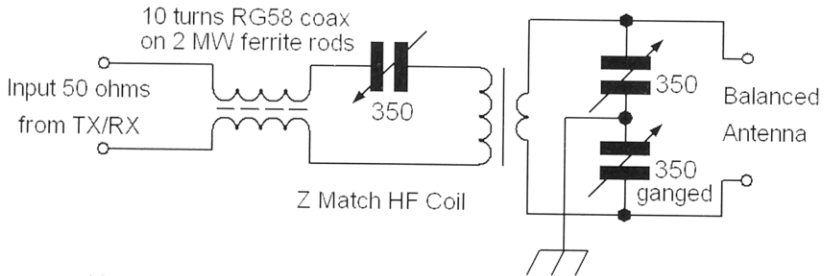
Paul Debono, 9H1FQ, 65 Triq Il-Hafur, ATTARD BZN 03, MALTA

Paul has been doing further experiments with his tuning system fed from a balun as shown in the last issue of SPRAT



40 - 10m Balanced Tuner

In the version below the output circuit is modified to cover 40 to 10 meters more efficiently, and with better loading. The capacitors can go down to 350 pf.



40 - 10m Balanced Tuner

AMTOOLS UK

Selected bargains in components, tools, antenna poles, etc.

A9 9M pole, £27.50. ADE-1 double balanced smd mixer.

(Like SBL-1), 2 FOR £5.50.

Fibre glass spreader set for cobweb, quad, etc. £22.

HZJ7 QRP ribbon antenna kit, £14. Springy (Slinky) £2.45.

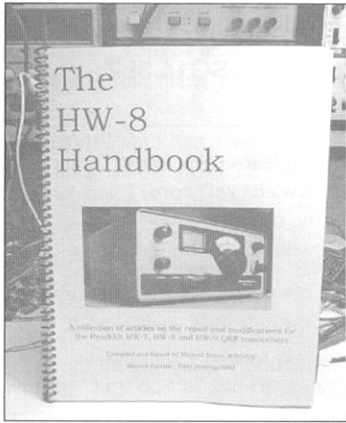
20pc micro drill bit set £3.50. Eye loupe magnifier (10x mag.) £2.50.

..... Lots more! Low mailing charges worldwide.

Visit the AMTOOLS *virtual* department store at www.amtoolsuk.com

72, Les. 00 44 1942 870634.

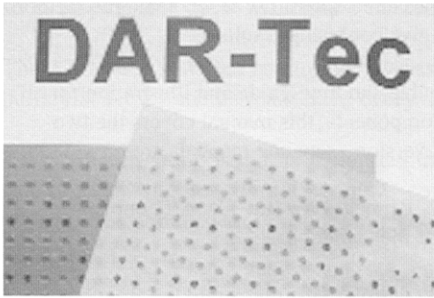
Amtools UK, 1 Belvedere Avenue, Atherton, MANCHESTER, M46 9LQ



The HW-8 Handbook Second Edition

A complete rewrite of the first edition. 104 pages long and spiral bound so it will lay flat on the table. There are lots of photos and schematics in it. Including more stuff for the HW-7, and a new DUAL RIT mod for the HW-8. There are complete PC board patterns and part overlays for the HW-7, HW-8 and HW-9. Also included are all the factory service updates from Heath. There are full length articles about troubleshooting. There are some new mods and I the best of the old ones. Spread throughout the book you'll find "Heathtips."

AVAILABLE NOW - SEE CLUB SALES



A company local to the G3RJV has begun to manufacture a range of Matrix Boards. DAR-Tec produce a plain 0.1" spaced matrix board (Perfboard) in two sizes and in translucent FR4 material. They also produce an interesting matrix board which is completely copper clad on one side. This is ideal for forming a ground-plane – remove the copper around the hole with a

countersink drill for insulated entry or leave the copper in place for a ground connection. DAR-Tec, 109 Mercer Crescent, Haslingden, Rossendale. BB4 4RL.

Tel/Fax 01706 215450. email sales@dar-tec.co.uk.

Or order via Ebay: search for "Matrix Boards". Ebay user name JAMSANDTHINGS.

Telescopic Fibreglass Poles

Great for antenna experiments– 23ft (6.9m) £17.95, 30ft (9.1m) £25.95

Telescope down to 4ft. Light and easy to carry. Quick to erect.

Prices include UK P&P and VAT.

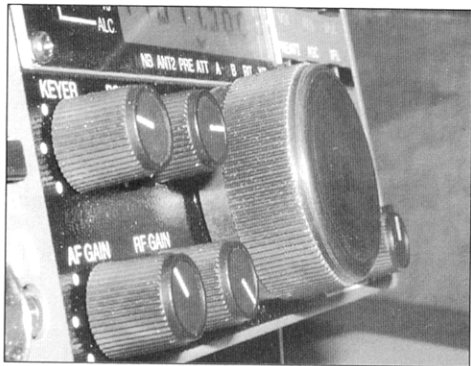
Cheques to: SOTA Beams, 89 Victoria Road,
Macclesfield, Cheshire, SK10 3JA.

Lots of other items for portable radio at www.sotabeams.co.uk

Hands On the Elecraft K1 - 4 QRP Transceiver Kit. Eddie Hotchkiss G3VLU 160 Sacombe Rd.Hertford SG14 3LZ g3vlu~dsp.pipex.com

After several QSOs with Ops using the above I became very curious to learn more about these Rigs. During some "surfing" I located the ELECRAFT Web site (www.elecraft.com) I was very impressed with the wide range of the "built in" features offered for the price.

As I had not constructed for a while I decided to have another "go" with something perhaps a bit more sophisticated than the "Fun Rigs" of yester years. I opted for the four band version plus auto ant tuner (KAT1).



An additional attraction was having all the "Bits" in one package,

A very comprehensive manual is provided similar in presentation to those supplied by Heathkit ,giving clear step by step instructions , "tick lists" to indicate state of the assembly, voltage and resistance check lists (Note these are measured with a DVM, an analogue meter may give confusing results).

A trouble shooting guide and illustration for all the components, this manual covers the two band version , seperate manuals are provided for

four band filter board and atu (with cross references)

The core of the rig is on three high quality PC boards i.e. RF board for Rx, TX A/F amp and common items etc. this board occupies the whole area of the cabinet base.

Front Panel board for LCD display, micro processor and controls. This plugs into the front edge of the RF board(at right angles) by a high quality multi-way plug/socket,

Filter Board (Two or four band) is plugged in on top of the rear of the RF board, (the optional ATU is then plugged into the filter board, 'Wedding cake' fashion)

All these boards are interdependent, (no wire connections). Fault finding is eased by the provision of a set of "Error messages" to indicate location of problems in the more vital circuits etc. These are listed in the trouble shooting section of the main manual, When the outer covers are in place it becomes a mechanically solid package of approx 5"x2"x6" weighing about 2 to 3lbs.

On the air it performs very well, the RX being remarkably "quiet" stable and sensitive (an optional noise blanker is offered I think that this would be an "overkill"., Tuning is very sharp even at default band width of 800hz. A set of three filters are provided ,the width being set to the users choice between 200 to 800hz I found that phones were necessary at the 200hz setting.

I compared a 40M sig. from a G0 in Yorkshire using a well tried IC706 with narrow filter. A readable signal was not possible until I changed the antenna (4BTV) to the K1. This produced a practical qso (about S2/3) both on internal speakers.

The TX is capable of generating 5watts at least on all four bands. Due to the order of tuning of the filter board i.e.30M before 40 m and 15m before 20M I became eager to get on the air. As 20M is a favourite band of mine I left 15M at 3.5W (20M @5W) intending to return to the 15M setting later.

To date I have had over 200 qsos on 40/20 M and 15M (No antenna for 30M), including over a dozen on 15M. The best was a 6Q7 and VE3 very pleasing with 3.5W into a four band vertical. plus, many countries from the Arctic to the Balkans.

The front Panel has a set of comfortably sized push button. (6) These are clearly labelled and well laid out on the 5"x2" panel. Most of the functions of these are used during assembly and soon become familiar.

The LCD display is limited to only three characters so it is not possible for the complete operating frequency to be displayed at one time. At any time tapping the [Band] button once will show firstly Mhz then Khz and then finally "100"s "tens" and units, e.g 7.0296 appears as - 7 then 0 then 296(default) Tapping the [Band] button twice steps to the next band.

During "key down" the frequency display is replaced by a one to five bargraph each segment representing one watt which is a rough guide to the output power as this tends to "round up" I prefer to use an in line Stockton Wattmeter for a more accurate indication of the actual output.

My antenna (4BTV) is adjusted to low SWR on QRP calling frequencies. I have not been able to explore the ATU although it shows promise, My intention is to re erect a carolina windom soon ,hoping that the it will handle the requirements , "Time will tell".

The ATU once installed cannot be "by passed". This is a shame as this would have suited my particular requirements (cant have every thing)?

An interesting point is that it is claimed that it will handle a random wire antenna hence I find it "odd" that no external "ground" connection is provided, something that I have always considered to be vital for satisfactory operation .

In conclusion, I believe that this little rigs performance is comparable to manufactured "off the peg" rigs. That is , PROVIDING that the instructions are strictly adhered to. This will produce a satisfactory result. ALL the problems I encountered were of my own manufacture !!!



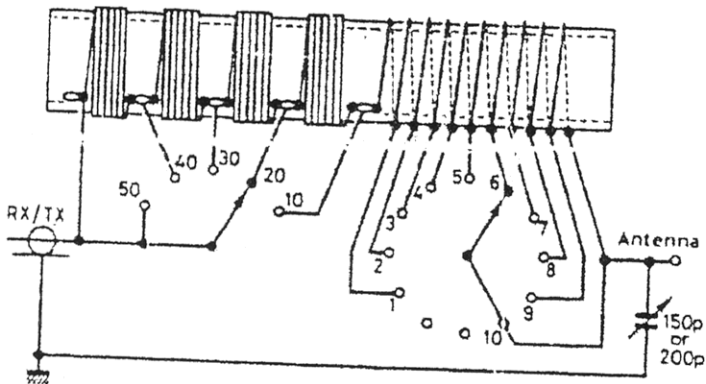
ANTENNAS - ANECDOTES - AWARDS

Gus Taylor G8PG

37 Pickerill Road, Greasby, Merseyside, CH49 3ND

A FINE TUNE L-MATCH ANTENNA COUPLER

With full acknowledgements to G30HM, G3SXW and Radcom,



This ATU permits switched selection of from 1 to 50 turns of a 50 turn coil, and only requires 14 taps on the coil. As shown it provides step-up impedance matching suitable for use with high impedance end-fed antennas. It can also provide step-down impedance matching by simply connecting the variable capacitor to the other end of the coil. The coil can be wound on a 5cm (2 inch) diameter former with wire of a suitable gauge for the maximum power to be handled.

The switches and variable capacitor should also be suitable for handling this level of RF power. For QRP only use, ordinary switches and a receiver type variable capacitor should be suitable. A nice feature of this design is that it reduces the number of tap leads to be soldered to the coil to a minimum.

As noted above switching the capacitor allows matching to a wide range of impedances. Switching can be achieved by fitting a simple changeover switch to connect the fixed vanes of the capacitor to the desired end of the coil.

A NOTE ON 28 MHz SPORADIC E PROPAGATION

During the last sunspot minimum we carried out a monitoring project on sporadic E propagation during the summer months on 28 MHz. It involved three stations, one in the south of England, one in the northwest of England, and one in Scotland. Results showed that the band was open at some time at least every three days, with more openings in the south of England than in the northwest of England, and even fewer in Scotland.

It was also found that once or twice during the summer sporadic E propagation in Western Europe coincided with sub-tropical propagation in the area of the Black Sea and Eastern Mediterranean such as RA6.

Quite by accident G8PG came across such an opening during a contest on 8th July 2006. The band was open for hours and 1.5W of cw provided contacts with 13 European countries plus Asiatic Turkey and Cyprus. So during the summer in sunspot minimum years it is always worth having a quick tune around 28 MHz to see if it is open.

AWARD NEWS

WORKED G ORP CLUB. 620 G4NBI ; 60 G3JFS

WORKED G ORP CLUB 20 G3JFS

Congratulations to the above Members.
Keep those applications coming.

EUCW CW NOVICE AWARD.

This award needs contacts with 50 different stations on cw during the first 12 months of holding a licence. Send a copy of the contact details certified by another licenced amateur with 3 first class stamps or 3 i.r.c.. to G8PG.

Include the power used.

5W or under gets a Class A certificate, higher powers a Class B Certificate.



**Plan now for the
GQRP CLUB WINTER SPORTS
EVERYDAY – DECEMBER 26th to JANUARY 1st**

Call “CQ QRP” on the International QRP Frequencies

The Winter Sports is not a contest, although it is usual for operators to exchange their G QRP Club membership number. Those taking part are invited to submit logs and comments to the G QRP Club Communications Manager, Peter Barville G3XJS, 26 Hever Gardens, Bickley, Bromley, Kent. BR1 2HU. (g3xjs@gqrp.co.uk). The G4DQP Trophy is awarded to the station making the best overall contribution.

COMMUNICATIONS AND CONTESTS

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

SUNDAY MORNING 40m QRP SSB NET

Martin, 2E0AYQ, and others have been trying to establish a regular QRP SSB net on Sunday mornings at 1000am (clock time). Partially in order to encourage participation from countries not yet able to transmit above 7100KHz, and partially (of course) to promote the 40m QRP SSB frequency, the net tries to meet as close to 7090KHz as possible. The band tends to be very busy at that time, and so it is not always possible to be exactly on the nominal frequency.

If 40m propagation is poor (as can often be the case at this stage of the sunspot cycle) then they suggest trying 3690KHz as a back up. I am writing this in August, and it is still early days for the net, but hopefully it will become well established over the next few weeks. Take a look!

EUCW/FISTS QRS PARTY 2006

I have been sent results of the QRS Party. Please let me know if you would like me to forward them to you – contact Robert at “m0bpt@blueyonder.co.uk” if you need more information - or have a look at
“<http://www.freewebs.com/m0bpt/eucwqrspartyresults06.htm>”
to see the full details.

7th QRP MINIMAL ART SESSION 2006

DJ7ST (Hal) has kindly provided me with the results of this contest, which I am willing to forward (just drop me a line), but I thought you might be interested to see his following comments: “The winners in both categories used valve rigs. The latter’s greater freedom from retroaction compared to transistors permit easier construction of frequency-stable transmitters with fewer components but stable tone. The recipe goes like: 2 pentodes, keyed ECO with aperiodic anode circuit (5kOhm), PA an hf-penthode in class A, i.e. the cathode resistor dimensioned to get constant anode current, independent of the state of keying, like a buffer stage.”

WINTER SPORTS

Yes, I know, it’s a long way off yet – or so it seems – but December will be here before we know it, along with the usual (dreaded) “X shopping days to Christmas”. But fear not, because the fewer shopping days to Christmas, the fewer days we have to wait for G-QRP’s Winter Sports, which starts on 26th December and runs for 7 days.

It really is *the* prime QRP event of the calendar, when activity levels are high (but power levels low) and opportunities for making QRP contacts are plentiful. Whether you like to search for the weak Dx, or prefer having a more relaxed QRP/QRP chat, Winter Sports is the event for *you*. In fact, it’s the prime event for us all, and I hope very many of you will

send me your logs. The information you provide can make for interesting reading for others, and give you the chance of winning the G4DQP Trophy. What more could we ask for!

I am hoping that I will have changed QTH by then, and be back on the bands with a reasonable antenna. I'm looking forward to being able to join the fun, and to meeting as many of you as possible on the bands.

Until then, enjoy your QRP, and remember that the deadline for the next SPRAT is the end of October.

72 de QRPeter

MEMBERS ADS - MEMBERS ADS - MEMBERS ADS - MEMBERS ADS

FOR SALE: Trio (now Kenwood) TS-120v HF SSB transceiver, 80-40-20-15-10 metre bands, 500Hz cw filter, 10 watts output. Microphone (not Trio). H/B mains psu with magnetic circuit breaker. Spare power lead parts. Unused mobile mount. Operating manual, Service manual. £150 buyer collects (preferred). G4CTE #347 QTHR (LOUTH, Lincolnshire). 01507 611096 pat.brad@virgin.net

FOR SALE: Maycom AR-108 Air Scanner, as new, unwanted gift. £35, inc. post & insurance. John Noble 01634 401472.

FOR SALE: Pair of Realistic TRC1008 Walkie-Talkies 100mW had aerials replaced. £5 ONO. Pair of Harvard 2-channel 100mW Walkie Talkies boxed £7.50 ONO. Pair of Universum AM 3 channel 2 Watt Walkie Talkies with at least 1 pair of Xtals in each set complete with cases, battery level meters and squelch control £9 ONO. Harvard 410T 40 channel 2 Watt Walkie Talkie £9 ONO. All sets in good working order and ideal for conversion to 10 metres. Also Realistic 49MHZ FM walkie-talkie info can be given to convert to 6m if needed £4 ONO Willing to split the pairs. Call David on 01322 381303 or Email davidrowlands@mail.ru

FOR SALE: Black Star Nova 2400 Counter (10 hz - 2.4 Ghz) Mint and in carry case. £150. Marconi Universal Bridge TF2700 (C, R & L) vgc £ 25. Advance Signal Generator 100 khz -100 Mhz vgc. £ 25. Dip Meter Kit G3WPO...new in box. £ 15. Contact details either via email...garry.olesen@ic24.net or telephone 01292-479245

FOR SALE: Mizuho MX14S xtals (eight) £15, Plessey G3ZVC ssb xcvr PCB fitted with nine SL600 i.cs and passives £12. Murata filters CFS455J (two) £8/£12, CA3020A i.cs (two) £5 each, Plessey SL6440 i.cs (four) £4 each. All plus postage. ON9CAU, mike.whelan@skynet.be



This is Fred - Our PCB expert

The Rochdale Convention [G3RJV comments.....]

There has been some speculation amongst members about the future of the Rochdale Mini-Convention. I do retire in the summer of 2008 so the last time the convention will be held at the present site is October 2007.

However efforts are being made to relocate the event to somewhere else close by the current site.

The details have yet to be worked out but the changes will be announced in good time to all members.

MEMBERS' NEWS



by Chris Page, G4BUE

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

A tip from **G3BLS**: while experimenting with an antenna, David needed to make a temporary connection of a feeder and discovered that the terminals of a 30 amp electric junction box, when broken away from their casing, make cheap and versatile connectors. **G4OEP** has been working on a wire telegraphy web-site and uploaded it in June, <<http://telegraphy.atspace.com/index.htm>>. Andy is still working on the site and welcomes feedback on it.

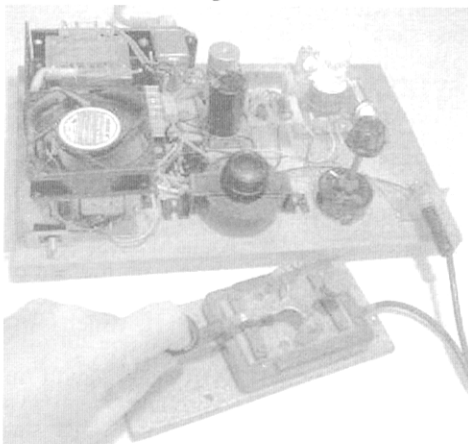
Five Japanese special event stations, **8J1P**, **8J3P**, **8J4P**, **8J5P** and **8J6P** were QRV 12 May/30 June by the JA QRP Club to celebrate International QRP Day on 17 June. **JH1ARY** says the club have begun an English web-page at <<http://en.jaqrp.org/>>. The EA QRP Club held its annual meeting in



Jim, G3NFB, (left) and Tom, DL4NSE, at the annual meeting of the DL-G QRP branch in Waldsassen, Germany on 28/30 April reported in *SPRAT* 127 - thanks photo DL2BQD.

Sinarcas (Valencia) on 2/3 June and **ED5QRP** and **EF5QRP** were QRV. The Halifax Radio Society held a special event station **GBØBXO** 28/30 July at Norland, near Sowerby Bridge, West Yorkshire in memory of John Ieak. **GBØBXO**. QSL via **GØPFH**.

F6BWO has been QRV with a homebrew triode manufactured by Claude. **F2FO**, (who completed the first 2.3/10GHz cross-band QSO between the UK and France in 1969). The picture below shows the triode, that delivers a generous 100mW CW crystal controlled signal on 80m, and enabled Jeff to make 45 European QSOs. He has now built a 'high power' version 1W VFO controlled transmitter using a vintage TM2 triode right out of the 1920s. Jeff will be QRV with the rig again this autumn on 3530, 40, 45, 50, 55, 60, 71 and 81kHz and has made a special colour QSL for contacts with the rig.



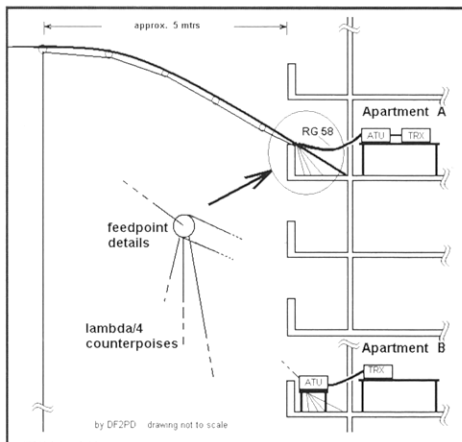
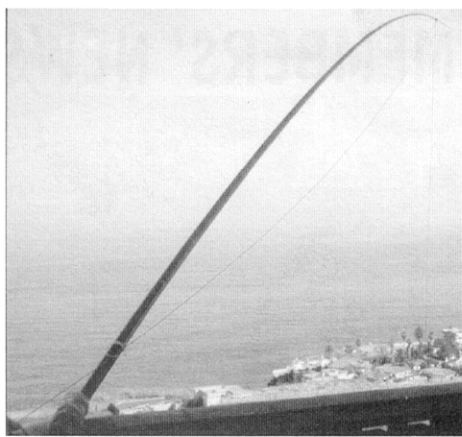
2EØAYQ in London made the most of a 10m opening on 7 June when the HB9HD Swiss repeater was 60dB over S9 with him. Martin made an FM 5W QSO with an IT9 station in Sicily. **MØDBO** worked **PY2DN** and **LU5VV** in quick succession on 15m PSK-31 on 9 June while running 5W from his TS-530SP and a homebrew vertical. Nigel says, "It proved to me that it is well worth putting out a CQ call on an apparent dead band". **GØBPS** and **KH6B** were invited to join **RV3GM** and the RU-QRP Club at UGRA-2006 in Smolensk for five days from 27 July with special club station **UE3QRP/3** QRV. The RU-QRP Club were also QRV 16/18 July as **UE3QRP/6** from Big Saddle Mount, Caucasus (4600 feet ASL) with a K2 and FT-817 transceiver.

USIREO and **USIRCH** planned a QRP DXpedition on a raft along the Desna River near Chernihiv between 6/9 July. Peter and Victor were QRV with the UR-QRP Club station call **UR4RWR** on 14060kHz. **EA5XQ** hopes to take his FT-817, a small tuner and some antennas with him to Texas, USA in September when he will be working at the University of Texas in Austin for three to four months. Juan hopes the recent airport restrictions on hand luggage will not prevent him doing this. **OK8OME** (ex **G4OME**) has been QRT for 15 years and has just come back to radio, but this time with QRP for the first time using a 40 metre horizontal loop between 18 and 35 feet high. Mike moved from the UK to Liberec about two years ago.

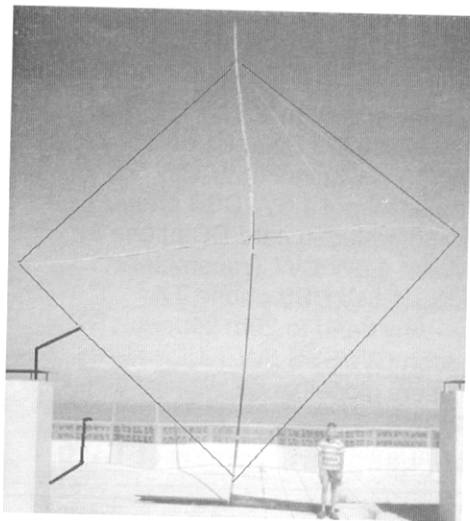
K3OQ used his QRP for a QSO with EA8 on 6m in June using a loop antenna in his attic. Jeff says he was QRV on 6 and 2m and 70cms with QRP in the ARRL VHF Contest and says "I had a blast, it is amazing what 5W can do when conditions are right". **SV1EEX** made many 6m QRP QSOs on 18 June while mobile on his motor cycle with his FT-817 and an MFJ 2/6m antenna. Nik says, "I worked **4Z4DX** while on route along the highway; 6m QRP mobile is really fun, even with QSB!". **G3UGF** worked SM on 160m on 2 August. Richard says, "In the UK we are experimenting with the use of 1836kHz as a QRP CW channel and it seems to be much better than 1843kHz which is often useless due to European SSB".

F5NZY worked **7XØRY** on 12 and 17m with his 1W and a G5RV in June. Steph says that Fran is very friendly towards QRP stations. **K7VO** is QRV from his new QTH with a Cushcraft R4 on a 15 feet mast and **KU4AB** square loops on a second 25 feet mast for VHF and UHF, after using indoor antennas. Caity says outside antennas make a big difference. **PA9RZ** moved to a new QTH in July and is QRV 50 to 1296MHz with antennas on a 34 feet telescopic mast whilst HF is "Limited to a 45 feet sloper from the loft window to the end of the back garden". Robert plans a 40/30/20m vertical inside a flag pole along the canal which runs across the back of his QTH. In July he worked and confirmed **4X11F** for DXCC 62 on 6m with QRP.

The picture and diagram above is of **DF2PD**'s 30 feet collapsible fishing pole (obtainable from **DK9SQ**) antenna with 81 feet of wire as an inverted vertical antenna for



apartment use. Manfred says that clamping the pole to the balcony was never a problem but it should be guyed to prevent it swaying, even in a gentle breeze. In October 2005 he compared the set-up with a single element full size vertically polarised diamond quad for 20m on the hotel roof (photograph next page with eight years old son Martin standing by it) and found there was no significant difference when switching between the two antennas on SSB. Comparing the pole antenna on 80 metres with a half-wave sloping dipole gave similar results. Manfred concludes, "Try to get an apartment as high as possible so that the vertical part can be as long as possible. Try to get the wire as far away from the wall as possible, as you will never know how much of the radiated HF will be 'sucked up' by the steel reinforcements in the concrete or by the electrical wiring of the building".



When the cat woke **GM3OXX** up at 0345z one morning in June, he decided to check 30m and found it full of W stations. George worked **FO5RII** in OC-066, **SV8/OK2BOB** and **VK6BN** and then went back to bed. He says he is willing to loan the cat to aspiring night-time DXers! On 9 July **G3XBM** had his best ever DX VHF contact when he received a 59 report from **EA8/DL6FAW** in Las Palmas (1883 miles) on 6m with his IC-703 and small vertical. Roger says, "It was interesting that the vertical seems to be a good performer for 6m sporadic E: I heard another local within 19 miles work him just before me running 100W and a five element, but he was struggling hard to copy the EA8".

The Four State QRP Group (4SQRPG) have announced another couple of runs of the **KD1JV** Power and SWR Meter Kit which they will ship to the UK and Europe for £16, see <http://4sqrpg.com/kits/swr_pwr/swr_pwr.htm>. 4SQRPG organise the Ozarkcon Convention in Joplin (two hours drive from Branson, MO) that **G4WIF** attended this year. Tony says this QRP event is really worth supporting. **AL7FS** has updated his Kits and Construction Powerpoint presentation for the Kenai/Soldotna Hamfest in July. Jim says it will give you a 40-45 minute talk and is available on his web-site at <<http://www.AL7FS.us/>>.

GØEBQ has worked W1, UAO, 7X and 3V, plus two-way QRP with UA1, using a bent **G5RV** in his loft and his new 20m rig, which is a clone of the Cub but uses dis-

crete components. The rig generated a lot of interest when Nigel displayed it at the Suffolk Rally. His next project is **HB9TSE**'s SSB rig in **SPRAT 127**. **WB3AAL** has been updating the web-site of the EPA QRP Club <www.n3epa.org>, and will include links to other QRP sites on it. **2EØAYQ** built a Ten-Tec 1340 kit and an iambic key for it this summer. Martin recommends the 1300 series of kits and is now building a 1380 kit. He also built the Cumbria design frequency counter and has been brushing up on his Morse code.

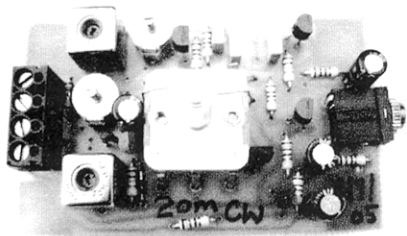
On 19 August QRPers in Russia and Hawaii made a two-way QRP QSO on 14061kHz. **RK1NA** and **KH6ZM** made a QSO which was heard by **DL2HRP**. Lutz said **KH6ZM** was audible nicely between 0610 and 0625z at his QTH in east Germany, the first time he had heard a QRP signal from KH6. **MIKTA** was QRV as **VE7/MIKTA/P 18/19 August** followed by operation from VE6 with his 5W SSB and QRS CW using a base loaded 16 feet vertical. Dominic also checked into the public service net on 3729kHz. **JA1DJW** reports a new QRP transceiver, the Tokyo Hy-Power HT-200 QRP, 10W HF and 20W 6m, SSB/CW/AM/FM modes, unveiled at the 2006 Tokyo Hamfair in August, see <http://www.onjapan.net/2006/hamfair/img_1960.jpg>. Nobuki says it is a double conversion superhet, weighing 4.8lbs and drawing 4A from a 13.8 PSU on transmit.

GM4XQJ continues to be pleased with his early K2 (serial number 374). Brian says he had a nice QSO with **GM3MXN** on 5MHz and will be QRV from the island of Fuerteventura (EA8) during the first two weeks of November with his K1 and dipoles. Dick, **GØBPS**: Ken, **W4DU**; Hank, **K8DD**, and Stan, **AC8W** will be QRV 28 September/4 October with QRP from the Isle of Man as **GØBPS**, **MD/W4DU**, **MD/K8DD** and **MD/AC8W**. **XE1UFO** reports a newly formed group of users of the Index Laboratories QRP+ and QRP++ SSB/CW rigs. Steve invites those interested to join them at <<http://groups.yahoo.com/group/xel1ufo/>>.

NT1U reports that the New England QRP Club has a new kit, the NEScaf, a switched capacitive audio filter. More information at <www.newenglandqrp.org>.

Please let me know how your autumn goes, plus any photographs, by 20 November please?

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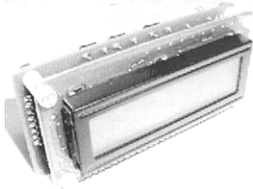
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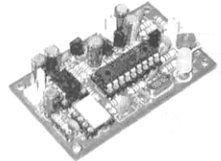
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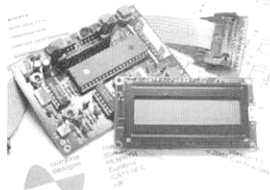


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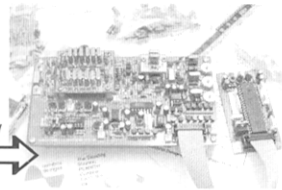
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LZ1YE has sent me details of some attractive QSL cards including the Club Log.

Members can make their orders by sending samples, explaining what they want to print, and sending the materials: photos, files...etc via e-mail: qsl@qslprint.com or qsl@kz.orbitel.bg or if no internet access via the postal address: Atanas Kolev, P.O.Box 49, 6100 Kazanlak, Bulgaria. Examples of cards and prices can be seen at www.qslprint.com

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Some members have asked

after the article in QPR Quarterly, about the G3RJV "Regenerative Receiver Files" CD that I issued at Dayton in May of this year. The CD contains all the information on the practical designs used in the Dayton presentation. I now have some more and they are available to UK members for £5 [post paid] and to US members for \$10 + \$2 postage. Dollar bills from the US – UK cheques to G.C. Dobbs. (I suggest €10 if wanted by EU members)



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GQR Club Sales

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

- 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 } plus postage: UK - 50p;
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Back issues of SPRAT are still available at 50p each. I have most issues from 78 plus a few earlier ones. UK Postage is 1st magazine - 50p, each additional magazine add 25p.

NB I am out of stock of the Drew Diamond book and the G-QRP Club Antenna Handbook, also, I am out of stock of mouse mats (no more supplies expected). All the DDS and W8DIZ kits are gone.

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

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You can order via e-mail to g3mfj@gqrp.com and if you wish to send credit card details over e-mail, you can send them, split into two parts (for security), to me, via my two different ISPs - g3mfj@gqrp.com and g3mfj@gqrp.co.uk. My PGP public key is on the G-QRP website.

You can check availability (or even order) on (+44) (0)113 267 1070 - But only if I am able to take the call!!!

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.