SPRAT

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DEVOTED TO LOW POWER COMMUNICATION

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PETER, US1REO, OPERATING UR4RWR/P OUTDOOR QRP DAY

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Mini-20 PSK Kit ~ Switchable PSU Tests
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JOURNAL OF THE G QRP CLUB

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Rev. George Dobbs G3RJV

Welcome to SPRAT 120. In this issue we complete the entries for the 2004 W1FB Memorial Award. This year we have had some good entries. The winner will be announced in the next issue.

Below is the challenge for the 2005 award, this time on a 'theme' rather than asking for a specific item of equipment. I look forward to seeing your entries. As with all SPRAT items – almost any format can be handled, from hand written to a computer file. Those who wish to present a "SPRAT-ready" article, email me for a formatted page.

The W1FB Memorial Award 2005

For 2005, the theme is **Portable Operation.**
Submit any design on this theme – accessories, antennas, measuring equipment ... or even a complete transceiver.
Please submit your design to G3RJV as soon as possible, with circuit sketch, all values and brief notes.
The project will be published in SPRAT and the winner will receive an engraved plaque.

72/3

G3RJV

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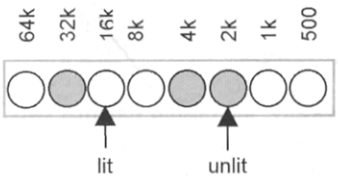
WIFB ME MORIAL ENTRY

A Simple Frequency Counter

Hans Summers G0UPL, Tudor Capital, Great Burgh, Epsom, KT18 5XT

This is an incredibly simple and cheap frequency counter (cost under £2) with binary readout, based on the ideas of Onno PA2OHH [1]. I built two versions: a Mk1 "prototype" for development and optimisation of component values, and a miniature low current version Mk2 designed for inclusion in a portable battery powered rig. These counters are ideal for when you want better precision in your QRP rig than a marked dial, but you don't want a frequency counter which will take more current, cost more, or be more complicated to build than the rig itself! The readout is in binary so is a little harder to read than a conventional digital frequency counter's numeric display. Such is the price of simplicity and it won't suit all tastes, but with a little practice the binary is easy to read. The right hand sketch shows the counter connected to the same VFO as my HF receiver [2] which is tuned to 3.689 MHz. The indicated frequency on the simple binary frequency counters is between 89.0 - 89.5 simply by adding the value of the lit LED's. The readout assumes that your dial markings are sufficiently accurate to read the frequency to 100KHz accuracy, with this counter providing the finer resolution of the offset 0 to 99.5KHz.



Operating Principles. The original idea is simple and elegant. A 74HC4060 IC is the oscillator and timebase, which controls a 74HC4040 IC which in turn, counts the incoming signal frequency. Half of each cycle is used for counting the incoming signal. On the second half of the cycle, the count is latched in a 74HC574 IC and the 74HC4040 is reset to zero. The state of the latched count in the 74HC574 is displayed on a row of LED's. I imagined a number of improvements to Onno's basic design, as follows.

The most important was the reduction from 3 to 2 IC's. I realised that the latch could be eliminated, by gating the incoming pulse stream so that it counted only during the first half of each cycle, then displaying the result only during the second half of each cycle by switching the LED's off during this time. I wrote to Onno about this and he built one possible implementation [1] within a matter of days, long before I had a chance to build my own version. Switching the LED's at 50% duty cycle also means the LED series resistors can be reduced whilst maintaining the same average LED current, which decreases overall current consumption.

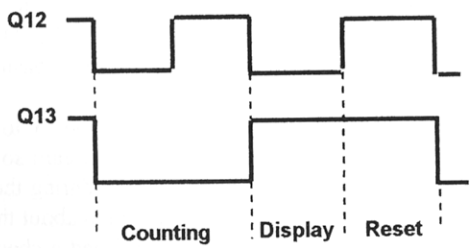
Onno uses 8 LED's which indicate 200, 100, 50, 25, 12.5, 6.25, 3.125, 1.5625KHz. These arise naturally and conveniently by design, from the choice of 6.4MHz crystal for the timebase. The frequency as an offset from the lower band edge (or any multiple of 400KHz) is read by adding up lit LED's. Because all those decimals are inconvenient, Onno applies the approximation 200, 100, 50, 25, 13, 6, 3, 1.5 to make the mental arithmetic easier. I was uncomfortable with this approximation (call me pedantic) so I designed a version using a 4.096MHz crystal, which reads 64, 32, 16, 8, 4, 2, 1, 0.5KHz. A special AND-gate circuit resets the count back to 0 when it reaches 100, such that the display always reads 0 - 100KHz from the lower band edge or any multiple of 100KHz.

Since my counter is intended for use in a 30m portable rig, the 30m band being only 50KHz wide, the higher resolution at the expense of reduced range is preferred. Other outputs of the 74HC4040 could easily be used to increase the range, or further LED's added for example. The binary sequence 64, 32... etc. is easily added up (at least to my mind), though some may prefer Onno's original scheme. Note that my counter is designed without Onno's MHz range, which I won't need in my application, but that could easily be remedied.

Finally in the pursuit of the ultimate in low power consumption, I wanted to eliminate the LED resistors altogether. Those resistors lower the voltage to the LED's by simply dissipating it as heat and that equates to wasted power. An alternative is to apply the principles of switched mode power supplies, and pulse the LED's with the right duty cycle to obtain the average current required. Using a transistor to switch the LED's this turned out to be surprisingly simple. Using this technique the current consumption of the Mk1 counter is 10 - 38mA depending on which LED's are lit.

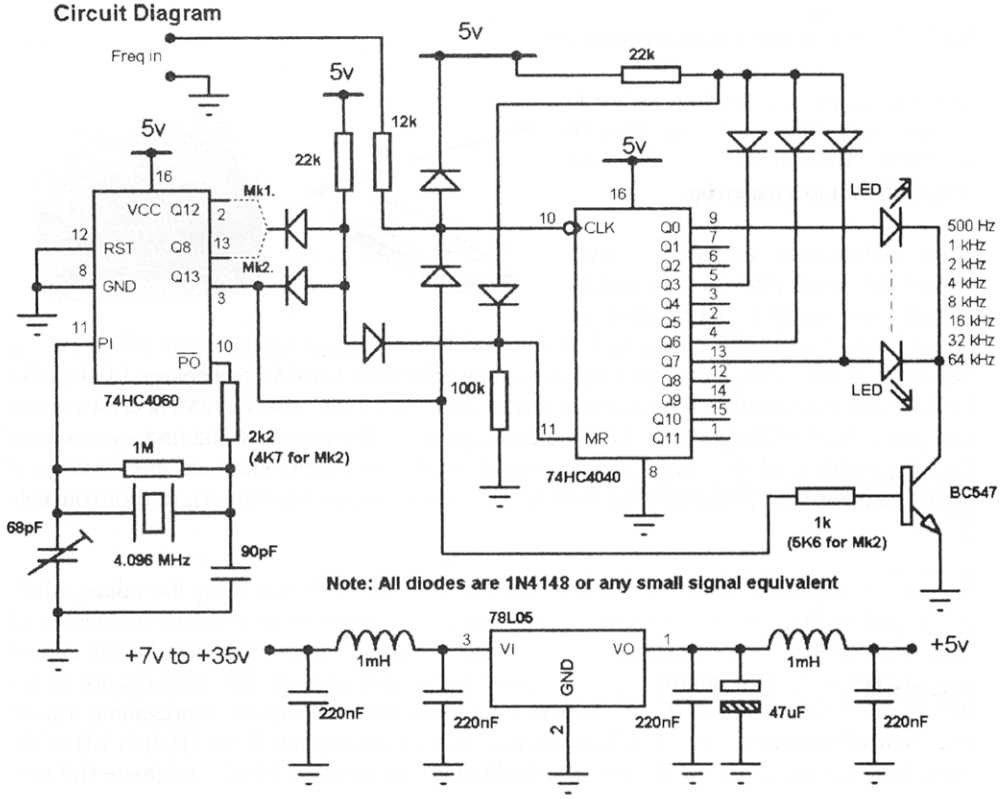
Logically, the design requires two 2-input OR gates, a 2-input AND gate, and a 3-input AND gate. Think of the number of extra IC's you would require for this - but there is another way, namely the use of diodes and resistors to implement these logic functions. I find this method works extremely well where only one or two gates are required, avoiding the requirement for additional IC's. Note that the input is a TTL-level signal. Since there are a wide variety of possible signal levels between the different equipment this counter might find use in, I decided to leave the VFO buffer amp outside the basic design and leave it to the responsibility of the interface to the rig itself. (A suitable buffer amplifier is shown on the next page). I did however protect the input from excessive voltages via a diode to +5V.

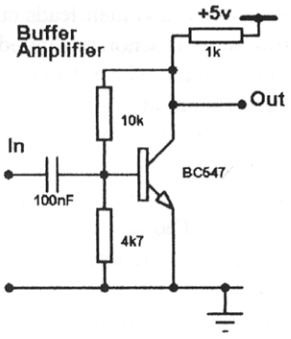
The timing diagram to the right illustrates how each complete cycle is divided up. The first half of the cycle is for counting. When the count is complete, the display is switched on during the entire second half of the cycle. But since the reset pulse occurs during the 4th quarter, the LED's are blank, creating an effective duty cycle of 1:4 (25%). Outputs other than Q12 on the 74HC4060 can be used to create shorter duty cycles. In the Mk2 counter I use Q8 (pin 13), for a duty cycle of only 1:64!



The Mk1 counter was built "ugly" style on a piece of unetched PCB stock measuring approximately 45mm square. 3mm clear-lens yellow LED's were used for the display. No particular effort was made to miniaturise this counter, since it was being used for development and optimisation of component values and I needed to be able to change components easily. Nevertheless the final size is respectably small!

Circuit Diagram



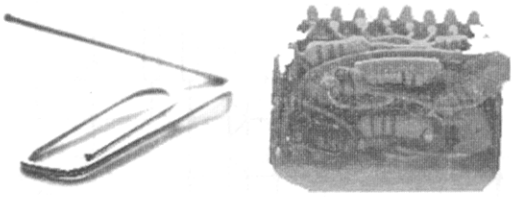


An interesting feature of this counter's display is the flickering effect. On any reasonably simple frequency counter the right most digit will flicker between two adjacent values, this occurs on all my numeric display frequency counters. When near the border between two nearby values such as 799 and 800, all three digits will flicker between the two. An identical effect occurs on the simple binary counter, except it is far more pronounced (for example, the case where the three right most digits of a numeric counter flicker is 1 in every 1000 readings). With a binary counter being base 2 rather than base 10, this effect on the right three LED's increases to every 1 in 8 readings (I hope this explanation is clear).

The right LED indicating 0.5KHz is ALWAYS flickering. But I don't let it annoy me! No, it's a FEATURE... the brightness of that 0.5KHz LED provides some indication of where the frequency is within the range sub-500Hz, effectively providing me with a better resolution than 500Hz by considering this LED as an analogue frequency indicator of the range 0 - 1000Hz. Neat.

Mk2 - The ULTIMATE in miniaturisation

The photograph scarcely does justice to the tiny size of this counter just 25 x 16 x 16mm. Here it is with the case removed, next to a paperclip.



High performance components were chosen for small physical size and to provide low current consumption of below 5mA. The TO-92 packaged LM2936 5V 50mA voltage regulator has a bias current measured in uA. The 2mm high brightness high efficiency GaAlAs technology LED's offer 1mA current consumption, one twentieth that of a standard LED. The 4.096MHz crystal is in a low profile HC49/4H style case. The trimmer capacitor is the tiniest I could find - yet none of the components used are surface mount. The enhanced physical and electrical specifications of these components more than tripled the total cost, (including postal charges), to approximately £7.50.

The circuit diagram is essentially the same for the Mk2, the difference being the values, which are marked on the diagram. The series resistor in the 74HC4060 crystal oscillator was increased from 2K2 to 4K7. Experimentally this was the resistance value producing lowest current consumption and saves approx. 100uA relative to the 2K2 resistor. The base resistor of the BC547 was increased from 1K to 5K6 to reduce current consumption, representing a good compromise between brightness efficiency and current consumption. I use Q8 (pin 13) of the 74HC4060 to give an incredibly low duty cycle of 1 : 64 for these LED's, which are still very bright.

Construction: Well the Mk2 doesn't use a circuit board at all. The two IC's are glued on top of each other, and their leads cut very short. The voltage regulator, switching transistor, crystal and trimmer capacitor are glued to the bottom IC (74HC4060) and their leads also cut to about 2mm length. The 8 LED's are lined up and glued on the top IC (74HC4040). The remaining components are just piled on in the most space-saving way I could devise. Connection to the counter is via a twin screened cable (+V, Signal and GND).

This tiny Mk2 counter even has a screened box to keep the digital noise out of the rest of the receiver! The box is made from single-sided PCB stock, with the copper side outwards (so as not to short the internal components). The edges are soldered on the outside by applying thin strips of brass shim over the edges and soldering them in place. This unique construction technique is an inside-out version of the usual boxes made from PCB stock.
I should also mention that this particular PCB stock from my junk box is fibreglass and half the usual PCB thickness than you are maybe used to. Small squares of PCB are stuck at either end of the circuit, and position it perfectly and firmly in the box.

There is no front panel. The intention is to mount this frequency counter in the front panel of a portable transceiver having a PCB-stock case, with the copper side inside. A small slit will be

cut in the front panel for the LED's, and the copper outside of the frequency counter box soldered to the front panel at its corners (permitting easy removal if necessary). This will complete the RF screening of the counter.

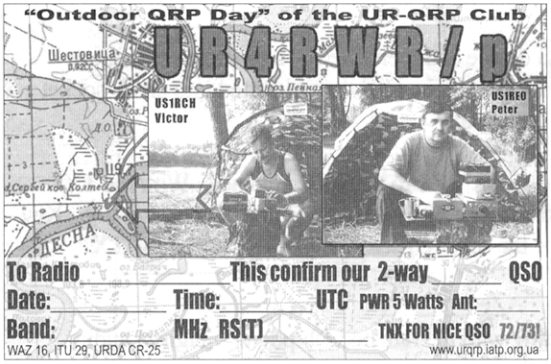
Observations.

Due to the switching nature of the counter, some interference might find its way back into the receiver either via the VFO or via the supply lines. Careful attention to VFO buffering and/or supply line filtering may be required. It might be advisable to fit an on/off switch so that if a harmonic is troublesome the counter can be temporarily disabled. Updates will be posted on my website [2] when I have experience of this - as will future developments of the simple counter.

It is interesting to look at the distribution of current consumption in the Mk2 counter. The LED's consume about 1.2mA when all are lit. The diode-resistor logic, switching transistor, IC's and voltage regulator consume a further 1mA approximately. Which means about 3mA is consumed by the crystal oscillator alone. If a more efficient oscillator topology was available it would perhaps half the overall current consumption of the frequency counter. But I don't know enough about oscillator topologies.

References:

1. www.qsl.net/pa2ohh/sfreq.htm
2. www.hanssummers.com



FRONT PAGE STORY
UR4RWR/P

Peter Grytsay, US1REO, wrote to tell us that between July 31st and August 1st the UR-QRP Club held its first "Outdoor QRP Day". The idea was to mark the 6th anniversary of the Club in the open air, working QRP frequencies using accumulators. The radio station of the Club - UR4RWR and operators: Peter - US1REO, Victor - US1RCH, worked low power on the picturesque bank of the Desna River. See **ANTENNAS-ANECDOTES-AWARDS** for more information. The station equipment included a NorCal-20 transceiver built from a kit donated by NorCal and supplied by the G QRP Club.

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

FOR SALE: Heathkit HW-9, QRP CW only. 80-10mtrs inc WARC. Loads of literature. Parts for narrow if filter mod. £160 inc car.
Part built Hands RTX109 kit. All band ssb/cw QRP Transceiver. cost £359 new---accept £180 inc car. Graeme - Nr Lowestoft. 01502 740965 graeme.g4ckh@btinternet.com

WIFB MEMORIAL ENTRY

The Whistler – Audible Field Strength Meter

David Boase G4IKR, 3 Choughs Cl. Camborne, Cornwall. TR14 7XH

This device was originally designed to monitor field strength whilst tuning/loading a TX PA stage into a LW aerial via an ATU. Although I could monitor the PA current and SWR whilst in the shack, I really wanted to know when the field strength was at maximum – after all that is the aim of the game, isn't it?

The heart of the unit is the voltage – controlled oscillator in IC2, a 4046 PLL IC. It converts the dc voltage present on pin 9 (VCO input) to an audio frequency, preset by C4, R5 and RV2. The VCO output on pin 4 is an 8V peak – peak square-wave which is attenuated to an appropriate level by the potential divider R6, R7: further attenuation and filtering are provided by C4. The signal emerging from the network, which is now more saw-tooth in shape and pleasant to listen to, is fed to IC3, an LM386 audio amp IC via the volume control, RV3.

The DC voltage available from the field strength circuitry is insufficient to drive the VCO directly to IC1 was added. Note this IC has FET inputs, unlike the 741, so it is possible to connect it directly across the drive source without loading it. The gain of this stage can be varied over a wide range by RV1 and provides ample sensitivity for setting up a 1 watt PA stage when placed some 5 metre from the aerial.

It is important to note that IC2 is a CMOS device and therefore full anti-static precautions should be taken when handling this chip. It is recommended that it is fitted into an IC socket (16 pin) rather than soldered directly into the circuit.

To use, initially, set RV1 to mid-range and adjust VC1 to the TX frequency. With the TX switched off, adjust RV2 and 3 to give a frequency of about 500 Hz at a suitable volume. Key the TX on and peak VC1. Adjust RV1 for the required sensitivity. Now adjust the TX tuning/loading.

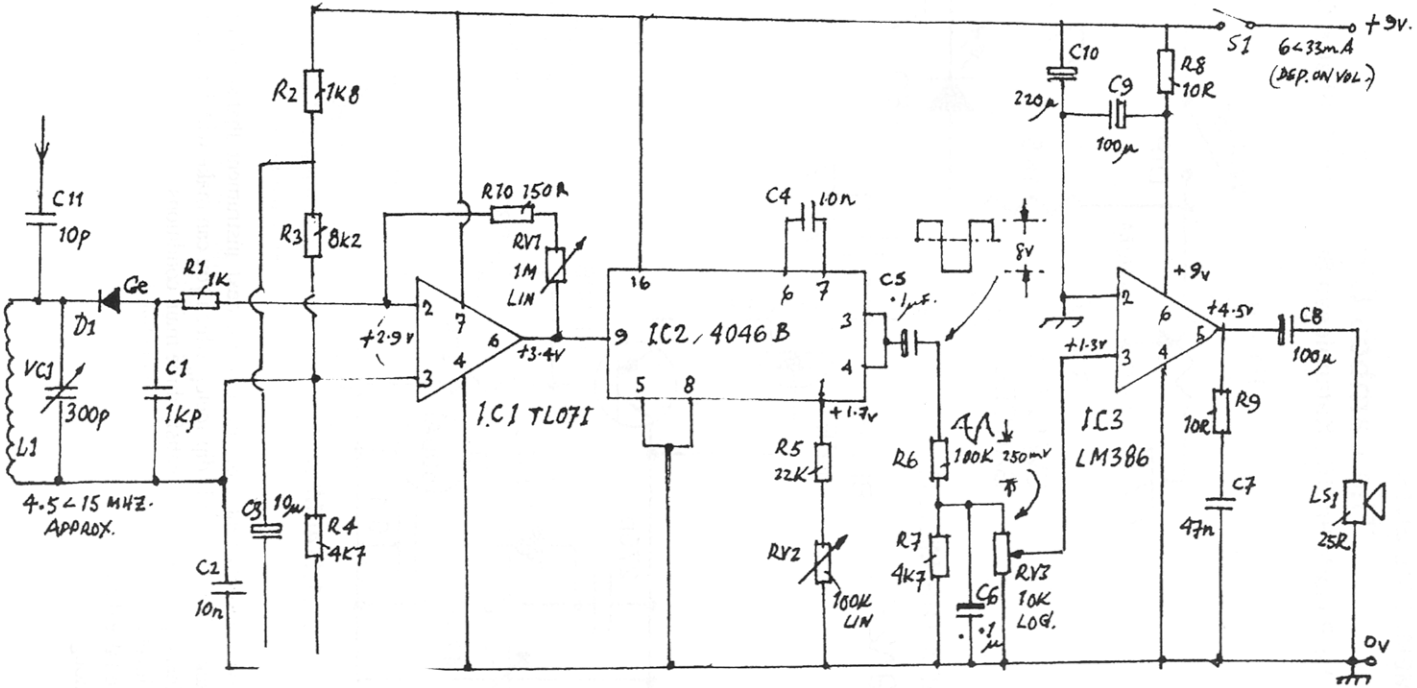
The audio frequency will change in sympathy with the radiated RF power – highest audio frequency represents maximum field strength.

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

WANTED: US Signal Corps BC342 or BC312 Receiver. Would prefer working unmodified, but would be interested if modified W.H.Y. Contact G4GDR, Adrian Tel: 01793 762970 or QTHR. Back copies of SPRAT 47, 52, 92, 101, 102 free to good home on receipt of postage.

WANTED: FT75 – TS120V – FT690 II – DX70 – TS50S. Tom M3EHA. 01606-596081

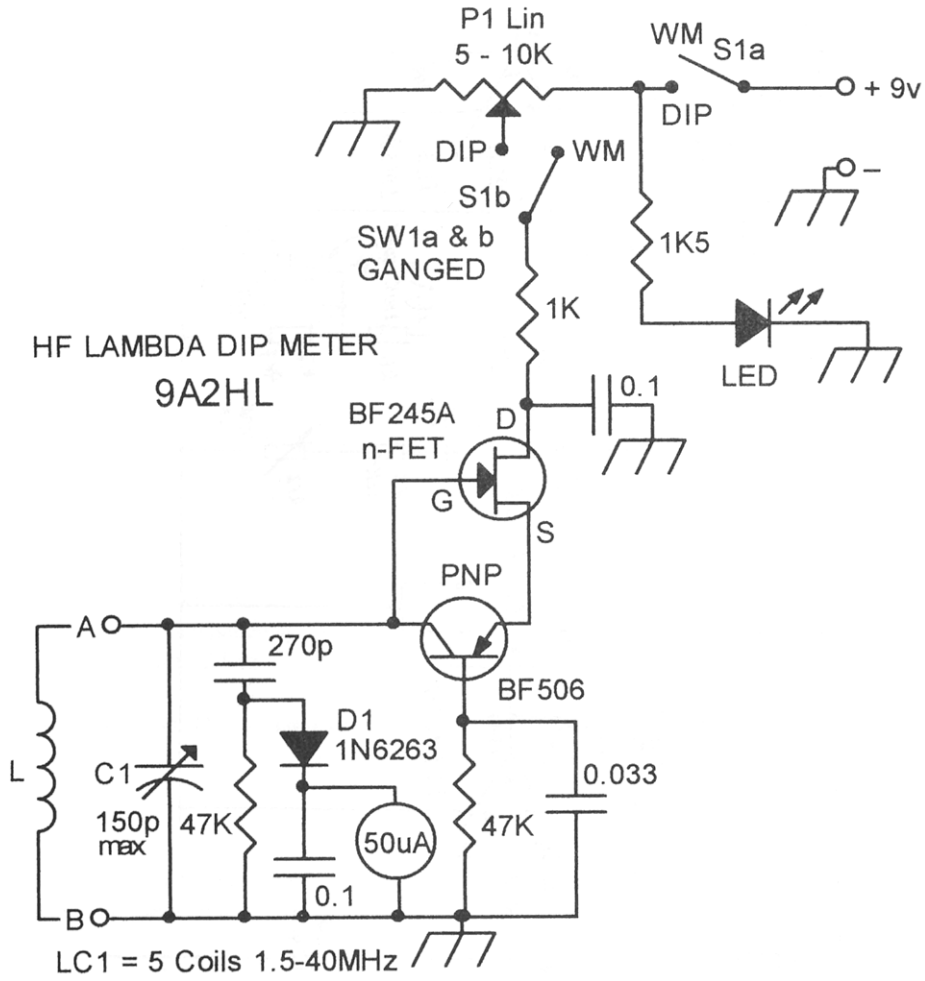
WANTED: High Z headphones. Can only offer money! Jim Harrison, GM0NTR 17B High Street, Oban, Argyll. PA34 4BG.


+9v.
S1
6<33mA
(DEP. ON VOL.)
C10
220µ
C9
100µ
R8
10R
C11
10p
Ge
D1
R1 1K
R2 1K8
R3 8k2
VC1
300p
L1
C1
1kp
4.5<15 MHZ.
APPROX.
C3 10µ
R4
4K7
C2
10n
+2·9v
R10 150R
RV1
1M
LIN
+3·4v
IC1 TL071
C4 10n
IC2, 4046B
C5 ·1µF.
8v
+1·7v
R5
22K
RV2
100K
LIN
R6
100K
250mV
R7
4K7
C6 ·1µ
RV3
10K
LOG.
+9v
+1·3v
+4·5v
IC3
LM386
C8
100µ
R9
10R
C7
47n
LS1
25R
0v

WIFB MEMORIAL ENTRY

The Lambda DIP-Meter

Bozidar Pasaric 9A2HL, Kataliniceva Str.6, 51000, Rijeka, Croatia



After a VOM universal instrument a dip-meter is the next instrument that should be found in every ham's shack. Here is a simple dip-meter which you can make without usual difficulties. An ideal dip-meter should satisfy three main conditions:

1) have the same level of oscillations over the whole band,
2) should not have false dips,
3) be sensitive enough.

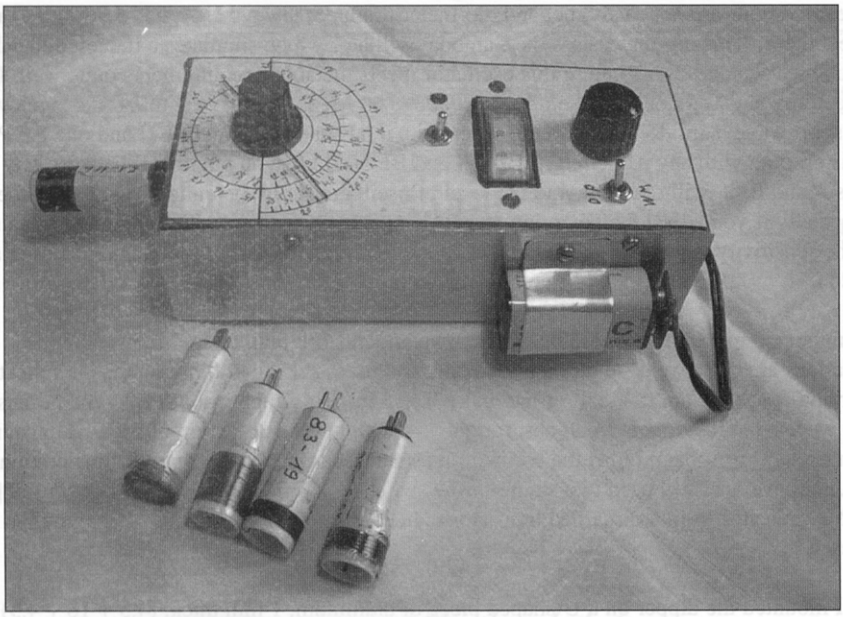
These conditions are not easily met and dip-meter produces always use a lot of effort in order to meet them. This dip-meter uses the Lambda oscillator which simulates a tunnel diode and its negative resistance. By its nature this oscillator meets the above requirements quite well. Its shortcoming is that it does not seem to work above 40 MHz, but I do not think this is relevant for a short wave ham. Referring to the schematic, it has one n-channel FET, and one RF PNP transistor, both with any name (e.g. BF245A and BF 506). If you put a coil between the points A and B, it will oscillate, and the level of oscillations will be quite even all over the band - especially if you adjust the potentiometer P1 somewhere in the middle. There are no false dips and the sensitivity is good. The diode D1 is of any RF type, silicon or germanium. I used a 1N6263.

The indicating instrument should be of 50 microamperes full dial, or so, because the oscillations are quite weak. (I did not have one, so I used a cheap 160 microampere indicating meter and read only the first half of the dial.) The S1a-S1b switch is an SPDT type because when we use the instrument as an absorption wavemeter (WM) the drain of the FET must not be connected - or it would load the coil with its small resistance and change the calibration. (I did not have one, so I used two single-throw switches.) For C1 I used a miniature plastic variable capacitor from a discarded transistor radio. One side of it had 150 pF maximum, so I used it.

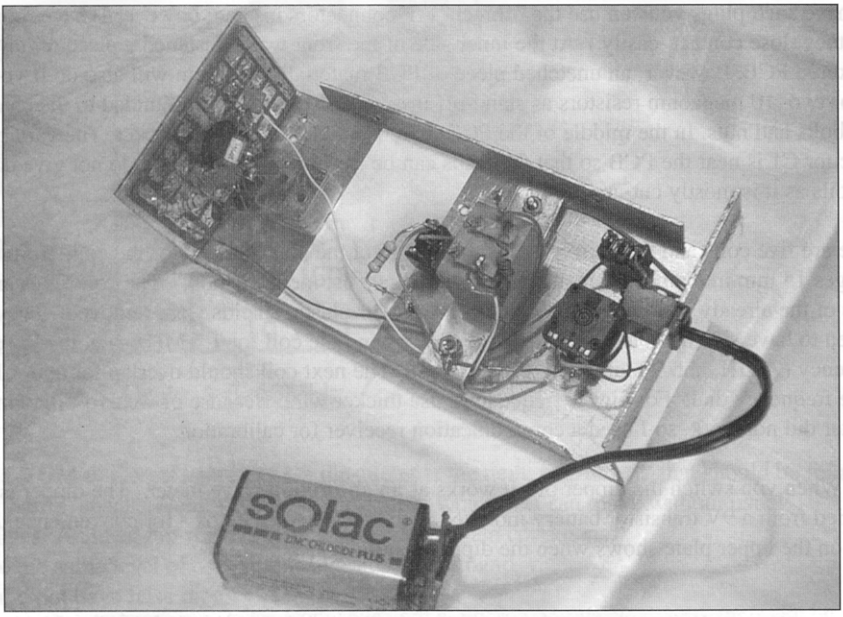
I mounted the dipper on a U-shaped piece of aluminum, 1 mm thick, (4.5 + 16 + 4.5) cm long and 7 cm wide. The corresponding bottom cover was cut from a 0.5 mm thick alluminium sheet. On the front side there is a socket for the coils. It is the type usually used for loudspeakers (the "dash-and-dot" type) and its male counterparts are for the coils. (If you do not have such plugs you can use the "chinch" AF connectors instead; however I have found out that they lose contact easily.) At the inner side of the front wall I fastened a piece of universal checkered PCB, however an unetched piece of PCB material 6,5 x 4 cm will also do if you use one or two 10 megaohm resistors as stand-off insulators. The PCB is grounded to the chassis with bolts and nuts. In the middle of the PCB there is a hole for the coil socket. The variable capacitor C1 is near the PCB so that the leads can be as short as possible. I do not give data for the coils as it is mostly cut-and-try business.

There are five coils and they cover 1,5 - 40 MHz. I got the plastic tubes for the coils from small syringes 15 mm in diameter which I bought at the nearest medical shop. The coil plugs are made of the already mentioned male plugs - after their plastic shields were removed. They also happen to have side bolts to fasten the coils. First wind the coil for 1,5 MHz - i.e. the lowest frequency (75 µH, abt. 90 turns of No. 33 BWG). The next coil should overlap for about 10% of the frequency dial. For higher frequencies use thicker wire. Because of weak oscillations my counter did not work, so I used a communication receiver for calibration.

When you switch the dipper off, it works as an absorption wave meter. The dipper is supplied from a 9V transistor battery mounted at the outside of the box - for convenience. An LED on the upper plate shows when the dipper is on.



DIPMETER - OUTSIDE VIEW

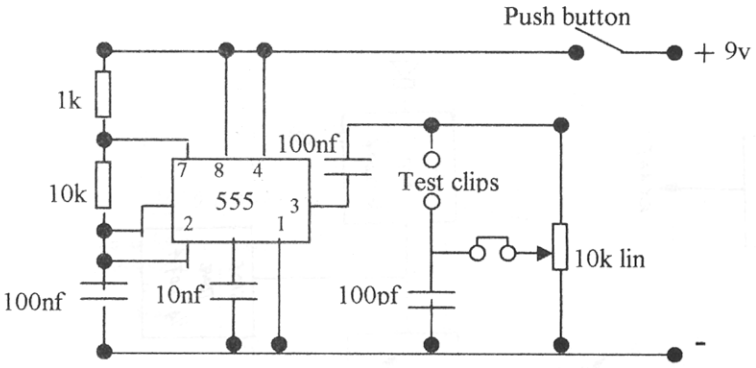


DIPMETER - INSIDE VIEW

WIFB MEMORIAL ENTRY

A Pocket Bridge

Stuart Vanstone MØSGV, 2 Walker Cres. Wyke Regis, Weymouth, Dorset DT4 9AU



This simple device was made to measure the value of variable capacitors. It can be built pocket sized so it is ideal for taking to Rallies. The prototype was built in a plastic box 90mm X 55mm X 22mm.

The circuit is a bridge (courtesy of Mr Wheatstone) with a 555 oscillator supplying the signal source. Power is derived from a PP3 battery and because use of the Pocket Bridge is very intermittent it should last a long time. A crystal earphone completes the circuit and makes a nice null detector.

It has only one range (about 10pf to 550pf) so a range switch and associated components are not needed. The scale is marked at 10, 25, 50, 100, 150, 200, 300, 400 and 550pf. Values between these markings can be guessed at, bearing in mind that the scale is not linear.

The internal 100pf capacitor need not be a close tolerance type. The accuracy comes from the calibration, which was carried out using one 10pf, four 100pf and one 150pf capacitors. These were all found in the junk box and were marked with quite a close tolerance. Connect a 100pf first and find the null (the quiet spot) and mark the dial 100pf. This should be about halfway on the dial. Connect another 100pf in parallel with the first and find the null, mark this one 200pf. Repeat this for 300pf and 400pf. Then connect a 150pf across the four 100pf capacitors to make a 550pf. Find the null and mark the dial 550pf. Remove the four 100pf capacitors and leave the 150pf in circuit, find the null and mark 150pf. Next two 100pf capacitors are connected in series and the null found. Mark the dial with 50pf. Add another two 100pf in series, find the null and mark the dial with 25pf. Disconnect all the 100pf and connect up the 10pf, find the null and mark the dial with 10pf. This should complete the calibration. Other combinations of capacitor could be used for calibration if so desired.

The Windrush 10.1MHz Transceiver

Bob Whetton G4XKL, 117 Tutbury Rd. Burton-on-Trent. DE13 0NU

The "Windrush" is a D.C. transceiver designed to be taken for week-ends away in the caravan.

Fig.1. shows a block diagram of the rig.

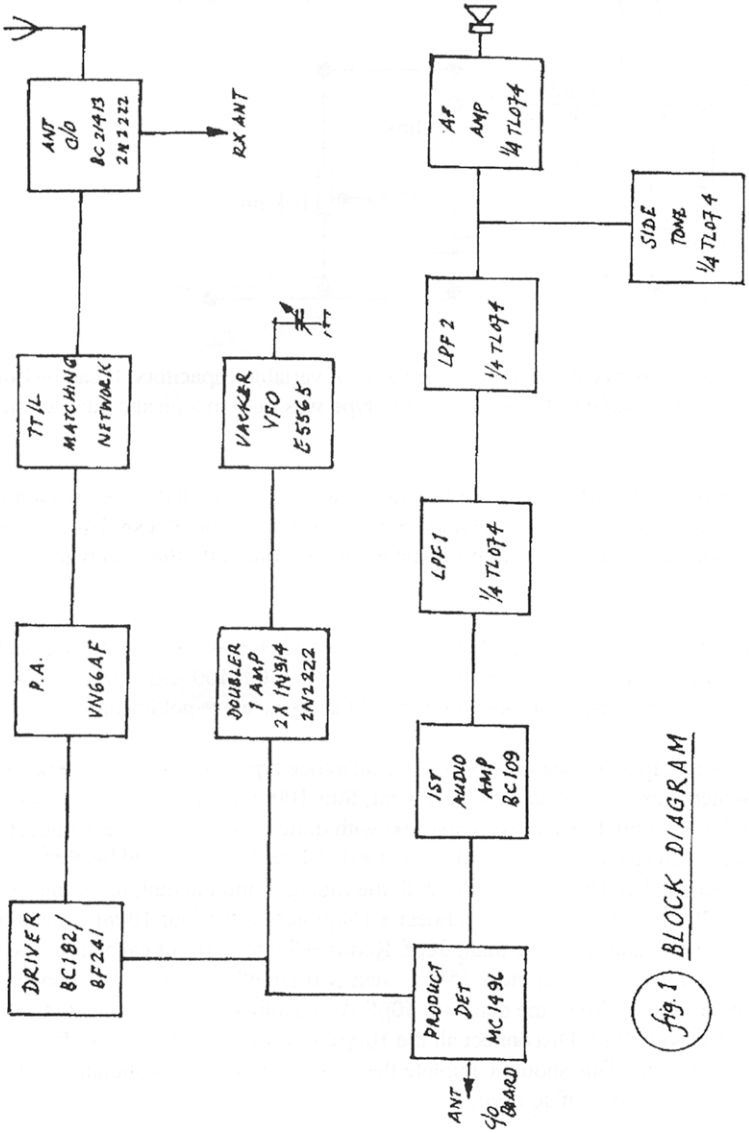


Fig.2. is the Vackar VFO (on of my favourites) and its buffer-amp.

- TC1 & TC2 set the tuning range.
- TC3 sets the coupling and is adjusted for reliable operation across the range.
- TC4 sets the transmit offset.
- C1, C2 in series amount to 6pf this reactance along with the 47k resistor set the buffer gain.

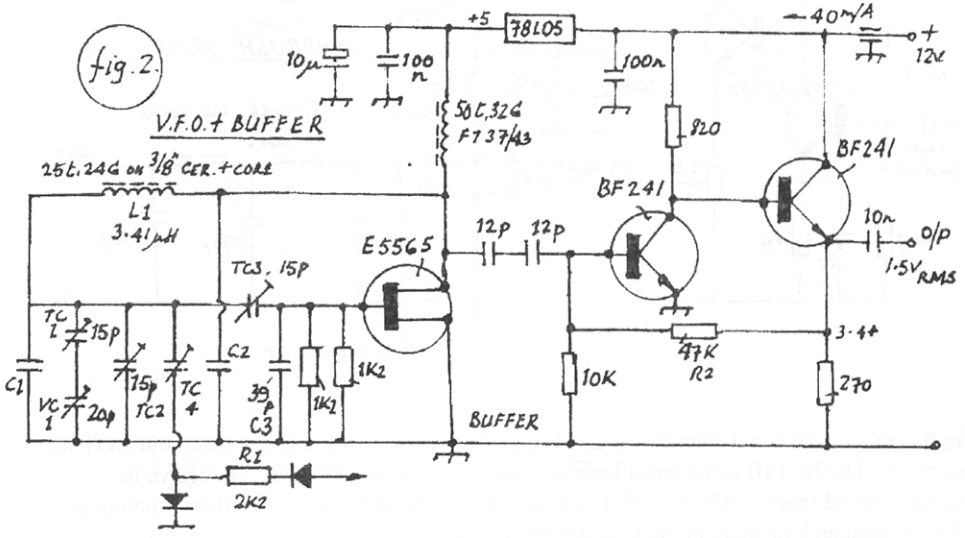


Fig.3. is a diode doubler and amp., the trimmer being used to peak the output on 10.1MHz.

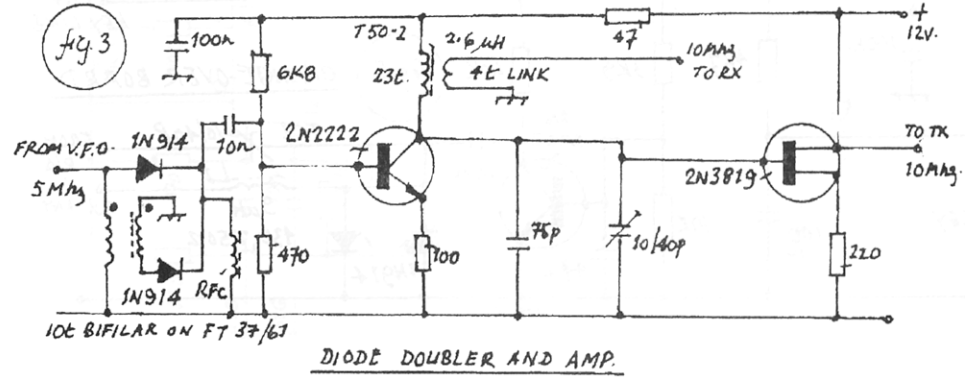


Fig.4. depicts the transmit chain. D.C. coupling being used to make sure the input to the FET final never goes negative. The preset pot is adjusted for desired PA current or until the output peaks, whichever is the sooner. (I have driven it to 1 amp without problems).

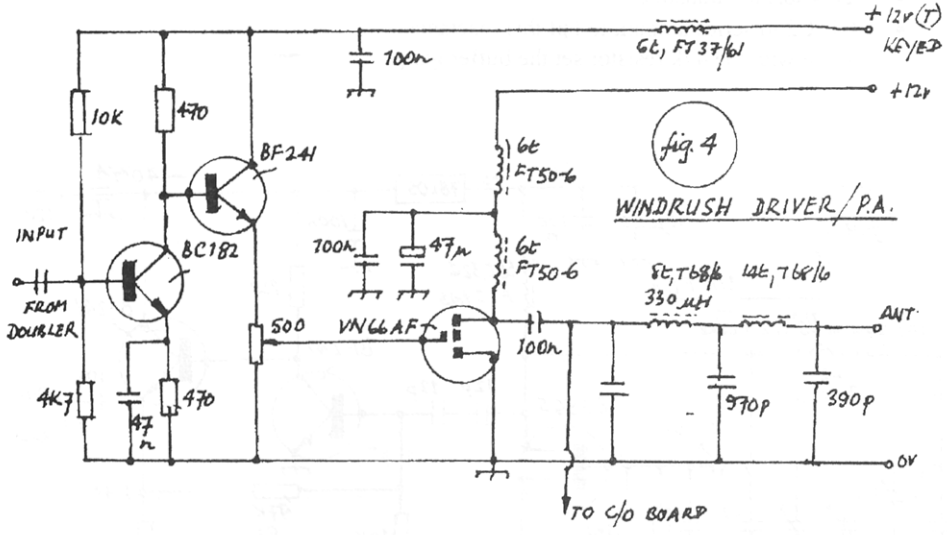
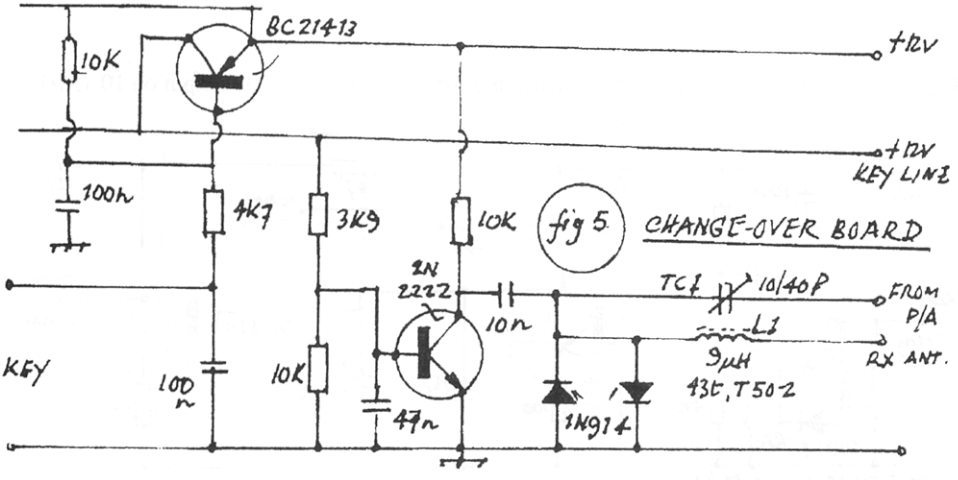


Fig.5. an unusual aerial changeover and I can't find where I took this one from, but NOT my invention! The BC14B is the usual keying switch. TC1 is a small value; on receive its reactance being tuned out by L1. But on transmit the 2N2222 is turned hard on shunting any RF to ground and the back-to-back diodes are insurance.



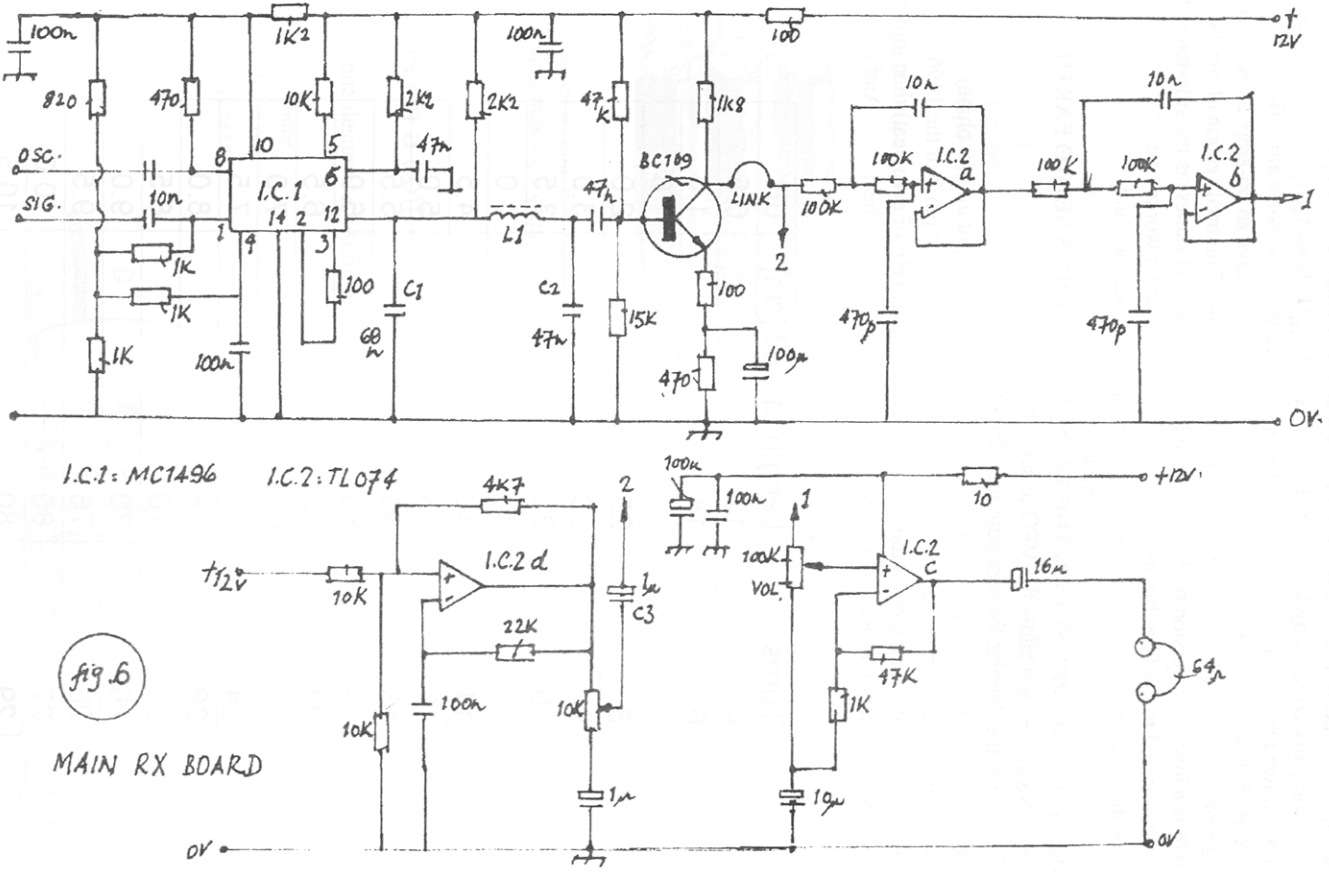


fig.6

MAIN RX BOARD

Fig.6. the receiver, IC1 is an MC1496 double balanced mixer. This is a follower by a PI matching network comprising C1, C2 & L1. L1 is a 100mH choke from Toko, very small, so can't be allowed to pass any D.C. at all! This is followed by a low noise amp. Before going to IC2a & IC2b low-pass filter sections. It may seem strange to have an op-amp. as AF. PA but with a pair of 32 ohm phones in series it causes no problems. The final section of the TL074 (TL074 is a low noise version of the TL084 and often cheaper at rallies) is the side-tone. It is shown connected to the filter but in reality C3 was omitted and it works fine.
Most of the semiconductors used are not critical, just what was on hand.

SETTING UP

MAKE SURE THE PRE-SET ON THE TRANSMIT BOARD IS SET TO EARTH.

- Switch on and allow the VFO to settle before setting it.
- Peak the doubler for best output on the band.
- Next the PA drive pot is set as required (key down, output into 50 ohms).
- The trimmer on the receive board is set to give 500mV at pin 8 of the 1496.
- And finally, tune a cw station to your favourite tone (HF of zero beat) then inject 12V to the junction of R1, D1 (board 1) and adjust TC4 to zero beat. ..... And that's it!!

Turns	Length of Coil [cm]	uH
4	12	0.5
6	18	1.0
7	20	1.5
8	25	2.0
9	38	3.0
10	38	3.5
12	40	4.0
14	40	4.5
16	45	5.0
16	50	5.5
19	55	6.0
20	58	6.5
22	62	7.0
24	65	7.5
26	68	8.0
25	70	8.5
26	70	9.0
26	76	9.5
27	80	10.0
29	80	10.5
30	85	11.0

uH/turns on a coil

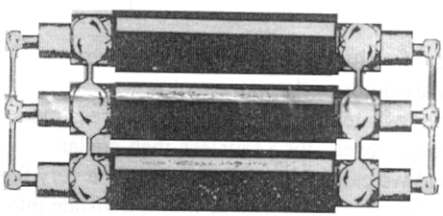
High Voltage Capacitors & Inductors for Antennas

Marco Eleuteri IKØVSV, Via della Caselle 22, 06053 Todi [PG] Italy

During antenna design we may need to use high voltage, anti-inductive, capacitors. But these are impossible to get in electronics shops and difficult to find in the surplus market. We can solve this problem by making capacitors from short pieces of coax cable. The capacitance between the conductor and screen braiding is some pF/cm, according to the type of cable.

For example [common cables]
RG8 = 0.95pF per cm
RG11 = 0.70pF per cm
RG58 = 0.93pF per cm
RG213 = 1.00pF per cm

So if we need a capacitor of 15pF, we can use a piece of RG213 15cm long.



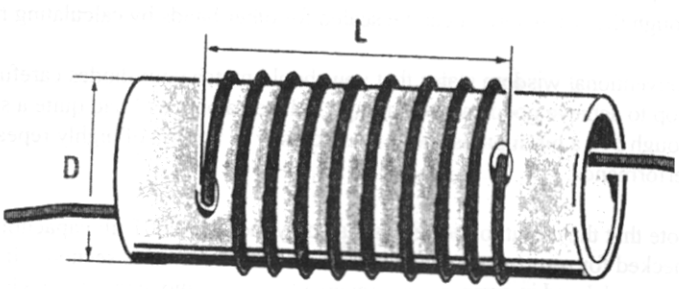
But if the capacitance we require is higher, for example 50pF, it is not useful to use a piece of cable 50cm long. But we can use 5 short pieces of 10cm connected in parallel – as with normal capacitor addition.

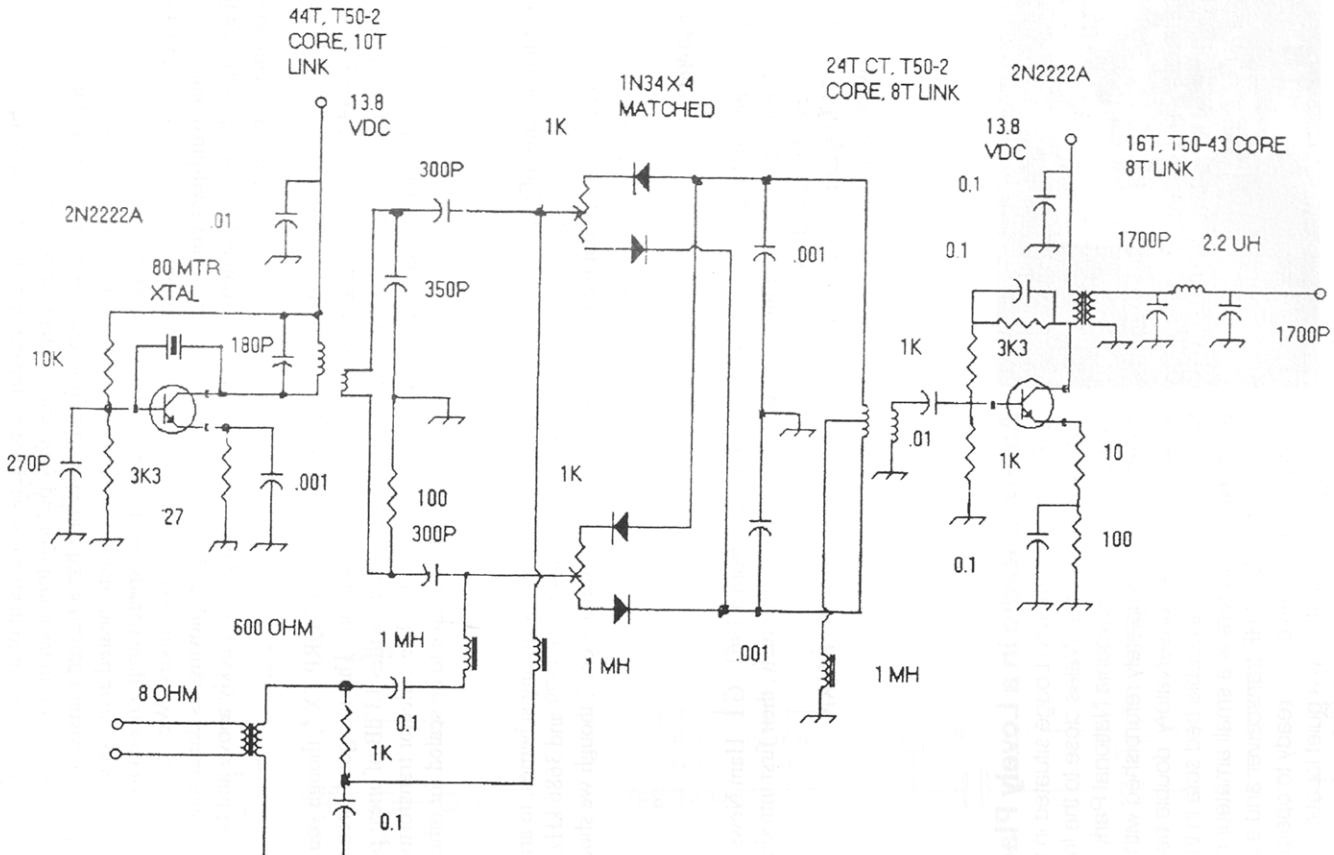
Above - we see a capacitor example made up from 3 pieces of RG213, each 8cm long making a capacitor of 3 x 8 pF = 24pF

uH/turns on a coil

During antenna design it is useful to have some tabulation for microhenry values.

The table given here gives values for a coil of **35mm diameter**




44T, T50-2
CORE, 10T
LINK
13.8
VDC
2N2222A
.01
80 MTR
XTAL
10K
180P
270P
3K3
27
.001
300P
350P
100
300P
1N34X4
MATCHED
1K
1K
1K
.001
.001
24T CT, T50-2
CORE, 8T LINK
2N2222A
13.8
VDC
0.1
0.1
16T, T50-43 CORE
8T LINK
1700P
2.2 UH
1700P
1K
3K3
.01
1K
10
100
0.1
600 OHM
1 MH
1 MH
1 MH
8 OHM
0.1
1K
0.1

I've cheated a bit calling this a "2 transistor" circuit, as some form of audio amplifier stage is obviously called for – just like architects, when they put together a set of house plans for you, "by others" means you're on your own. I figure every one has a busted transistor radio to scavenge an audio stage from, right? The original tube version cheated also – one of the tubes was a dual triode with one section devoted to a carbon mike speech amp, chosen for low parts count, but also for the limited audio bandwidth inherent in carbon mikes. We should probably impose similar band-pass constraints on whatever we end up employing, as the amount of phase shift generated by our simple network departs from optimal pretty quickly above and below normal speech frequencies.

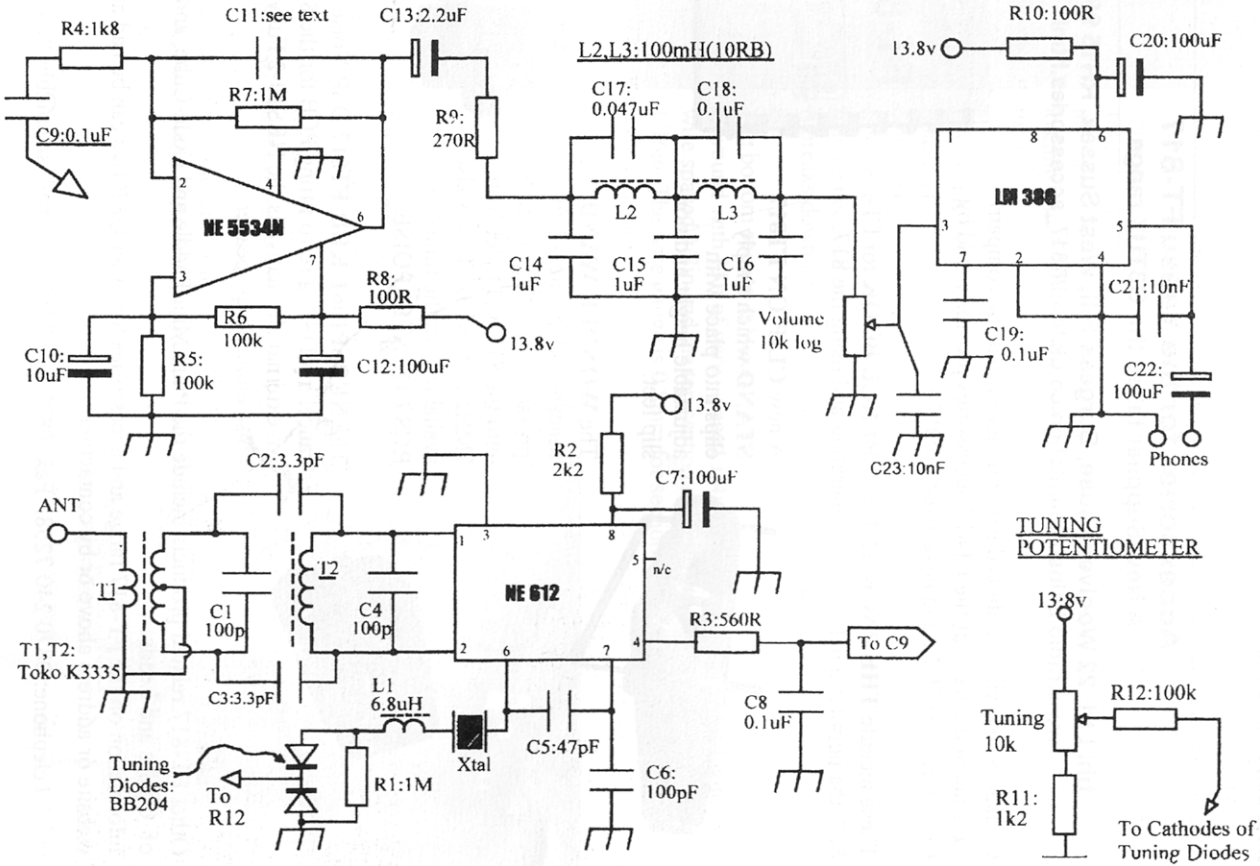
The final amplifier is lifted directly from "The Jersey Fireball 40" QRP TX [3], though you won't see the claimed 1-watt output due to under-drive in our application. This is a good circuit for the scrapbook even if you choose not to build this project, as it provides 13 dB of linear power gain, is quite well mannered and uses commonly available parts. The collector transformer is broadband, so only the low pass filter component values would have to be scaled for other bands.

One of the beauties of phasing rigs is their freedom from complex mixing schemes, to arrive at an operating frequency. While inexpensive crystals are available for 3579 and 3686 kHz, further embellishments might include a VXO or "ceramic resonator osc", though we should be alert for signs of frequency pulling on nodulation peaks.

Bibliography

1. "The QRP Quarterly", Oct 93 p. 17. Reprinted from a 1961 "G.E. Ham News". Apparently 1,000's of these rigs were constructed – for many, their first introduction to the "Donald Duck" mode.
2. "73 Magazine" circa 1976. Exact issue unclear. Si Dunn K5JRN.
3. www.njqp.org

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



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

The CP 20 14MHz CW Receiver

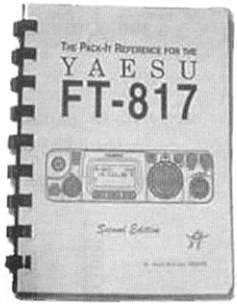
Submitting the CP 20 Receiver circuit for SPRAT readers - Tony says:
The elliptical filter is 800Hz [CW] bandwidth and is the nicest I have ever managed to make. The LM386 is run at 20dB to avoid hiss with most of the audio gain from the pre-filter amplifier, a NE5534.

Accessories for the Yaesu FT-817

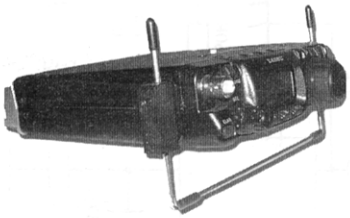
A New Supplier takes the G3TUX range

bhi Ltd, 22 Woolven Close, Burgess Hill, West Sussex. RH15 9RR
www.radio.bhinstrumentation.co.uk/html/ft817_accessories.html

Graham Somerville of bhi Ltd has announced that the company have taken on many of the FT817 accessories previosly sold by Chris Rees, G3TUX, and advertised in SPRAT.

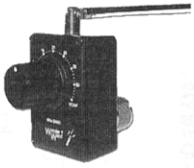


These include **THE PACK-IT REFERENCE BOOK** for FT-817; the popular quick guide to operating and using the 817.



A new **CLIP-ON FT817 STAND** which simply clips into place with adjustable height and non-slip feet.

The **WONDER WAND** tuneable whip antenna for portable use. Plugs directly into the 817 and tunes from 7MHz to 50MHz. This is also available with the tuneable RCS COUNTERPOISE.



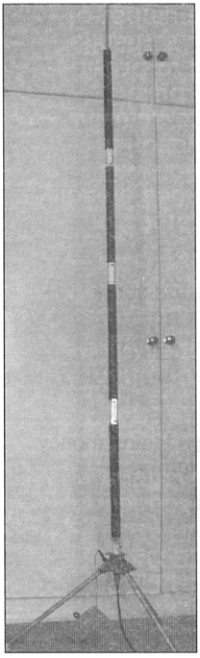
The **NEDSP1061-KBD-FT817** DSP Noise cancelling DSP, a retro fitting PCB for the 817.
An external alternative is the **NES10-2** Fully featured noise eliminating speaker.

Other FT-817 related products include the Palm Mini-Paddle and Code-Cube, and a range of Cables and Leads.
Information on the FT-817 range and accessories for other QRP rigs can be had at the website or address above or by contacting

Telephone: 0870 240 7258. Fax: 0870 240 7259. or email: sales@bhi-ltd.co.uk

Helical Indoor Portable Aerial

Ted Landon G3MHT, The Meadows, Smithy Lane, Bigby, Barnetby, S. Humberside DN38 6ER



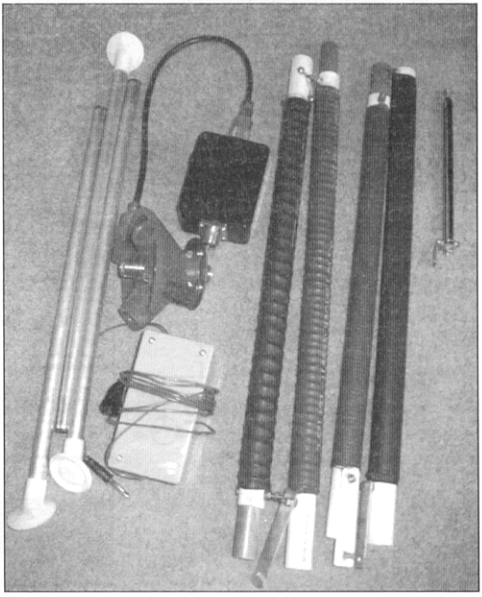
This helical indoor portable aerial is based on an 80m design by ZL1BDY circa 1975 and was described by Pat Hawker G3VA in 'Technical Topics' around that time. Over the years it has gone through many modifications and having been put to one side several times before reaching the finalised version. It consists of four sections of 22mm plastic water pipe (mine is 3/4in) 41cm long which are joined by wooden dowel, this is sliding fit inside the pipe. The 132mm whip attached to the top section, provides some top loading which helps broaden the bandwidth and also provides a means of tuning.

I originally built it for use on 40m, but other bands can be covered and the final version covers bands 40, 30 and 20m, whilst using the loaded counterpoise previously described (Sprat No.118). The tripod was liberated from an old dress makers dummy but due the height of the aerial on 40m it may be necessary to devise a lower base support. (my ceilings are 8ft 6ins). It breaks down into easily manageable sections and will fit into a small case etc.

The bottom section is wound with 7ft 6ins of wire, spaced 1/2in. Section two is wound with 13ft of wire, spaced 1/4in. Section three is wound with 24ft of wire spaced 1/8in and the top section is wound with 41ft of wire spaced 1/16in. The wire gauge is 0.8mm for sections 3 & 4 and 1.25mm for the two bottom sections.

The photograph shows the aerial set up for 40m. For 30m, remove the top section and fit the whip to section three and adjust the whip and counterpoise for the lowest SWR. Similarly, for 20m use sections one and two, fixing the whip to section two. After testing and any adjustments have been made, the four sections are covered in heat shrink sleeving.

As with the previous article on the Miracle Whip (Sprat No.118) I use the isolating inductance to prevent RF on the feeder. Used indoors and with 5w, some surprisingly good contacts have been made, including an LA on SSB on 40m.



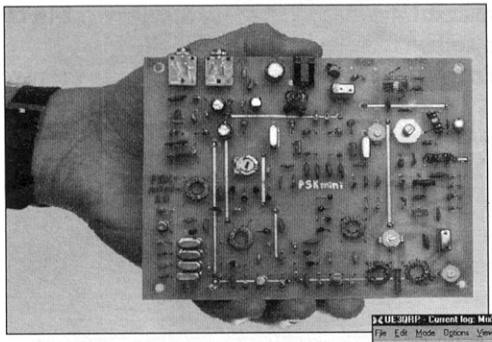
PSK Mini- 20 Kit

RV3GM Oleg V. Borodin, P.O. Box 229, Lipetsk, 398043, Russia

Parameters:
Power output - 4 watts @ 50 Ohm
Power supply - 12...13<8 V DC @ 1 Amp
RX sensitivity - 0,5 uV
IF - 8867 kHz 4-poles xtal filter
RX bandwidth - 2,2 kHz
Frequency - PSK 14070 kHz (stabilized by xtal)
RX/TX-control - by PC COM-port (software)
Price:

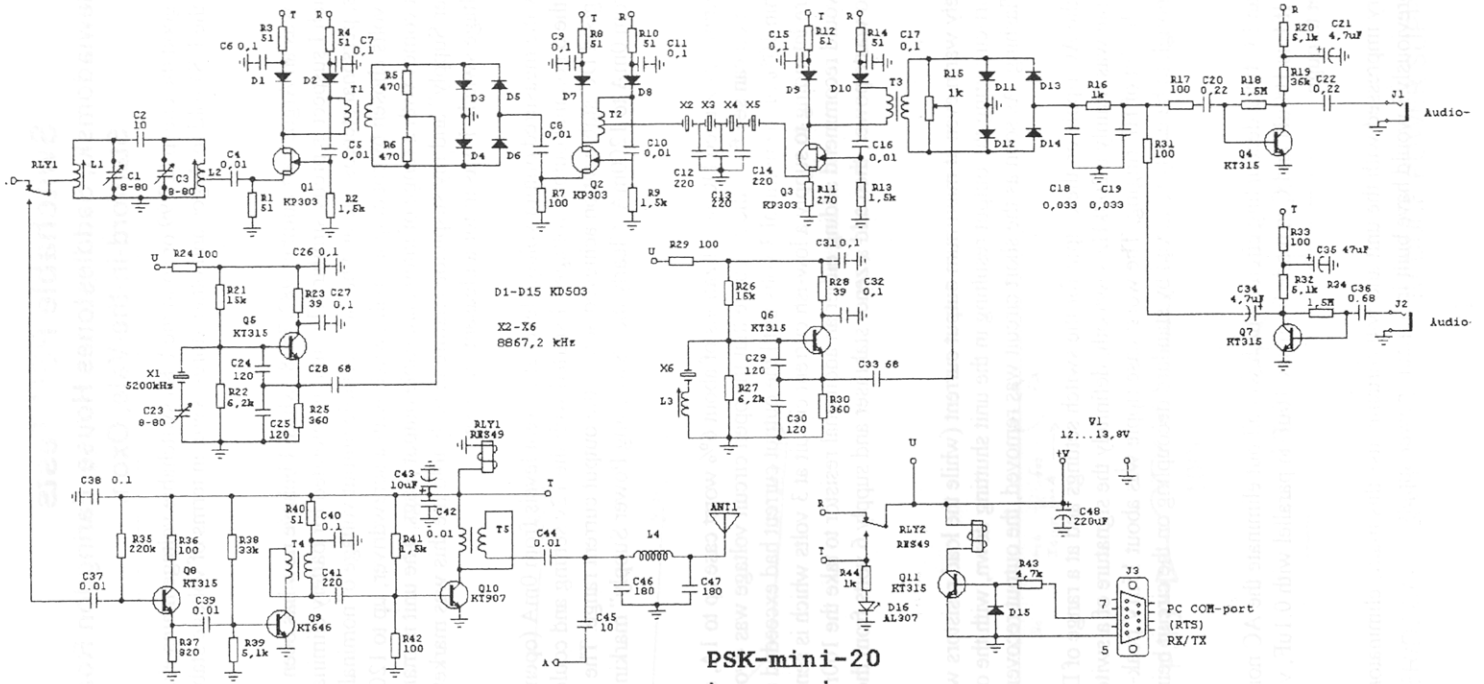
kit of parts (full kit) - $60;
- "minimum" kit (include PCB, all Russian types 11 transistors, 15 diodes, assembly manual, exclude resistors, capacitors, inductors, xtals) - $35 (yes, only $35 !!!)
- kit of 6 xtals (IF filter, BFO 8867 kHz 5 xtals and VXO 5200 kHz xtal) - $20 (!)
Attention!!! For 5 and more kits - 10% discount !!!

All the prices include post & packing by air-mail. Payment only by Western Union money transfer to Oleg V. Borodin, Lipetsk, Russia. Send Money Transfer Code Number (MTCN) by E-mail. Don't forget to show your full name and mail address!



LEFT – BUILT KIT

RIGHT – SCREEN CAPTURE


D1-D15 KD503
X2-X6
8867,2 kHz
Audio-
Audio-
PC COM-port
(RTS)
RX/TX
PSK-mini-20
transceiver

Switchable PSU Tests

Stef Niewiadomski, Saddlestones House, Faringdon Road, Stanford-in-the-Vale, Oxon.

I wondered how good the cheap (£7.99 or so in the UK) switchable voltage mains eliminators ("wall-warts" in the US) sold in Argos and other stores were, in terms of voltage stability and output noise.

The unit I tested was an Argos part number 982/7538, which I believe now has been replaced by 982/8908 which I suspect is pretty similar. This unit is intended for battery eliminators for CD/MP3 players, personal stereos, etc and has a selectable output voltage of nominally 12, 9, 7.5, 6, 4.5 and 3 volts chosen by rotating a small switch with a screwdriver, up to 1200mA output current. It comes with a range of interchangeable output plugs. The unit is marked "Switching Power Supply" and my suspicious nature initially told me this was marketing "spin" on the output voltage switch. I was in for a pleasant surprise!

The graphs show the measured output voltage level at current levels from 0mA (open circuit) to just over 1A for the 6 nominal output voltages. I started with the 12v setting and could see immediately the good DC stabilization achieved across the output current range. The droop is only about 3% from 0mA to 1200mA. Clearly the "Switching Power Supply" marking is accurate!

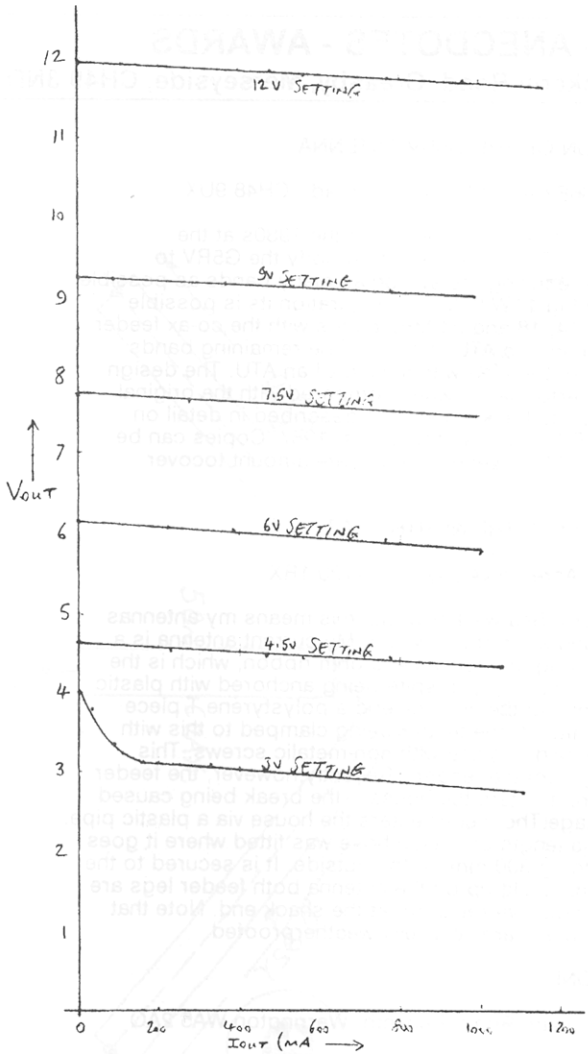
All the switch settings produced DC stabilizations of about 6% worst case up to 1A, except for the 3volt setting. You can see from the 3v curve that the open circuit voltage was 4volts and didn't get to within 10% of the nominal 3 volts until the output current had exceeded about 100mA. If you are intending to supply a low-ish current circuit at 3 volts which is sensitive to over-voltage, I would recommend adding either an additional resistor to take the 100mA, or if you don't want to waste power, then add a zener stabiliser and supply 6 volts from the mains eliminator.

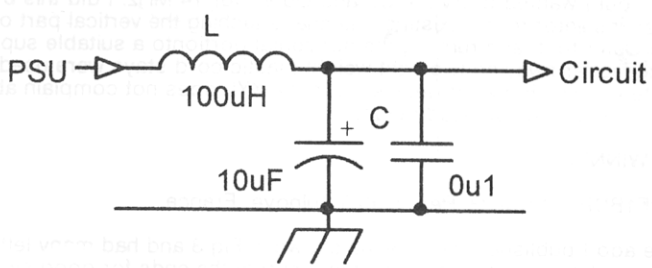
The unit ran barely warm even at maximum output current (while the load resistors were cooking) and short-circuiting the output resulting in the unit shutting down, with the output "ON" indicator flashing. As soon as the short circuit was removed, the output recovered.

I also measured the AC ripple on the output for the switch settings and at a range of DC output currents. The ripple was mainly a 200kHz sawtooth, definitely the signature of a switched-mode power supply, with a bit of HF ringing. The worst case ripple was about 15mV peak-to-peak, certainly small enough to be easily removed by standard decoupling on the circuit being supplied.

Figure 1 shows an LC filter/decoupling circuit which will all but eliminate the AC noise for a sensitive circuit. If L is 100uH and C is made from say 10uF in parallel with 0.1uF, very little of the ripple will get through.

Overall I was very impressed with the unit and will certainly use this mains eliminator in lots of projects where previously I would have built in a mains power supply.





LC FILTER/DECOUPLING CIRCUIT TO REDUCE POWER SUPPLY NOISE

ANTENNAS - ANECDOTES - AWARDS

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

A MUCH IMPROVED VERSION OF THE G5RV ANTENNA

Brian Austin, GoGSF (ex-ZS6BKW) 110 Frankby Road, CH48 9UX

This antenna is the result of research carried out in the 1980s at the UniversityW of Wiitwatersrand. The object was to modify the G5RV to improve its effectiveness by reducing the swr on as many bands as possible. The final version is shown in Fig.1. With this configuration its is possible to use the antenna on the 7, 14, 18 and 24 MHz bands with the co-ax feeder connected directly to the rig and no ATU in circuit. The remaining bands in the range 3.5 to 28 MHz can be used with the aid of an ATU. The design offers good efficiency and performance when compared with the original G5RV. The whole project and its background are described in detail on pages 167 to 173 of the I.E.R.E. Journal for August 1987. Copies can be obtained from G8PG but do please send an adequate amount tocover copying and postage costs.

THE BOTTOM OF MY GARDEN IS THE NORTH SEA !

F. Dinger, GMoCSZ, "Shore Acre", Inver by Tain, IV20 1RX

Anybody who knows the North Sea will know that this means my antennas are going to have to withstand a lot of big winds. My current antenna is a doublet with each side 21m long and fed via 400 ohm ribbon, which is the weak point of the system mechanically despite being anchored with plastic rope. To reduce flexing fatigue at the antenna end a polystyrene T piece with a 200 mm long tail was fittted, the feeder being clamped to this with a strip of the same material held in place with non-metalic screws. This absorbs most of the flexing from the feeder. Recently,however, the feeder broke at its other end, where it enters the house. , the break being caused by gradual weathering damage.The feeder enters the house via a plastic pipe. To reduce flexing and wear a length of plastic hose was fitted where it goes through the pipe, and extending 300 mm on the outside. It is secured to the feeder by tape. To avoid staic build up on the antenna both feeder legs are grounded via 47K, 1W non-inductive resistors at the shack end. Note that all connectors etc on the T-piece are very fully weatherproofed.

TWO FOR THE PRICE OF ONE

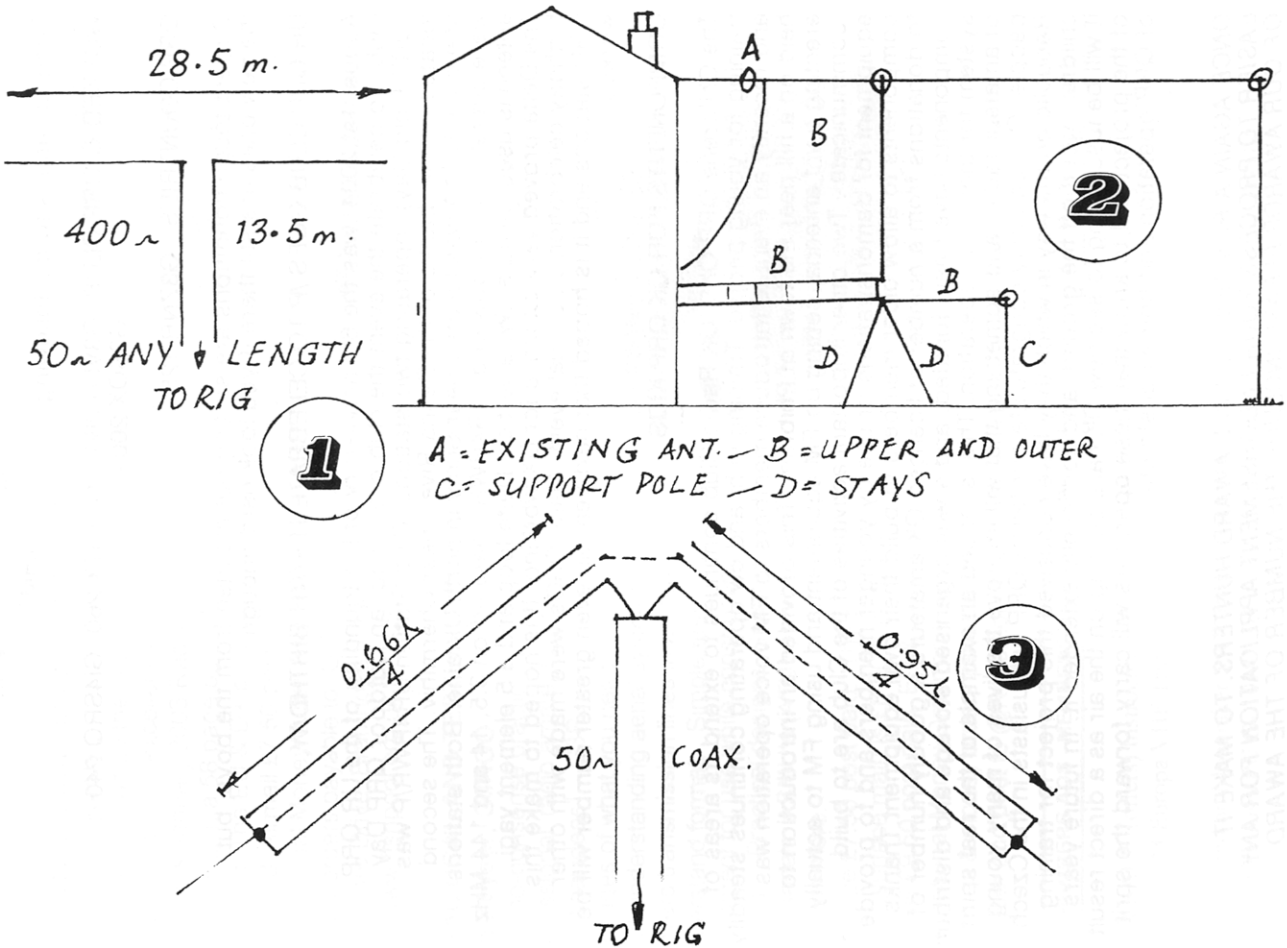
A. Heyes, G3ZHE,20 Walsingham Road, Penketh, Warrington,WA5 2AQ

I already had a dipole running from the house to a 30 ft pole at the bottom of my garden, but I wanted to try an "Up and Outer" for 14 MHz. I did this by attaching an insulator to the existing antenna ,attaching the vertical part of theUp and Outer to it, and running the horizontal portionto a suitable support. To stop the feeder swaying two light weight plastic cord stays were used in an inverted V. See Fig 2 for details..Even the XYL does not complain about this one as it is well above head height. ..

THIS IS A WINNER

P.Danvin, F1BDP, 14 Rue G. Peri, 59620 Aulnoye, France.

Some time ago I published the antenna shown in Fig 3 and had many letters saying how well it worked.. Once erected just trim the ends for good swr. You can use two at rightangles to give all-round coverage.


28·5 m.
400Ω
13·5 m.
50Ω ANY LENGTH
TO RIG
1
A
B
B
B
2
D
D
C
A = EXISTING ANT. — B = UPPER AND OUTER
C = SUPPORT POLE — D = STAYS
0·66λ/4
0·95λ/4
3
50Ω COAX.
TO RIG

AWARD NEWS

Congratulations to the following.

WORKED G QRP CLUB. G3VLU 280 ; DL1HTX 260; Gi4SRQ 240 ; G3SOX 200.

QRP COUNTRIES. G3ZNR 125.

Current tough conditions are sorting out the men from the boys, but the new ones are stil there if you look hard enough.

UR QRP CLUB GOES /P TO CELEBRATE ITS 6TH BIRTHDAY.

August 1st,2004, was the 6th anniversry of the founding of the UR QRP Club. To celebrate the event the club organised an Outdoor QRP Day (QRP Field Day) ,operating two stations. Club Station UR4RWR/P was located on the banks of the Desna River, near Chermihiv. The second station, UT7AXA was located near Sumy in north Ukraine. Both stations were entirely battery powered. UR4RWR operated on 3.5, 14 and 144 MHz, antennas used being a LW, a vertical Delta loop and a 5 element yagi. The Delta proved very effective for DX working. It is hoped to make this birthday celebration an annual event .Many QSOs were made with other QRP stations and it is hoped that next year an even greater number will be worked.

COMPONENTS FOR OK QRP KIDS

The Childrens QRP OK5PQK Radio Club continues to extend its areas of training for young people. Training in hf and cw operating continues steadily, and recently an event to introduce members to FM voice operation was held on a hill near the town of Phibram. This provided an introduction to erecting a vhf antenna, setting up FM equipment.and using FM to actually communicate . Two other important activities of the Club are to build equipment for demonstrations or use by younger members and to provide components to allow older members to build their own equipment.Thanks to donations from a number of licenced OK amateurs a goodly number of components have been donated, and a well organised storage and distribution system for them is in operation. This is indeed an example of the real spirit of amateur radio, and something that will improve the lives of many young people. One can only congratulate our fellow QRP enthusiasts in the Czech Republic on the way in which they have conceived this project for training children, got it off the ground, and continually extended it. In future years it will be fascinating to see new OK calls coming on the air as a direct result of the project and to know that these operators will carry forward the sprit of QRP operation and home construction,

ONCE AGAIN A REMINDER TO ALL AWARD HUNTERS. TO MAKE IT EASIER TO PROCESS YOUR ENDORSEMENT APPLICATION FOR ANY OF OUR AWARDS PLEASE INCLUDE THE NUMBER OF THE AWARD AS SHOWN ON THE BASIC CERTIFICATE. TKS OMS.

SIMPLE TEST EQUIPMENT FOR THE QRPer

"A wonderfully useful book by G3MFJ and G4WIF .... A must for any QRP library .. in fact, I wish I had written it!" – G3RJV

"Don't be mislead by the title, this book will be useful for any amateur... excellent source book" - Review in R.S.G.B's January 2003 Radcom.

20 projects in a 58 page book. The U.K. price is £6.00 post paid. The EU & DX price (surface mail) is £6.50 post paid. Airmail £7.50 post paid. EU & DX orders International Money Order only. Make cheques & money orders payable to "G.Firth" and post to 13, Wynmore Drive, Bramhope, Leeds, LS16 9DQ UK - see www.fishpool.org.uk for U.S. orders.

PRACTICAL AND TESTED AERIAL SYSTEMS

Ian Keyser, G3ROO

"It is no-nonsense practical book – good technical information for the 'non-professional' radio amateur with lots of practical ideas" – G3RJV.

80 pages of what you need to know to start understanding aerial systems. Covers transmission lines in an easy to understand format. Simple test equipment for use while constructing aerials. Practical designs. Supporting your aerials. ASMU's (ATU's) and Baluns and lots more.

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

FOR SALE: (offers) Instruction manuals for TS130SE and Taylor Model 22 fault finder. Info on SSM Europa VHF Transverter, P/Copy of Workshop manual for Scope Telequipment S22A

Info. required on Moonraker SWR/Pwr meter and matcher.

Contact John G4VPU G- 10181 Tel: 0191-252-2304 johnina@tiscali.co.uk QTHR.

FOR SALE: MFJ Super High Q Loop antenna. £250 ono [collect - Middx] Laurence, G1LRR, Tel: 0208 891 5281.

COMMUNICATIONS AND CONTESTS

Peter Barville G3XJS e-mail: g3xjs@gqrp.co.uk
40 Watchet Lane, Holmer Green, High Wycombe, Bucks HP15 6UG.

Let's start the column by looking forward to this year's Winter Sports. Yes, I know, the winter months may still seem a long way off (we can but hope!), but Christmas is just around the corner, and with it comes the most popular QRP event of the calendar. Remember, it's not a contest (so no need to worry about a points scoring system) but more a festival of QRP fun. Commencing December 26th, and running continuously to include January 1st, Winter Sports provides a relaxed QRP activity period and a chance to use QRP and work/make friends around the world on any band or mode. Let me have your log by Feb 1st 2005 so that I can include as many details of your activities as space will allow in SPRAT.

Don't forget, the G4DQP Trophy will be awarded to the member submitting the best log. It doesn't have to be packed full of exotic dx contacts in order to be adjudged 'best'. For example, you might have been operating from an unusual location, or under difficult circumstances, or using unusual homebuilt equipment. Make the log as interesting and/or unusual as possible, but (most important) enjoy the event to the full.

INTERNATIONAL QRP DAY 2004

How nice it would be if this event attracted the same degree of support as does Winter Sports. I'm sure poor summer HF conditions contribute to the low level of activity, and discourage many from spending time in front of the rig, but a little perseverance usually pays dividends. Roy 2E0OOO used his FT840 (5W cw) and Butternut 8-band vertical to score a total of 37 points. Valery RW3AI submitted a multimode entry using an IC7800, multi-band vertical and longwire antenna, scoring 43 points. These were the only two entries from members, and so Valery wins the 2004 International QRP Day Plaque.

The Club's congratulations to you Valery, and our thanks for encouraging some non-members to participate; although I have not been able to consider them for the Trophy, I am grateful to RU3AG, UA3FY and US7MM for their support and check logs. So, here's a challenge to you members for next year's event: outnumber the non-members! How easy should that be?

CZEBRIS 2004

OK1AIJ Karel has sent details of the OK/OM results, which are as follows:

OM7DX	**160**
OK1FVD	**141**
PA0ATG	**091**
OK1DKR	**048**
OK1DEC	**044**
OK1DSA	**032**
OK2HWP	**002**

"Have We Gone Soft?"
Asks George, GM3OXX. He has sent me fascinating details of the 1948 Low Power Contest. It ran from 2300z on Saturday Sept 18th to 2259z on Sept 25th. "The high tension power supply for the complete transmitter must be obtained from a single standard capacity 120 volt dry battery. Only one battery may be used throughout the Contest."

Could this be the way to enter Winter Sports? At least there would be no need to worry about power cuts!

By the way, the winner had 101 qso's and worked 37 countries with 9W input.

2005 YEOVIL QRP CONVENTION
Next year's Convention will be held on Sunday 10th April, and the associated Fun Run during the week 14th March to 18th March. My thanks to George G3ICO for the information.

Please let me have items for inclusion in the next SPRAT by the beginning of November, and - as always - have plenty of QRP FUN.

72 de QRPeter

Thanks to Max
Our thanks to Max Prickett, G3BSK, who has offered Two Way QRP QSL Labels and Blank QSL Cards to club members. The demand has grown less in recent times and Max has decided to discontinue the stickers and cards.
Thanks Max for a useful service to club members.

"An Experimental 20' Vertical for 7MHz" [Summer SPRAT 2004]
Des, GI3XZM, says,

Since reading Gus' essentially edited notes for this project I have had further thoughts which possible builders should bear in mind:

1] The aerial was highly experimental. It was just 'tried' not properly 'tested' [a few hours use – say 20 QSOs]

2] Excellent earthing is possible at this QTH. The garden sometimes floods with sea water! On other sites matching may be more difficult and efficiency much lower.

3] The capacity hat using as many paralleled half turns as possible, inductance to bring the ¼ wave resonant frequency down to about 80% of that required, and the series capacitive base tuning to get back up to the correct frequency, together seem very useful for experimental verticals.

SSB & Data Report

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

The general opinion of band conditions seems to have been summed up by Darren GW7HOC MW5HOC, his comments of: What have I worked? NOTHING, What have I heard? Next to nothing! He has taken to using the DX cluster to see if any QRP stations are about. He also admits to 'turning up the wick' a bit!! QRP on 40M SSB has been horrendous. The lack of activity has one good side, as he says " At least it's driven me back to reading about antennas. I'm desperate to improve the home antenna. I don't think I can, but I'm learning something new each day. A message for us all there I think. Martin M3CUS asked "Have You Tried 17 Meters? Heard a couple of South American stations. I have had some nice contacts on this band with my 10 watts and sometimes a lot less. Also there is very little QRN on this band. G0BPS worked Comoros isles on this band when it was 'dead'!

Edward WA3WSJ says "Yes the bands have been terrible lately, but I've still had fun operating portable with my K2-SSB. I cranked it up to ten watts and worked many stations on SSB from Cape Henlopen State Park in the state of Delaware here in the US. I also worked DX on PSK31 from my tent at night. Forty meters was like no antenna attached to the rig, but one night it opened and I ran a bunch of stations operating from the Overfalls Lightship in Lewes Delaware. If you would like to see some pictures, go to my website at http://www.wa3wsj.com/files/WA3WSJevents.html. Adrian G1UBL told me that "It's been great for SWLing ! I was QRV /P in France in mid July, hrd Japan, S.Korea and Somalia on 17m on what was otherwise a dead band but couldn't work any of them with my 5watts. I'm back here at the start of Sept for 12 days and will be taking some wire and bits and pieces to knock up a better aerial, also hope to have a Kanga 10m pole so will be able to get it higher, it was only at 4-5 metres last time. Will be QRV on usual SSB freq on 40/20/17.

From Caity K7VO - OK, here's one for you... I recently added a Patcomm PC-9000 to the shack and I've been enjoying it on SSB and CW. The SCAF filter works exceptionally well. Best DX yet: 9K2GS on low power (just under 5W) into my dipole only 30 feet up.

Talk of the Kanga 10m pole has brought to mind my own exploits with fishing poles. I have a selection at home right up to a carbon fibre 12.5m pole and before anyone shouts at me I use this one for fishing only! If you are looking for sources of cheap poles for amateur work remember that they must NOT be Carbon, glass fibre is OK though. A good cheap source of poles can be found on eBay. For UK buyers look under 'sporting goods - fishing' and in the search criteria box enter 'pole' you will be amazed at the selection available. For others check your own countries eBay Auction site.

The new addition to the 'BPS shack, an Elecraft K2 is waiting patiently for the SSB module to arrive. A superb rig by any standards. If anyone has any doubts as to the quality of this radio just check the reviews and the ARRL lab report.

That's it for another edition, your news and views to me direct as above or by email to **g0bps@trickie.com**

MEMBERS' NEWS

by Chris Page G4BUE

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Tel: 01798 815711
E-mail: g4bue@adur-press.co.uk

Long term regular readers of this column will know that I deplore the use of adding / QRP to your callsign (G4BUE/QRP) especially when trying to work DX and contest stations in a pile-up. In my view it is not legal, as the / QRP suffix is not part of any callsign licensing system that I am aware of, and secondly I have always construed its use as if the station using it is trying to get some form of special treatment from the DX station because they are using QRP. I have always encouraged QRPers to use their proper call only, at least to establish the QSO; by all means mention you are QRP once you have established the QSO, perhaps by sending 'TU 599, QRP HR' instead of the usual 'TU 599' pile-up exchange.

Support for my opinion has recently come from two of the world's top DXpeditioners, **G3SXW** and **G3TXF**, who have given lots of QRP DXers many new CW countries. **G3SXW** wrote his comments as the result of a QSL request he had received for the QSL to be addressed to the QRPer's callsign/QRP. Roger wrote, "My understanding has always been that QSLs do *not* have to be addressed to 'call/QRP' to count for awards. I do not log /QRP as part of the callsign and so do not write it on QSLs. That suffix is not part of the callsign. QRP stations stand a better chance of breaking through pile-ups if they do *not* send '/QRP' - it seems to always happen that I hear those three letters but cannot copy the callsign! Perhaps if they invested that time to send just their callsign I might grab it out of the noise. Instead of sending 'QRP QRP G4BUE/QRP' they would just send 'G4BUE G4BUE' (a shorter message) it would be copied more easily at the DX end. QRP operators need to hone calling skills (timing, speed, frequency etc) to get through pile-ups with their (self-imposed) limitations rather than depending upon the generosity of DX operators to single them out. By the by, I am a recent convert to QRP CW operating and am amazed at how little difference there is being heard by DX between 100 and 10 watts.".

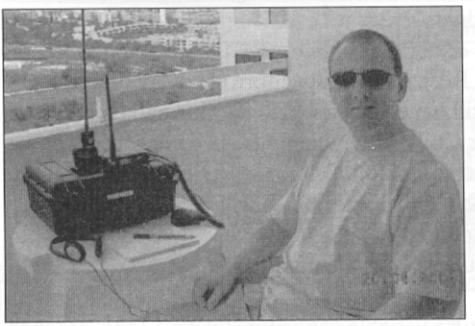
G3TXF added, "I gladly echo the sentiment of Roger's fine words on QRPers in DX pile-ups. Many QRPers make life unnecessarily difficult for themselves by cluttering things up in the pile-up by sending '/QRP', or even worse, just strings of 'QRP QRP....' with no callsign. I too am loathed to log anyone as / QRP, even if they are sending it. I feel that it is endorsing something that you do not necessarily know to be true. There is one further problem with QRPers in pile-ups and that's the *dupes* phenomenon. I fear that I have turned away many a QRPer because he appears to be a duplicate QSO. Maybe the answer is that the QRPer works the DX station just once on a band, and does it, if he really wants to, with QRP. As Roger has noted, there are a handful of pushy QRPers (if that's not an oxymoron!) who try to insist that a '/QRP' is added retrospectively to the callsign on the QSL. I also strongly resist doing this".

There you have it then, straight from the horse's mouth so to speak. Please bear Roger and Nigel's words in mind when you are in your next DX or contest pile-up, because if you do then you are likely to increase your DXCC band totals which is the main object of DXing.

SMØHPL planned to be QRV from Market Reef 28/31 May, including the WPX CW Contest as **OJØSM**. Anders also planned to use his own call of **OJØ/SMØHPL** looking for two-way QRP QSOs on 40, 30, 20 and 15m. **G3YMC** made 880 QSOs, 400 prefixes for a claimed score of 627k points in the CQ WPX CW Contest at the end of May with 5W from his K2. Dave said the highlight was working **ZL6QH** first call on 40m and then again on 20m when he didn't even realise the band was open to New Zealand. DL2BQD tested his new two x 20.5m doublet in the contest and found it did "a jolly good job indeed". Dieter said YB and CP were his best DX and his highlight was **G4BUE** on two bands!

PA9RZ worked 106 DXCC in the Benelux QRP Marathon (1 July 2003 to 30 June 2004) with a maximum of 5W into a W3DZZ, vertical (30m+) and Yagis for VHF/UHF, and since 1 July had worked 62 DXCC to start the new Marathon. Robert worked SV on 6m for 59 DXCC on the band and he is planning to attend the Rochdale convention. **M1DUD (M5AEF)**writing in the middle of July said "It's as good as ever on 6m even though we are heading towards the sunspot minimum". Robin worked 30 DXCC in June (27 SSB and 19 on CW) with 2W from his FT-817 to a five element beam. His main highlight was two new DXCC, 3A on CW and 7X SSB and CW. A further bonus was ZA on CW. The greatest DX worked this year was on 29 June With UT1IA at 2620 kms.

M1RAL was QRV 17/24 April as CT/M1RAL/P from Algarve from a seventh floor apartment (see photograph below). Richard used his FT-817 and Miracle Antenna and writes, "I had extremely good 20m paths to the southern parts of the UK, Germany, France and Scandinavia as well as Australia, receiving stations the like of which I had never heard from my home QTH. These VK stations really were booming through into southern Europe. Excellent 17m paths were also open to the USA and Canada again making a welcome change to operating from home. Local VHF operation on 2m FM was very entertaining too!".



G3ROO evaluated his new three-band vertical with his FT-817 in July and August and while working four VKs and seven JAs on the early morning 20m LP, found the vertical to be between two and four S points down on his quad although he never 'lost' a QSO with the vertical. Ian says, "The Dx is there, people do not listen for the weak signals! A classic was at 1900z on 3 August - I worked Ken, **JA1KGW** and had a ragchew for about 15 minutes on 14060kHz on the vertical. After the QSO I was on my computer while listening, Ken was calling CQ for about 30 minutes without getting a reply although several DLs called CQ on top of him. He was a good signal with me, and I am sure that even in a noisier location he would still have been audible".

Miracle Antennas announced the QPack Precision Tuner at the beginning of June and said it is "a link-coupled-derived tuner that matches a *very* wide range of loads from 3-30MHz, with slightly reduced range on 6m. It is rated a 25W and tested at 50, and is very efficient- much more so than the typical T-tuner or single-link Z-Match. The QPack has several unique features including a transformer input stage, Miracle Flatpack low-loss variable capacitors, and a very nice ergonomic design. It is very compact, rugged (much more so than any other tuner is likely to be) and - we believe - looks gorgeous. More information may be found on our Website at <www.miracleantenna.com>".

MI5MTC made some experiments with different colour antenna wire while on a caravan holiday in Kerry. Michael reports, "One antenna with thin brown insulated wire was almost impossible to see in dull or sunny conditions. It was about 50 metres on a 10 metre fishing pole across a small valley to a tree opposite, and then about 20 meters over a path in the valley. Some folk on the path noticed the dangling end of the thinner near white coloured fishing line holding it. In contract the two other antennas in white coloured insulation stood out brightly, sunny or dull. A dark coloured thin wire seems hardest to see when well up. Another point - the GRP pole and thin wire survived a Force 9 gale and driving rain that lasted about 12 hours. Thin and flexible, both bent and danced the squalls which flattened tents and caravan awnings elsewhere on the site".

That clears the files for this time. Please let me know how your autumn goes, by 20 November, please. Please also remember that I welcome photographs for this column, which can either be in digitised format or hard copy, in which case I can return them to you after I have scanned them. If you intend to send me ordinary mail, please send it to me at 312 Quail Avenue, Sebring, FL 33872, USA after 5 October - thanks.

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Crystal set with IC amplifier to boost reception. Signals can be heard even with relatively short aerials. This kit is great fun for the experimenter and covers approx. 6 – 15 MHz. ***Price £8.45***

Post & Packing £1.75 for up to 2 kits (within UK – for other areas please enquire.)

Note: Please make cheques payable to D. Rowlands. Payment in Pounds Sterling Please. Please allow 28 days for delivery.

Other radio & electronics kits are being developed. Details will be advertised in SPRAT when they become available. All enquiries please send SAE to D. Rowlands, Micro Radio Products Dept GQ 7 Broomfield Road Swanscombe Kent DA10 0LU or Telephone 01322 381303 (Ask for David) after 7pm or Email to microradio@telco4u.net mentioning SPRAT

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N.B.T.V.A

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

GQRP Club Sales

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

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

6 pole 9MHz SSB crystal filter 2.2kHz @ 6 dB, 500ohm in/out **£12** } plus postage: UK - 50p;
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Pair LSB/USB carrier crystals HC18U wires - [9MHz ± 1.5kHz] £6 pair } plus postage
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SA602AN - £1.75, MC1350 - £2.00 } 70p EEC,
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FT37-43 – 80p; FT50-43 - £1.20; FT37-61 - £1.00; FT50-61 - £1.20; BN43-2402 - £1.00
Plus postage – up to 5 packs = 35p (UK), 70p (EEC), 90p (DX); 5 – 10 packs = 70p, £1.40, £1.80 etc.
Please note some more slight price adjustments on these. (The packs may have the old prices on them!)

NEW ITEM – available at Rochdale – FT114-43 – 80p each (for postage - counts as a pack of 5 – they are heavy!)

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

G-QRP Club mouse mats £3.50 each inc post UK £4.00 EEC & 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 as previous ads – However, UK Postage now 1st magazine – 45p, each additional magazine add 15p (blame the Post Office – not me!)

NB I am temporarily out of stock of the Drew Diamond book, also, I am out of stock of 7.2MHz resonators, Poly-varicon capacitors and NJ Club pad cutters (no more supplies expected), and 14.060 miniature crystals All the DDS kits are gone, but I still have some of the W8DIZ freq ref kits (Sprat 116) - £10.

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/expiry date. We can only send the goods to the card owner's registered address. Sorry, we do not accept Debit Cards such as Switch or Connect.

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