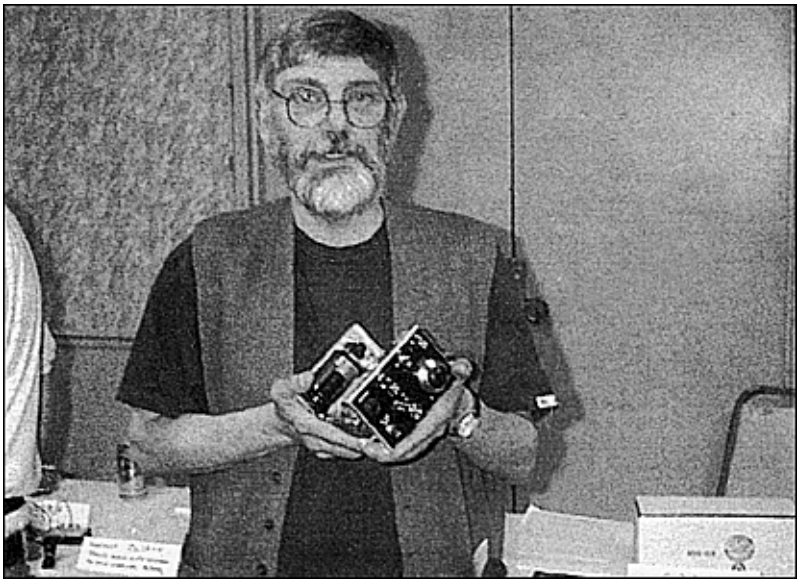
SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED•TO•LOW•POWER•COMMUNICATION

ISSUE Nr. 103	© G-QRP-CLUB	SUMMER 2000



F6CRP RECEIVER - MIC TIP - MISER'S ANTENNA ANALYSER
LOOP REGENERATIVE RECEIVER - PEG GRIPPER & TESTER
LF RECEIVE CONVERTER - A SIMPLE DDS - HB9BWY TRANSMITTER
BALANCED ATU MOD - NO COST FS METER
A.A.A. - CLUB NEWS - COMMUNICATIONS NEWS - VHF NEWS
NOVICE COLUMN - MEMBER'S NEWS

JOURNAL OF THE G QRP CLUB

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Rev. George Dobbs G3RJV

EDITORIAL

I complete this SPRAT rather hurriedly after returning from the Dayton Hamvention - so hurriedly that it may appear slightly later than usual. I was heartened by the success of two members in winning construction prizes at Dayton but saddened by the recent death of Frank Lee, G3YCC, who has been an avid member of the club since the beginning..

Just before Dayton I was leading a Celtic Pilgrimage to Ireland and used some of the time to make further plans for **CELTICON - the QRP event in Dublin on September 1-2-3.** If you wish to join us for that event please contact me for further details.

G0BXO tells me that some member have sent subscription cheques made out to individual club officers. Please help us my making **all cheques payable to the G QRP Club**.

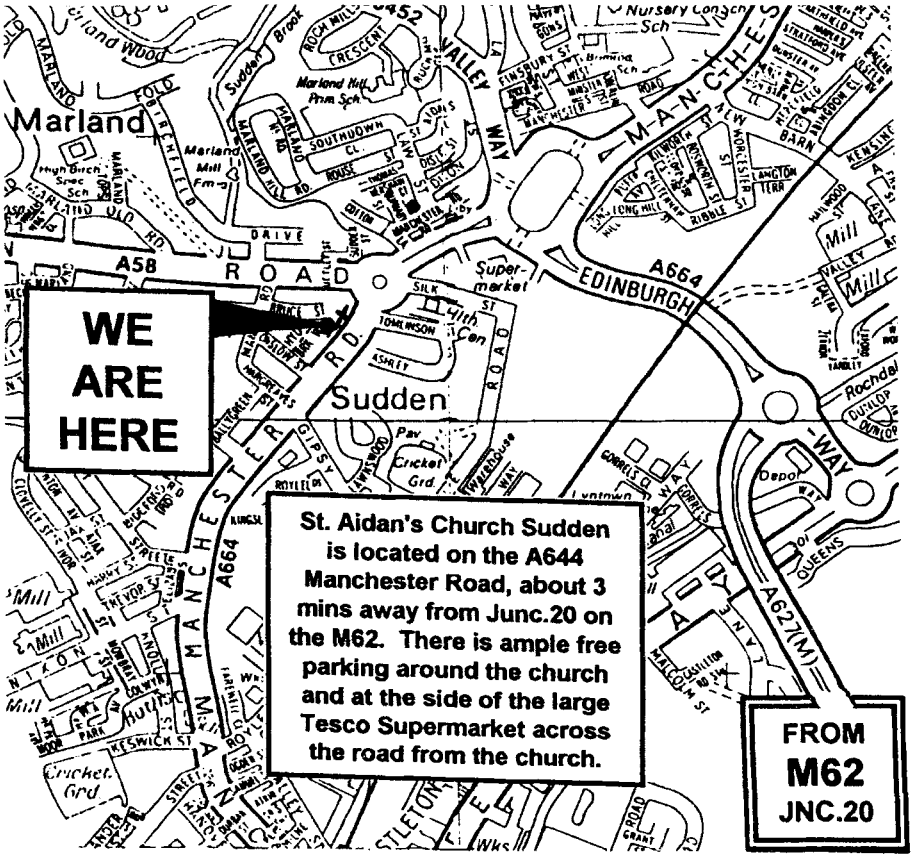
May you have an enjoyable summer.

72/3

G3RJV

EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK
Printed by G QRP Postal Mailing, 4 Hyde Square, Upper Beeding, Sussex BN44 3JE

THE G QRP CLUB
MINI-CONVENTION
SATURDAY 28th OCTOBER 2000
ST. AIDAN'S HALL SUDDEN ROCHDALE
ADMISSION £1 - DOORS OPEN 10am - TALKIN S22
LARGE SOCIAL AREA - LECTURES ON QRP SUBJECTS
BRING & BUY - SURPLUS - JUNK - COMPONENTS - KIT TRADERS
FOOD & DRINK ALL DAY - INCLUDING THE FAMOUS PIE AND PEAS



LOCAL ACCOMMODATION

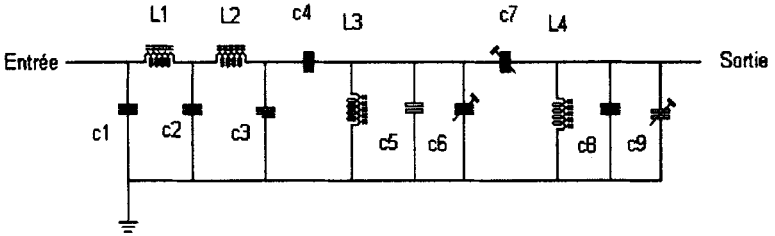
The Royal Toby Lodge - Tel: 01706 - 861861. Fri/Sat Tarriff : £39.95 per room
All rooms en-suite each with a double and single bed. Restaurants and Public Bar
Also within close range of the site : Oakenrod House : 01706 - 642115
The Norton Grange Hotel : 01706 - 630788

80 , 40, 20 m and more DC RECEIVER

Denis Auquebon F6CRP, 30 rue des mûriers, 17140 Lagord. France
f6crp@wanadoo.fr http://perso.wanadoo.fr/f6crp/

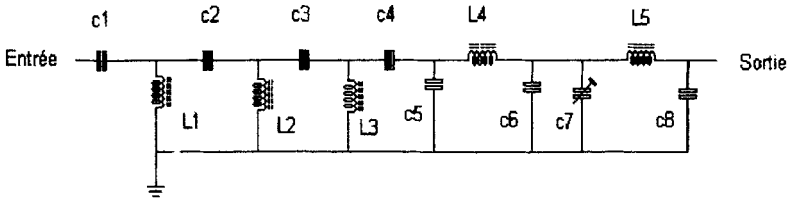
My 6 years old son wanted a " HAM TOY ". Having read excellent articles on the mixers with 4066, here the result.
I use the universal VFO described in SPRAT 101 of VK3AWC and I took as a starting point the work of VK2DOB SPRAT99 and I7SWX in Radio Rivista to produce the mixer. For the filters, I built those described in all the editions of the ARRL handbook, one will be able to carry out with profit those described by G3RJV on the site of the GQRP-club with TOKO transformers.
The preamplifier HF uses a 2N3866 or 2N5109 with 40 mA idling current, so it is hot, put a radiator, the collector is loaded by a wide band transformer . (10 turns bifilar n°28 AWG on FT37-43)
The mixer is this described in SPRAT 99 by VK2DOB, I put in parallel the inputs to decrease direct resistance but it seems not significant. The transformer is the same one as described, 10 turns trifilar on FT37-43.
The AF signal is filtered by a capacitors filter and amplified by a BC237A
The AF filters are made with LM1458, I tried to use TL072, the AM detection seems more significant, I thus returned with the LM1458. The filters are commutated by another 74HCT4066 , it makes possible to do this commutation by a simple D.C. command. The power gain is done by a TDA2003 which has a good behaviour with many signals in its bandwidth, surely better than LM386. The gain of the preamplifier is adjustable by adjusting the bridge of resistances 47/2.2 ohm. To increase the gain, increase the 47 ohm. There is enough power to excite a loud speaker.

Important : Use only for the whole project 74 HC or 74HCT series.



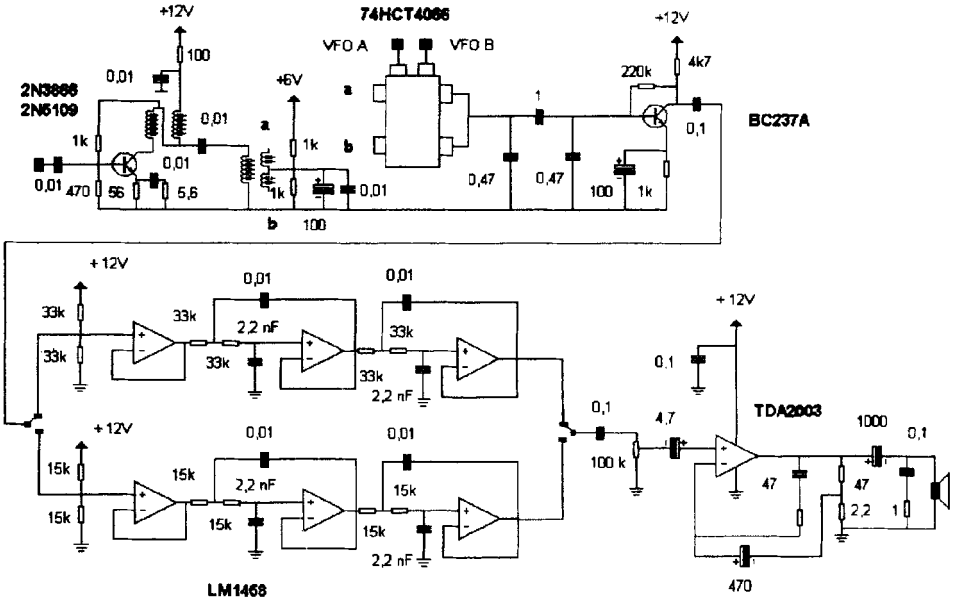
40 and 20 m filters

Elements values for 40 and 20 m filters								
Bands	**C1-C3**	**C2**	**C4**	**C5-C8**	**C6-C9**	**C7**	**L1-L2 Turns on T50/6 n° 22 AWG**	**L3-L4 Turns on T50/6 n° 22 AWG**
40 m	**430**	**860**	**47**	**47**	**0/180**	**0/10**	**17**	**25**
20 m	**220**	**430**	**22**	**47**	**0/180**	**0/10**	**12**	**17**



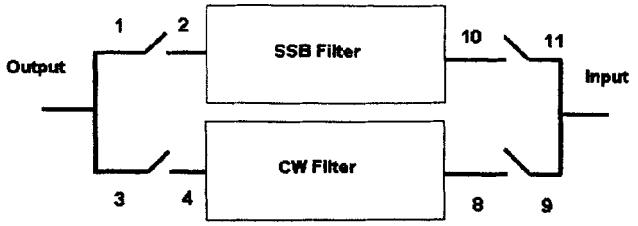
80 m filter

80 m filter								
C1-C4	C2-C3	C5	C6	C7	C8	L1-L3	L2	L4-L5
650	420	5000	560	350	5000	21 turns T50/2 n° 22 AWG	20 turns T50/2 n° 22 AWG	30 turns T68/2 n° 22 AWG

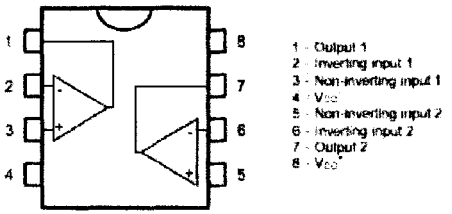


All caps in µF

SSB Filter : 12 - 13
CW Filter : 5 - 6



Filter switching using 74HCT4066



LM1458

SPRAT Index

The complete SPRAT index is now available with an additional database of the odd error which crept into articles. It can be downloaded free from the club website www.gqrp.com. It is in Adobe Acrobat format and is fully searchable. For members without web access, please send an A4 envelope with 41 or 33 pence postage (first or second class - your choice) to Tony G4WIF, 38 James Road, Dartford, Kent, DA1 3NF. Please also include an ordinary first class stamp to cover costs. DX members should send a self addressed A4 envelope enclosing a U.S. five dollar bill and we will pay the postage. Tony can also be contacted via email at g4wif@gqrp.com

SPRAT CD TUTORIAL : Tony can also offer his SPRAT CD Tutorial document for those having trouble with the SPRAT CD ROM. This is available for an SAE to the address above.

W4RNL (LB Cebik) Antenna Information

W4RNL's web site (http://www.cebik.com) is devoted to antennas and related subjects. For those who pay for connect time by the minute or via long distance or for those who have worn out their printers downloading text, LB has created a CDROM from the site. Version 1 of this ever-expanding site is dated April 20, 2000. It can be ordered through the web from AntenneX (http://www.antennex.com) by looking in the "shopping shack" under books. The price is (US) $29.95 plus shipping for the approximately 280 articles and notes on wire and directional antennas, antenna modelling, and transmission lines and tuners.

A Microphone Tip

Neil Mackinnon G4WAZ, 49 Balmoral Way, Worle, Weston-Super-Mare, BS22 9AL

Having just returned from an extended absence, to amateur radio. I realised that I no longer owned a microphone for my Argosy 525D. A visit to a local emporium provided me with a 'Hi Impedance' mic, which turned out to be 600 ohms. Knowing there was a solution, which my rust covered brain could not remember, Phil G4UDU at Adur Communications came up with the answer. ' A microphone transformer' I can hear you all crying.
Maplin have such a unit, No. FD23. I wired the PTT straight through, took the common ground to the metal enclosure and ran the mic o/p and mic ground to the transformer primary. With a suitable 8-pin socket fitted and a screened fly lead to the Ten-Tec jack plug, all is now well. I have had good audio reports on all transmissions.

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

WANTED: Turns counter, mechanical type with crank handle to drive roller coaster, counting up to 40 turns, I need at least 2 of the same kind: DD3LY, A. Knott, Hardenbergstr. 4, D-24105 Kiel, Germany. Tel: +49-431-89353 [QTH] or +49-4308-186244 [QRL], I will call back.

WANTED: For young beginner. Valve or Transistor Super Regen Receiver with plug in coils etc. Homemade or Commercial. amateur bands and general coverage. Please ring Adrian, G4GDR 01793 - 762970 or QTHR.

FREE: 1987-99 RadCom, most bound in hard cover. Contact Gordon Pope G3ASV, 6 Brookland Rise. LONDON. NW11 6DL

HELP REQUIRED: I wish to expand the freq coverage of the Sony ICF-SW7600G Italian -German version - limited at 3850 up to 26100 kHz. how to do it? Perhaps a member can help? Many thanks in advance - IK0VSV: Marco Eleuteri, Via Paolo Rolli 18, TODI P)
I-06059 ITALY

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

QRP Labels: Black Lettering on Gold with Club Logo : 200 labels £2. Post inc.
Blank QSL Cards: You complete your address and call. Blue lettering on white card, 5.5" x 3.5". 100 cards £4. Post inc. Sample from : **M.L. Prickett [Max] G3BSK, 260 Haslucks Green Road, Solihull, West Midlands. B90 2LR.**
Cheques: "M.L. Prickett" [The G QRP Club benefits from each order]

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 £4 (or £3 plus a recent SPRAT wrapper) to Dave Gentle, G4RVI, 1 Sunny Hill, Milford, Derbys. DE56 0QR, payable to "NBTVA"

MAA : A Miser's Antenna Analyser

Gerald Stancey G3MCK 22 Peterborough Ave. Oakham, Rutland. LE15 6EB

In spite of what some advertisers may tell you, most of the normal antenna adjustments that amateurs need to make can be carried out by simply using a good SWR Meter. However there are times when more information is needed, such as knowing the impedance at the shack end of the coax feeder. The current vogue instrument for solving such problems is the antenna analyser. The MAA does the job of a commercial analyser but costs a lot less.

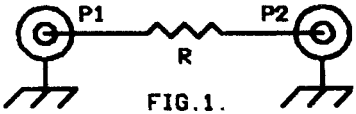
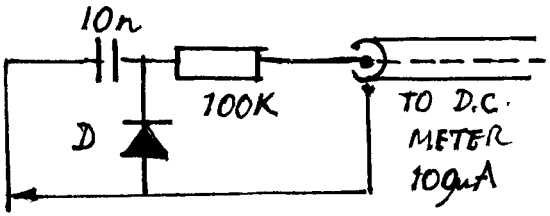


FIG.1.
The heart of the MAA
R about 50 ohms, see text

Your first reaction may well be "you must be kidding". However keep the faith and read on. Yes you do need some more equipment but this is only gear that any normal amateur can be expected to have or to be prepared to make. The extra bits are, a low power (1-2 watt) transmitter for the bands of interest and a RF voltmeter. The first can be provided by turning the wick down on your transceiver. An RF voltmeter is easily made, see figure 2.

fig.2



R.F. VOLTMETER

'D' SHOULD BE GERMANIUM

How to use the MAA

To use the MAA you don't need to know how it works but, for those who want to know the theory is covered at the end of this article.

Connect the RF source to P1 and the load whose impedance you wish to measure to P2. connect the RF voltmeter between P1 and ground and set the RF source to give about 7 volts across P1 (Vi). Now measure the voltage across the resistor (Vs) and the voltage from P2 to ground (Vz).

For purposes of explanation let us assume: Vi = 7 volts, Vs = 4 volts, and Vz = 5 volts, also R = 47 ohms. Now refer to figure 3 [not actual size], draw a line OA about 10" long, mark S so that OS = 4". Place a compass point at O and swing an arc of length 7". Place a compass point at S and swing an arc of length 5". Call the intersection of the arcs P. We now have OP = 7" and SP = 5" Drop a perpendicular to OA at X and measure SX = 1.05" and PX = 4.85"

I have chosen to make 1" equivalent to 1 volt, however any unit of length may be used.

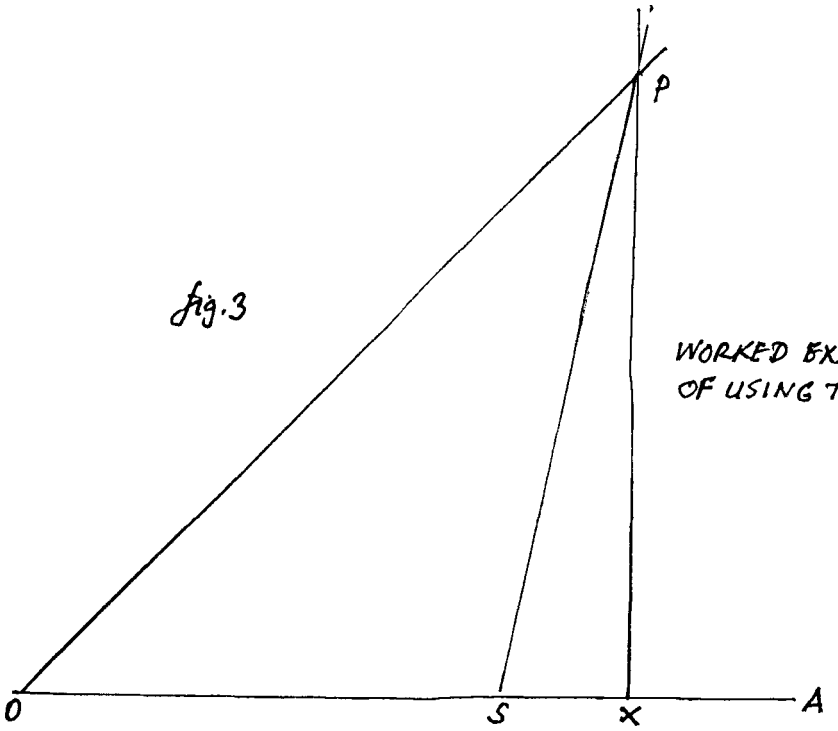


fig.3

WORKED EXAMPLE OF USING THE MAA

The impedance across P2 is calculated as follows:
Resistive component = 1.05 x 47 / 4.00 = 12.3 ohms
Reactive component = 4.85 x 47 / 4.00 = 60.0 ohms

To find the nature of the reactance, i.e. is it inductive or capacitive place an inductor of about 60 ohms reactance in series with the unknown impedance at P2 and re-measure Vi, Vs, and Vz. If $Vz \approx Vi + Vs$ then the component has capacitive reactance, otherwise it is inductive. Instead of using an inductor you can use a capacitor of about 60 ohms reactance and invert the above logic.

Special cases

If $Vz = Vi + Vs$, then the load is a pure resistance.

If $Vz^2 = Vi^2 + Vs^2$ then the load is a pure reactance.

Hence this technique can be used for measuring reactances. For example, by suitable choice of frequency, capacitors in the range of 20 pF to 2000 pF can be measured.

If a quarter wave stub, with the far end open circuit, is connected to P2, then Vz = 0. this can be used for making stubs or for finding the velocity factor of coax. For best results it is advisable to make a unit specially for this purpose with the diode probe built directly actoss P2.

Construction details

The basic unit can be built on a piece of PCB. The value of R is not critical, say 33 - 68 ohms and 1W rating. It must be non-inductive and it is OK to use parallel combinations such as 2 x 100 ohms to get the required resistance and wattage. The actual value you use for r must be substituted in the worked example for 47.

I have found that a normal 100 micro amp analogue meter is best to use with the RF probe as non-analogue meters can be susceptible to RF pick up. Calibrate the probe to allow for the diode off-set as follows.

Put a resistor of about the same value as R across P2 and measure the three voltages as before. The diode offset (D) is given by:

$$D = Vi - Vs - Vz$$

This value must be added to each of the three readings before using them to construct the voltage diagram. In other words if D = 0.3 then in the above example Vi was actually measured as 6.7 volts.

Low power RF source

If your transceiver cannot be adjusted to give about 1 - 2 watts or if you feel unhappy about connecting it to an unknown impedance then feed the MAA through an attenuator. Anything over 6 dB will virtually ensure that the rig sees a suitable load. Don't forget to make the attenuator with resistors that can dissipate the excess power.

Pros and cons

This is a practical rather than a precision instrument. However it will put you in the right ball park and enable you to proceed by the usual amateur methods of cut and try. Incidentally the professionals solve their problems this way but call it sorting out teething troubles!

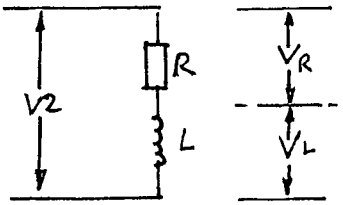
Compared with commercial equipment the MAA takes a little more effort to use. In practice it can only be used in the amateur bands and probably in the shack. In its favour is not only its low cost but the deeper understanding you need to use it. To put it bluntly if Impedance is a closed book to you why are you bothering to measure it?

The theory bit

You don't need to read this to use the MAA but it is only applied RAE theory.

Consider a resistance in series with an inductance, see figure 4. Apply an AC voltage across the combination and measure the three voltages, Vz, Vr, and V1. You will find that they are related by the formula $Vz^2 = Vr^2 + V1^2$

This relationship can be represented by a right angled triangle whose sides are in proportion to Vz, Vr and V1.



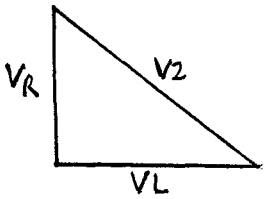
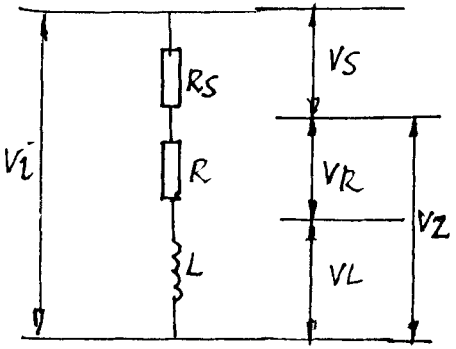


fig.4

VOLTAGE RELATIONSHIPS IN A CIRCUIT WITH RESISTANCE & REACTANCE

Now put a resistor Rs in series with the combinations and apply an AC voltage across them such that Vz remains unchanged. We can now draw the voltage of figure 4 to give figure 5. You will see that this is the one we drew when we used the MAA for measuring an Impedance. In other words the MAA has effectively given us a way of getting inside the unknown impedance to measure Vr and V1.

Now who was it who was saying that the RAE is of no real use to amateurs?



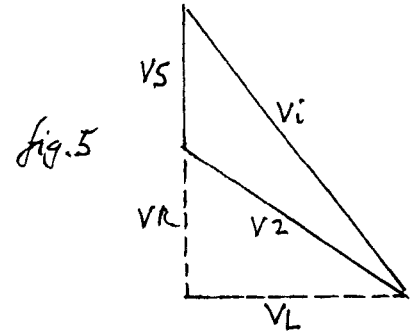


fig.5

VOLTAGE RELATIONSHIPS IN THE MAA

Congratulations

To Carl Mason, GWØVSW, QRP Master number 120, in also becoming the HF Bands Columnist for the Practical Wireless magazine.

REGENERATIVE RECEIVER WITH A LOOP ANTENNA

Olivier ERNST F5LVG 2 rue de la Philanthropie, F-59700 MARCQ-EN-BAROEUL, FRANCE

I have built regenerative receivers since 1975 using tubes, transistors or MOSFET devices. However, I never made such a sensitive receiver as this one. Using it I have heard FK, VK, ZL on 20 meters on SSB without an outdoor antenna.

The sensitivity of a loop antenna is directly proportional to its Q. In a regenerative receiver, the effective Q of the coil increases thanks to the feedback. Therefore, a regenerative receiver using a loop antenna can have a high sensitivity, without another antenna. Furthermore, there is no dead spot due to the load of the antenna.

The choice of the feedback transistor is very important. I used a high gain low noise AF transistor instead of an UHF transistor that had a tendency to self-oscillation in UHF frequencies.

To increase its input impedance, a resistance of 220 Ω was placed in the emitter connection. L2 decreases the detuning due to the regeneration adjustment on 20 meters. R6 and R8 have a low resistance to reduce hum. D1 is a zener diode used as a varactor. To avoid body capacitance, R7 (tuning) and R8 must be at least at 30 cm from the loop antenna.

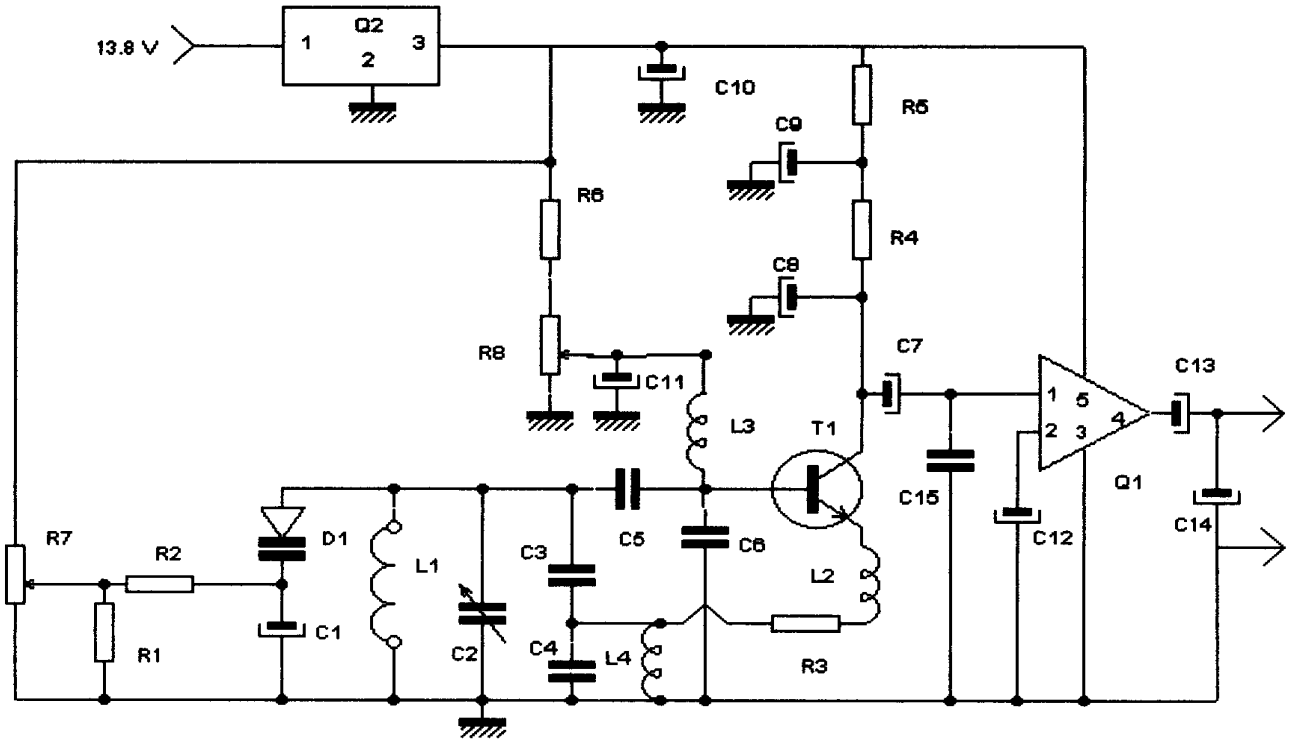
Parts List:

R1/ R2 : 4.7 KΩ
R3/ R4 : 220 Ω,
R5/ R6 : 1KΩ,
R7 : 20 KΩ
(10 turn potentiometer),
R8 : 100 ohm
potentiometer,

C1 : 10 µF,
C2 : 200 pF variable,
C3 : 100 pF,
C4 : 470 pF (20 m)
1.5 nF (40 m)
4.7 nF (80 m),
C5 : 10 nF,
C6 : 22 pF,
C7 : 2.2 µF,
C8 : 1 µF,
C9: C10: 100 µF,
C11 : 1000 µF,
C12 : 22 µF,
C13/ C14 : 4.7 µF,
C15: 100 nF,

D1: zener diode 18V 1W,
T1: BC549C,
Q1: TDA2003,
Q2 : 9V regulator,
L2: 1 µH,
L3/ L4 : 1 mH.

Loop Information
L1 antenna coil, 16 cm in diameter, wire diameter 2.8 mm. 20 & 30 meters : 1 turn, 40 meters : 2 turns, 80 meters : 5 turns.



THE F5LVG LOOP ANTENNA REGENERATIVE RECEIVER

Two Peg Axial Gripper and Diode Tester

Ken Craven G4LKP 8 Melander Close YORK YO2 5RP

A dislike of seeing fragile wire leads damaged by crocodile clips led to the construction of this simple device for the rapid testing of all varieties of axial components. The addition of a polarity reversing DPDT switch enable diodes to be checked at speed.

Method

The wooden clothes pegs are mounted parallel to onbe another, each having a set of two conducting 'Gums' of tinned PCB. I cut and tinned four pieces of PCB 18 x 16mm, but dimensions, positioning & geometry of the 'Gums', and the separation of the pegs may be varied at will (and as the width of one's index finger.) 15mm distance between the pairs of 'Gums allows testing of the shortest of salvaged diodes.

Stick a self adhesive lable over each tinned surface and glue eac pair of such papered surfaces together with 'Pritt' to form a 'Sandwich'. If the 'Gums' are made 18mm long & the pegs are cut back 19mm, as per fig.1, this will allow the 'sandwich1 to maintain a mid-line position when glued to the peg. I used Araldite, filling the gaps between eac peg half and the 'Sandwich'. But avoiding the 'sandwich' edges.

When set rock hard, separate the paper layers with a thin blade, and saw 3 x 3mm from the trailing edge of both upper 'Gums'. 9Figs. 3 & 5).

Drill lower peg halves and 'Gums' as in figs. 4 & 6.

Clean and polish tinned surfaces.

Mount pegs on box (75 x 50 x 25mm); Fig 7.

Fix and wire the pegs, ultra Min DPDT switch and terminals as in Fig 8. I used 6BA 20mm bolts, green wire for the Right (Starboard) peg, red for the left, and solder tags to simplify the wiring of the DPDT switch, which reverses the polarity of the peg to terminal connections.

TWO PEG AXIAL GRIPPER

FIG. 1.

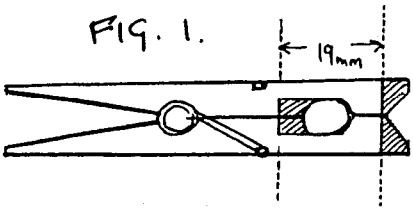


FIG. 2.

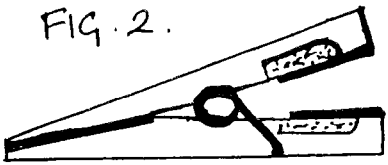
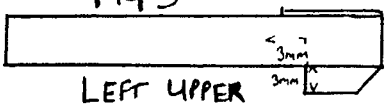
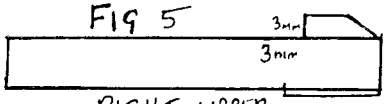


FIG 3



LEFT UPPER

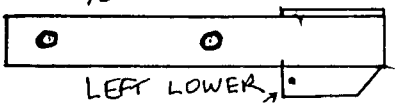
FIG 5



RIGHT UPPER

FIG 4

c/s 3mm HOLES



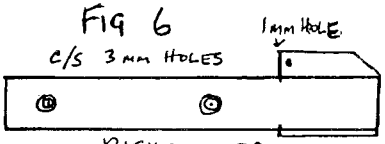
LEFT LOWER

1mm HOLE

FIG 6

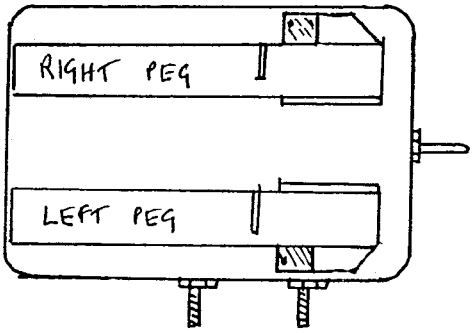
c/s 3mm HOLES

1mm HOLE



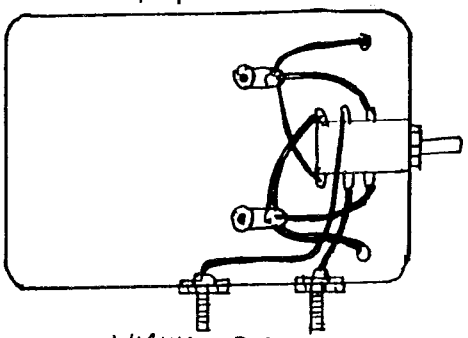
RIGHT LOWER

FIG 7

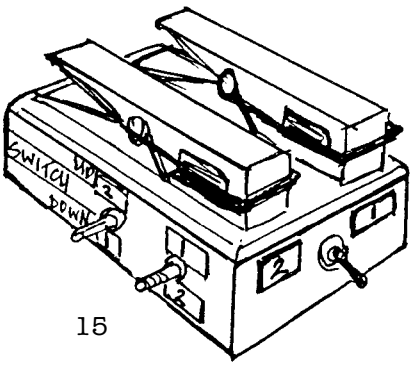


TOP VIEW

FIG 8



WIRING DIAGRAM



AN L.F. RECEIVE CONVERTER

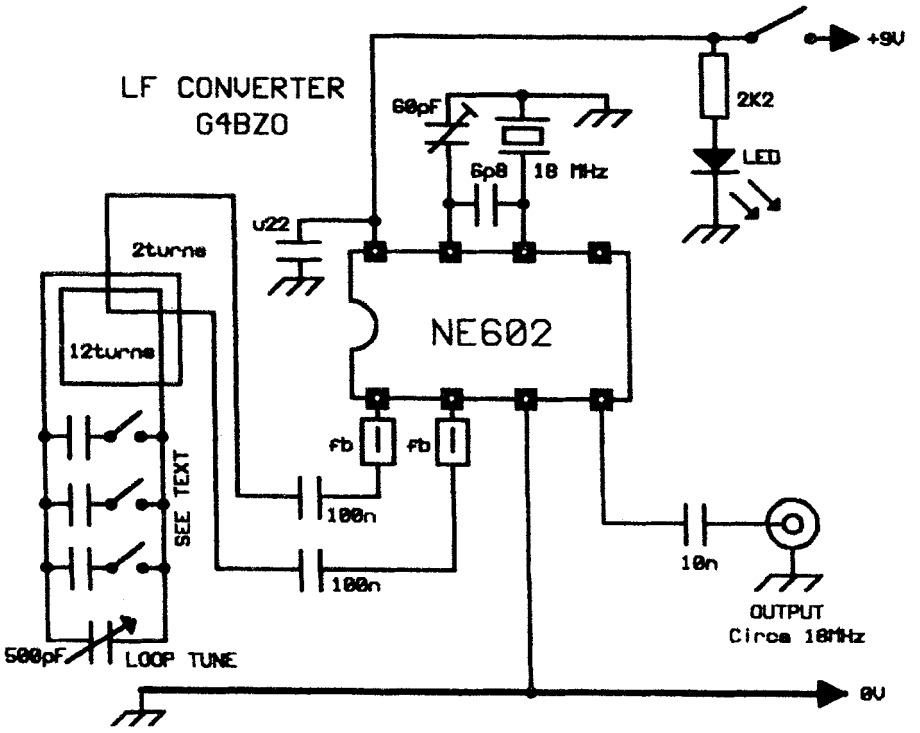
IAN BUTTERWORTH G4BZO

LOW FREQUENCY LISTENING

The author had been thinking about low frequency listening for some time; mainly for weather fax reception and collecting the non-directional beacons used by aircraft. The best way of doing this seemed to be with a loop antenna and this would probably require a balanced preamplifier for best results. This project got nowhere for some time and suffered a further setback when it became clear that there was much of interest below 150khz which is the lowest frequency covered by the authors receiver.

AMATEUR ALLOCATION

What was required then, was a converter to allow coverage of frequencies below 150 kHz. The arrival of the 73 kHz amateur allocation proved the final spur to getting something built.



CIRCUIT CONFIGURATION

An NE602 (also known as SA602) mixer/oscillator device was chosen. This device permits satisfactory performance from a very simple circuit and has a balanced input with a fairly high impedance (about 1000 Ohms) making it ideal for this application.

The Author's converter was built ugly fashion on a scrap of copper clad board. The whole unit including pp3 battery was built into a plastics box with the exception of the loop antenna.
A crystal oscillator at around 18mhz is mixed with the low frequency signals to produce a tunable IF of 18 MHz to 18.15 MHz. The author found a crystal in his junk box but an 18.000MHz CPU. crystal is readily available.
To check that the crystal oscillator is working, the circuit should be powered up while listening for the crystal oscillating on a nearby receiver tuned to 18.000 MHz. It may be helpful to turn on the receiver's BFO if it has one. Adjust the 60pf trimmer capacitor VC1 until the crystal is oscillating and producing the strongest signal. Note that there will be a fast and a slow side to this adjustment. The best setting is just on the slow side of maximum signal. Finally, switch the power off and then back on and check that the crystal oscillator starts promptly.

LOOP ANTENNA

The loop receiving aerial has long been a favourite with medium wave dx enthusiasts. The loop used in this project was made from 3 metres of computer ribbon cable. This had 14 conductors,12 were used to form the tuning computer ribbon cable. coil and 2 to form the coupling to the NE602. The two ends of the cable are joined to form a loop with no twists. The two ends of the cable must be offset by one turn to form the loop i.e. the far end of conductor 1 is joined to the near end of conductor 2. The near end of conductor 1 and the far end of conductor 2 then form a two-turn loop. The tuning coil consists of twelve turns formed in the same way.
The loop is tuned by a polyvaricon type variable capacitor of the type found in transistor radios. Both sections are connected in parallel to give the maximum tuning range.
Further fixed capacitors are introduced by toggle switches to tune the loop to lower frequencies. Starting with the polyvaricon at 500pf if each successive switch adds double the capacitance of the previous one then all values of capacitance up to twice the highest can be selected by switch combinations as follows.

Variable	Switch 1	Switch 2	Switch 3	Total
0-500pf	500pf	1000pf	2000pf	
	Off	Off	Off	0-500pF
	On	Off	Off	500-1000pF
	Off	On	Off	1000-1500pF
	On	On	Off	15000-2000pF
	Off	Off	On	2000-2500pF
	On	Off	On	2500-3000pF
	Off	On	On	3000-3500pF
	On	On	On	3500-3500pF

This arrangement can be extended to cover lower frequencies but the above was found to be suitable to the author's requirements, covering from below 50khz to above 350 KHz. The loop should be arranged in an approximately square shape in the vertical plane for receiving. The Author found that hanging the top of the loop from a shelf or open drawer was satisfactory.

If splattery interference can be heard at some frequencies this may be due to band 3 FM. broadcasts being received by the converter. This may be cured by slipping ferrite beads over each of the coupling loop leads as close as possible to the NE602.

IN OPERATION

The output of the converter should be connected to a receiver tuned to the vicinity of 18mhz. An increase in noise level should be heard with the converter powered up

The easiest way to test the converter is to tune to BBC radio 4 on 198khz. If an 18.000mhz crystal is used in the converter then tune your receiver to 18.198MHz (18198kHz). Try different switch settings and adjust the polyvaricon vc2 for the strongest signal.

Satisfactory operation can then be confirmed by trying for weaker signals for example on 117 or 134 kHz (receiver tuned to 18117 or 18134khz)

Happy low frequency listening.

A Useful Aid for the Hard of Hearing

Bill Durham G3DNE, 2 Meadow Cl. Kingston St Mary, TAUNTON. TA2 8JA

For the last few years the wearing of headphones has been a problem. I use national health type Aids for each ear and often have trouble with them becoming oscillators!! As the aids can be switched for induction use I made up a coil of some 20 turns of stranded insulated wire with a resistor in series equal to the output impedance of the audio out of the Rx.

The coil should be large enough to slip over the wearer's head, and hang round the neck, then switch to the T position of the aid(s). The improvement I found to be remarkable, so much so that a duplicate is used to listen to the TV, taking the audio out from the video into a small AF amp. For those who may wish to try the system there is much room to experiment for your own needs. As a point of safety DO NOT connect direct to a TV.

An Easy DDS

John Cooper G8GKU, 44 Yarnells Hill, North Hinksey, OXFORD. OX2 9BE

The title of this article aims to describe the ease with which a Direct Digital Synthesiser (DDS) can be assembled and tested. Initial testing may be carried out using a completely free programme which is available via the Analog Devices web site.

This implementation of the Analog Devices AD9830 is largely a direct crib of the recommended test circuit as may be found in the data sheet for the device. Added value includes low pass filters and an output amplifier. Although the AD9830 device is specified as maximum RF output of 25MHz, it has been found consistently that the devices will work with a 60MHz clock thus enabling 30MHz maximum RF, this is only the personal finding of G8GKU and is not to be taken as proven. However for the vast majority of users the frequencies below 25MHz are of main interest.

Circuit description.

As there is so little to describe, this is a fairly short section. Firstly an introduction to the computer interface. This is provided by a group of connections comprising eight data lines, three address lines, a reset line, data latch controls and a write signal. Other inputs to the circuit as a whole are provided to select which one of two frequency control registers is selected as the active one. Other inputs allow the user to select one of four phase modulation registers, which may be programmed to provide phase modulation of the generated RF output. With the exception of the power supply and the RF output all other I/O are at standard 5V CMOS voltage levels. As per the maker's test circuit, the connections to the unit are named in accordance with the Centronics (tm) parallel port connector.

A list of the ***programming*** inputs and their function(s) follows :-

D[0..7]	binary data, active high.
RESET	AD9830 internal reset, active low.
WRITE	AD9830 internal write, active low.
LATCH	interface latch, low order 8 bits, active rising edge.
LOAD	interface latch, high order 8 bits, active rising edge.

The following are mentioned but not over visible in the circuit diagram, being in parallel with the Data bus D[0..2] lines:-

A[0..2]	AD9830 internal register binary address, active high.

A list of the ***user control*** inputs and their function(s) follows :-

FREQSEL	selects active frequency register, low is reg. 0, high is reg. 1.
PSEL0	Phase registers address bit 0.
PSEL1	Phase registers address bit 1.

Other inputs.

GROUND	Signal ground reference.
RF out	50 Ohm RF output.
+12V	Power supply input.

A tour of the main silicon items next.
Primary device is of course the AD9830 DDS I.C. Its purpose is to carry out very fast but relatively simple arithmetic, this results in a numerical value which when placed into a sine look-up table provides a sampled RF sine wave output.

Providing binary data to the AD9830 are two 8 bit data latches U3, U4. These two latches obtain their data in turn from the common 8 bit data bus which connects to their inputs. U3 and U4 store data under the control of the clock signal fed to pin 11 of each I.C.

All DDS units require a master clock in order to operate. In this design the clock is provided by a standard metal can crystal oscillator, Y1. Readers will see that at the output of Y1 there is a means of applying a variable DC bias to the clock input of the DDS. This is nothing to do with the DDS I.C. whatever. The reason for RV1 is simply that during work with other DDS systems using similar canned oscillators the author has noted that some oscillators do not actually produce a large enough output signal, i.e. the logic swing is sometimes not "rail to rail". It was found that by placing the clock signal onto a DC pedestal that this problem is easily overcome. It is unlikely that most users will actually need to fit RV1 or R9, C15, simply leave them out.

Post DDS filters.
U7, U8 are provided to remove the higher harmonic content of the RF signal and any feed-through of the DDS clock signal. These 30 MHz low pass filters are made by Minicircuits. Some constructors may feel that only one filter is needed. In the spirit of home brew there is no reason why constructors could not refer to a source such as the ARRL hand book and make up a filter consisting of, perhaps, three inductors and a suitable number of capacitors, mounting the arrangement in the PCB holes where the filter(s) sit. To be clinically correct the first filter input U7, i.e. from the DDS, should also be terminated in such a manner that the rejected H.F. has a 50 ohm path to ground. This was tried but gave no visible gain and was omitted, if a constructor wishes to add this H.F. termination it may be added below the board, across the input pins of the first filter.

Post filter amplifier.
In order to provide an output signal that is of practical use, a broad band monolithic amplifier is used, Minicircuits type MAR3SM. This amplifier is prefaced by an attenuator which provides a moderately good termination for the last filter and also sets the signal level to such that the amplifier output is not compressed. In the units built an output of 800mV peak to peak into 50 ohms is obtained. Physical pin-out of the MAR3SM is the industry standard four pin type, with two opposing grounds and with opposite in and out pins. If a constructor wishes to use a different amplifier the pin out should fit most standard types. Changes may be needed to the amplifier supply voltage and the value of R2. L1, a DC feed choke in the supply to the MAR3Sm may be made using a ferrite bead with two or three turns of suitably thin enamelled wire.

Remaining circuitry.
Two regulators provide +5V for the logic devices and +9V for the output amplifier. There may be some temptation to fit only the +5V logic regulator and simply feed the output amplifier

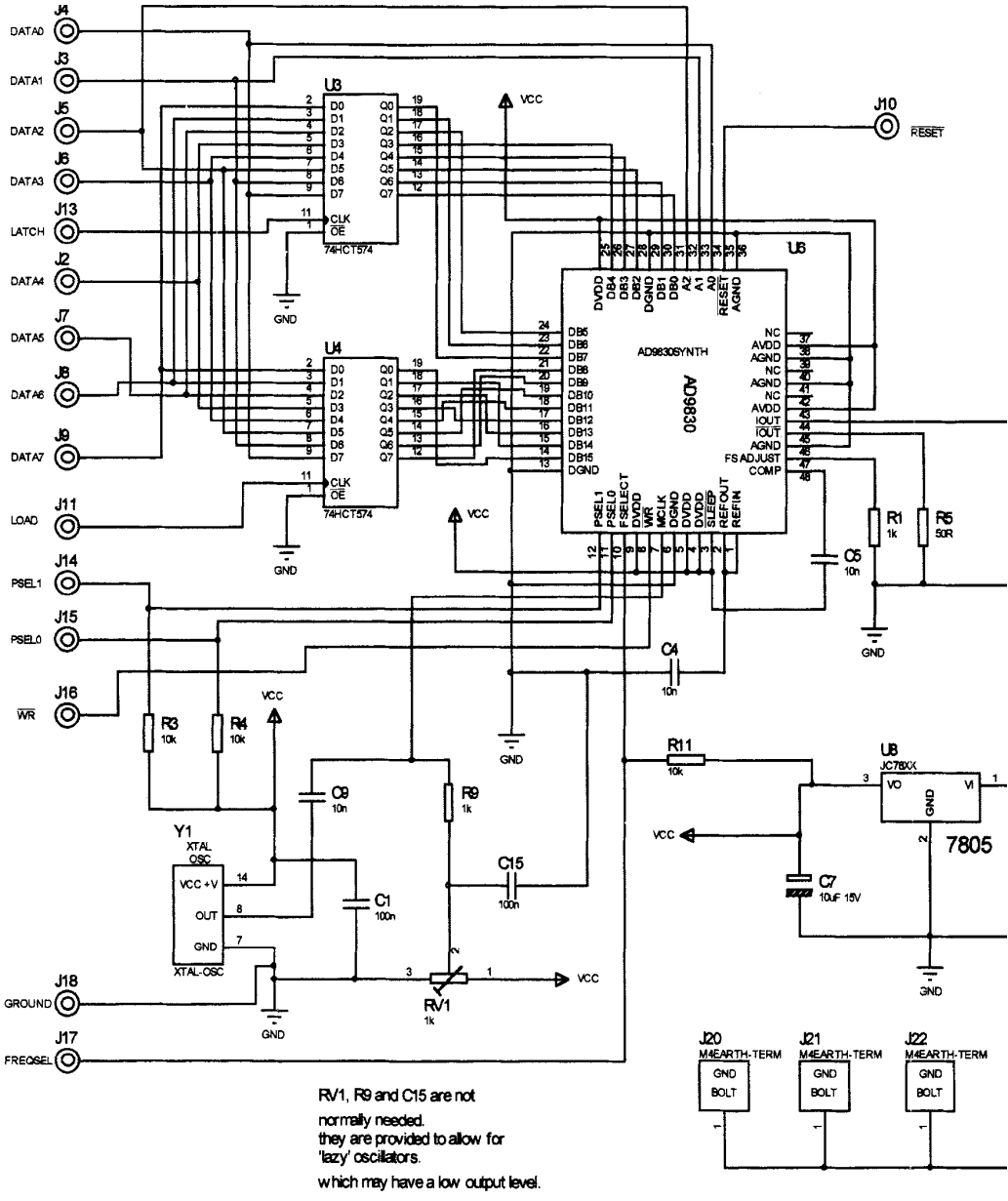
directly from the +12 supply, with a modified value for R2. This of course would work, however, any noise or power supply hum / ripple would be seen on the RF output as amplitude modulation of the RF envelope, this in most cases would be unwanted. If real A.M. is needed, then driving the DAC reference voltage with a suitable signal may be a better idea! Anyone tried this yet?

In its present form this DDS unit does not have a friendly PIC, shaft encoder, display and key pad wired to it. It is the intention of the author to add these feature later, possibly next SPRAT. However, with the high volume of skill in the readership of SPRAT, it is very likely that someone will hook up this unit to a PIC 16F84 and few cheap CMOS logic devices and thus add the remainder of the items need to a produce the typical knob controlled DDS VFO, publishing the design in the next SPRAT. The challenge is set! Readers may wish to know that a free PIC16C84 C compiler is now on the web, address in the reference section. All timing and other information required for programming the AD9830 is to be found in the datasheet.

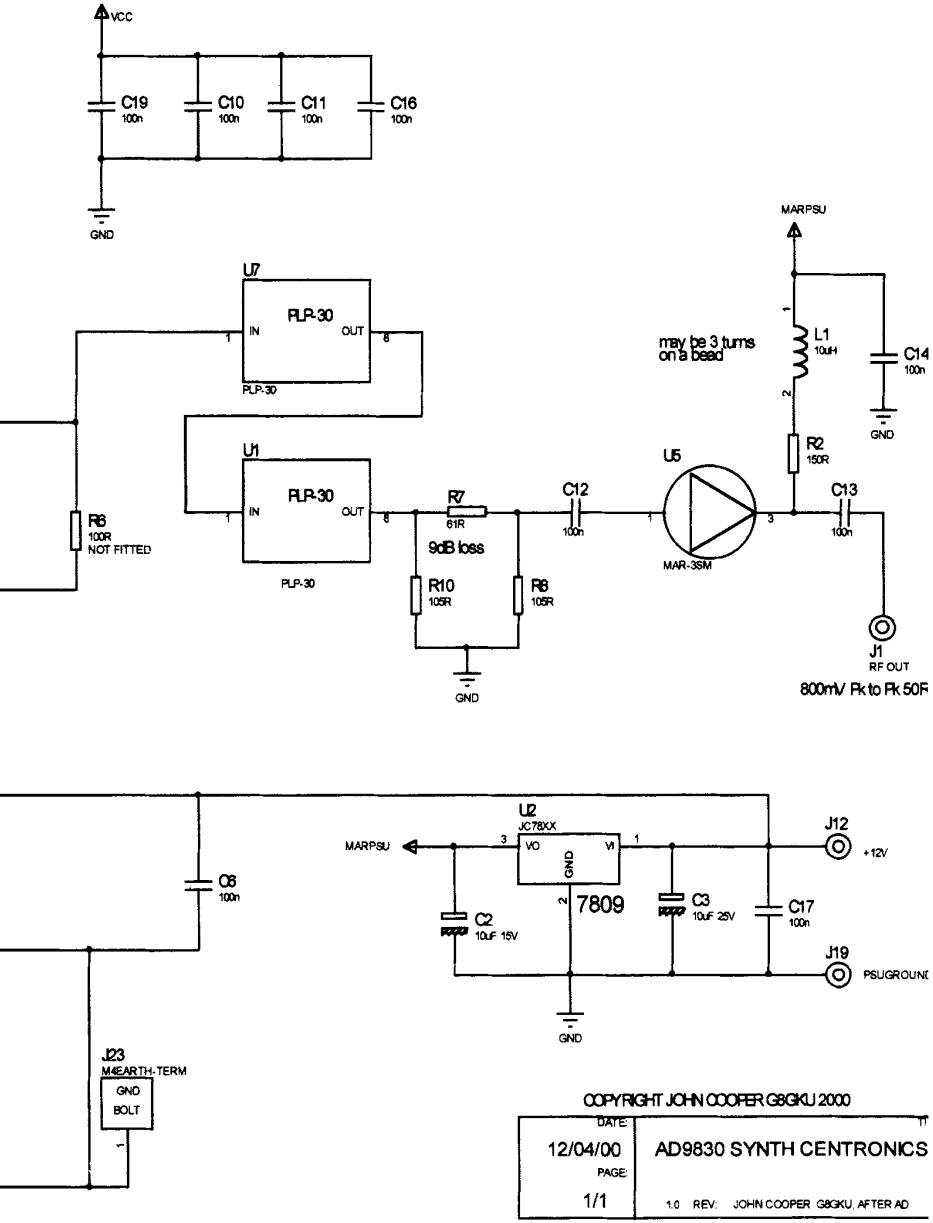
Construction.

The physical size of the pins associated with the AD9830 together with the high frequency signals dictate that a PCB is to be used if any realistic reproducibility is to be achieved. I have designed a working PCB, and have had a test batch made. Units built thus far have worked first time without problem. Should there by sufficient interest PCB's can be obtained from me. As the quantity of PCBs made directly dictates the price it is difficult to state a price here, however it is unlikely to be below £15 each, for small quantities. The PCB is of plated though hole style and has ground plane fill as per good RF practice. Standard size silicon size parts are used, but the small R and C parts are surface mount, (SMT) If need be, due to lack of SMT parts, conventional but **small** R and C parts may be soldered to the SMT pads. A full parts list and layout diagram are available with the PCB. Copyright of the PCB and the overall implementation remains with G8GKU. This design being presented for individual amateur use only.

The AD9830 and other parts may be obtained from several sources, RS part numbers are given below, readers are advised to check part numbers prior to placing any order.
UK telephone number for RS is 01536 201201.
AD9830 RS pt number 231-5269 74HCT574 RS pt number 650-150



RV1, R9 and C15 are not normally needed.
they are provided to allow for 'lazy' oscillators.
which may have a low output level.


VCC
C19
100n
C10
100n
C11
100n
C16
100n
GND
U7
PLP-30
IN
OUT
PLP-30
U1
PLP-30
IN
OUT
PLP-30
R6
100R
NOT FITTED
R7
61R
9dB loss
R10
105R
R8
105R
GND
C12
100n
U5
MAR-3SM
MARPSU
may be 3 turns
on a bead
L1
10uH
C14
100n
GND
R2
150R
C13
100n
J1
RF OUT
800mV Pk to Pk 50R
C6
100n
U2
JC78XX
MARPSU
VO
GND
VI
7809
C2
10uF 15V
C3
10uF 25V
C17
100n
J12
+12V
J19
PSUGROUND
GND
J23
M4EARTH-TERM
GND
BOLT
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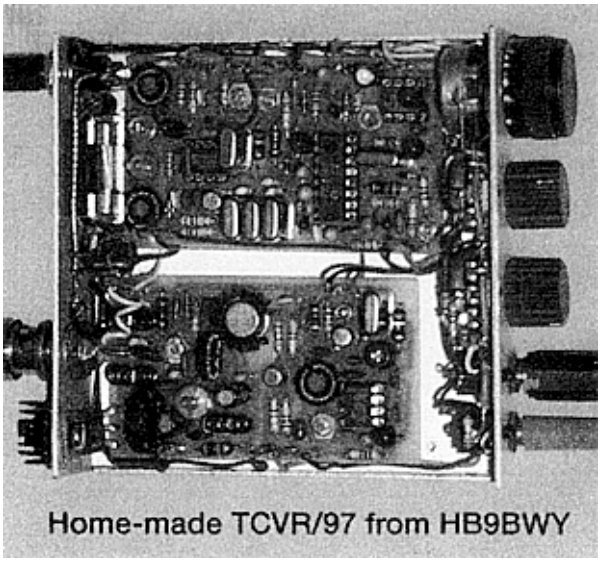
AD9830 SYNTH CENTRONICS
1.0 REV: JOHN COOPER G8GKU, AFTER AD

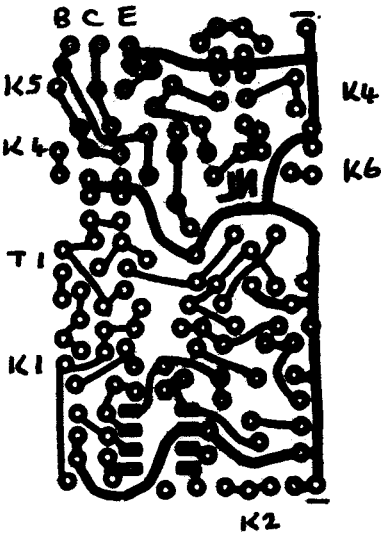
QRP Transceivers using Wide Range VXOs : Part 2

Norbert Litz HB9BWY, Pappelweg 7, SACHSELN, CH-6072. SWITZERLAND

Following the receiver section of the HB9BWY Transceiver, in SPRAT 102, Norbert has submitted the transmitter section of his transceiver. The band signal is obtained from the FET buffer of the receiver NE602 mixer as shown in the receiver diagram in issue 102.

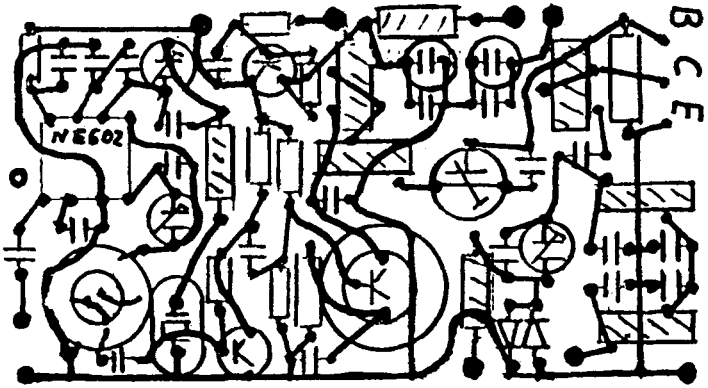


LATEST VERSION OF TRANSCEIVER



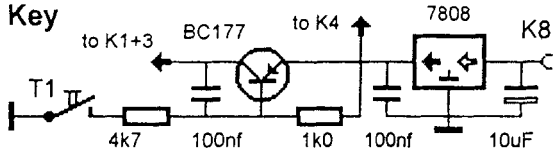
FULL-SIZE PCB LAYOUT

COMPONENT LAYOUT



TX from HB9BWY Norbert Litz Pappelweg 7 CH 6072 Sachseln

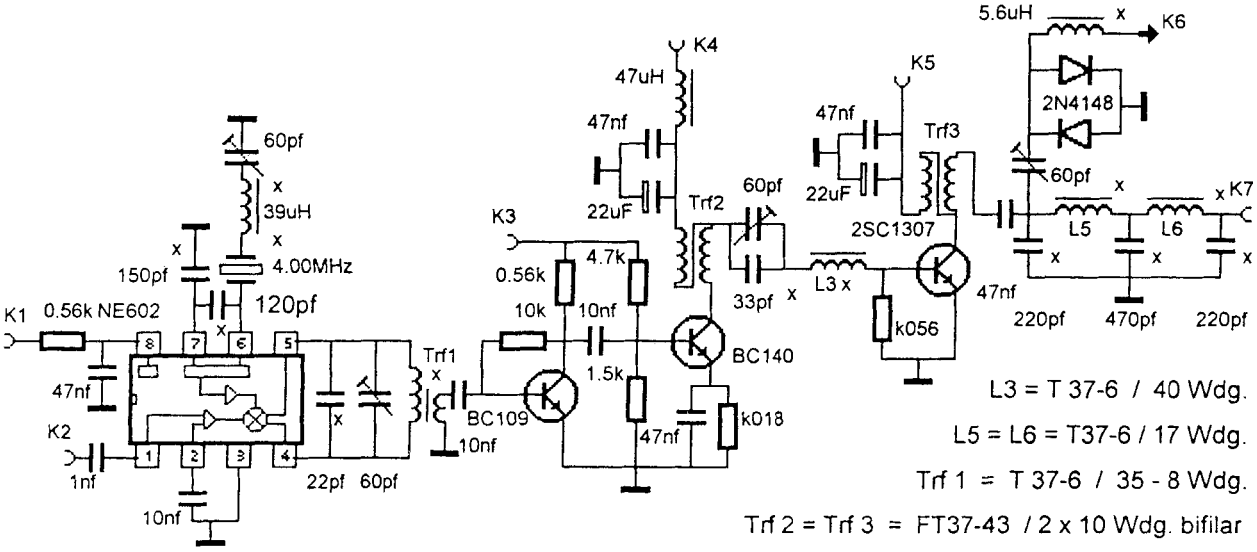
Variante 30 m band Other bands change "x" New Software in 1999 / Li



K1 + K3 = from Key K2 = from VXO - buffer

K4 = 8 V stab. from Key K5 = K8 = 10 - 13 Volt

K6 = to RX K7 = from Ant.



L3 = T 37-6 / 40 Wdg.

L5 = L6 = T37-6 / 17 Wdg.

Trf 1 = T 37-6 / 35 - 8 Wdg.

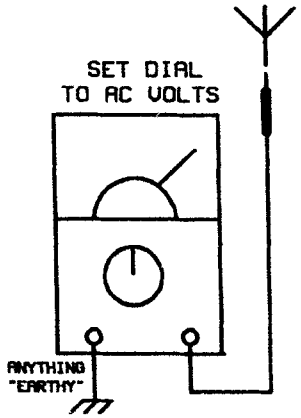
Trf 2 = Trf 3 = FT37-43 / 2 x 10 Wdg. bifilar

Mixer Oscillator Filter Preamplifier Filter Amplifier Filter

Balanced Feeder Mod for T- Match ATUs
Some notes from GM3MXN

When modifying a T-Match ATU (such as the MFJ ATU) for balanced feeder, the use of a 4 to 1 balun on the output side is bad practice and can lead to losses, it is much better to place the balun on the input side, and if it is a choke balun it will make the ATU balanced, if not grounded, I know that the purists will say a wood or plastic box should be used , but in practice I have found that the balance is good.

I have a 1 to 1 choke balun on the input side made by winding 20 turns RG58U coax on each of 2 ferrite rods in series, and on the output side I use the coax socket to feed the balanced output. The only drawback is a slight hand capacity but I can tune every band including 50 MHz and don't use QRO as you could get an RF burn from the case, no trouble with QRP. No earth should be connected, unless coax feeder is used.



No-Cost Field Strength Meter

John Gardner GW4KVJ, Y Blanfa, Nelson Rd, Yvstrad Mynach, Hengoed. CF82 7EG

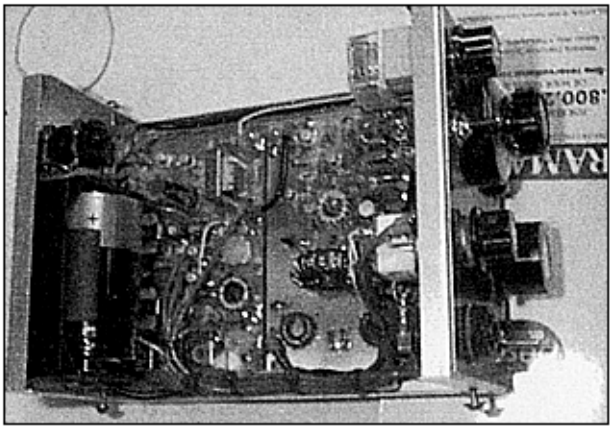
I discovered this idea by accident.
Using a multimeter on the AC ranges - grounding the negative lead and raising the positive as an antenna makes a simple FS Meter.
It may be a useful idea to SPRAT readers.

G QRP CLUB MEMBERS TRIUMPH AT DAYTON

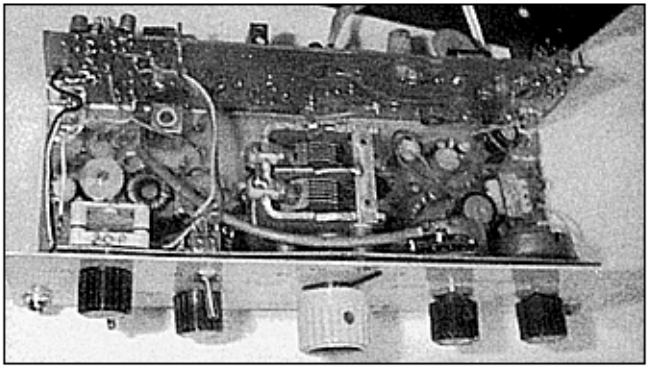
First and Second Prizes in Construction Contest

THE ONE-VOLT CHALLENGE: Design a transceiver of any kind that will function satisfactorily over a range of about 1.0 to 1.6 volts.

Readers may recall the "One Volt Challenge" issued in SPRAT 101. The challenge was issued for the Four Days In May event at the Dayton Hamvention. G3RJV offered to take any UK member's entries and submit them for judgement to Wayne Burdick, N6KR and Jim Kortge, K8IQY.
Two UK entries were taken to Dayton : The "Hamoeba" by Duncan Walters, G4DFV and a TRF Transceiver by Chas Fletcher, G3DXZ.
The G4DFV design won first prize and the G3DXZ design won second prize.
Well done to both of them!



The First Prize HAMOEBA 30mTransceiver by G4DFV.



The Second Prize TRF Transceiver By G3DXZ

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

TWO ANTENNA IDEAS FROM MoAJL

The OCFD-L

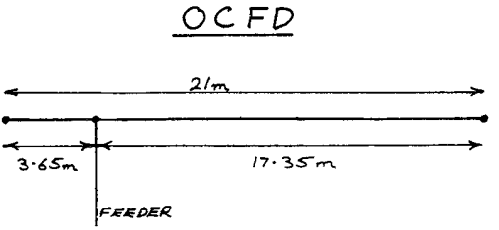


FIG 1

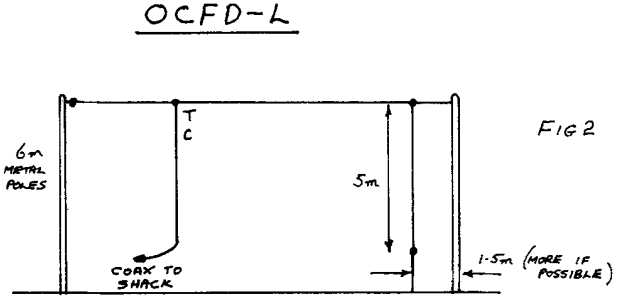


FIG 2

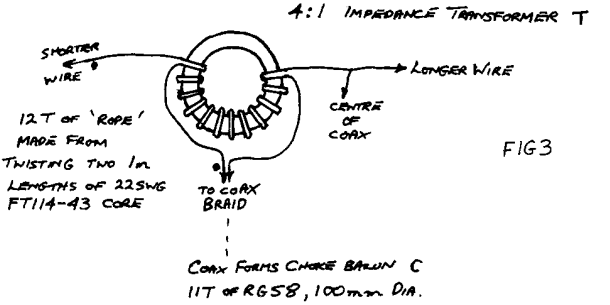


FIG3

This off centre fed dipole is intended for 40,20,15 and 10 metres. It was originally computer simulated by K1POO then modified by MoAOP/K4DG (refs 1 and 2) The basic design is shown in Fig. 1, and my space saving inverted L version in Fig 2. On 20,15 and 10 metres the current maximum is well up the vertical portion. Th feedpoint is slightly reactive and the Z averages 200 ohms. The 4:1 impedance

matching transformer of Fig 3 gives a 1:1 match into 50 ohms over the range 5-29 MHZ and easily handles 10W. The choke balun is an essential item in this version: it should be wound close to the transformed . The antenna had to be shortened by about 10 cm from the original design when using this version. Adjust the number of turns in the choke balun for best vswr on 40m. The vswr on this version is not as good as the fully horizontal version, but is good on 15m and not worse than 2:1 on the other Bands. It will also load on the 3 WARC bands. I was short of time for extensive trimming for best performance, so it may be even better if very carefully adjusted.
(Refl Electronics World Nov 96 and Tech Topics Radcom Mar 97.
Ref2 Tech Topics Radcom July 97).

A 40 Metre inverted L with a co-axial cable radial

To get this antenna into my garden (and avoid XYL problems) I used the G2HCG Controlled Feeder Radiation idea (Ref 3). Fig 4 shows the layout used. By inserting the choke balun a quarter wavelength along the co-ax feeder the braid in this section becomes a radial and radiates. The antenna section is 0.3 wavelength and is resonated by means of a 150p,350V series capacitor housed in a plastic box at the ground stake.

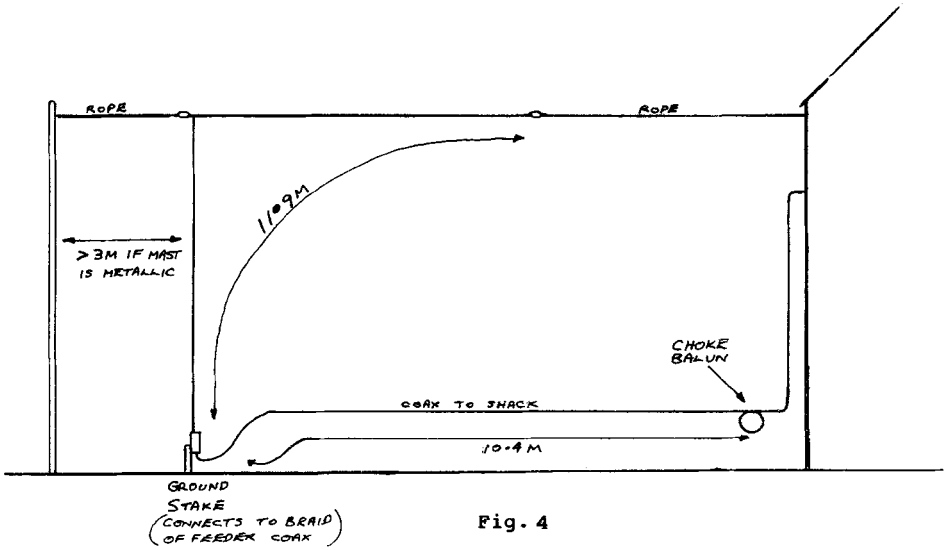


Fig. 4

This arrangement gives 50 ohms at the feed point and moves the current maximum up the vertical section. The choke balun is 10 turns of RG58 feeder wound on a 15cm diameter former . By slightly varying its position best swt can be obtained. Using this method and slight trimming of the wire part of the antenna vswr of between 1 and 1.2 was obtained over 7 -7.05 Mhz.

(Ref 3. G2HCG Radcom May 1990 and July 1991)

MoAJL Antennas (Cont)

Address; M. Eales, MoAJL, 137 heron Way, Upminster, RM14 1EE

THE BERLIN SLOPER

Bernd Zander, DL6YCG, Illzacherweg 11, D-12109, Berlin.

For many years I have enjoyed working /p from a local park during the summer. For a time I used an inverted V dipole supported by the branch of a tree, but I was not happy with the heavy co-ax feeder required for this antenna. Reading through some articles about ex-East Block clandestine radios I found the idea for the Berlin Sloper. My version is for the 7 MHz band. It consists of a quartr wave sloping wire hung from the branch of a tree, and a counterpoise 10m long. The counterpoise is supported on canes or plastic stakes at about 0,5 metre above ground. The antenna is fed via a small atu such as an L-network. The 7 MHz performance is good. It is slightly directive in the direction of the slope, but all Europe has been worked with good signal reports

AWARD NEWS

QRP MASTER. The following are welcomed to the Worshipful Company. G4JGY, DL2LQC, GoMOU.

QRP COUNTRIES. 100 GoKZO, 75 G0MOU, G4GJY, 50 G4LDS,GWoVSW. Particularly note Eva,GoKZO, our first lady to make the hundred. Well done !

WORKED G QRP CLUB. 1340 GM3OXX (Wow!!), 520 G4NBI, 460 GoKCA, 360 G4JZO, 200 GoUTF, 160 G3FNM, DL1HTX, 140 DL2DWP, GWoVSW, 100 GoTAK,80 DL2LQC, 20 G3HOH

TWO-WAY QRP. 30 GWoVSW, 10 G3AIO.

Hearty congratulations to all the above.

If you are thinking about going for one or more of the Club Awards now is an excellent time to start. Various people forecast that the present sunspot cycle would peak around now, and conditions have certainly been excellent so far this year, and particularly during the past few weeks. When you can hear a PY1 calling CQ (not CQ DX) on 7 MHz, call him with 3 watts and have a QSO with him conditions cannot be bad , particularly if only a simple back garden antenna is being used ! Apart from the fact that there is a lot of fun in QRP award hunting, the activity generated helps protect our QRP frequencies and show what QRP can do.

THE QRP MASTER CLASP has been approved by the Committee. News of how QRP Masters can obtain one will appear in our next issue.

G QRP CLUB ANNOUNCEMENTS

Silent Key : Frank Lee, G3YCC

We regret to announce the death of Frank, G3YCC. A keen QRP, operator, and founder member of the club, Frank was also well-known for his extensive QRP Website. Frank has been the G QRP Club Sales Officer for some years.

GQRP Club Sales

Prior to the death of G3YCC, Graham, G3MFJ, had taken over the club sales because of Frank's ill health.

For all items listed formerly from G3YCC, the new address for orders is Graham Firth, G3MFJ, 13 Wynmore Drive, Bramhope, LEEDS. LS16 9DQ
Currently available:
Radio Projects for the Amateur by VK3XU. £6 + £1.25 UK post [EEC £2.90]
Low Power Communications Vol 3 Rich Arland. £8 + £1.25 UK post
6 pole 9MHz SSB crystal filter 2.2kHz @ 6dB, 500Ω in/out £12 [50p post]
Pair LSB/USB carrier crystals HC18U [9MHz +/- 1.5kHz] £6 a pair
6 pole 9MHz CW crystal filter 500Hz @ 6dB, 50Ω in/out £12 [50p post]
88mH Toroids - 2 for £2 [60p post]
LT700 [type] Transformers £1 each post free.
NE602 *[SA602]* at £1.75 each. MC1350 at £2.25 each [both inc post]
IRF510 Power FETs £1.25 each [inc post]

G QRP - DOT - COM

New Internet Addresses for Club Site and Club Officers

The new address for the club website is www.gqrp.com

The club officers all now share a common ISP address so for emails to officers use:

Sprat & General Secretarial Matters: g3rjv@gqrp.com
Membership Queries & Subscriptions: g0bxo@gqrp.com
Club Sales & Callsign/QTH changes: g3mfj@gqrp.com
Members Handbook & Accounts: g3pdl@gqrp.com
Communications Manager: g3xjs@gqrp.com
QSL Bureau / Cards in/out: g4jfn@gqrp.com
SPRAT Index & Website : g4wif@gqrp.com
Construction Advice: g3roo@gqrp.com
Morse Tapes : g3vtt@gqrp.com
Members News [SPRAT] : g4bue@gqrp.com
Novice [SPRAT] : g4raw@gqrp.com
VHF [SPRAT] : g8seq@gqrp.com
SSB [SPRAT] : g0bps@gqrp.com

COMMUNICATIONS AND CONTESTS

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

My efforts in the last issue to simplify my email address have now taken another slight twist, with the advent of the Club's new "gqrp.com" facility. You'll see my new email address at the top of the column, but "g3xjs@qsl.net" will still work, as does good old snail mail. Packet radio, however, is no longer an option.

SOMERSET HOMEBREW CONTEST

Support for this year's event was quite good, and an improvement compared with the last year or two. I sampled the activity on the bands myself, and had no difficulty finding plenty of participants. In total 12 logs were received, and my thanks go to G4MQC, G0OTE, RW3AI, G4APO, G3VAJ, PA9RZ, F5SSI, G0JJI, OK1DZD, G3WDS, GW0EGH and G4GLV. You'll notice 4 logs from overseas, which is pleasing indeed.

There was a good range of equipment used, including (fittingly) three Somerset Tauntons. It was also good to see a nice mix of cw and ssb activity, so those members not so keen on cw events should perhaps make a note in their diary to enter next year's Somerset HBC. When is it? Well, I'm not sure yet, but watch this space.

In the meantime, our congratulations go to Rowland, G4APO, who used his K2 to great effect, winning the contest with a score of 105 points from 21 cw qso's. He has very kindly donated his prize to the Club, and as a result George will be sending a Walford Electronics 20m Minehead to a deserving overseas amateur. At the time of writing, the identity of the lucky recipient has not been finalised, but I shall let you know in the next issue. I must say, Rowland's generous offer says everything about members of the G-QRP Club, and the QRP movement in general.

Ian, G3VAJ, claimed second place scoring 59 points with an all 40m ssb entry, making 19 qso's (including LX, DJ and RW2). I will also need to update the news about the runner-up prize because Tim has suggested a (cw only) Sparkford as Ian's prize, but the matter is still under debate, Hi! Anyway, congratulations to Ian, and I hope his entry will be an inspiration for other QRP ssb operators.

The slight change of times, and inclusion of 40m, have definitely produced a greater number of entries, and so the event will be held again next year under similar rules as this time. Our thanks to Tim for his continuing support for this event.

CZEBRIS 2000

Once again, a disappointingly low number of entries, but thanks go to RW3AI, LY2FE, G4MRH, H3HKO, G4MQC and G3ESP for their support. The scoring method led to errors in some of the claimed scores, and I have had to adjust them accordingly. Therefore, I will try and make presentation of the rules in SPRAT easier next time around. However, Stan G4MQC has (once again) submitted a fine entry, with 115 points scored from 49 qso's, to be this year's

winner. Well done Stan. Congratulations also go to the runner-up Valery, KW3A1. His 43 qso's scored 98 points.

A question posed by many was, "Where were all the OK/OM stations?" It is a pity that the event has not been better supported by our OK/OM colleagues in recent years, so let's all try and make amends next year.

G4EDG should be congratulated for filling first place in the AGCW 1999 Summer Contest (scoring almost twice as many points as the 2nd place entry), and for winning the 5 watt section of the July 1999 'O QRP Contest'. His equipment was a JR599 Rx and homebrew 5 watt Tx, with a Dx-33 3 ele tri-bander and 80/40m trapped dipole. **G4ELZ** was also successful, winning the VLP section of the same AGCW contest, scoring more than three times the number of points as the runner-up.

16th YEOVIL QRP CONVENTION

Attendance at this year's Convention exceeded 2000, underlining the popularity of this annual event. 28 Yeovil club members, visitors and guests enjoyed the Dinner on the Saturday evening, including an entertaining after dinner speech given by Tim Walford.

Lectures on the Sunday were given by G3MYM (Aerial Radiation Patterns), G0SOF (Look Out, Digital TV's About!) and G0MDK (Tesla Coil). Unusually, no entries were received for the Challenge Construction Contest this year - maybe last year's winner (G3KLT) set a challenge which proved too demanding! In the main hall, the traders were busy selling their (QRP) wares, and the caterer was serving a fine selection of food and drink.

At lunch time, presentation of the Yeovil FunRun CW Contest certificates were made by G3ICO to: G3LHJ for best 80m score, G3CQR for best 40m score, and G3BPM for best overall score.

The day was rounded off with a QRP Forum, and a panel of Yeovil and G-QRP Club members fielded questions from 20+ visitors until well after closing time. The date to note for next year's Convention is Sunday 22nd April 2001.

As the summer approaches, maybe your thought are turning to some QRP operation from a holiday location. If you think it might be of interest to others (perhaps it will be from a rare, or unusual, Dx location) let me know and I will do my best to give you some publicity, including an entry on my Website: "http://www.qsl.net/g3xjs".

The deadline for SPRAT 104 is 7th August, and in the meantime I hope summer time conditions are not too bad, and that you all have plenty of QRP FUN.

72 de ORPeter

VHF MANAGER'S REPORT

John Beech G8SEQ, 124 Belgrave Road Wyken Coventry CV2 5BH
Tel: 024 76 617367;
Fax: 024 76 611654; E-mail: john8seq@discover.co.uk; Packet: G8SEQ@GB7COV

Over the last few years I have been experimenting with omni-directional antennas for the vhf-uhf bands which will give a horizontally polarized signal , ideal for Dx working on CW/SSB. Starting with one for 4m some five years ago, I have now built one for 2m & 6m and a quad version for 70 cm. I also have one under construction for 10m. Shown here is the double turnstile version suitable for 2,4 or 6m.

The dipole centres are standard X-types with the centres bored out on a lathe to fit onto a 25 mm aluminium tube, with a pinch-screw. The phasing harness is made from standard coaxial cables RG58 & 2002 (75 ohm ethernet cable) for the 2m and 4m versions. However I have been experimenting with RG174 and 3002 ethernet cable which are much thinner & therfore easier to fit inside the tube. I have also been experimenting with a different arrangement which should give a better match to 50 ohms. The quad version uses a similar construction, but a different arrangement for phasing. The 10 m version uses 37 mm tube and some plastic U-clamps with dielectric internal and external spreaders . The elements are made of 18,12 & 8 mm thin walled aluminium tubing and is generally of much more robust construction. If you want details of these two latter antennas I suggest you send me a large SASE.

All the antennas have a main lobe which is aimed three degrees above the horizon with 12 dBi gain when mounted an odd multiple of a half wave above the ground (the 70 cm version should have 15 dBi gain, but the losses are higher in the phasing harness.)

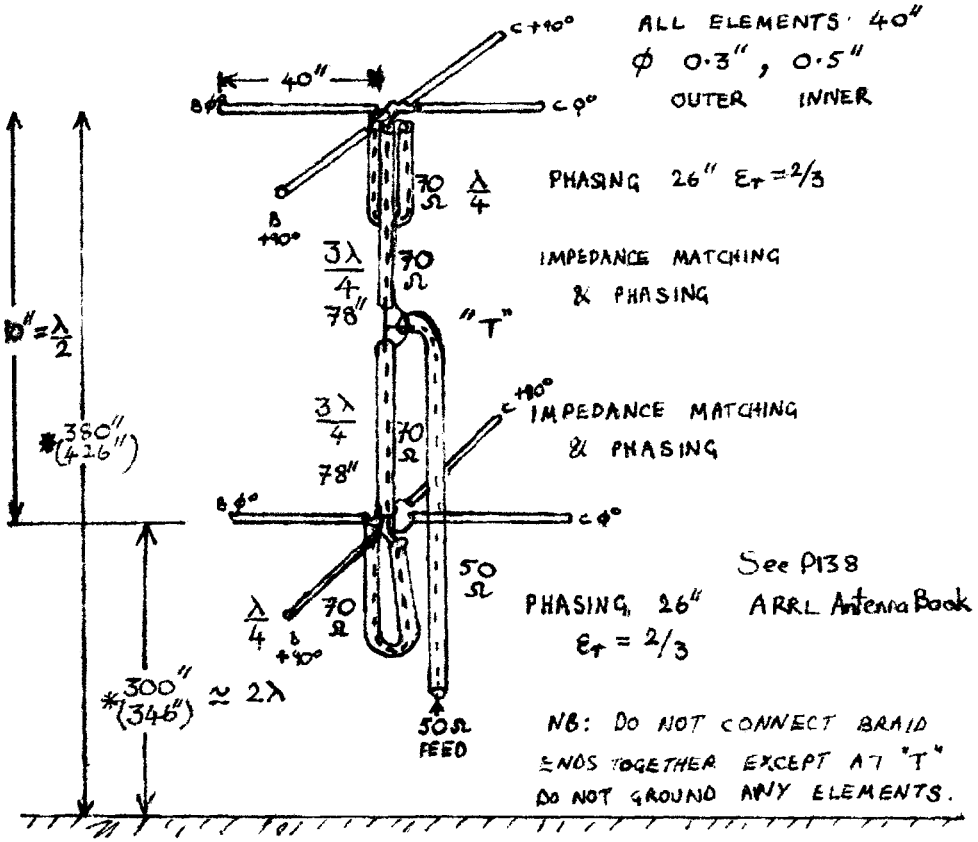
73 de John G8SEQ

Text for Diagram:

The phasing and impedance matching networks have been calculated for 70Ω cable with a velocity factor of 0.66 [solid dielectric] . The cables are all mounted inside the aluminium supporting mast of 25mm approx. internal diameter. This section is then bolted to a 2" diamter aluminium pole to raise the whole structure above roof level.

****These are the dimensions used in ELNEC to analyse performance; figures in brackets are Home QTH ; other figures are contest QTH***

70MHz DOUBLE TURNSTILE ANTENNA



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

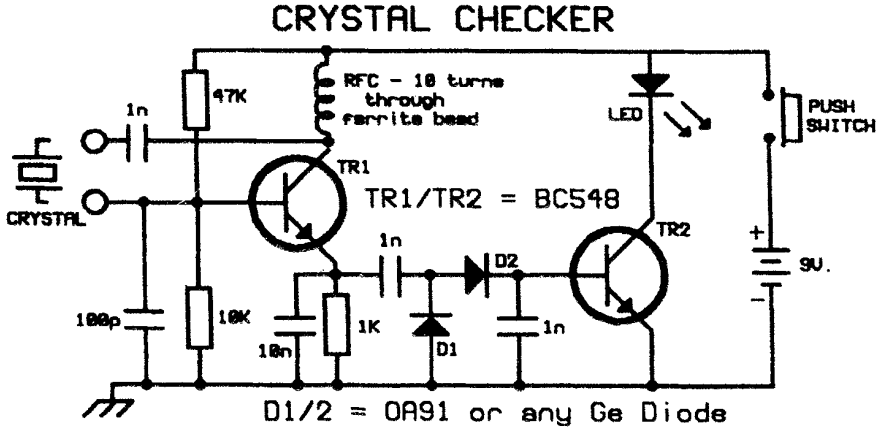
FOR SALE:-LDG QRP AUTO ATU 0.5 TO 30W .New, perfect working order. £100.
MFJ AUTOTUNER EXTENDER. £25. TOM GM3MXN. Tel 01698 330248
gm3mxn@tsorbie.fsnet.co.uk

FOR SALE: MQ-2 Antenna, it works on 20,17,15,12.10 & 6M bands. Fairly new and complete with instructions and box. £275 ono. Watson WDB30 2m/70cm 30W power amplifier £35 ono. Microset RU20 70cm linear amp. 20W with RX preamp £20. Microset 2m/70cm linear amp, 20W with RX preamp £27. Call David Rowlands on 01322 381303, or write to 7 Broomfield Road, Swanscombe, Kent. DA10 0LU.

NOVICE NEWS **Steve Ortmayer G4RAW**
14 The Crescent, Hipperholme, Halifax. HX3 8NQ. Tel: 01422-203062
email: ortmayer@hotmail.com

BEST THING IN THE SHACK.

We must all have a piece of equipment that we find most useful and would not like to be without. Mine is s crystal checker which glows an LED when the crystal is oscillating. It is most useful as a signal source for checking receivers as well as checking crystals. I have other circuits but they do not have an LED so you can never be sure that the crystal is oscillating and it is possible that the receiver is dead. My circuit came from an old Short Wave Mag and was by G3RJV. I cannot find the original circuit but it looks like the one from the website of peter, VK3YE. Two croc clips are used to hold the crystal.



NEWS FROM WALES.

Eileen, 2W1BPS has sent details of a neat NICAD charger built into a car cigar lighter plug. In the plug body is a %w car bulb in series with the "pos" lead to provide a current limit. There is also a 2A fuse. The unit is used to charge C cells but I am sure it could be adapted for other types.

NEWS ~ What are you Novice members up to? Please let me know.

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

FOR SALE: Partridge Joymatch ATU (L Match) £15 [inc P.P.] Morse Key WT8 AMP on wooden base £12.50 [inc P.P.] Gary Fisher GØWTL, 6 Totternhoe Rd. Dunstable, Beds LU6 2AG Tel: 01582 - 661856.

WANTED: OAK HILLS RESEARCH "QRP SPIRIT" in good order 80/40/30m. Jim, GØNTR. QTHR or Mobile 07713 926255.

COLLECTOR wants pre-1945 QSL Cards. Would gladly reimburse mailing expenses. Jack Hotchkiss, W7CNL, 3708 Hawthorne Drive, Boise, Idaho 83703. USA. [GQRP 9559]

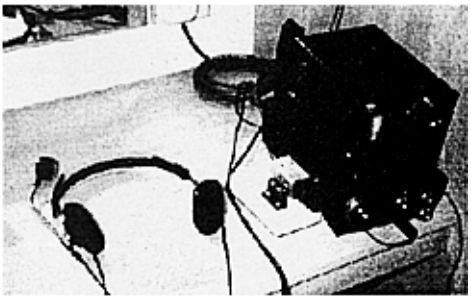
MEMBERS' NEWS

by Chris Page G4BUE

Highcroft Farmhouse, Gay Street,
Pulborough, West Sussex RH20 2HJ.
Tel: 01798 815711 Fax: 01798 813054
E-mail: g4bue@infinnet.co.uk
Packet: GB7DXS on UK DX PacketCluster

Kurt, **HB9AMZ**, is now QRV as **HSØZBS** and has worked two-way QRP with Udo, **DL9HCE**, during his recent QRP Pacific DXpedition. **G3XJS** worked Udo as **ZK1HCU** on 28 March on two-way QRP and has also QSO'd Kurt. **NL7DS** was planning to be QRV CW on 28110kHz from Finger Mountain, Alaska with QRP at the beginning of March, offering a *Certificate of Contact* instead of a QSL for all QSOs. Durell said "Because I will be mushing dogs to this area my equipment list will be small. An HTX 100, my Iambic keyer and paddles, and enough wire and insulators to string an antenna, plus a twelve volt battery and solar charger". He was hoping to work European QRPers and I wonder if anyone made a QSO with him?

GM3MXN worked **J3/K4LTA** in February to bring his QRP DXCC to 187. As a result of contacting the RSGB about the interference to 14060kHz being caused by the Feld-Hell mode, David Waterworth (the new Chief Morse Examiner?) has told Tom "that Hellschrieber mode is a facsimile mode, therefore the enthusiasts of Hell mode cannot justify saying its a CW mode and operating on or near 14060mhz causing QRM".



Shown above is **G4BJM**'s 80 metre QRP rig (built-in PSU and keyer and ATU in the box on top) which he took on holiday to Norfolk at Easter. Fraser made 22 QSOs with a long-wire between two trees.

Congratulations to **G3ROO** who QSO'd **VK6HD** on 160 metres on 3 March. Ian used just three watts and asks if there are any other club members QRV on the band? Congratulations also to **MØAWN** who worked his first JAs on 5 March on 28060kHz with his GQ Plus at 4 watts. Chris was surprised to find that one of the stations, **JA6PA**, was running 5 watts to give him his first two-way QRP QSO with Japan also.

N4UY, writing at the beginning of March, says "I just worked George, **GM3OXX**, with my homebuilt Small Wonder Labs GM-10 at 700mw to my attic 10/15/20 metres dipole on 28.060kHz. George was at 1 watt". Jake then adds "This 10m stuff is fun!". On 19 March **G3XJS** found **JR4DAH** running QRP

Robert, PA9RZ, in his well appointed shack.

Spot the QRPer! DL2BQD sent this third edition of the QSL card used by amateurs in Schwedt. Dieter is on the extreme right of the second row.

calling CQ on 21061kHz and after exchanging 569 reports went and cut the grass. Peter came back later and heard **N9AG** running QRP as **J68AS** on 28060kHz and exchanged 589 with him - what a day!

EW1MM (ex UA6LFC and UC2AGL), photograph below, is QRV with 5 watts and likes constructing. Gary uses all modes, including the digital modes.

G3XJS is "absolutely delighted" with his K2 which he built just before the last Rochdale Convention. Peter says "it is an outstanding rig, both in its performance, and as a kit". Chris, **GØWFH**, will be QRV 12/22 August from Jersey as **GH4BJC/P** (the ISWL club call), SSB only. Chris has set-up a Web page at <http://www.qsl.net/g0wfh/g0wfh>.

NRØNR will be QRV 30 July/10 August from Ringarogy Island (across the harbour from Baltimore) in Co Cork, Eire as **EI/NRØNR/P** with a SG-2020, MFJ-971 tuner, ICT 22012-6A PSU and random wire antenna. Gene would like to hear from our EI members (<gmcgahey@du.edu>). **DL4VM** will be QRV 25 June/15 July near Brodgoszcz, Poland as

SO2VM with his modified TS-50S, five watts and dipole.

DL2BQD attended the tenth annual DL-QRP meeting at Pottenstein at the end of April. Dieter says that **DK6SX** gave a demonstration on a *Pyramid* antenna for 20 metres and **DK4UH** and **DF2OK** offered a *Help Desk* service.

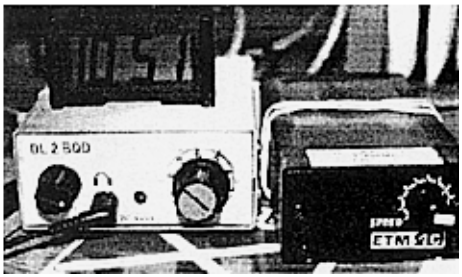
Rudi, DK4UH, (left) and Mike, DF2OK, at the Pottenstein QRP Meeting.

Over the last two months new member **GW4ALG** has "concentrated on tidying the shack, assembling a portable station for 136kHz and QRP on 80 metres", with his homebrew transceiver (see <http://www.alg.demon.co.uk/radio/qrp/80txr.htm>). Steve will be **GW4ALG/P** with it in NFD. The antenna loading coil for his portable 136kHz antenna is constructed on white PVC gutter downpipe, the lower coil is 100 uH and the top coil 0.8 mH. One of the PVC buckets to the side is wound with a 2 mH coil and the other is a 1.6 - 2.4 mH variometer. It can be used for loading kite antennas, balloon-supported antennas, and longwire antennas.

ZL1ABB (ex **G3UOV**) emigrated 18 months ago and has been QRV with his Argonaut since November and has worked into Europe on 20 metres with a dipole.. Bryce normally monitors 14060kHz between 0700-0830z on Mondays and Thursdays and says the bands are very quiet in ZL compared to the UK. **WB3AAL** sends details of the Appalachian Trail Award issued by the Easter PA QRP Club (USA). Ron says "it is open to all a radio amateurs and you can find the information at <www.n3epa.org> (click on the link to HTML or Text and then click on the Appalachian Trail Award). I have recently updated the application forms for each award".

is QRV with QRP and worked Europe in May with his 5 watts and long wire antenna. Peter is often around 21055kHz. **US1REO** reports the UR QRP Club's two annual activity periods in August (0000-2400z on the first Sunday) and December (1000z Saturday to 1000z Sunday of the third weekend) CW and SSB on the normal QRP frequencies. Contact Peter at <us1reo@urqrp.ne.cg.ukrtel.net> for more information. G4KXW used 500mW for nine days recently to make QSOs around Europe on 20 metres with a 15 feet high dipole. Dons says the ultimate was "a ten minute QSO Tolya, **RA9WYY**, in Ufa".

G3SOX is QRV on 20, 30 and 80 metres with a Howes kit and has worked around Europe with it. Harry is mostly on 80 metres and his best QSO so far is with a UA3 in Pskov.



DL2BQD's homebrew CW transceiver at the Pottenstein QRP Meeting.

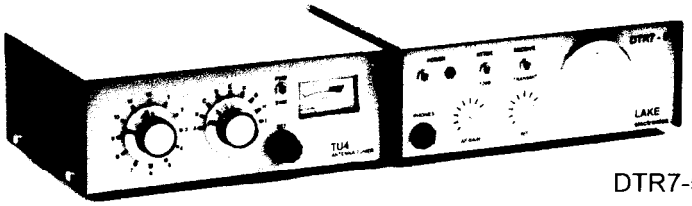
How is your summer going? Please let me know for the Autumn edition of SPRAT, by 20 August please.

The Kits with ALL the Bits !

LAKE Electronics

7 Middleton Close, Nuthall, Nottingham NG16 1BX

Tel: (0115) 9382509
E-Mail : radkit@compuserve.com
Internet : http://ourworld.compuserve.com/homepages/radkit



DTR7-5

TU4

The **"DTR" series of Single Band CW Transceivers,** all of similar basic specification, now come in three versions :

DTR3-5 (80m) DTR7-5 (40m) DTR10-5 (30m)

All feature : Internal power adjustment, 25mW (or less) to 7W (or more)
Low-pass output filter : better than -50dB harmonic attenuation.
Receive (DC) sensitivity < 1μV MDS, selectivity about 250Hz @ -6dB.
Stable VFO covers 100kHz up from the lower band edge.
Receive attenuator 12dB, RIT ±4kHz
Power requirement - 1A (key down) at 12 - 14 Vdc

(For a completely independent assessment and an objective comparison with other QRP rigs, see Peter Hart's review in October 1995 RADCOM)

Kit price, including ALL components AND hardware **£97.80 plus £4.00 postage**
These kits can be specially built to order for £172.00, inclusive.

TU4 Antenna Tuner

Frequency range 1.5 - 30MHz
Power rating 80 watts (CW)
Very sensitive SWR meter - less than 1/2 watt for full scale reading.
SO239 for co-ax, terminals for end fed wire and balanced feeder.
4:1 balun included.

Kit price - **ALL** parts and hardware - **£68.00 plus £4.00 postage**
Ready Built - £88.00 plus £4.00 pp.

VISA MasterCard