SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED•TO•LOW•POWER•COMMUNICATION

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WHERE IS THE ANTENNA? SEE PAGE 29

BROAD BAND AMP - OK2PZL TRANSCEIVER - EP2 MODIFICATIONS
DL QRP PA - FOXX 3 - WALL WARTS - MORE MAD VFO CURES
TIPS FOR FT7 - FT747 ON QRP - THE GQ PLUS - GUTTERSNIPE
A.A.A. - COMMUNICATIONS & CONTESTS - NOVICE NEWS
I7PKY PIXIE - SSB COLUMN - CUCKOO KILLER - MEMBER'S NEWS

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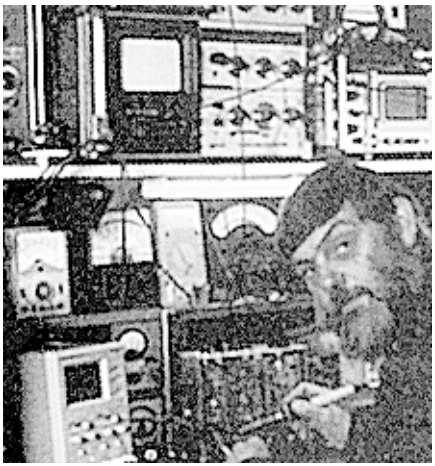
This could be your last copy of SPRAT

JOURNAL OF THE G QRP CLUB



St. Aidan's Vicarage,
498 Manchester Road
Rochdale, Lancs.
OL11 3HE. England
TEL: 01706 - 631812 FAX: 0870 056 7345
(overseas tel: +44 1706 631812)
Internet : g3rjv@gqrp.demon.co.uk
Homepage : www.gqrp.demon.co.uk

Rev. George Dobbs G3RJV

EDITORIAL

Dear Member,

G3RJV AWAY THIS SUMMER

As mentioned in the last SPRAT I will be in the USA from May 6th to July 8th.

The next issue of SPRAT will be completed when I am away by Graham Firth, G3MFJ, who has been kind enough to offer to put the finishing touches on what I will prepare before I leave.
It will be helpful if I don't return to a mountain of mail although **please continue to send SPRAT submissions to me** and I will deal with them until my return. We need to maintain the flow of material for SPRAT.
The following officers will deal with queries:
Membership & Subscriptions : G0BXO, Communications Matters: G3XJS, Novices: G4RAW, SSB: G0BPS, VHF: G8SEQ, Antenna Advice: G8PG, Circuit Advice: G3ROO.
These are on page 3 of the Member's Handbook - please refer to the list in the left column.
I will have an email address in the USA : **G3rjv@aol.com** (the initial G must be upper-case) Its usage will depend upon when I can get a connection so please use sparingly.

Also - Please note my new FAX Number - as above

72/3

G3RJV

EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK
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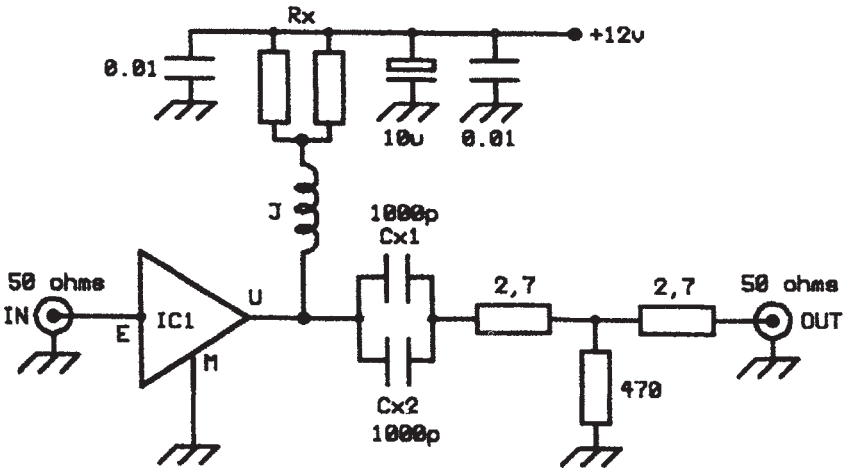
A Simple Easy Build Broadband Amplifier

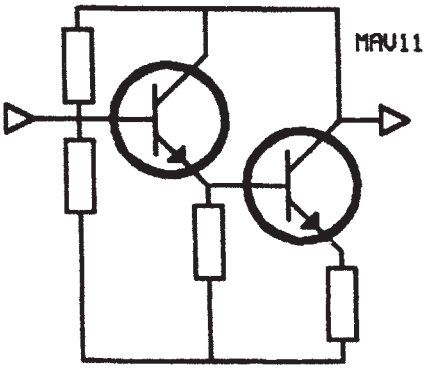
Marco Eleuteri IK0VSV Via Paolo Rolli 18, TODI (P) I-06059, ITALY

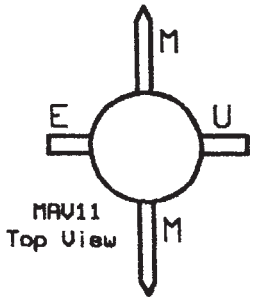
Using an MAV11, a DC to 1 GHz amplifier is possible capable of 13 db gain (nearly 30mW from an oscillator) without the need for alignment.
The output T attenuator protects the MAV11 from any eventual SWR
But Note: Max Input Power is 25 mW
The value of R_X is critical, and maximum I_{IC} must be 50 mA. (48 mA for security)
The formula (of course) $R_X = (V_{CC} - V_{IC})/ I$, where V_{CC} is Power Supply voltage, V_{IC} is Voltage on pin out 5.5V. I = stage's current (50mA max).
With $12V_{CC}$ R_X = to 135Ω (2 x 270Ω in parallel)
C x 1 and C x 2 only for RF types These are for output broadband flatness.
It is possible to build it with "Deadbug" techniques, keeping the wires very short.



J = 24t on 2mm ferrite core
wire 0.33mm dia

BROADBAND
AMPLIFIER





OK2PZL 7/14 MHz Transceiver

Petr Pokorny OK2PZL, Paseky 462, 760 01 Zlin, Czech Republic

A W1FB MEMORIAL AWARD WINNER

The W1FB Award for 1998 has been divide between GM3OXX and OK2{ZL for two excellent entries to the competition

Technical Notes:
The coils for pulling the crystals - I have tried various types. The best results were with a cross - wound coil using the dust core. The only disadvantage was its radiation (o 0.5mm). So, finally, I used an IF transformer coil from on AM transistor radio. which is housed in a metal cover, thus well shielded. RIT - I hope this receiver incremental tuning is rather original. It took me some time to think out the RIT without any additional parts. During receive the voltage (current) on T1 collector is decreasing and making the frequency shift about 1kHz. The diode D causes no voltage on T2 drain. During transmit - key down - the T1 collector gets the full voltage via diode D and the RIT is disabled. I think this idea could also be used to build a RIT with a varicap diode - the full voltage through the diode D - the regulated voltage through a potentiometer - the voltage divider. The 50uF capacitor parallel to the RIT potentiometer prevents the scratches during tuning.

Transistor T2
I tried many IRF types (IRF510, 520, 530 710) and the type BUZ 72. IRT510 seemed the best, but the power output on 14 MHz was only 300 mW.

In some articles on VMOS PAs from W1FB I found notes types VN66 AF and VN88AF. I tried VN66AF and this proved to be the best one. The power output with IRF510 was 1W on 7 MHz and 300 mW on 14 MHz, with VN66 AF it was 1W on both bands. The PA transistor T2 should work in class AB - the efficiency is lower, but at the same spurious should also be lower.

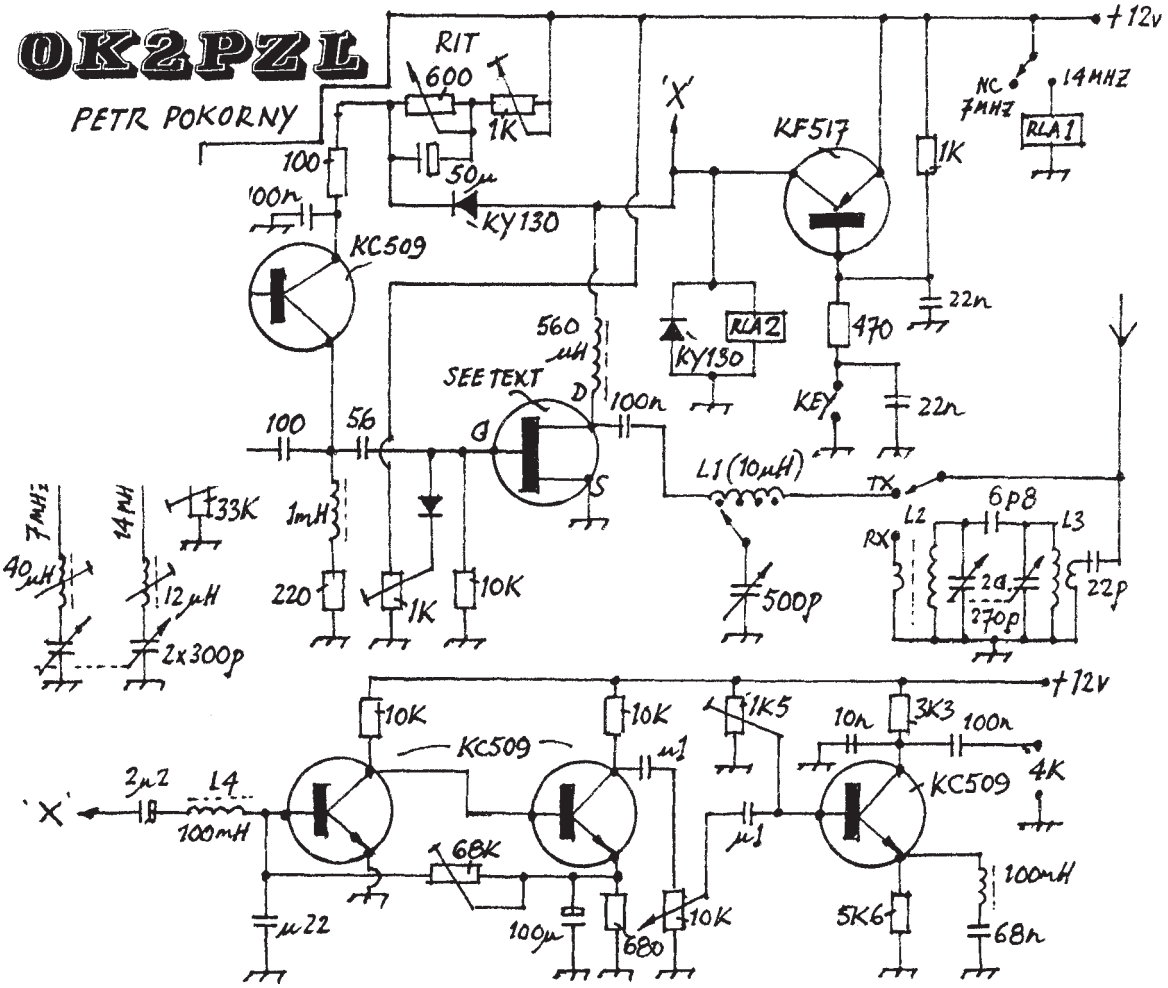
The narrow band matching filter L1, C1 appeared as the only good out of many filters I tried. It removes the unwanted frequencies during transmit, it is better than a simple low pass filter. During receive it helps to reject with the front-end band pass filter.

RE2 - the band pass filter switching - I had the relay with only one change - over contact.
RE2 and coils L2, L3 are located directly on the variable capacitor forming a "cube".
Transistor T4 should be the low - noise type (BC 550, BC 413) compared to com on transistors, it really causes noticeable decreasing of noise.

Transistor T6 - capacitor 10 nF in collector prevents the self oscillating of the amplifier in case you build the amplifier like me, that is on a universal board without shielding.

Coil L1 - I have reached the best results with a coil wound on a ceramic former dia 20 mm, 30 turns of wire dia 0.5 mm, with taps. Finally, I used the Amidon toroid core T50 - 2, 50 turns, tap every fourth turn, the inductance about 12uH.
The practical notes.

The full BK operation is an advantage, there is no switching receive/transmit. My first QSO was with OE/DF5KR on 7 MHz, my report was 559 and I used the central heating as an antenna, followed by DF7QH with RST 339. Both stations proved unbelievable patient and I would like to thank them. Later on, I put up an inverted dipole, some 5m up and it was much better, hi - IK, ZU, F, HB, OZ, 4U1, EA etc.


OK2PZL
PETR POKORNY
RIT
600
1K
100
100n
50µ
KY130
KC509
'X'
+12v
NC
7MHZ
14MHZ
RLA1
KF517
1K
22n
470
RLA2
KY130
560 µH
SEE TEXT
D
G
S
100n
KEY
22n
100
56
L1(10µH)
TX
RX
6p8
L2
L3
2a.
270p
22p
7MHz
14MH
40µH
12µH
33K
1mH
220
1K
10K
500p
2x300p
10K
10K
1K5
10n
3K3
100n
KC509
µ1
4K
2µ2
L4
100mH
68K
µ22
100µ
680
10K
5K6
100mH
68n

with reports 559. The first QSO on 14 MHz was with OH 5 MKB RST 569. The receiver is very simple, but seems to be quite good. The plans are to build another AF amplifier for the loudspeaker (TDA 7052).

I must say I was inspired by the transceiver FOXX by GM3OXX from sprat and by articles by W1FB on V - MOS transistors. The whole rig is built on a universal board of a postcard size. The front and back panels are soldered to this board. The cover is made from a U shaped tin.

R1 220 ohm. Driving of T2 (0 - 500 ohm)
TL choke, 560uH and higher. During received it lets go through only af signal
R2 1k. adjust for listening at the same freq as transmitting
L1 30 turns on former dia 20mm, tap every third turn
L2, L3 - 3uH. 2 turns/12 turns on a toroid N 05 - - 10mm
L5 together with capacitors M68 forms a simple filter
Transistors:
T1, T4 - T6 KC 509 (any BC type)
T2 VN 66AF (IRF 510)
T3 KF 517
T5 KC50G

The W1FB Memorial Award

The award for 1998 is shared by George Burt, GM3OXX for the JBS Transmitter and Petr Pokorny, OK2PZL.

For 1999, the project is to design **a Simple Receiver for one or more Amateur Bands**, suitable as a construction project for a Novice. Please submit your design to G3RJV by the last day of November 1999, with circuit sketch, all values and brief notes. The project will be published in SPRAT and the winner will receive an engraved plaque.

All Entries to G3RJV

WOULD YOU LIKE TO SPONSOR A MEMBER?

For some years members of the G QRP Club who are not able to pay their own subscription have been sponsored by other members. These include members in third world countries and from countries where currency is not exchangeable. If you would like to sponsor such a member, please contact our membership secretary :

John Leak, GØBXO, Flat 7, 56 Heath Crescent, Halifax. HX1 2PW.

TAKE TWENTY FOR ONE HUNDRED - Circuits for prizes!

The hundredth edition is SPRAT is coming soon! Peter Gant [member 10003] reminded me of the "Take Twenty" series in Practical Wireless some years ago. Each month the series featured a simple circuit for the constructor using twenty or less components. At Peter's suggestion we are inviting members to submit "Take Twenty" circuits. Accepted circuits will be published in SPRAT and the authors will receive a prize! All we require are circuit sketches [include all component values] and brief notes on the projects. **All entries to G3RJV**.

Epiphyte Mk.2 - Modifications

Roger Powell G0AOZ, Town Pond Cottage, Town Pond Lane, Southmoor Oxon OX13 5HS

Frequency Display.

The DFD4 frequency counter kit from C M Howes has been added to the Epiphyte. A fifth digit has been added to display the MHz figure, wired to permanently show a '3'. Power is taken from the PCB2 supply via two 0.25Ω resistors in parallel, 1KΩ and 820Ω. On this extra display digit, pins A, B, C, D and G are connected together. The 7-segment displays are not mounted on the supplied PCB2, but soldered close together side-by-side on a piece of suitably cut Veroboard. The Veroboard then has wires soldered to it which are lined up with the original holes in PCB2. This gives a much neater appearance to the completed display as the digits are now side by side with no gaps in between. CON8 on the Epiphyte pcb provides a suitable signal take off point for the frequency counter input. The counter pcb and input buffer module are mounted within a metal enclosure to minimise radiated noise.

RF Preamplifier/Preselector.

The Preamp/Q-Multiplier circuit from HRT Jan/Feb 1996 has been built and modified to provide greater front end selectivity. The Q-Multiplier part of the circuit has been discarded as this did not appear to offer any advantages. The 12v dc supply to the Epiphyte board is fed to the preamp pcb via a 510Ω resistor with 47mF 16vw capacitor - this gives the required 9v to the circuit. The 4.7KΩ rf gain control pot is replaced with a fixed 4.7KΩ resistor. The preamp can be taken in and out of circuit by a 2-pole switch. The rf gain is controlled by a 100Ωpot mounted ahead of the preamp circuit immediately after the Epiphyte TX/RX relay contacts. The variable capacitor specified (solid dielectric) has been replaced with an air-spaced 50pF which has a 27pF ceramic series capacitor, to give coverage over approximately 3.6 to 3.8MHz. The coil is no longer tapped, and consists of 31 close-spaced turns of 26swg enamelled copper wire on 7/8" OD plastic tube.

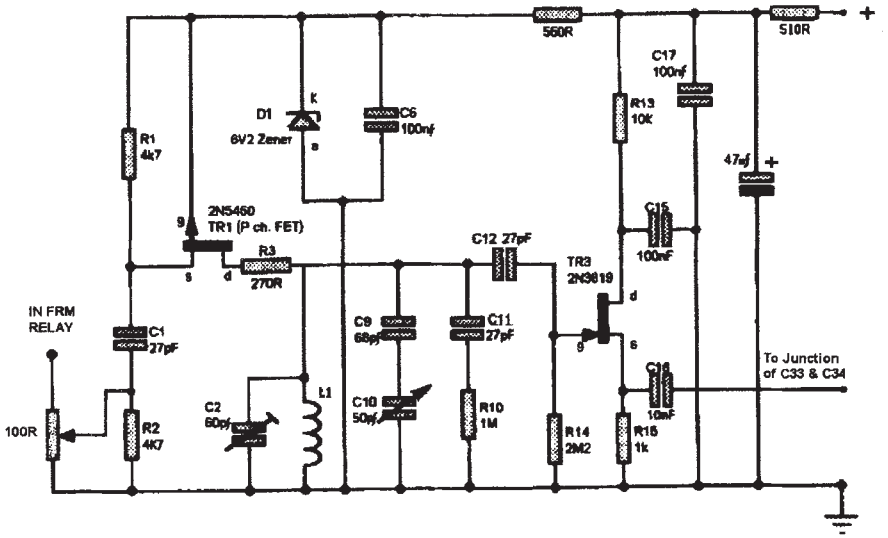


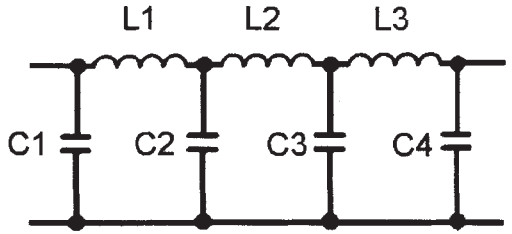
Fig. 1 Preselector circuit (Modified - G0AOZ)

S Meter Circuit.

The Howes DCS2 S meter kit has been added, taking its input from the junction of L4. C21 and C22 on the Epiphyte pcb. The meter appears to give similar readings to that of my main station transceiver, an FT-101E.

Lower Pass Filter.

The original Epiphyte Mk.2 low pass filter (2 section, 5 pole) has been replaced by a 3 section 7 pole filter, as per G3VPW, utilising T37-2 toroids. The coils are wound with 26swg enamelled copper wire.



L1, L3	26 turns, which gives approximately 2.62mH.
L2	28 turns, which gives approximately 3.19mH.
C1, C4	560pF polystyrene capacitors.
C2, C3	1200pF polystyrene capacitors.

Audio Derived AGC.

This circuit was designed by G3LUB and utilises an SL6270 Vogad i.c. Remove C22 and C23 on Epiphyte pcb and connect input to AGC board either side of C21. Connect AGC output to pin 3 on U4 (LM386-4).

Easy-Tune Oscillator. (G QRP Club Circuit Handbook Fig.4. Page 17)

This simple oscillator circuit designed by G3RJV uses a unijunction device to give a tone on transmit which enables the aerial matching unit to be adjusted for minimum vswr/best match etc. Operation is by momentary switch which also keys the PTT line.

Increase Audio Output.

1. Short out R14.
2. Put 100nF between pin2 and pin3 on U3.
3. Ground pin2 (or pin3) on LM386-4. (Do one or other).

Various.

To prevent possible low frequency rumble on transmit, change C52 from 1mF to 10mF.

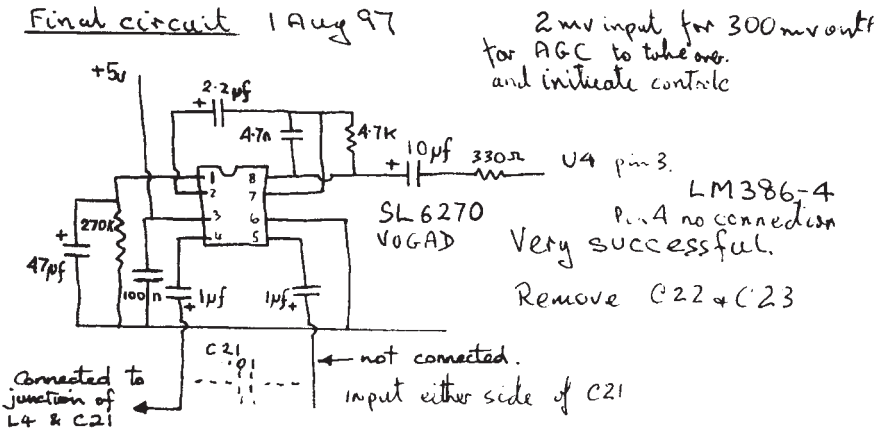
To increase microphone gain, replace R17 with preset 150kΩ pot, adjusted nominally to 98kΩ.

To provide a "processed" audio for DX working, change C53 from 1mF to 0.01mF. Also, re-adjust the replaced R17 pot. (On my PCB these are separate components which are front panel switchable).

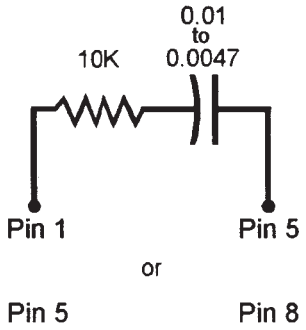
When changing R17 and C53 as above, I have added a 220pF capacitor across R17 to restrict audio bandwidth.

Notes.
Possible source of pcb for EP-2 frequency counter circuit as detailed in Sprat:-
FAR CIRCUITS - 001 847 836 9148 (NB: this is a U.S. phone number).
The pcbs for most projects in QST are supplied by this company.

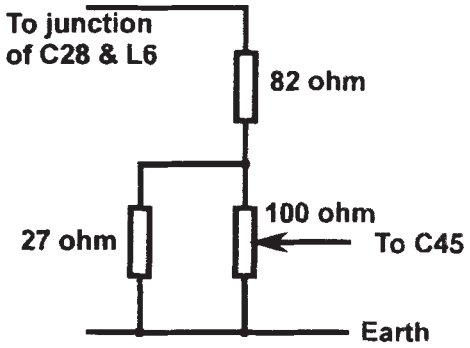
AGC Circuit by
G3LUB.



To Reduce hiss on received audio.
The suggestion below comes from G3IKN, and should be connected across pins 1 & 5 or 5 & 8 of the U4 i.c. LM386-4.

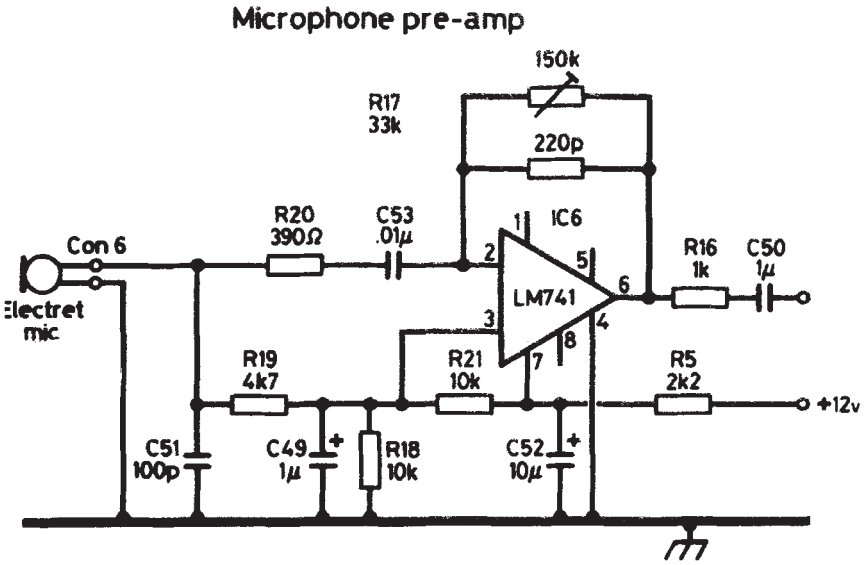


Modification to allow variable power output.
The combination of three resistors as per diagram below replaces the original preset potentiometer R15. This preset pot is removed from the circuit board, and the variable 100 Ωpot is mounted on the front panel together with the associated resistors. Three wires then run back to the circuit board.



The two additional resistors enable a better spread of power settings on the 100Ω resistor. They could be left out, but this would leave the power settings operational over a comparatively small range of the pot.

Modified microphone preamp circuit.



Circuit/Component value discrepancies/alterations etc.

Very few errors found in the paperwork which came with the pcb from Hands. The Assembly/Alignment guide has a components list and details of alterations which ***MUST*** be made to the pcb.

Derry Spittle's original circuit shows C53 as 1uF whereas the manual shows 0.1uF. I have actually modified this ***down*** to 0.01uF, which increases 'top' for a more penetrating audio and helps with those distant contacts where the remote station is struggling to hear you! You should also put a capacitor across R17 to limit audio bandwidth, particularly if you modify this resistor to obtain more microphone gain. Otherwise you will have a rather wide signal. I currently use a 220pf across R17.

The cap C42 in the parts list doesn't appear on the circuit diagram, and C18, 19, 22, 23 and 24 should be 0.1uF NOT 0.1pF.

Several people have changed the standard MuRata 455J1 ceramic SSB filter for a narrower one. I am personally quite happy with the 455J1, and find the rather narrowed audio response through the CFJ455K5 filter less acceptable. Note that this narrower filter has a slightly different pin spacing to the standard 455J1 filter.

On some pcbs, the main tracks carrying +12v are a little thin. I have built up one or two of the main tracks with thin copper wire, particularly those to the power transistor and the +5v regulator. This has helped to eliminate a slight "FMing" problem which was initially encountered.

Since I often operate my Epiphyte at power levels of less than 1 Watt, I removed the toroid T2 and diode D5 (modulation/power indicator), and associated wiring. The LED would not light with these low power levels, but I found that the S meter actually registered a sound level out of the U3 NE602 i.c., so this gives an indication of audio at least.

Increase size of heatsink normally supplied for p.a. transistor if you consistently run the TX at the full 5 Watts output. The one I have used is more than double the size of the original which is supplied by JAB Components, but theirs is adequate for outputs of 2 Watts or less.

The GØAOZ EP-2 Transceiver

Countries worked on 80m SSB: Algeria, Andorra, Asian Russia, Austria, Azores, Belarus, Belgium, Bosnia, Bulgaria, Canada, Costa Rica, Croatia, Cuba, Cyprus, Czech Rep, Denmark, European Russia, Faroe Is, Finland, France, Germany, Greece Hungary, Holland, Italy, Jamaica, Kaliningradsk, Kazakhstan, Latvia, Lithuania, Luxembourg, Malta, Monaco, Norway, Spain, Poland, Portugal Romania, Sweden, Switzerland, Ukraine, USA, Yugoslavia. The best DX being Costa Rica on 5 Watts, and Newfoundland Canada on 500 Milliwatts! and several American stations predominantly East Coast, Quebec in Canada, and through the pile-ups to work Monaco and Andorra without assistance.

The DL-QRP-PA [9W. on a 1" Board]

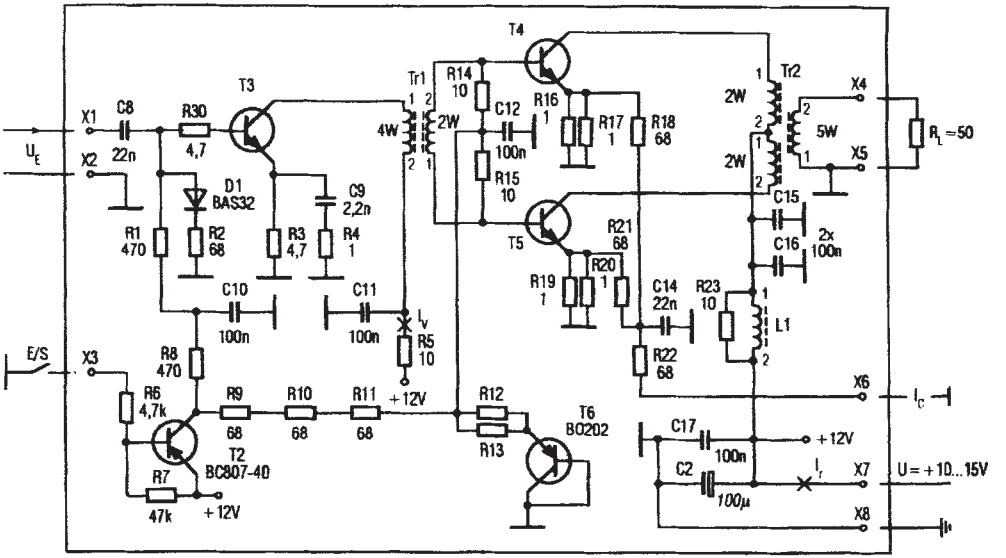
Peter Zenker DL2FI, Saarstr 13, BERLIN. D-12161

translation of an article in QRP-Report, the magazine of the DL-QRP-AG

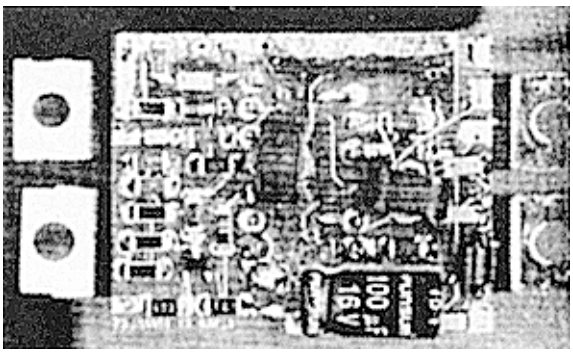
QRP, means 5 Watt carrier output or 10W PEP, at least this is the international definition. This is assumed by many Hams to be not an technical issue, but this is not true as you will see very fast if you have a closer look to the PA of many QRP Rigs.

While the homemade QRP-receivers are often high sophisticated, the transmitter part of most QRP-rigs is developed the easy way. As a type of standard normally most constructors use a single step PA. In newer times very often cheap V-MOS switches are used instead of real bipolar RF-Power transistors. To meet the FCC rules, the PA normally is followed by a sumptuous lowpass filter which also very often does not help enough. Hams trying to build their own rigs based on such designs even if they use kits almost never reach the assumed power level especially on the higher frequencies. This results in dozen and dozen of tweaking procedures every time a new schematic or a new kit appears.
In the past I tried several of the tweaking procedures by myself. Following the instructions given by lots of people on the Internet QRP-L or in other Ham Radio publications I tried nearly all published modification for the NorCal40, the SIERRA and some 10 to 15 other rigs. Using simple measurement techniques some of the modifications seemed to work great, e.g. the power of my SIERRA at 28 MHz was more then doubled. Using a high tech Analyzer which I was happy to loan from a friend I had to learn that power is not power. What I had seen on the Dummy Load plus wattmeter was shown at the Analyzer as a broadband noise. In other words, My modified SIERRA produced RF at several frequencies up to the UHF range, but at the desired 28 MHz frequency I found the same output as before.
And old law in RF says: If a PA is well designed, every thing in it does what it is designed to do. If the Output transformer is designed to run at 2 Watt level, tweaking it to 5 Watt normally results in extreme increasing harmonics without changing the complete design.

The constructor of the DL-QRP-PA Helmut, DL2AVH is working on this problem since many years. Since the early 80 one main result of his experiments is the knowledge that miniaturizing of semi conductor power amplifiers is a way to go that helps a lot. The reason for miniaturizing is the fact that even in 5W RF-Amplifiers currents are very high. Compared to a 5 Watt Valve PA he calculated that due to the high current the line length of all lines between any two points of a semiconductor PA have to be 600 times shorter then in a valve PA. This could only be realized by using SMD parts. The second result of his experiments was that he now only works on push pull amplifiers concepts. As he says, push pull amplifiers dont need much more expenditure, but give you much better results in terms of harmonics then any other type of PA. Some overloading as it is quite normal in Amateur Radio transmitters causes only very little more harmonics in a push pull amplifier but make a standard PA to be a type of big harmonic gun. Using some of the QRP-PA's I've seen in my lab would give you at least some bad comments by angry friends. While testing such a PA at 3515 kHz my friend DL7ARY phoned in asking me why I not was responding to his call at 7030 kHz where he could hear me with an S7 signal.
Experiments with several V-MOS PAs showed that due to the characteristic of V-MOS it is nearly impossible to get linearity and good harmonic suppression below 28 Volt. At 12 Volt range they can only be used as a switch, but not as a PA for RF.



As a result of his long time experimenting Helmut now presents his RF broadband amplifier devoted to the DL-QRP-AG. It is a push pull PA using a pair of 2 SC1971, designed to give a harmonic level as small as possible, to work absolute stable between 11V and 15V and to give an output level of 9.7 Watt to 7.5 Watt between 1,8MHz and 50MHz. The PA need a driver level of about 200mV to 300 mVand has a gain figure of 37 dB +- 1dB over the entire range of frequency. It is constructed on a double sided PC-board about 1 by 1 inch, using 36 SMD parts, two double hole torroids plus 3 RF Transistors and one constant current source. As a first batch we produced 100 of this PA. about 50 have been sent out in Kit form and the other 50 have been sent out as a kit to members of the DL-QRP club DL-QRP-AG. The response was overwhelming. Although some people had problems with the SMD parts (I personally used an extra big magnifier), not one reported problems on the RF side. In the mean the DL-QRP-PA has been adopted to nearly all known QRP-Rigs. It works absolute great in my SIERRA and in the QRP+ from Index as well. The harmonics of the SIERRA are at least -65 dBC (below carrier) I got response from German White Mountain users which are happy now and it also fits great into a NorCal40.



The PA is now no longer available from the DL-QRP-AG, but it can be purchased as a SEMIKIT from the FUNKAMATEUR Reader Service. (That's a German Amateur Radio Magazine) They offer a kit with all SMD parts already soldered :-) for a very reasonable price. You can order the PA using the Internet shop at http://www.funkamateur.de. The shop is partially English language, prices are in $US and you can use your credit card.

The FOXX-3

Derek Alexander G4GVM, 52 Brockington Rd. Bodenham, HEREFORD. HR1 3LP

Never having seen this circuit, or its predecessors, I was intrigued by the FOXX - 2 9SPRAT 91) and impressed by the results on 80M - it gave me 1 Watt output and a good number of QSO's.
For me, the essence of this diminutive transceiver is the oscillator and PA/mixer and I see no reason to make life difficult with such low audio, manual changeover and no sidetone.

Leaving the basic circuit as it stands, I set about removing the audio, keying transistor and manual changeover switch, and adding the circuits, which replace them, together with the sidetone oscillator. I venture to call it the FOXX - 3.

The circuits are self-explanatory, but note the addition of the 82p cap on 80M to increase the offset to about 500 Hz and the diode to stop the 12v on RX operating the sidetone.

The new audio circuit, which includes a pre-amp, uses very few components and gives a substantial increase in level, driving an 8 ohm speaker easily. A muting circuit has been included to reduce the thumps on changeover and is worth the additional components. I have used the second input port of the LM386 for the sidetone oscillator, whose positive line is keyed with the PA.
Phase shift oscillators need plenty of gain and a BC109 or better is required here.

Summary of changes to original circuit:

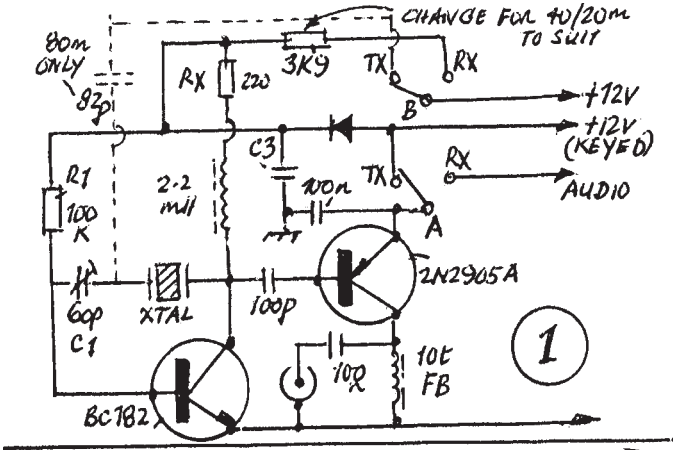
1. Insert IN4148 between Atx and junction C3/RI
2. Insert 82p cap between Btx and junction CI/Xtal, for 80M only.
3. Replace existing audio with Fig 2.
4. Replace TR3, associated keying components and changeover switch, with Fig 3
5. Add phase shift oscillator, Fig 4.
6. Possibly substitute the 1K pot with a suitable "plug-in" resistor
   (eg 3K9 for 80M - lower for 40, 20 etc).

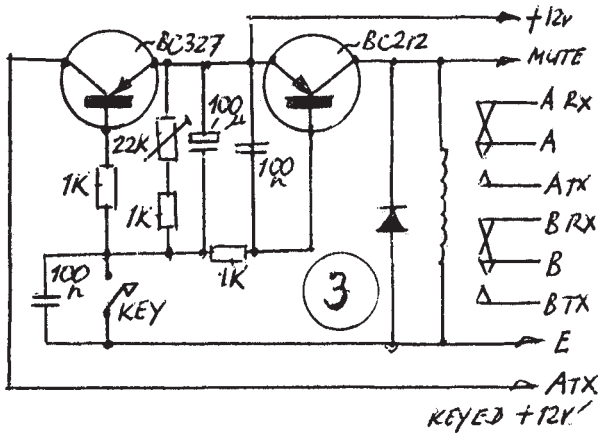
I have found low profile DIL socket pins, which plug in to each other, provide a useful source from which to construct plug-in units such as low pass filters.

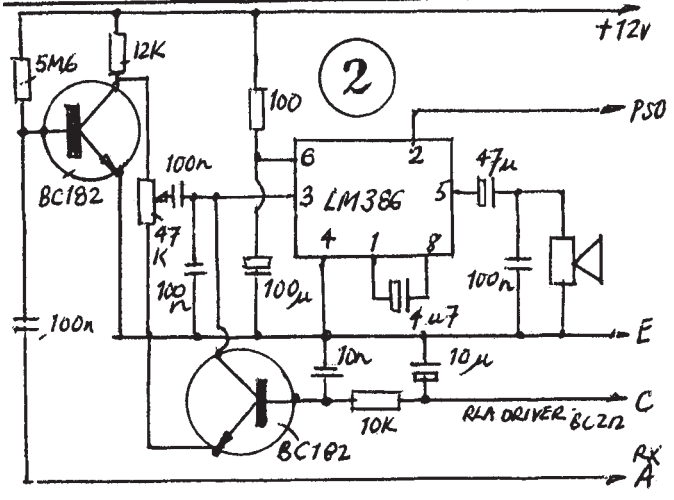
This fascinating little fun-circuit is great to use. Mine measures 2" x 2.6" x 1.25"" high.
Refer also to SPRAT 91.

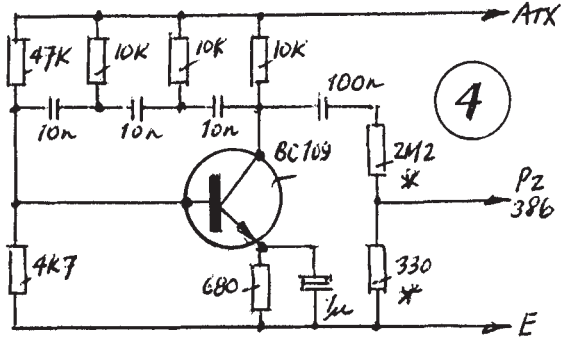
N.B.T.V.A.

The Narrow Bandwidth TV Association (founded 1975) is dedicated to low definition and mechanical forms of ATV and introduces radio amateurs to TV at an inexpensive level based on home-brew 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 audiocassette 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, G4RVL, 1 Sunny Hill, Milford, Derbys, DE56 0QR, payable to "NBTVA".





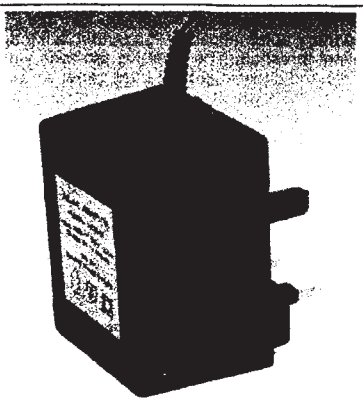




* CHOOSE TO SUIT DESIRED S/TONE LEVEL

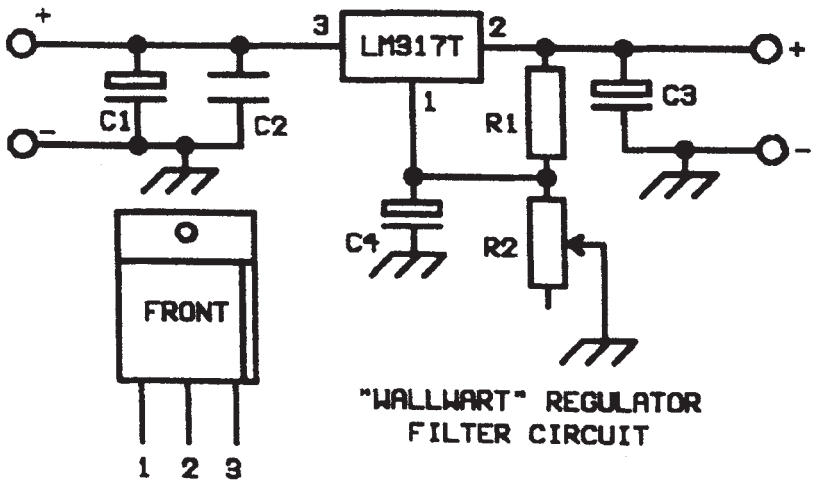
Working with Wall Warts

Fred Bonavita W5QJM, 334 Royal Oaks Dr. SAN ANTONIO, TX 78209. U.S.A



A resurgence of interest in plug-in adapters as sources of power for QRP gear has occurred of late, and it as sparked new interest in these readily available, cheap and easily converted units.
Writing in the May 1998 issue of QST, Mike Aiello, N2HTT, expanded on some ideas first advanced by the late Doug DeMaw, W1FB, in QST for June 1985 using power cubes left over from consumer electronic devices or child's game. Today's cubes come in a variety of voltages, ac or dc, and with a current capacity of 300 mA to 1A or more - ideal for QRP.
As they stand, however, the DC power cubes - or "wall warts," as some call them - are poorly regulated, if at all, and need additional filtering. The ac-output units need to be tamed completely: rectified, filtered and regulated. Read Mike's and Doug's articles for a better picture of how these devices work.
My purpose here is to take power-cube use one more step. Both authors' work produces a power source with a fixed voltage at low current. This approach offers a variable-voltage output at more than 1A and at minimal cost. I make no claim of originality for this circuit. It's the child of some creative plagiarism from sources long forgotten. There are many sources for wall warts, especially swap meets, where I've bought them for as little as a dollar. I found a wall wart (called "adapters" by some) with an output of 16V ac at 2.25A and making a nice handful.
That ac output cube needs the full monty: rectification, filtering and regulation. But others come with dc outputs that require only better filtering and regulation.
The two QST articles cited here plus the ARRL Handbook, Solid State Design, and Solid State Design, and W1FB's QRP Notebook have information on small power supplies that is readily adapted for use with these cubes. It's easy to substitute a wall wart for the transformer and add filter caps, regulators RFCs and the like to produce a useable power supply that's easy to handle.
The rectifier/regulator/filter must be housed in an outboard case. I used a small aluminium box (3x3x1 inches), but Mike used a project box from Radio Shack. His cube puts out 12V dc at 1A - OK, but not all that's possible.
The wall wart I used for this article has an output of 13.5V dc at 1.7A, which is ideal for my EMTECH NW40 plus accessories. After regulation and filtering, the output is still 13.5V, and I have not tried to squeeze it for more than 1.5A.
The adjustable regulator is the LM317T which sells for 60 cents in the U.S. It is in a TO-220 case, can handle up to 37 volts and up to 1.5A. If that's not enough, try the LM350T which can handle twice that much current. It's $5 and in a TO-220 case but needs much more heat sinking.
I used point-to-point wiring, and for heat sinking I mounted the LM317T to the floor of the box with appropriate insulation and a plastic screw and nut to hold it in place. Mike used the aluminium cover of his project box for a heat sink, but that likely would not be enough for the LM350T. nor would the small, all-aluminium box I used.
For a filter cap, I used a 4700uF, 50V electrolytic, since it combines with the built-in filter cap in the cube. Unfortunately, there is no easy way to find out the value of that cap without opening the cube, which would destroy the sealed case. If the ripple is a major concern, as it was for Mike (he used 14,100uF to get it down to 2 percent), the Handbook tells how to calculate the capacitance needed. I have detected no hum on signals on a transceiver with a direct-conversion receiver, and others have told me there was no ac component on my signal. But I have not checked the completed supply with an oscilloscope.

The 10uF tantalum cap bypasses the 5K pot for better ripple rejection. Use tantalum because it has a low impedance, even at high frequencies. The 1uF tantalum across the output improves stability under varying loads. Both are recommended by the chip maker.
This is not intended to be the definitive piece on wall warts, but it is a starting point. Ant for those looking for a cheap, easy-to-handle power source for a QRP rig, this is ideal.



C1 = 4500uF 50v C2 = 0.1uF cer C3 = 1uF 25v tant C4 = 10uF 25v tant
R1 = 120Ω ¼w R2 = 5KΩ lin pot

15th Annual Yeovil QRP Convention 1999

Sunday April 18th, The Digby Hall, Hound Street, Sherborne, Dorset

The Lectures:
G3MYM - Daytime Signal Absorption on Top Band and 80 Metres
G8SEQ -- QRP Operation on VHF
G3MCK - Near Vertical Incidence Sky Wave
Morse Tests on Demand - Construction Challenge [see last SPRAT]

OOPHS - SPRAT 97

Martyn Lindars and the author have pointed out some errors in the drawing for the **MB4 Receiver** in SPRAT 97. A 100K resistor should be connected between tags 7 and 10 on the top rows of tags. The aerial input should go to 2, not point 1 in the diagram.
Martyn suggests a possible better arrangement for the grounding leads is to omit the wire from VC (ROT) and tag 8, connect tag 8 to the grounded tag on the right of the board. Connect VC(ROT) to the top of ROT. SW. to obtain the grounding through tag 1.
The **F5LVG DC Receiver** has a missing component designation. The diode in the varactor section of the VFO should be marked as "D3". The balance pot on the mixer has no value - we suggest 1K or 5K linear.
The **18MHz Wide Range Crystal Transmitter**, page 20. The second crystal in the table should read 18.080 not 18.050.

Ten-Tec Mad VFO Disease - another cause

John Livingston G4FDD, 26 Dikelands Lane, Upper Poppleton, York YO26 6JB

G3MBN's article in Sprat 97 identifies a major cause of PTO problems - but be aware there is another cause of wobbly VFOs in TenTec transceivers. It can produce other odd and baffling symptoms as well - the worst being spurious oscillations on transmit.

The Argonaut 515 circuitry makes extensive use of chassis grounding for the various circuit boards, and if the grounding should become less than perfect, all sorts of strange things can happen. The VFO is particularly prone to this because of the use of varicap diodes with their requirement for a very stable source of control voltage. The transmit driver will also self oscillate if its RF ground is not truly 0 Volts (in other words - there is some series resistance).
The cause of these nasties is the use of small steel "L" brackets to secure boards to the chassis, and to join individual bits of the chassis metalwork together. The brackets are fixed by a self tapping screw at one end (OK), and a small hollow aluminium rivet at the other (NOT OK!). A layer of oxide corrosion builds up between the steel bracket and the aluminium chassis / rivet, and the original ground connection develops a series resistance. This will vary with every slight movement, and tends to disappear during faulting - which is why it is so difficult to track down.

The solution comes in two parts :

- Where you can reach them - chisel or drill out the rivet and replace with a nut and bolt. Spring locking washers are useful to get a positive connection.
- Where they are inaccessible - primarily the VFO board to chassis mounts - bypass the bracket by bonding the board ground to the nearest existing chassis earth tag with a short length of insulated braid. There is a suitable one adjacent to the VFO output terminal at the back of the VFO box. While you are at it - bond all the earth tags together with braid as well to bypass any other dubious brackets.

If your Argonaut starts doing odd and unpredictable things - check the chassis grounds !

Ten-Tec Mad VFO Disease - More Notes

Ted Trowell G2HKU Hamlyn, Saxon Ave. Minster, Sheppey, ME12 2RP

May I add the following comments to Brian's (G3MBN) helpful article in SPRAT 97.

1. The wipers can be removed from the VFO shaft without removing the frond panel. Remove the tuning knob and stand the CORSAIR on its heat sink. Loosen one of the two screws, which hold the wipers until it is nearly free. Use a pair of sprung normally closed tweezers to undo the last turn and carefully remove the screw. Use a pair of pointed tweezers to remove the wiper (if it has not been withdrawn on the screw).
Replace the screw and repeat for the second screw.

2. I have found that THOROUGH cleaning of the brass guide bar and the plastic slider cured the problem with my note.

Tune the VFO to relax the spring and remove the VFO box. Remove the brass guide bar but NB THE SLIDER IS IN TWO parts. Clean all the old grease from the bar and the plastic slider with meths. Make a 'pull-through' with dental floss and some soft teased out string to ensure that there is no grease inside the slider. Polish the guide bar with "BRASSO" and the section that will be covered when the spring is compressed. Clean any grease from the inside of the VFO box where the guide bar fits.

Compress the spring and tie with dental floss, Reassemble and tune the VFO to compress the spring, cut the dental floss and remove it.

3. Grease. I used Silicone MS4 but TANDY are selling a TEFLON based lubricant in a syringe which may be on OK

Little Tips for the FT7

Bernd Zander, DL6YCG, Illzacher Weg NR 11, BERLIN, D-12109

1. The audio output does not sound good in CW. Changing R610 at the audio pre-amp transistor to 24K give a tremendous improvement
2. The sound in SSB is too narrow for my taste. Changing the two capacitors in the demodulation section from 0.0uF to 0.047 or 0.022 gives higher frequencies in the audio signal.
3. The front end is very sensitive. Good news for mobile fans but bad news for good antennas. There are problems on the lower bands in intermodulation products. The MOSFET in the front end is getting too much voltage from the AGC. Change R113 to 57K to reduce the gain. A 100K pot could be used to set the level of your choice. In the IF section, at the AGC control line, I also changed the 120K to 83K [at the MOSFETs Q402/401] to lower the IG gain a little. These modifications, although reducing gain, increase the small signal receiving capabilities by reducing noise and intermodulation problems. The only problem is that the S Meter requires adjustment.
4. I also changed the diode 2104 at the switching section on the band switch to 1N4007 to prevent intermodulation.

At the 8 volt regulator change the electrolytic to 47uF and the blocking capacitor on the 8 volt bus to 0.1uF and add little ferrite core [or VK 200 cores] to improve the decoupling.

RED ROSE QRP FESTIVAL

SUNDAY 6th JUNE, 1999 11 am to 4pm

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Handbook Correction: OE6EIF, 9985 is Andreas (not Andrea).

QRP Mod For The Yaesu FT-747GX

Leighton Smart GW0LBI, 33 Nant Gwyn, Trelewis, Nr. Treharris, CF46 6DB

The Yaesu FT-747GX was a rig produced by Yaesu for the 'budget' market, a 100-watt rig with general coverage receive, memories, dual vfo's etc. Apart from the 'plastic box' casing, and the dodgy VFO knob, it's a good little rig, pretty light so good for portable work, and second-hand models can be picked up for around £200 - £300, a relatively cheap HF rig, considering the features.
That's why I bought mine. I wanted a dedicated 5 watt QRP rig, but couldn't afford a Ten Tec Argonaut II, (the earlier Argonauts are rarer than rocking-horse droppings) or even a QRP Plus, so I got hold of a second-hand 747 and carried out the following mod.

The maximum power output of the FT-747 can be controlled by utilising the existing ALC circuits, and the modification can be carried out with the use of a dummy load and an accurate power meter.

Locate the ALC circuit which is on the main chassis. The pot for the ALC control is numbered VR10, and can be found at the bottom right hand side of the main board with the front of the rig facing you.
When found, connect a dummy load and power meter to the rig's antenna socket and select the CW mode. With the key down, rotate VR10 anti-clockwise until the power reads 5 watts.
The ALC will now automatically restrict the power output from the 747 to a maximum of 5 watts on all modes and on all bands, although 10 metres will show about 4.5watts output.
To adjust the rigs' own power output meter to full scale at 5 watts, locate VR12 (which is conveniently placed alongside VR10) and rotate it clockwise until the rigs' meter reads full scale at 5 watts.

Power output on CW, AM and FM can now be controlled up to 5 watts using the DRIVE control.

DRIVE CONTROL MOD FOR SSB

Unfortunately, SSB power is not controlled by the DRIVE control on the 747, the operator having to use the inefficient MIC GAIN control instead, but fortunately another mod can be made to activate the DRIVE control for controlling SSB power output as well as the other modes.

To do this, locate the filter board which is mounted above the main chassis, again at the bottom right hand side of the rig. Remove the filter unit, (take care while you do this) and below where it was mounted, on the main board, you will find a diode numbered D63.
Simply snip one of the legs on this diode and the drive control is now activated for use on sideband as well.
With the mic gain up on full, you can run as low as 50 or a 100 milliwatts of sideband and still have bags of audio. The drive control will now control the SSB power output up to a maximum of 5 watts.
Used with a decent amplified microphone (or speech processor preferably), QRP or even QRPp sideband can be great fun.

Details of the GW QRP Club are available from Leighton - the founder member

The GQ-PLUS - A Simple Multiband CW Transceiver - Part 1

Sheldon Hands GW8ELR,Tegryn, Llanfyrnach. Pembs. SA35 0BL

The original GQ40 and the 20/30mtr variants have been one of the most successful Sprat designs with now nearly 500 built and running. I have been asked many times about multi-banding the set but the stumbling block has always been the provision of the required LO. While this is easy with a PLL or Xtal mixer, finding cheap crystals with a common vfo offset is not. Some experiments were made changing the IF filter frequency suit available mix xtals ,but it was difficult get the same repeatable performance as the GQ 6 pole 4.4336 MHz filter.

The real answer to the LO problem is the AD9850 direct digital synthesis ic. After ordering some samples I sent one along to G4OPE , it took some time to re-kindle Micks interest in DDS programming, but last quarters Sprat bears the result .The DDS3 board allows full synthesis of all the LO frequencies needed in a 1.8-30mhz design with the bonus of a LCD readout to 1hz and a set of drivers for switching the Low/ bandpass filters etc.

The GQ-PLUS is a three board system, it follows the design philosophy of the mono-banders but has a number of circuit improvements. Board one contains the rx, low level tx and QSK control, board two the pa, LPF, rx pre-amp and switch drivers, and board three the small front panel DDS and MPU.

From the Antenna socket the rx signal passes the through a cascade of 5 element lowpass filters than a high speed isolation reed relay. Here the signal is routed either to board two or through a High pass filter with a 13.9 MHz cut off to a cascade pair of MAV11 MMIC's. The MMIC's are 50 ohm with a combined gain of 25db and have good signal handling with a IP3 of +30dBm. The high gain is needed in the 14-30 MHz to keep the band noise floor above that of the DDS. The pre-amp is not needed for the lower bands and is bypassed by a small relay pair.

On board one the signal is bandpass filtered by a 5 element Butterworth filter using torodial inductors. The toroid inductors have a very high Q compared to TOKO 10k inductors so allow a tighter 3db bandwidth and lower insertion loss. Following the filters is the mixer, this is a TUF1 diode ring. It has similar specs to a SBL1 but is housed in a non hermetic package which is about a quarter the size. One advantage of the BO2 pack is that a TUF1H level 17 mixer is also available, this has similar specs to the SRA1H but is about a third of the price. Its an ideal replacement if you aspire to a 6 element mono-banders or Rhombic antennas. The pcb has provision for up to two cascade MMICs on the mixer local oscillator port. MMICs are excellent buffer amps in this application allowing configuration of the correct gain for LO injection, while offering a dc to 2ghz 50 ohm termination.

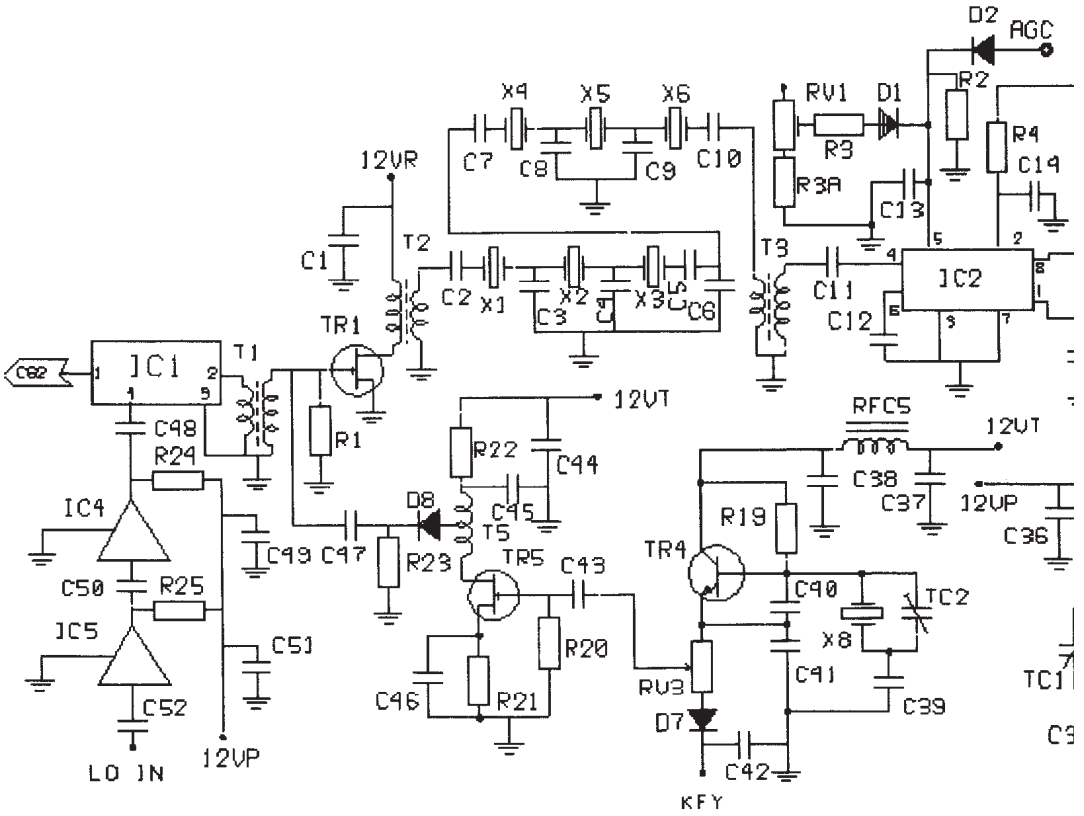
The mixer output now at the IF frequency is amplified by a transformer matched J310 then passed through the 6 pole xtal IF filter and amplified again in the main IF by a MC1350P

The original mono-banders were potent white noise producers unless the DK4RW filter was added. This seems fairly common in NE602/LM386 circuits seen in IF to audio sections. The Plus therefore departs from the common and has a discrete four diode mixer followed by trapped lowpass filter and 2N2222 audio pre-amp. To maintain this low noise high signal handling section a TDA2003 follows as the main Audio pa. This device is rated at 20 watts so is well under run, the main problem is finding a good small speaker capable of handling the peaks of output!!

The transmit side starts on board one with a keyed oscillator controlled by a cmos timer This is buffered and amplified, then coupled to the mixer via a matching transformer. A very small sample of the buffer input is picked off and coupled to the rx detector to provide side tone.

The mixer and bandpass filters are bilateral so the CW IF is now mixed and filtered to signal frequency and used to drive a cascade pair of MMIC's. The output is at 50 ohm and connected to board two via miniature coax.

The next part will look at board two and discuss construction aspects.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X5
X6
RV1
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R4
C14
12VR
C7
C8
C9
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R3A
C13
C1
T2
C2
X1
X2
X3
C3
C4
C5
C6
T3
C11
C12
IC2
TR1
T1
C82
IC1
C48
R24
R1
12VT
R22
C44
RFC5
C38
C37
12VP
C36
IC4
D8
C45
T5
TR5
C43
R19
TR4
C40
TC2
X8
C41
C39
TC1
C49
C47
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RV3
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C42
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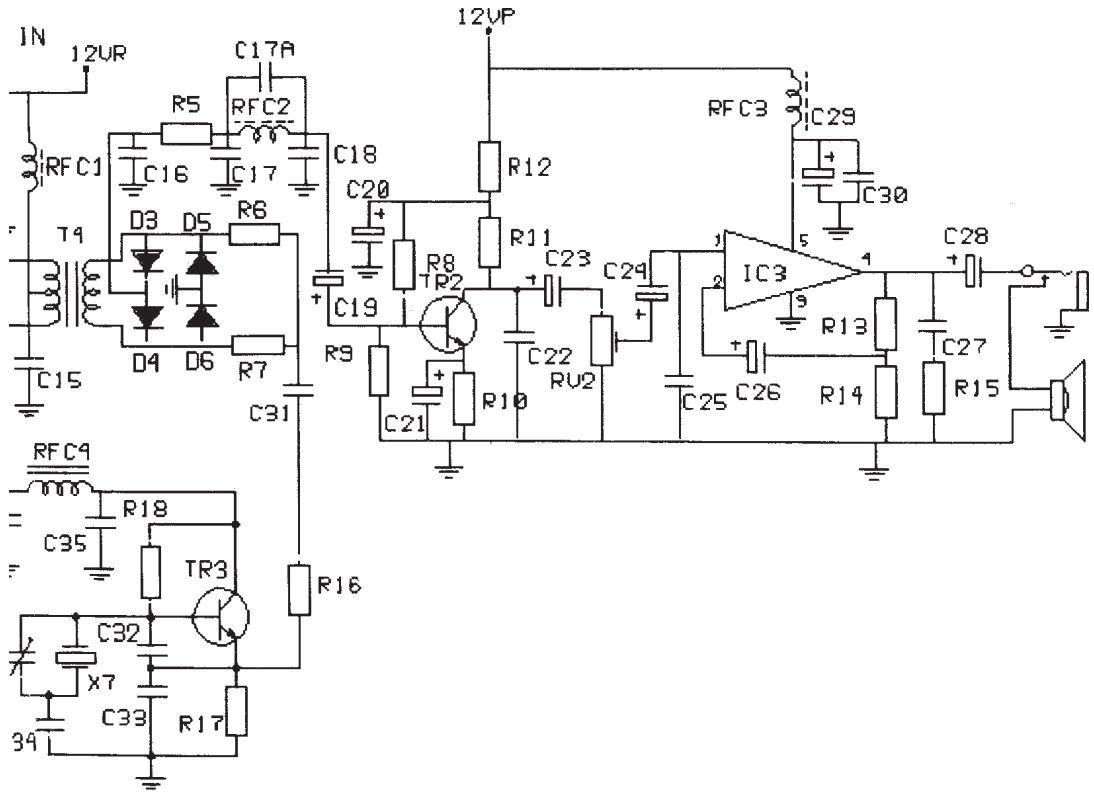
LO IN
12VP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R5
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C16
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T4
D3
D5
R6
D4
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C15
C31
C19
C20
12VP
R12
R8
TR2
R11
C23
C24
C22
RV2
R9
C21
R10
C25
IC3
C26
R13
R14
C27
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R16
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R17
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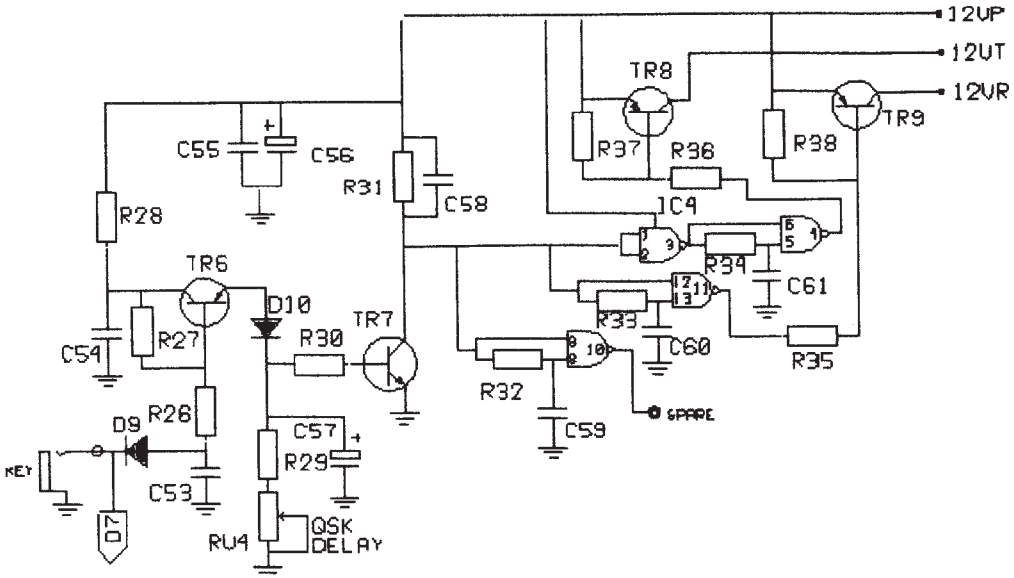

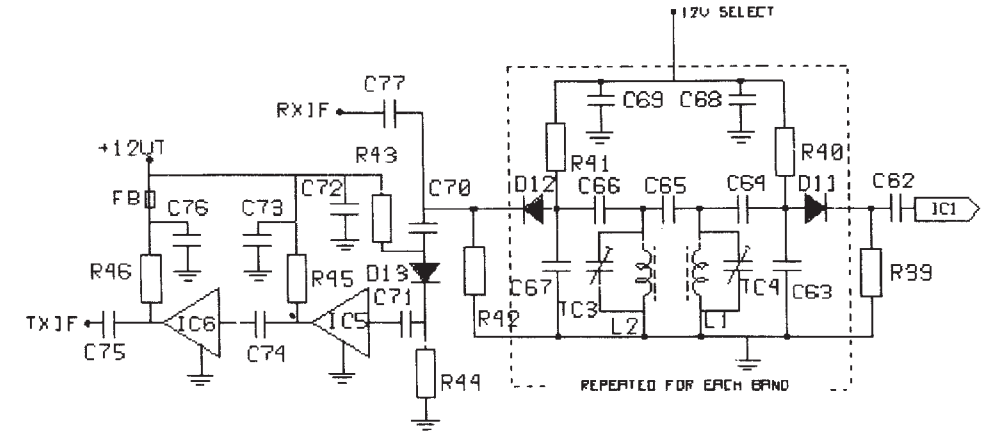

Details of a kit for the GQ-PLUS can be had from:
HANDS ELECTRONICS, TEGRYN, LLANFYRNACH, DYFED, SA35 0BL.
TEL : 01239-698-427

GQ-PLUS PCB1 PARTS

R1,10	560R
R2,9,30,31,32,33,34,37,38	10K
R3,23,35,36	4K7
R4,22,28	100R
R5	820R
R8,20,27	100K
R11	5K6
R12,16,39,42	1K
R13	220R
R14	5R6
R15	1R8
R18,19	220K
R21	180R
R24,25	220R
R25,46	180R
R26	47K
R29	2K2
R43,44	1K2

RV1,2	10K
RV3 1KPRE-SET(withwheel)	
R4 10KPRE-SET(withwheel)	

C1,12,13,14,16,22,46,54,58, 59,60,61	100N
C2,4,5,7,8,10,25	180P
C2A,4A,8A,10A	22PF
C3,9	100PF
C3A,9A	4P7
C5A,7A	8P2
C6	220PF
C6A	18PF
C11,15,30,31,35,36,37,38,42,44 45,48,49,50,51,52,53,55,62,70,71 72,73,74,75,76	10N
C17,18	0.056NF(563J)
C17A	33N
C19,23,24	2U216V
C20,21	10U
C27	220N(POLYBOX)
C28	470U16V
C32,40	150PF
C33	390PF
C41	560PF
C34	27PF
C39	68PF
C43	47PF
C47	1N
C56	100u
C57	4u7
CTS	1P2

TC1,2	5-30PFMTC-GRN

D1,2,3,4,5,6,7	1N4148
D8,13	BA243ORSIM
TR1,5	J310
TR2,3,4	2N2222
TR6	2N3906
TR7	2N3904
TR8/9	BD140
IC1	TUFIH
1C2	MC1350P
IC3	TDA2003
IC4	MAV4
IC5	MAV11
IC6	4093
IC7	MAV4
IC8	MAV11
T1,2,3	K37X830
T4	FT37-43
T5	BLN43002
X1-8	4.4336MHZ

RFC1	100uH283AS-101J 7BS
RFC2	100MH 181LY-104J 10RB
RFC3	15uH 494LYF-0082K 8RBSH
RFC4,5	1000uH 283AS-102J

1MTR 32SWG ENAMALLED
1MTR PVC SINGLE CORE
1x9 BERG HDR
3X2----------
14 PCBPINS

FROM THE CLUB MEMBERSHIP SECRETARY

John Leak GØBXO, Flat 7, 56 Heath Crescent, HALIFAX. HX1 2PW
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Please write to, telephone or email me if you think we have made a mistake.

PLEASE QUOTE YOUR CLUB NUMBER AND CALL SIGN.

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Please remember to tell us if you change your address. Each quarter, a number of copies of SPRAT are returned to me by the Royal Mail as undeliverable because the member has moved and has not arranged for mail to be forwarded. Please remember changes take time to work through the system.

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A standing order form appears in the Winter SPRAT each year.

TWO CLUB OFFICERS MEET

Rudi Dell, DK4UH, (right) G QRP Club German Representative entertains G QRP Club Membership Secretary **John Leak, GØBXO,** in his shack

German G QRP Club Members Pottenstein Meeting 1999

9 - 11 April 1999

For more information contact Rudi Dell, DK4UH
Weinbietstr. 10, 67459, BOEHL-IGGELHEIM
Tel/Fax 06324-64116, Email: DK4UH@t-online.de or PR.

A DATE FOR YOUR DIARY:
The 1999 Rochdale QRP Mini-Convention
Saturday 23rd October

CLUB OFFERS .....WHILE STOCKS LAST

NE602 Chips at £1.75 ea. inc. postage [SA602]

MC1350 at £2.25 each inc. postage in the UK

G QRP CIRCUIT HANDBOOK [usually available from the RSGB]
Non-RSGB Members [UK & EU] £7.50 + 75p [UK] £1.25 [EU]
Book available in the USA via Kanga[US]

LOW POWER COMMUNICATIONS, VOL.3. [QRP Hardware] K7YHA
Last few copies at £8.00 + £1 [UK] £1.50 [EU]

RADIO PROJECTS FOR THE AMATEUR
by Drew Diamond, VK3XU, Workable plans for the construction of receivers, QRP transmitters, transceivers, test equipment, and some handy construction hints for the practical radio amateur.
Available for £6.00 (plus UK postage £1.25, EEC postage £2.00)

WHITE ROSE PHASING RECEIVER PCBs [SPRAT 71]
Main Board: £5.58 inc postage. Converter Boards: £2.25 inc postage
Original RX PCB [SPRAT 61] £3.75 Exciter Board [SPRAT 66] £3.75

Cheques to "G-QRP CLUB" (an address sticker is helpful) Orders to:
Frank Lee G3YCC, 8 Westland Road, Kirkella, HULL. HU10 7PJ

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

BEG, BORROW OR BUY - Book "Active Filter Cookbook" published by Howard & Sams & Co Inc. G3BPM. 01935 - 881763

WANTED: scrap Gould OS300 oscilloscope with good mains transformer, will collect within reasonable travelling distance of Birmingham. Tony, G4LLW (tel 0121 682 1972)

FOR SALE: On behalf of local radio club - QST 1932-1979 approx 6-8 copies believed missing, fair to good condx, unbound, in years, all readable. £50.00 the lot.
Two ZX Spectrums. Small raft of software £20 the pair. Spectrum Plus Two, Wafadrive with spare wafers, manuals, PSU, software, Clean GC, functionally tested £40. Buzzer, sig. Training, GWO, clean + data plate, believed 1940's, unwired £20. All monies to local Nautical Training Corps unit - youth charity. Details Peter G4LEG 01293 - 437814 after 1800.

FOR SALE: Epson LQ400 dot matrix, roller feed, set for PC, working order £10. AP w621 headphones in GWO £10, ZA3238 DLR No.2 Headphones GWO, no cable binding or plug £10 Peter Brent, 14 Stagelands, Crawley, W. Sussex, RH11 7PE. 01293 437814 after 1800.

FOR SALE: Trio TS120V 10 watt CW/SSB (+ details on running at less than 10w) covers 3.5/7/14/21/28. £225, Matching TRIO PSU PS-3 13.8v @5A £35. Ext. VFO DFC230 £35-00, Hanser Power meter, 1.8 - 50 MHz PEP/RMS £30, All ono + carriage, or complete QRP station + fist mic £275. Contact Chris G4LDS QTHR (01621 785704) Essex. e-mail: cbaker@ireng.com

TIPS FOR CONSTRUCTORS [1]

Two Ideas by Ron Wilson G3DSV

The idea for weather proofing PL 259 is good as long as one has the tap swirls. For the last 20 years I have used Waxoyl from Halfords and the like. A liberal brushing over, completely seals them off. My 2m Ringo ranger was taken down recently, the first time for over 10 years. The PL 259 rings came undone with no bother and inside the pin showed no tarnishing at all. My rotator is coated in the same way. On dismantling it was perfectly dry inside. That after about 14 years.

The SPRAT article on bending aluminium was good but I think a lot of people will fight shy of softening and tempering a bit of steel - help is at hand. From most D I Y outlets one can get a tile cutter, actually it is a scorer. Just a straight piece of steel with a hardened chisel shaped end. Just right to make the VEE for bending. These are hardened steel and the one I have is still serviceable after many years' use making chassis and cabinets.

TIPS FOR CONSTRUCTORS [2]

Hot Glue Air-wound Coils by Alan Upton G3UZU,

Maintaining the spacing and form of an airwound coil can be problem. I have used this idea when winding such coils. I use hot glue [from a glue gun] as an insulated spacer and for a winding jig, I use cheap plastic hair-combs - the type which have fine and coarse teeth. The coarse teeth are ideal spacing for about 18 gauge wire. Reduce the height of the teeth by a half and clamp two combs together with a half inch spacer. Set the wire between the teeth of the combs. Run the hot glue over the coil, letting it cool before moving the coil round to the next position. Mistakes can be undone by cutting the glue with a knife. I have used such coils in a Z Match to 100 watts without problems.

EUROPEAN - USA EQUIVALENTS

From time to time, I get requests for equivalents of devices used as projects in SPRAT. Perhaps someone would like to consider submitting a short article for SPRAT, with a table of the more commonly specified European devices (ICs as well as transistors) and their nearest US counterparts?

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

FOR SALE: Muirhead Freq Analysers [2 off] £20 ea, Heathkit R/C Bridge £20, G2DAF Receiver Mod MKIIB £20, Advanced Scope OS250B £20, Telequipment Scope D54 £30.
WANTED: Alignment Details for Heathkit HW100 Receiver. D. Griggs, G0IPT, 5 Collingwood Ave, Muswell Hill, London N10 3EH. Tel: 0181-374-9070

WANTED: ARGONAUT 509 or 505. Also Heathkit HWA71 PSU for HW7 or HW8. Adrian Heath, G4GDR, 227 Windrush, Highworth, Swindon. SN6 7EB. 01793-762970

FOR SALE: YAESU FT-77S QRP Transceiver with CW Filter, crystal cal. And FM boards, with hand mic and manual. Original Packing £250. Bert GW4KUS. QTHR [Swansea] 01792-541486

THE "GUTTERSNIPE" ANTENNA

Dave Lunn, G3LSL, 86c Billing Road, Brafield, Northants. NN7 1BL

Sometimes, circumstances dictate trying an antenna layout which defies all the accepted rules and really shouldn't work at all, let alone well. In my own case, a move to a new house, much closer to both its neighbours, meant leaving behind a roomy half-acre plot with a 60 foot beech tree at the far end, and having to accommodate a workable antenna in less than half the previous space. Worse, the new house sits squarely in the middle of its garden and has no mature trees from which to support wires. A final worry was that my new neighbours were "unknown quantities" when it came to their tolerance of amateur radio antennas and I didn't want to advertise my leisure interest at an early stage and so invite enquiring knocks on the door each time a burst of local EMC disturbed their viewing or listening, especially as most of my operating time would be on QRP.

My antenna therefore had to be of the "invisible" variety and one advantage of the new house I noticed immediately was that it had a plastic rain-water gutter which runs continuously all round the roof. At a height of approximately 25 feet, it would hardly be a "Dxer", but a wire simply laid in the gutter in the form of a horizontal loop should, I felt, at least provide some inter-G contacts on 80m and 40m and possibly into the Continent as well.

Choosing a day when cleaning leaves from the gutter seemed a natural thing to do, I surreptitiously installed the antenna wire and arranged entry of the loop ends into the loft space through a single convenient ventilation hole under the eaves. From here I connected a length of 300 ribbon cable and ran it to a point immediately above my upstairs "shack", where a small hole in the ceiling allowed it to drop down to the rear of my antenna tuning unit.

I estimate the overall length of the loop to be about 160 feet and it tunes up beautifully on all bands via my home-built "Z-match" ATU (except for 17m, which is probably the fault of the ATU rather than of the loop length). Several QRP contacts later I was convinced it could at least put out a signal, but how would it fare in other respects? It disobeyed a number of basic antenna rules, such as proximity to household wiring, plumbing and other assorted metalwork, it encircled the loft-mounted TV antenna and passed perilously close to the point where the telephone wires left the property. In the event, none of these things have posed the slightest problem on either transmit or receive and the "guttersnipe" has performed its invisible role impeccably. Not only have I enjoyed numerous inter-G and Continental QSOs but I've had respectable contacts and reports from the Mediterranean and from US stations, all while using less than 3 watts output.

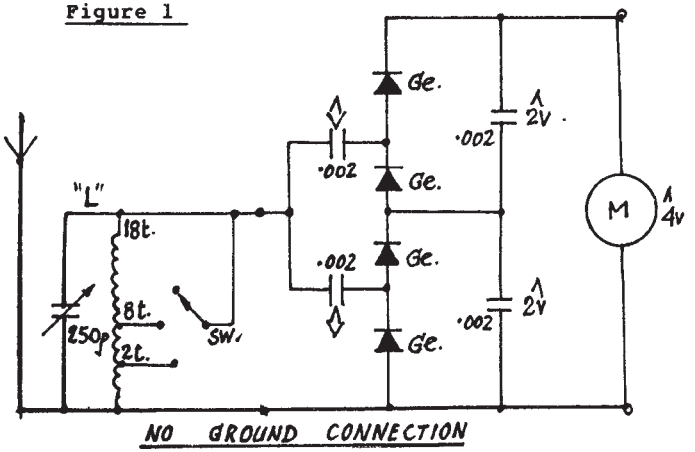
The only minor inconvenience is that my ATU settings vary a little, depending upon whether it's raining or not, but that's a small price to pay for a workable antenna system and rain in the gutter doesn't seem to affect either received or transmitted signal strength. For the record, the wire comprises 7-stranded PVC covered cable, of the type normally used for equipment wiring and, as it's under no mechanical strain or movement whatsoever, it should last for years. So, if faced with a similarly difficult antenna problem, don't let the pundits or the rule-books put you off. Try a "guttersnipe" and see how it works out for you!

A HIGHLY SENSITIVE RADIATION METER/ ABSORPTION WAVEMETER CIRCUIT

AAA Technical Staff

For a long time we have been trying to find a higly senstive radiation meter that requires no power supply and has minimum circuit complexity. The ciruit shown in Figure 1 is an attempt to meet these requirements. By adding three diodes and three capacitors the voltage applied to the meter is approximately quadrupled,with no need for a power supply. (Note that the inverted V over the voltage figures in the diagram indicates peak rf volts). The diodes are small-signal germanium type. The antenna is a one metre telescopic whip. For maximum sensitivity meter M should be a 20,000 ohms per volt voltmeter of the analogue type with switchable ranges up to (say) 20 volts. It is possible to use a digital meter, but the delay in the change of reading on such a meter makes tuning awkward, and the accuracy can be affected if exposed to even QRP level rf fields at the top of the hf range. The coil is wound on a 1 inch (2,5 cm) diameter former.Tuning ranges ; the 2 turn switch position in our model gives coverage of 28 to 18 MHz, 8 turns 14 and 10 MHz, and the full 16 turns 7 and 3.5 MHz. Although meters of lower sensitivity will work, we strongly advise using 20,000 opv (a 0-50 uA meter with suitable series resistors.) You will find that the sensitivity of the meter is such that you get body capacity effects, with reading s changing when the hand is removed from the tuning knob, but the reading obtained when the hand is removed is still the maximum. Any suggestions on overcoming this effect will be appreciated. To get some idea of the improvement this circuit provides it was compared to a conventional, single diode circuit using the same meter. As one would expect, the voltage quadrupler gave readings well over three times those obtained with the single diode. We have not seen a circuit like this used before, but it does show great promise. One feels it would also provide the basis for a useful crystal broadcast receiver using high Z phones .

Figure 1



AWARD NEWS

Congratulations to the following.

QRP MASTER. G4APO,OM3CUG, and EA1KC are admitted to the Roll.

QRP WAC. OM3CUG (endorsed for 5 bands !),DK2VJ.

QRP COUNTRIES. 200 W7CNL,CM3CUG (well done !); 100 DL7GK, GoTYM, EA1KC; 75 G4APO; 50 OZ1BXM,OM2ZZ(all 1.8MHz); 25 DK2VJ,GI4SRQ,GWoVSW,MoAVW.

WORKED G QRP C. 1040 G2DAN (good show); 800 G8PG; 640 G3INZ; 280 EA1KC; 240 GM4OSS; 180 GoTYM,DK2VJ;160 OM3CUG; 100 2EoAOZ (nice !) ; 60 MoAVW; 40 GWoVSW;20 DL2BQD, G4VUX, GW4PXQ.

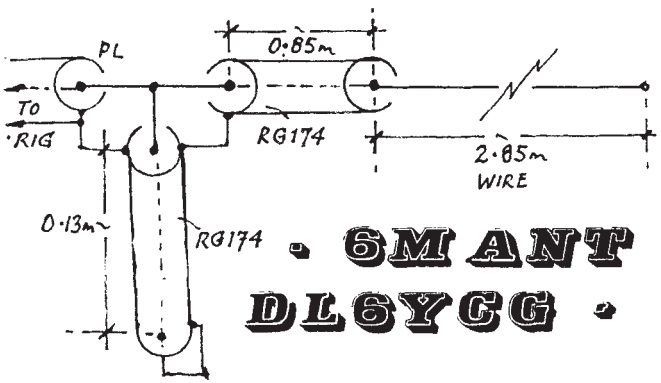
TWO-WAY QRP. 50 W7CNL (Great!), 40 G4APO,OM3CUG,EA1KC;30 GoTYM, DK2VJ; 20 Gi4SRQ,GWoVSW; 10 MoAVW, DL2BQD.

The EA1KC results are of note - all contacts with 1W or less !

THANKS TO THE MEMBERS who sent in copies of the W2PV loop article.

A LIGHTWEIGHT ANTENNA FOR 6 METRE USE

Bernd Zander,DL6YCG, Illzacher Weg 11, 12109 Berlin, Germany



This antenna gives excellent results. particularly for 6m /P use. It requires no ground or counterpoise, is very light, and can be supported on a light fibreglass mast. An SWR near 1:1 was obtained at several different /P locations. Although Bernd has only used this antenna on 6 metres, it looks very interesting and could easily be scaled up for the lower bands such as 10 or 15 metres where it should give a good account of itself.

MILES PER INCH

Only one story so far (from Frank, W4LJD.) We just do not believe that nobody else has a good mini antenna story to tell, so how about letting us have yours ?

COMMUNICATIONS AND CONTESTS

Peter Barville G3XJS, 40 Watchet Lane, Holmer Green, High Wycombe, Bucks HP15 6UG.
E-mail: peter@barville.demon.co.uk Packet: g3xjs@gb7avm

WINTER SPORTS

Well, it's over for another year, but I hope you managed to join the FUN for at least some of the event. Judging from the logs I have received, opinions differ on band conditions and the level of activity compared to other years. A commonly held view, however, was that the 'O QRP Contest' held during the last weekend of December unfortunately tends to create a slight clash of interests. The two events don't really sit comfortably together because although both promote QRP activity, they support different styles of operating. However, I am sure an enjoyable time was had by all. Personally, I concentrated on 15m and 10m (making the most of the promising rise in solar flux) and found quite a lot of activity from our colleagues in North America. On 20m I did work into Seattle and Anchorage, but both stations were QRO. One QRP dx station featuring in many of the logs was Brian, 9J2BO, who did an excellent job with his 5 watts and 4 ele. Amongst other QRP dx stations reported active were CO2KK, CU2AR, EA6/G2CNN, EA8QJ, FM5CW, HP1AC and LX/DJ6OZ.

GB2QRP (Club Nr. 9000) was again activated by (QSL manager) Bob, G4JFN, who asks me to remind members that this is an official Club callsign which counts towards the Club Members Award.

It is unusual to receive a significant number of ssb logs for Winter Sports (or indeed, other QRP events), but this time I have been sent a superb entry from Chris, G0WFH. Not only did he operate with QRP ssb (sometimes 4, sometimes 10 watts PEP), but did so from his (parked) car, with mobile whip antennas. He has kindly sent me photographs of his Texas Bugcatcher antennas (one is the commercially available version, and the second is Chris's homemade version) mounted on the vehicle, and it is easy to see that they are likely to produce good results. They are VERY large indeed!

His log includes contacts with 3B8, 6W, 7X, 9G, AP, CN8, FG, HZ, JA, JX, P4, PY, TI, YB0, VK - and two ZL4's on 80m! Many fixed qro stations would be proud to have a similar log, and Chris is to be congratulated on his achievements with his QRP mobile station. He is the overall winner of the G4DQP Trophy for Winter Sports 98/99, and possibly the first ssb station ever to win the Trophy.

There are two other entries I would very much like to mention. IK5PWQ operated during the event with 500mW using a homebrew transceiver consisting of 13 (yes, thirteen!) one inch square pcb's. Stefano's antennas were a vertical quad loop, and delta loop, and his best Dx contact was with 3B8CF. Paul, GU4YBW, sent an immaculate log following his carefully timed total of 21 hours 10 minutes at the rig (4 watts from a QRP+, G5RV and indoor 15/10m dipole). Both Paul and Stefano will be receiving special certificates for their unusual and interesting contributions to

Winter Sports.

My thanks go to all who participated, and in particular to the following members who submitted logs, all of which had a story to tell: GB2QRP, G0DJA, G0KRT, G0OTE, G0UTF, G0WFH, G3BSK, G3ICO, G3LHJ, G3MCK, G3XUO, G3ZKZ, G3YYF, G3TUX, G3ZHE, G4GDR, G4JQX, G4CMZ, G8PG (Check log), M0/DJ0PJ/P, GM4XQJ, GU4YBW, GW0VSW, GW3SB, DF7QK, DJ0GD, DL2BQD, I2IAL, I7CCF, IK5PWQ, K2JT, KA1OX, OE6EIF, OK1DZD, OK1FVD, ON5UP, PA0RBO, PA3BHK, RW3AI, VE3ABT, W1VT (Check log), W2JEK, W3TS and W4/G0FSP. (My apologies for any omissions.) We all know by now (I hope) that Winter Sports has no rules, and is NOT a points scoring contest, and therefore every participant is a winner!

1998 CHELMSLEY TROPHY

9A2RA, G0DJA, G3LHJ, G3LSW, GW0VSW, DJ0GD, KF8EE, OK1FVD and RW3AI were this year's entrants - slightly fewer in number than last year, but with some pretty impressive results amongst them. Top of the pile was Peter, DJ0GD, who had a total of 1650 qso's with QRP during the year. With an indoor dipole for 80/40m, R5 vertical for 20/15/10m, 3 watts cw and 5 watts ssb he worked 153 DXCC countries and 52 DXCC 2-way QRP. Included in the 2-way QRP total were 3 new ones - OX, TK and ZL2. Our congratulations go particularly to Peter for his fine effort, but also to the others for their fine contributions to this event.

YEOVIL QRP CONVENTION and FUNRUN

If you receive this SPRAT in good time, please don't forget these ever popular events - details to be found in SPRAT 97 (6-9th Apr FunRun, 18th Apr Convention).

SLOVAK LOW POWER SPRING SPRINT

Again, hoping this reaches you before it is too late, a reminder that this event takes place every Easter Monday (5th April 1999) 1400-2000z. SPRAT 94 has the details. I have a list of the 1998 results, if you would like to send an ssae.

EA QRP CW CONTEST

This contest takes place during the 3rd weekend of April every year - so 17/18th April this year. The 1st period is from 1700-2000z (17th) 14045-14065kHz. The second period is from 2000-2300z (17th) 3540-3570kHz, and the third from 0700-1300z 7015-7035kHz. Categories: QRP - maximum 5 watts output, QRPp - maximum 1 watt. Multipliers: every EA province and DXCC country. EA stations will give rst and province, non-EA stations to give only rst. Score: every contact with a QRPp station = 2 points, contacts with a QRP station = 1 point each. Final score = points x multipliers. Logs to (and further details from) EACM. If you prefer, I can also supply details (ssae please).

The deadline for the next issue is the beginning of May. Enjoy your QRPing.

NOVICE NEWS Steve Ortmayer G4RAW

14 The Crescent, Hipperholme, Halifax. HX3 8NQ. Tel: 01422-203062

Arise Sir Steve!! Enzo I7PKY has written to "Sir Steve Ortmayer" with details of how to shift the Pixie 2 700Hz from TX to RX. Enzo has a neat arrangement with a varicap diode.

John, 2E0ASG asks if any members have had success with magnetic loops. I have two friends G3ABS and G3KKP who have made loops using the case of hardline coax as the loop. They have had good results but use QRO. John wants to use an indoor antenna. Last week I spoke to John, G0BXO, the hard working membership secretary. John had worked ZL and he uses 5w to an indoor half G5RV - so it shows it can be done.

I have made the Rockloop by C.F. Rockey, W9SCH, and this has worked well on 15m. See the G QRP Club Antenna Handbook for details. Here are also details of other indoor and restricted space antennas, which could be of use.

Wyn who runs the Llandovery College Radio Society has sent me details of simple ground plane antenna for 70cm. The antenna is called the Thunder Pole designed by 2W1FAJ. Details from me for an SAE.

Novice Exam Dates:	Closing Date for Entries
7th June	16th April
13th September	16th July
13th December	16th October

Please keep sending your news and views on Novice matters.

SSB COLUMN : Dick Pascoe GØBPS

Seaview House, Crete Road East, Folkestone. CT18 7EG. Tel: 01303 891106

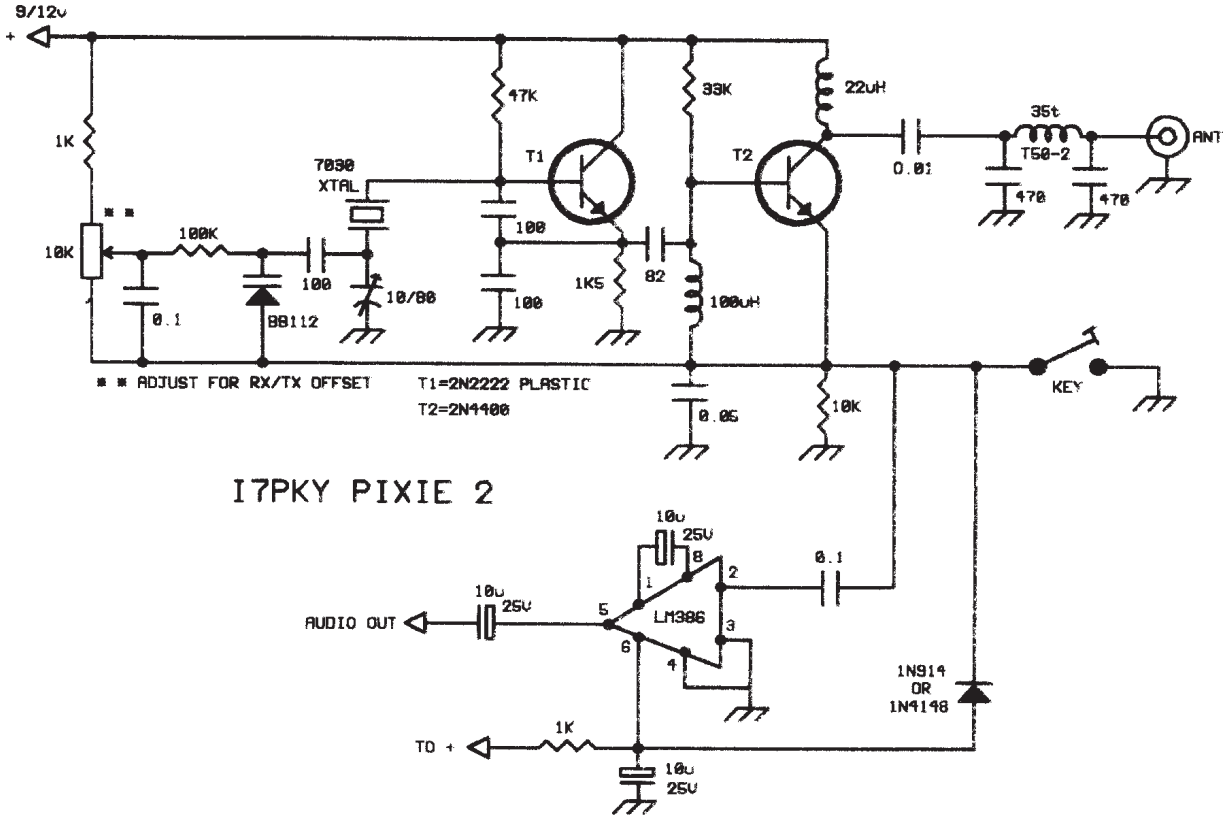
Email : Dick@kanga.demon.co.uk. via packet to GB7RMS

Brian GM4XQJ wrote to tell me of his exploits. He rarely gives much thought to the higher ends of the bands but has recently had a few 8 watt contacts with Cliff ZL4AS who is very active around 21.250 at 11.00 most days. Brian has also had a few contacts on 40m with Brian G0NSL who is from Runcorn, he apparently puts quite a good signal into GM. The biggest problem seems to be the QRO splatter.

Carl GW0VSW wrote from West Glamorgan to 'brag' about his bag. He has been doing extremely well with countries such as P43, HB0, 9A, J43 and EA6 on 20m. The DX on 40m included EA7 and GM4, EA5, EI and LA. Carl uses the early version of the QRP Plus with 4 watts into an inverted 'V' shaped G5RV. My own exploits were severely curtailed when the weather took out my antennas. Living on top of a hill has benefits except in really nasty weather.

I received a letter from Leighton GW0LBI who has been quite active on 10m and 17m since Christmas. His 5 watts PEP on 10m gained him 9K2, 3V8, ER4, SA1, D44, YV6, K2 and UA6. His ventures onto 17m pulled in UR5 (1W), IK3, 9A2, EA6, SM0 (1W) and YO3. Not a bad bag. Leighton tells me he has also heard G0NSL running 5 watts on 40m regularly.

Please let me have more letters, emails or even packet messages about your ventures onto the bands. TTFN for now.


9/12v
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1K
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XTAL
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* * ADJUST FOR RX/TX OFFSET
T1=2N2222 PLASTIC
T2=2N4400
I7PKY PIXIE 2
10u
25V
0.1
AUDIO OUT
10u
25V
LM386
1N914
OR
1N4148
TO +
1K
10u
25V

The Cuckoo-Killer

Doug Gibson G4RGN, Marlow, Westwell Lane, ASHFORD. TN26 1JA

Don't get me wrong - Ii am a bird-lover. But there is one bird that I have been trying to kill for the past twelve months. Many of us are being plagued by a racket that comes up on 2 metres, especially in the evenings, which announces itself by a raucous "CUCKOO!" followed by a stream of digital hash which drowns out all but the strongest signals.

It appears that the cause is one or more of the recently installed Paging transmitters which are proliferating with their giant 'candlesticks' all over the country, as well as other high-powered PMR-type systems. These stations are operating quite correctly on their allotted frequencies, and the problem is not theirs; the cause lies in the design of the front ends of some amateur receivers. The 'Barn-door' characteristic of these circuits admits a very wide band of signals, which overload the mixer, and generate a cacophony of cross-modulation products.

A solution to the problem appeared in an article in the RNARS 'Mercury' magazine submitted by G3EGF, from an original idea from WB6IGP. His solution describes a cavity resonator, using a large tin can similar to the type used in repeater filters. I built this device, and it worked perfectly, totally eliminating the QRM, but I felt it was a rather massive contraption to have on the bench, and decided to try something smaller.

Returning to first principles, I experimented with conventional LC circuits, and found that the enclosed arrangement is 100% effective in this location, all cuckoos being killed stone dead, although in the most severe cases the larger unit might still be needed.

Construction is in a box 65 x 65 x 45 mm made of double-sided copper-clad board, soldered all round, with all grounds soldered to the bottom board.

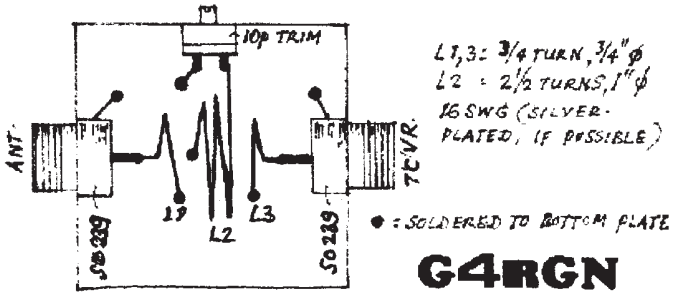
The device is tuned to 145 MHz by adjusting the trimmer to obtain a 1 -1 VSWR on transmit; if a perfect 1-1 cannot be found, try reversing input/output, or slightly changing the size of one of the coupling loops. Actually, I was able to get a better VSWR with the device in circuit than before! Tuning is very sharp indeed, and it is best to carry out first adjustments on low power - the SWR leaps up and down alarmingly as the trimmer is adjusted.

For a simple design, the insertion loss is remarkably low - less that half an S point on transmit and receive at 145 MHz, and slightly more near the band edges if the trimmer is not adjusted.

L1,3 = 3/4 turn, 3/4" dia. 16swg

L2 = 2.5 turns 1" dia. 16swg

Silver Plated if possible



PLEASE SEND VHF NEWS AND CIRCUIT IDEAS TO:
John Beech, G8SEQ 124 Belgrave Road, Wyken Coventry CV2 5BH
Tel. or Fax 01203 617367. Packet Homebbs : GB7COV. Email: john8seq@discover.co.uk

MEMBERS' NEWS

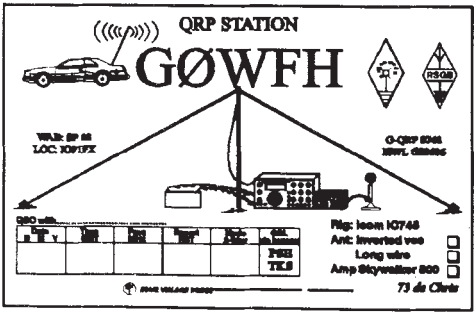
by Chris Page G4BUE

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

G4CFT recently started QRP again after a ten year break. Mike used to be on HF but now want to try QRP on 2m. **DL2BQD** was QRV as **TA4/DL2BQD** during a holiday with the rig used in the Harz Mountains (p.39 SPRAT 97. Dieter applied for a Turkish licence (in addition to CEPT regulations) in advance and received a quick affirmative reply by fax. He declared his rig on entering Antalya Airport to prevent any problems leaving Turkey. Dieter will be QRV for two weeks this summer from OK land.

Dieter, DL2BQD, in front of the Turkish flag.

GM3MXN takes me to task for saying interference to the CW bands from the CQ SSB Contest is only once a year (p.38 SPRAT 97) as there is a band plan and it is "the thin edge of the wedge. Tom sent a copy of the minutes of an IARU Region 1 Permanent HF Committee meeting of 20-22 February 1998 saying the Chairman had been in correspondence with *CQ Magazine* (the sponsors of the contest) for the last five years following "a very large number of complaints from CW operators about European and Middle-east groups who operate high power phone stations in the CW ends of the 7MHz band during the CQ WW and WPX contests". Evidently the editors of CQ Magazine do not accept this as a problem for them to deal with and refuse to make any changes to the contest rules. They will continue to press CQ Magazine as well as HF Managers asking entrants not to operate below 7040kHz and follow the band plan.

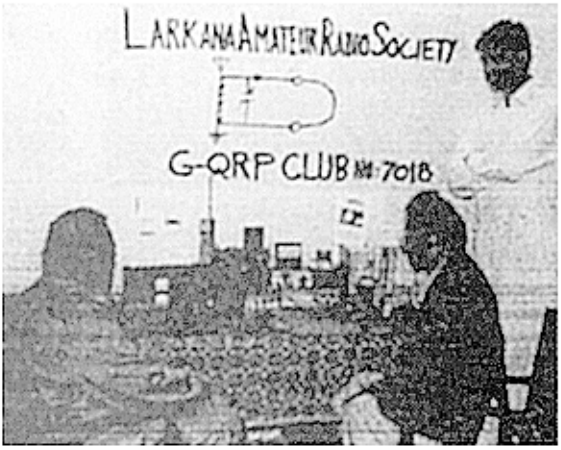


Chris, GØWFH's, mobile QRP QSL.

GØWFH has been working QRP mobile since 8 December with an IC-746 and a Bugcatcher vertical antenna mounted on the back of his car. Chris has made 270 QSOs including 10W QSOs to KP4, VP9, J8, VK6, 7X, JX and ZL on 80m, A4, PY, 6W, TI, PZ and JA on 40m plus 4W QSOs to YB and VK6 on 20m, JA and SU on 17m, KP2, 3B8, VK5, YB and W7 on 15m, 5A, 9Y, AP, VK6 and 9G on 12m and CN, PY, 7X and KP2 on 10m. **DL4VM** has been QRV QRP only since January 1996 with an indoor four band trap dipole but has now put up an indoor dipole for 20m. His seventh QSO with it was with **ZL4SEA** and Thomas thanks George for "his big ears" for hearing his 4W. He will be on holiday at Cevennes in the South of France in July and will be looking for QRP QSOs with members.

WB2VUO is the trustee of the of the NQ2RP/B 10m milliwatting beacon 125mW (+21 dBm) on 28287kHz and welcomes re-

ception reports to <wb2vuo@ juno.com>, <wb2vuo@ frontiernet. net> or <wb2vuo@ juno.com>. Keith says the Byron/Bergen beacon is still QRV and all reports will be acknowledged and appreciated. **G3ATM** says he never thought he would make the 5W QRP QSOs with **ZL4SEA** reported in SPRAT 97 (p. 38) from his valley in North Devon as his antennas are in the roof space of his flat. The antenna that Doug used for the 30m QSOs is made out of ¾ inch copper pipe as a magnetic loop fed via a 1:1 balun to a Faraday loop and remotely tuned to give use of 10-14MHz. He has WAC with it and says it may encourage other members to have a try with indoor antennas. Doug also QSO'd **ZL4SEA** with 5W while on holiday in January in the Forest of Dean using a 67ft long wire antenna average height of 12ft!



Habib, **AP2HUH**; Roshom, **AP2RJ**, and Arshad, **AP2AHQ** (l to r above) are members of the Larkana ARS where they are QRV with a Realistic DX-200 receiver and a Cascade 20/80m donated by **G3RJV** and a EP2 donated by the Norcal and G-QRP Clubs, together with a home-brew QRP wattmeter, frequency counter and digital multimeter.

PA3BHK changed his call to **PA9RZ** at the end of January after the Netherlands Radio Agency made vanity calls available. Robert bought a SG2020 in 1998 and says it is a "wonderful rig for SSB, 20W PEP out of that little thing is almost as effective as 100W from my IC-736. For CW however, the rig is disappointing. Too much IF amplification following the SSB filter on 60mHz, controlled by an AGC voltage based upon the AF signal after the AF filter, causing the IF amplifier to overload when there's a strong CW signal adjacent your frequency, outside the AF filter alright but within the SSB filter. This causes a steam roller effect making the receiver as good as useless for serious CW operation on busy bands like 80 and 40m."

Our Membership Secretary **GØBXO** made a Boxing Day visit to **DK4UH**' shack and the photograph above shows him (left) with Rudi and his dog. Back home in January John "managed to snatch a few minutes on the air in amongst all the renewals" and QSO'd the **ZL9CI** DXpedition to Campbell Island with his "5W from my FT-840 into a (very) bendy indoor half-size G5RV". **G3XJS** also QSO'd **ZL9CI**, with his first call, on 20m. Peter was running 3W to his 2 element Yagi (long path) and says "I still hear people talking about working DX on 'just 100 watts', hi".

DH1FBL will be on holiday in Denmark 1/15 May and 26 June/7 July and will be QRV with his Kenwood 120V and W3DZZ antenna a **OZ/DH1FBL/P**. Wolfgang will be on 80, 40 and 20m looking for QRP QSOs with members.

GWØVSW is QRV with a QRP Plus but often suffers from high QRN levels during the day. Carl turned to 40 metres where he QSO'd **VP5/K8JIF** and **VE2/N6ZZ** and to 80 metres where he QSO'd **8P6EM** in addition to **FY/DJØPJ** on 15 metres. **IK5PWQ** believes in teaching them young and already his three year old daughter Rachele is showing an interest in the shack (see photo below). Stefan tried 500mw into

a "quad loop vertical antenna" for the Winter Sports and was pleased to QSO **3B8CF**. **G3YCC** also QSO'd **3B8CF** who was calling CQ on 14059kHz 1 January and QSO'd several other QRPers.

F6ACD has recently moved to a new QTH and the photo shows his shack with an Argonaut 505 and FT-707, although Pat usually uses home-brew equipment.

F5NZY made 811 QSOs in the CQ CW Contest for 364,180 points with his TS-120V at 5W to a 45m long wire, delta loop and doublet antennas. Steph says "It is my very first contest...no strategy was planned and I regret it as I missed a lot of 'easy' multipliers (PA only one band)".

G3YCC has recently 'discovered' the Pentel Green Label NN50 marker which has proved to be excellent as an etch resist medium. **N2CQR** is QRV on 20m (14032-14040kHz) using a homebrew superhet receiver (W1FB design) and a VXO controlled, 4W transmitter (W1VD design) to an end fed half wave using the ATU described in G8PG's column in SPRAT 97. Bill is a big fan of SPRAT and often scans older editions while riding to work on the Washington DC subway system. **G3XJS** says those needing ZS two-way QRP, take a look for Bill, **ZS6KO**, on 10m during the afternoons as he has been QRV with 5W into a 5 element Yagi. Peter also says that **UA2FFV** is QRV QRP.

G4UDU of Adur Communications received the following from Scott at Ten-Tec: "We have finished the long-awaited 1380 80m QRP CW transceiver kit. We expect to have them ready for delivery in April. Also going to follow with models 1315 for 15m and 1317 for 17m, but the higher band versions won't be out until later in the spring or early summer. No plans for 10m or 12m".

G3NPA provided **G3PLX** with a low level signal to test his new PSK31 software. Geoff started reducing his power with Peter 'talking him down' to achieve the level he required. The test then consisted of Geoff sending Peter a file of text using PSK31 QPSK and afterwards he asked Geoff to try to measure his power output into the antenna, which he did using a scope to measure the RF voltage into a 50 ohm load. To their surprise Geoff measured 0.28volts pk/pk which is the equivalent of 200 microwatts! Peter and Geoff are approximately 300kms apart and Peter read Geoff's signal with 20% errors on his screen. Later the same evening, Geoff was contacted by **GM3RXU** (about 600kms distance who had heard the contact and reported that he was copying about 20% my signal. Geoff says "both Peter and I were truly staggered that such flea power could be used to make contacts like this. Mind you a mode that only uses 32Hz bandwidth obviously has its advantages. And maybe it shows that CW might *not be* the ultimate QRP mode in future! I think that PSK31 *could* be a revolution in small signal detection methods and be a real bonus for the QRP lads who are not so hot or keen on the Morse key".

Don't forget to let me know how your Spring goes, by 25 May please.

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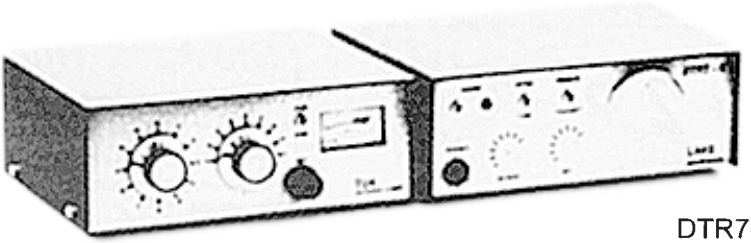

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