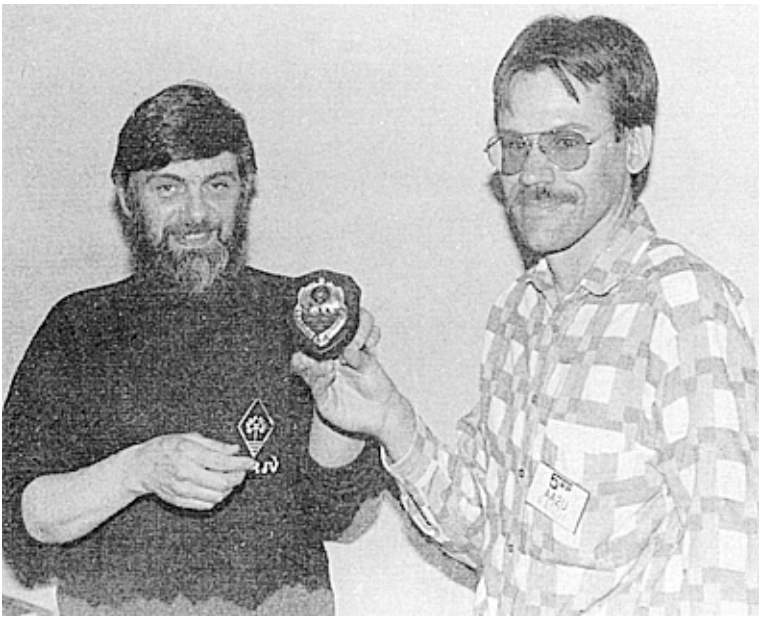
SPRAT

THE JOURNAL OF THE G-QRP CLUB

DEVOTED·TO·LOW·POWER·COMMUNICATION

ISSUE NR. 67 | © G-QRP CLUB | SUMMER 1991



G3RJV presents Randy, AA2U, with the G4DQP Trophy at Dayton

COMPUTER BOARD TX * MINI-CONVENTION

CW FROM SSB TX * DOUBLE CONVERSION RX

VALVE 80M RX * HW9 MACMODS

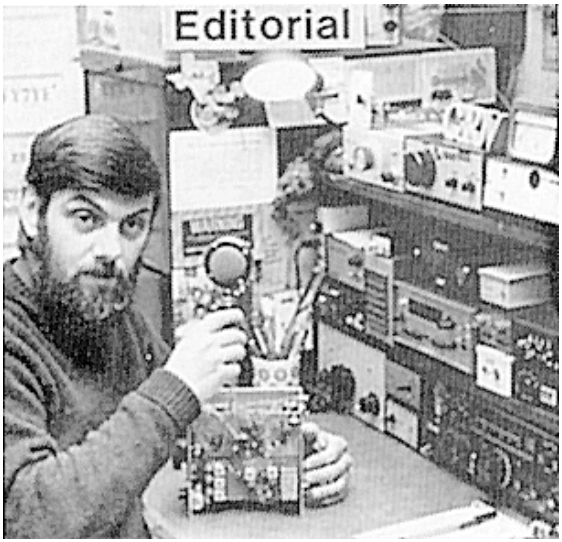
JAMBOREE SMD LINEAR * ROO ON SSB

UP & OUTER * CW FILTER * CSP PROJECT

COMMUNICATIONS FORUM * EUROPE FOR QRP

NOVICE - VHF - SSB - MEMBERS NEWS

JOURNAL OF THE G QRP CLUB



Rev.George Dobbs G3RJV

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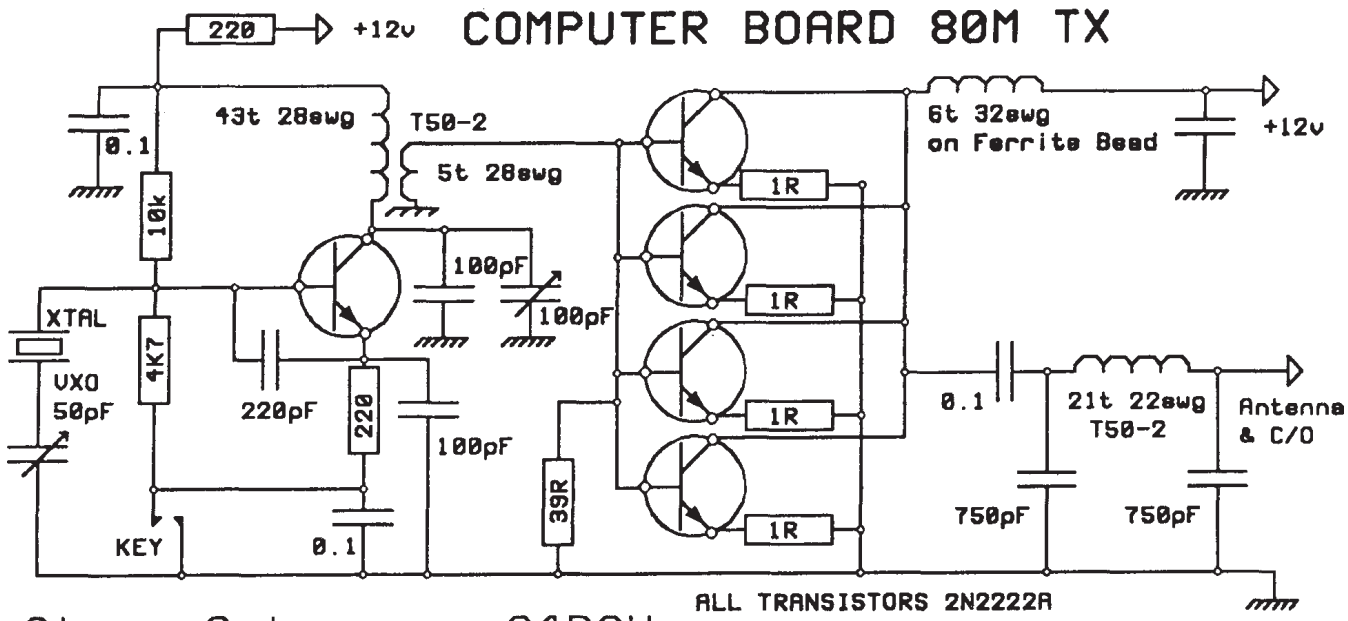
A short editorial this time : I have to make room for for member 3777 below! I have not met many real life heroes, which is perhaps as well, because I am led to understand that they usually prove to be a disappointment. So it was with mixed feelings that I drove up to North Michigan at the end of April to meet Doug DeMaw, W1FB. I had admired Doug's work, from afar, for many years. Dissappointment ? Not at all : we talked radio, looked at circuits and his workshop, shot muzzle loading rifles and ate venison. Doug exceeded my expectations.

Watch out - a new version, completely revised and enlarged, of his QRP Notebook is due out soon and he has promised more articles for SPRAT. I am trying to get him to come over and join us for the QRP Convention in October. 73

LOOK-OUT! Jo-Anna Dobbs GOOHW

After a number of years, I won't say how many G1IJW became G0OHW in March of this year!

Why so long? Well, by the time I have fed the children and G3RJV, done the washing, ironing, shopping and cleaning; been out to work and prepared for the next day, smiled nicely at all callers at the Vicarage, (holy or not), CW practice was not a priority. Nor is it still - though I do like to wander through the bands when the house is quiet. The problems now are sympathetic and sensitive operators. If you hear me please, please QRS otherwise I suffer from flustered, erratic CW syndrome and the key has been known to fall off the bench! I have ten entries in my log book and hope to double up on that by the next issue of SPRAT!!



COMPUTER BOARD 80m TRANSMITTER
Steve Ortmayer G4RAW

I was given a pile of computer boards and they were covered in 2N2222A's so I put them to good use.

I have used the W1FB ballasted PA idea from SPRAT. It gives about 1.5w out on 80 metres. I get theraputic value from these simple projects!

THIRD G QRP CLUB MINI-CONVENTION

SATURDAY OCTOBER 19th 1991

ST. AIDAN'S CHURCH HALL, MANCHESTER RD, SUDDEN, ROCHDALE, LANCS

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ROCHDALE MINI-CONVENTION ACCOMMODATION
TUDOR HOUSE, an above average inexpensive Bed and Breakfast Guest House is situated just down the road from the Convention Hall. To book ring Catherine Traynor on (0706) 861103.
THE MIDWAY HOTEL is situated on Manchester Road about a mile from the Hall and offers good quality modern hotel accommodation at a fair price. Telephone : (0706) 32881
Likewise is the NORTON GRANGE HOTEL Telephone (0706) 30788

ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS

WHITE ROSE RECEIVER BUILDERS: Did you know all the parts are available from Farnell Electronic Components, Canal Rd. Leeds. Roy, G0IWU has supplied a list with catalogue numbers and prices : copies for SAE to G3RJV.

WANTED: New or GWO valves: OA2, 5763, EL34, 2 of each required. J.W. Mackay, 4 The Crest, Whitehaven. TEL: 0946-694910.

WANTED: Reliable HF tx/Rx, poss. TS130S. Will exchange or sell either Yaesu FT290II or Amstrad PC1512DD, each valued around £325. Both in vgc. Also wanted Yaesu FLdx400 transmitter to match existing receiver. Contact Keith (ex G8YBF) QTHR or leave message TEL: 061-477-5303 (not QTHR)

SPRATS FOR MILLWATTS: I need SPRATs before 49 and have a complete set of the "Milliwatt" to swop. Jim Maxwell, W6CF, PO Box 473, Redwood Estates, CA 95044. U.S.A.

FT101E immaculate cnx, cw filter, fan, manual; £275 (spare PAs available if required. Small Oscilloscope (Heathkit circuit): £25. G3AEP QTHR. TEL: 0253-720756.

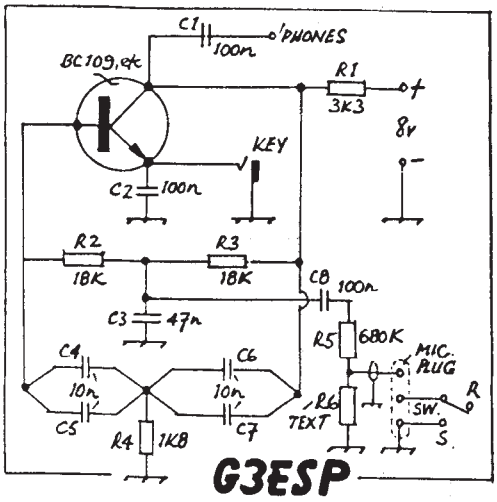
THE ANTENNA EXPERIMENTER'S GUIDE *by Peter Dodd G3LDO.*
Over 200 pages and 120 illustrations on experimenting with antennas. Subjects covered, construction of RF test equipment, antennas and masts. Optimizing existing commercial or HB antennas. VHF modelling of HF antennas. Using computers in measurement and modelling
£8.90 (£7.90 to G-QRP members)+ P&P 78p UK, £1.20. Overseas surface mail.
Available from 37 The Ridings, East Preston West Sussex BN16 2TW. tel 0903 770804

QRP CW FROM AN SSB TRANSMITTER

Walter Farrar, G3ESP, G-QRP-C 2857

My FT-7 transceiver is a low-power cw/ssb rig, but not low enough to send "official" QRP cw, so the add-on unit described here was built to do just that, and I can now transmit any power from milliwatts up to the "legal" 5 watts maximum output. Method: If an ssb transmitter is modulated by a pure tone, the emitted single sideband is equivalent to a normal carrier, and if the tone is keyed the output signal is identical to normal cw.

The adaptor consists of a twin-T oscillator (ARRL Handbook), said to give a clean tone at about 750 Hz. The output from C3 is high-Z and is excessive for the mic. input of the FT-7. The mic. gain control is a 5K potentiometer, and this with R5 (680K) attenuates the tone output. (A different model of transmitter might require such attenuation built into the adaptor, the values of R5 and R6 being determined by experiment). The adaptor output is fed to a microphone plug, to connect to the mic. input socket. Also connected to this plug is a single-pole toggle send-receive switch. At the rear of the FT-7 is a DIN socket with 13.5V and 8V available. The 8V is used to power the adaptor. A second output is taken from the collector



and fed to the receiver headphone output for sidetone. (The FT-7 audio output is at 4 ohms. A miniature 5/1200 ohm transformer was connected (backwards) to feed high-Z phones, and then the sidetone could also be heard at sufficient level).

In use, a low-power wattmeter (similar to the one one p.53 of "W1FB's QRP Notebook") is first connected to the output of the transmitter. The "Mic. Gain" is turned to zero, the key pressed and the gain increased to give the required power reading. The transceiver is then connected to the antenna. To operate, the rig is switched to LSB or USB and the RIT ("Clarifier") set to zero offset. If a CQ is put out, the signal is say, 750 Hz offset from the suppressed carrier frequency. A precisely netted reply will therefore also be 750 Hz offset, and will be heard as a 750 Hz tone. To net to a received signal, the main tuning is adjusted to match it to the sidetone, which is audible even with the S/R switch in the receive position. Thereafter any adjustment of the received tone is done by using the RIT.

The prototype occupied a Cigar tin 12cm by 11cm, including a loud-speaker for sidetone and an adjustable output. The final version goes on a board 3cm by 2cm housed in a rather smaller box!

DC RX = Double Conversion RX

Ian Macpherson GM3RXU

Many of the receiver circuits published in SPRAT and other journals for simple home construction are based on Direct conversion designs. Some of these, such as the Sudden, can give excellent results and are easy to adjust and set up. They all, however, suffer from the same potential deficiencies although some of these can be minimised with good design:

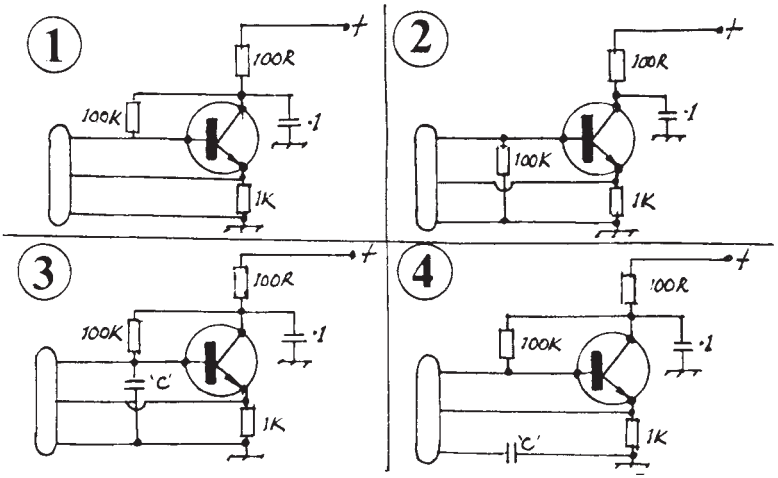
- AM breakthrough can be greatly reduced or eliminated by the use of balanced detectors.
- Selectivity can be improved by the use of AF filters after the detectors.

Without the use of rather complex phasing techniques, however, DC (direct conversion) designs do not allow "single signal" reception. The audio image is always present along with the desired signal and on a busy band this can have the effect of making the band seem doubly busy.

The use of a conventional superhet with a reasonably sharp filter at 455 KHz can provide single signal reception but the low IF allows RF image breakthough with signals of 7 KHz and above unless a good RF filter is incorporated ahead of the mixer. Designs such as the LCK avoid this problem by using a high IF built around a crystal ladder filter to give good selectivity. Such designs can give excellent single band CW performance but the design and construction of a crystal ladder filter may put some people off (unnecessarily) and certainly getting a good flat passband for SSB reception can be a bit tricky.

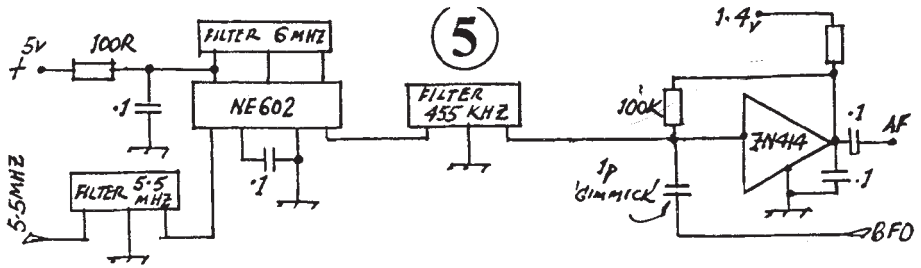
There is an alternative design which is not often seen in home construction articles. This is the double conversion technique and was used in some of the later valve receivers such as the YEASU FR50B and the EDDYSTONE 888. Such designs offer the use of conventional 455 KHz filters while at the same time a first IF which is sufficiently high to avoid RF image problems. Nothing comes free, however, and some care is required with the design to avoid "birdies".

Anyone interested in the design of amateur equipment should always keep an eye open for the availability of new and useful mass produced items. In this context, the ceramic filters used in TV sets to give IFs of 6 MHz and 5.5 MHz have some interesting properties from an amateur point of view. They can be used, for example as the frequency determining elements in oscillators.



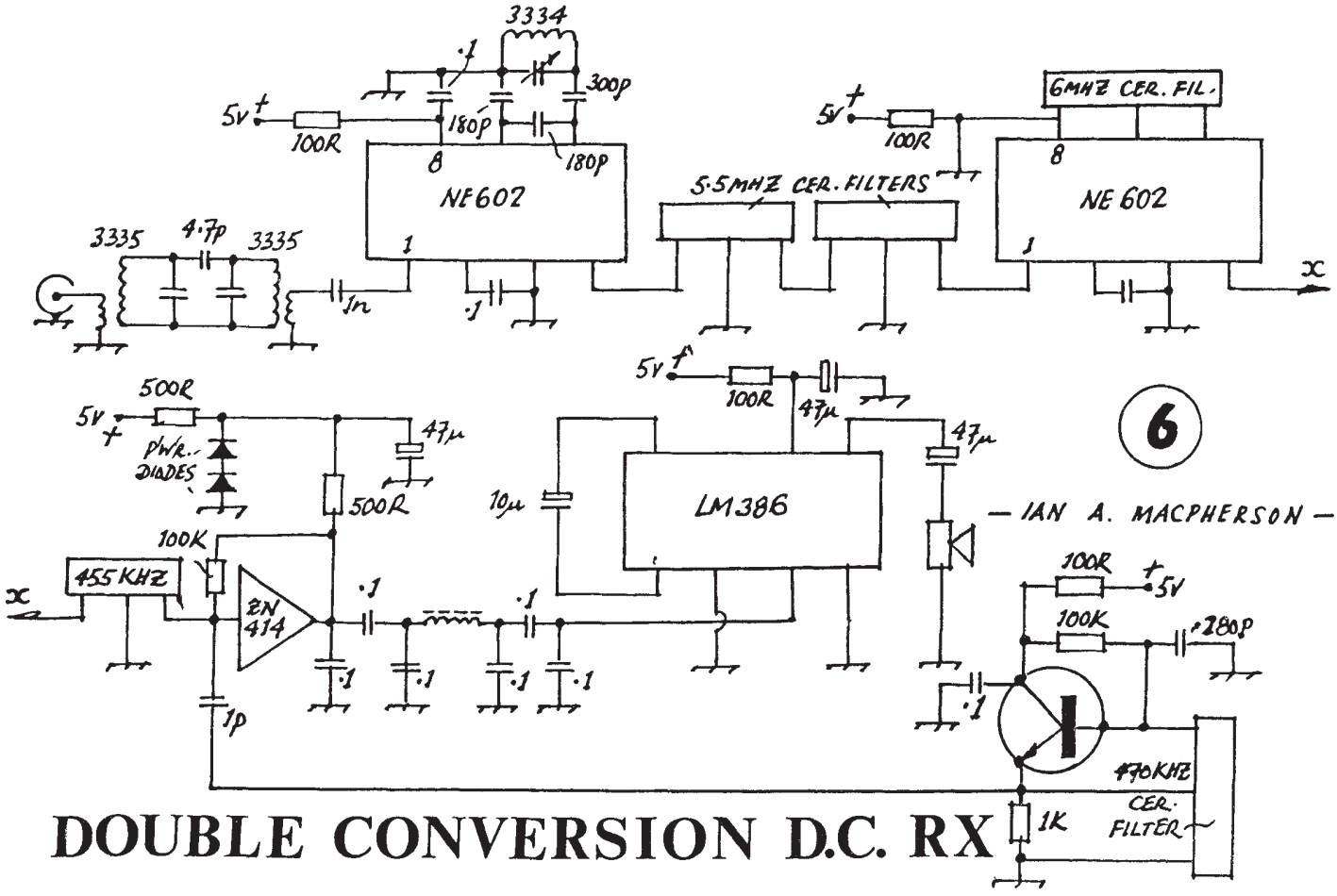
Figs 1 to 4 show some typical circuits. In these a 10.7 KHz filter will oscillate at about 10.8 MHz, i.e. at the upper cut-off edge of the passband. The 6.o MHz, 5.5 Mhz, 4.5 MHz and 455 KHz ceramic filters oscillate at the lower cut-off edge of the passbands, i.e. 5.91 MHz, 5.39 hz, 4.4 Mhz and 450 KHz respectively.

The frequency can be controlled by the addition of a series or parallel capacitor as in Figs 3 and 4. The typical range for a parallel capacitor would be about 15 KHz at 5.5 or 6.0 MHz. A similar similar range is possible at 455 KHz but a substantially larger capacitor is required. A series capacitor raises the frequency by a smaller amount, the limit being loss of oscillation.
The 5.9 MHz signal generated by an oscillator controlled by a 6.0 MHz ceramic filter is conveniently 455 KHz above the passband of the 5.5 MHz ceramic filter. Combining these features with the NE602 mixer-oscillator it makes the basis for a double conversion design which requires virtually no set-up adjustments.



In Fig 5 the ZN414 acts as the IF amplifier at 455 KHz but also behaves as a passable product detector if the BFO injection is kept low enough to avoid triggering the AGC. The full receiver is completed with the addition of a further NE602 as the RF mixer and an LM386 as the audio output amplifier as in Fig 6.

A practical receiver for 20 meters built around these elements gives excellent results with only one small "birdie" in the RTTY section of the band. The RF coils were 3335 types and the oscillator coil a 3334 type from CIRKIT or MAPLIN. The 455 KHz filter used in the IF stage was two CFM2A455 types from CIRKIT, back to back but any narrow band AM or SSB type filter would work fine. The BFO injection was obtained from an old 470 KHz ceramic transfilter used in an oscillator circuit and padded down to the appropriate band edge with parallel capacitors.
Injection into the ZN414 depends on layout and leakage but assuming screening is good then a small "gimmick" twisted wire capacitor or about 1 to 1.5 pF will be sufficient.
The ceramic filters can be found in the catalogues from CIRKIT and MAPLIN and also from time to time in the TANDY (US Radio Shack) stores. They are inexpensive and cost about 70 to 80 pence each.
The results are well worth the effort - clean signals from a quiet background with no image problems!!



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— IAN A. MACPHERSON —

DOUBLE CONVERSION D.C. RX

VALVE DC RECEIVER FOR 3.5 MHz BAND

B.A.BUTCHER G0ILL

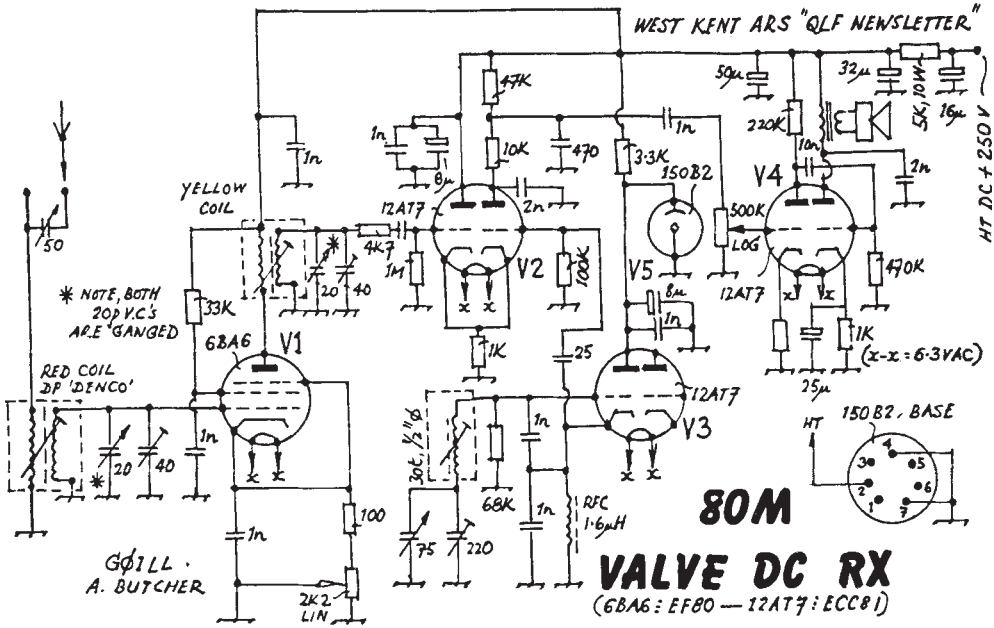
SSB plus CW by direct conversion is a less complicated receiver than the superhet.

The RF amplifier (V1), tuned to the required frequency, feeds HF signal to the Product Detector/Mixer (V2). Local Oscillator signal is produced in V3. Mixing incoming signal from V1 with the signal from V3, and processing it in V2 results in an Audio Frequency signal. This AF signal is then amplified in a two-stage amplifier V4, which provides adequate volume for 5 in. speaker.

The circuit shown covers 3.5 MHz amateur radio band with a few kilohertz to spare at each end. In these DC receivers the selectivity is in the audio circuits so make sure you do not overload the Mixer with too a strong signal from the RF stage, as local breakthrough will take place. An ATU or a Pre-Selector is also highly desirable in tuning this set, which is indeed very lively and has very good quality audio from SSB transmissions.

Note: the V5 (150 B2) Voltage Stabiliser, is not a must, but does help to hold the oscillator steady. Its socket connections are as shown. Some Valve Books show wrong pin connections.

The signal from V3 can also be used to drive transmitter for the same frequency band. Remember that this is the "Real Stuff" with some high voltages present. Some unscheduled body contact with such voltages might be a little unpleasant.



CLUB SALES OFFERS:

SBL1 Double Balanced Mixers : Bargain price of £3.50 ea. From: Dave Aizlewood, G4WZV, 36 King St. Winterton. Scunthorpe. DN15 9TP. Dave has stocks of **WHITE ROSE BOARDS** : Main Board £2.50, Converter Board £1.25, Exciter £3.75 (Cheques : "G QRP Club") 25p pp. on above

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HW8 HANDBOOK : New Edition of Modifications for the HW7/8/9 series (reviewed in June Rad Com) Members price : £5.00 FROM G3RJV . G3RJV also has new stocks of the **6 Pole 2.2KHz Crystal Filters** at £12 (50p pp.) LSB/USB Crystals at £3 the pair. (Cheques "G QRP Club")

(PLEASE SEND A SELF ADDRESSED STICKER WITH ORDERS FOR THE ABOVE ITEMS)

MACMOD HW9 IMPROVEMENT

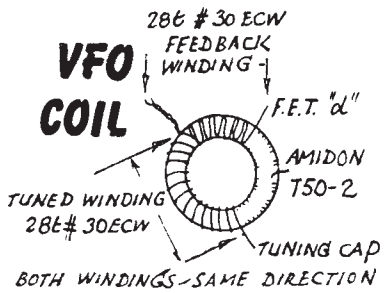
Ken Maxted GM4JMM

The Heathkit HW9 is a compact transceiver with good break in performance but, in the eyes of many, suffers problems in respect of local oscillator drift, poor IF skirt selectivity and inadequate receive sensitivity. Many of the remedies published have been tried but none have lived up to expectations. It is realised that component batches may vary and particularly in respect of the VFO coil may significantly affect performance: some VFOs may exhibit exemplary stability in which case do leave well alone. If however, you are not happy with performance none of these mods will damage your rig and are, with care, reversible.

THE VFO

On examples of these rigs VFO drifts of 2kHz per hour for over two hours are not unusual. After two hours the drift is closer to published specification. These figures have been obtained at stable ambient temperature. It was felt that the coil and slug assembly was the major culprit and recourse was made to the stable pairing of an Amidon T50-2 core and polystyrene capacitors. The toroidal core has the disadvantage of having no slug to tune but in fact sufficient adjustment can be made by squeezing the turns together or stretching the coil out to fill the core.

With reference to the Heath circuit diagram and component layouts, remove the screen can and coil assembly. Desolder and remove C182, C184, C186 and C183, C185 and C187. These are the fixed parallel capacitors in the oscillator tank circuit.



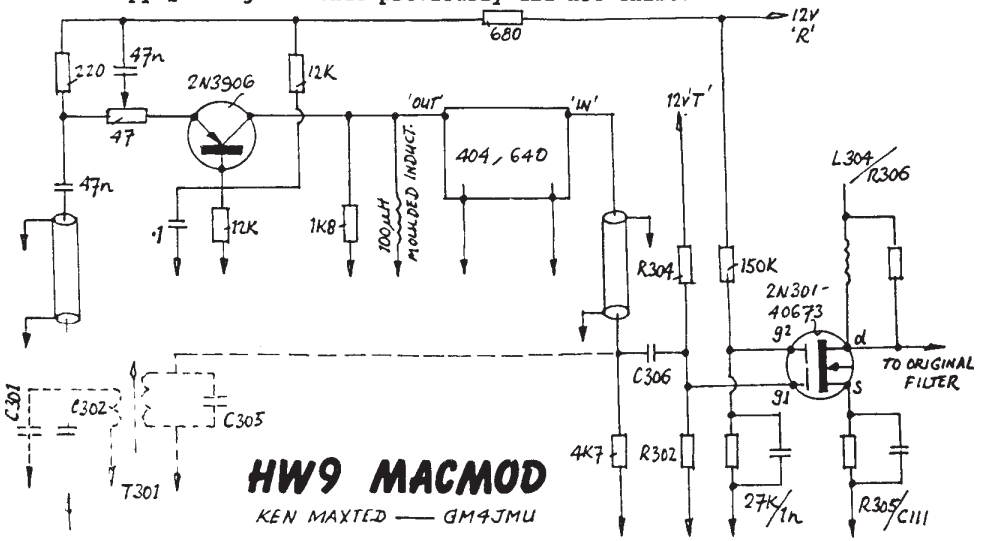
Wind a coil on the toroid comprising two winding in series (not interwound.) The tuned winding is 28 turns of 30 swg enamelled wire. The feedback winding between points connecting to the FET drain and the coil centre should be close wound with 28 turns of 38 swg. The tuned winding from the coil centre to the tuning capacitor fixed plates should be spaced to fill all but a remaining quarter of the core circumference: this will ensure that the turns are at the correct tension to stretch or compress the tuned winding. The coil turns should not be too tight and need not be pressed in close contact with the core faces but assume a more or less circular cross section. Boil the completed core and winding for one minute or so in water to set the turns. Pull the completed coil down onto the PCB using the original mounting holes and at this stage do not fix it in any way apart from soldering short flying leads. Replace C182 through C186 with an 82pF polystyrene capacitor in the C182 position. Replace C183 through C187 with a 1500pf polystyrene capacitor in the C183 position. (Alternative positions may be used if the size of the capacitor demands but make sure that the "top" capacitor is the 82ft and the grounded end is 1500pf.)

Replace the oscillator board in the rig for testing. Do not do any other mods until this stage is completely satisfactory. Using a frequency meter or an accurately calibrated receiver, adjust the VFO as per the Heath text. Squeeze coil turns to reduce inductance, stretch to increase. Trim capacitor on the VFO tuning capacitor to obtain closest tracking to dial calibration - it will be slightly more compressed than in the original. When the VFO is reading correct at the HF and LF ends melt a blob of beeswax through the core centre to

hold it on the board. Check the frequency when the wax is cool and trim. The screening can is not used and should be stored with the other removed components.
Check the netting IRT and, if necessary adjust the VFO output level. Initial drift should be about 350Hz LF (VFO freq) over half an hour. Subsequently drift should be less that 300Hz per hour.

IF MODS

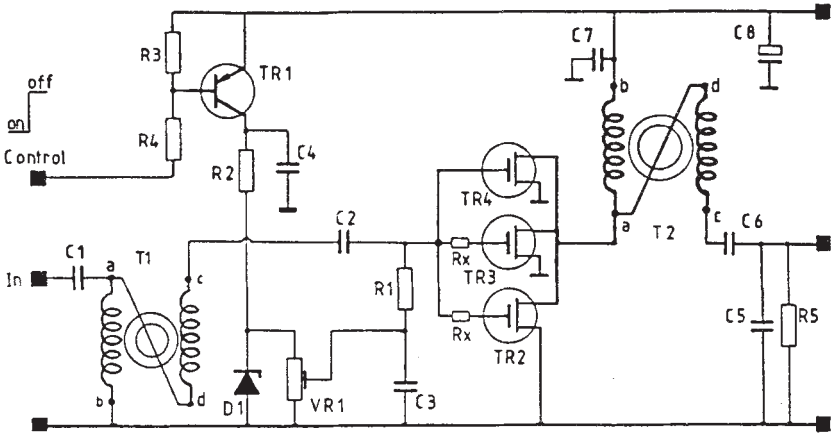
Most published IF mods require the construction of a ladder filter. These filters are very good indeed but unfortunately a lot of re-jigging of the IF is required to meet their lower impedance requirements. The mod suggested could prove a little expensive if a 404-640 Heath crystal filter has to be purchased but the performance improvement makes it well worthwhile..
The basis of the mod is threefold; to improve the termination of the diode mixer and match into a filter; to increase overall IF gain and to cascade a second filter to improve selectivity.
This is achieved by removing. T301 and C301, the IF input tuned circuit. A flying lead of miniature 50 coax is soldered onto the PCB to pick up the transformer end of C302 and a ground point. A second flying lead is connected to the transformer end of C306 and a ground point. In place of the tuned transformer is inserted a grounded base transistor stage presenting 50ohms to the diode quad and an output impedance of 1.8K to match the "output" (yes!) end of a fox crystal filter (Heath 404-640). The "input" end of the crystal filter - yes it is back to front - is terminated in 4.7K and routed back down to the main board to couple in through C306. In the prototype a "blob board" construction was used on a small piece of PCB material and it was stuck to the top of the crystal filter in the rig using double sided adhesive foam pads. Use a convenient R+12V point to pick up power. Check the work, switch on the rig and hear the difference!
To increase overall IF gain, desolder Q301 and replace it with a 2N301 or 40673 using gate 1 to the 9 position. Solder a 27k resistor to a convenient ground point (a grounded component lead and a 150K to a R12V point (again a conveniently close component lead). At the junction of these resistors, decoupled to ground by 1n ceramic, solder gate 2 of the dual gate MOSFET. (It may be a good plan to slip a ferrite head on gate 1 before soldering it in place). Try the rig , it now should be more lively and selective. You will now be able to work up against very strong station without the AGC pumping and you will copy QRP signals that previously did not exist.



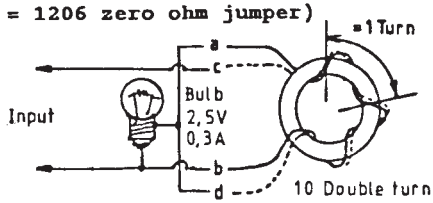
JAMBOREE QRP LINEAR AMPLIFIER

BILL MOONEY G3VZU

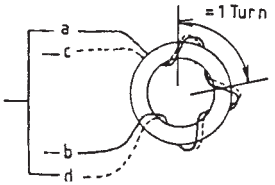
The JAMBOREE QRP linear amplifier can be used as a final output feeding an antenna via a suitable change-over relay etc. or as a driver stage to run a more powerful transmitter. It uses three 1 watt SOT89 packaged MOSFETS so that it will handle 3 watts dissipation easily. With good heatsinking this kpower can be extended with increased efficiency. The user should make some measurements and keep an eye on what power is being used.



(Rx = 1206 zero ohm jumper)



BULB DUMMY LOAD



TRANSMISSION LINE TRANSFORMERS
T1 : 14t twin 36 swg enam.
T2 : 9t twin 24 swg enam.

COMPONENT CHECK LIST

R1	820R	(821)	size 1206 chip resistor
R2	1kO	(102)	size 1206 chip resistor
R3,R4	10kO	(103)	size 1206 chip resistor
R5	4k7	(472)	size 1206 chip resistor
Rx	ORO	(000)	size 1206 zero ohm jumper
VR1	10K		Trimpot type 3315
C1,C2,C4		100nF	1206 Y5V Ceramic
C3,C7.C6		470nF	1812 Y5V Ceramic
C5		47pF	1206 COG ceramic
C8		33uf/16V	Tantalum case D
T1 - core		Type B64290 K40037 X830	
		6.3mm * 3.8mm (ID) *2.5mm	
T2 - core		Type B64290 K40038 X830	
		10mm * 6.0mm (ID) * 4.0mm	
D1		5V1 zener in mini MELF pack	
TR1		BCW30 PNP SOT23 transistor	
TR2,3,4		BST80 Power MOSFET in SOT89	

160 TO 30 METRES
SMD LINEAR AMPLIFIER
50-100mW DRIVE FOR 3W IN
12 to 16v SUPPLY
NOMINAL 50 Ohm LOAD

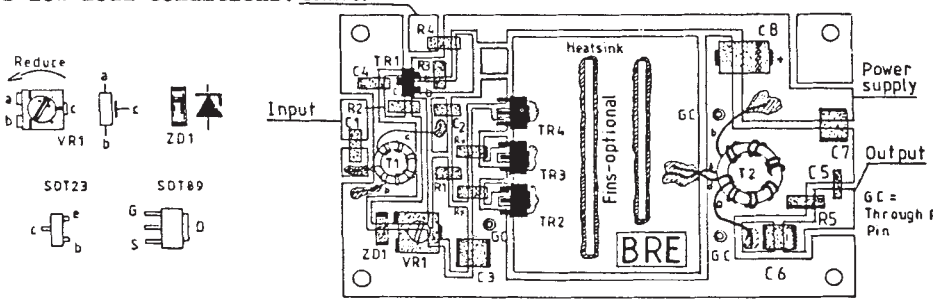
KIT AVAILABLE
BLUE ROSE ELECTRONICS
SEE ADVERT THIS ISSUE

CIRCUIT OPERATION

Input coupling makes use of a small transmission line transformer (TLT) T1, to achieve an input impedance of about 200 ohms mostly resulting from R1. C3 has a very low reactance such that the lower end of R1 is effectively at RF ground. The MOSFETS are N-channel enhancement mode types so that a forward bias is required (>2.6V) to make them conduct. This is supplied from a zener diode stabiliser D1, R2. VR1 is used to set the bias on the gates.

TR1 controls the PA by switching the bias. Turning TR1 on with a "Low" on the "Control" input thus activates the PA. A "High" or NC on the Control input results in the removal of bias and the PA is inoperable.

A high level of drive (>2.5Vpk) will defeat this bias switching arrangement. The user must therefore be able to adjust the drive level. The trimpot is a high quality robust device which will withstand a lot of tweaking. The MOSFETS are operating in parallel and therefore another TLT is needed to transform the resultant low drain impedance to a nominal 50 ohms. The cold end of this output TLT is decoupled to RF by C7. The output capacitor, C6, is also a large value, low reactance ceramic for tightest coupling. R5 and C5 serve to reduce high frequency products in the output and to improve stability under low load conditions.



GETTING IT GOING

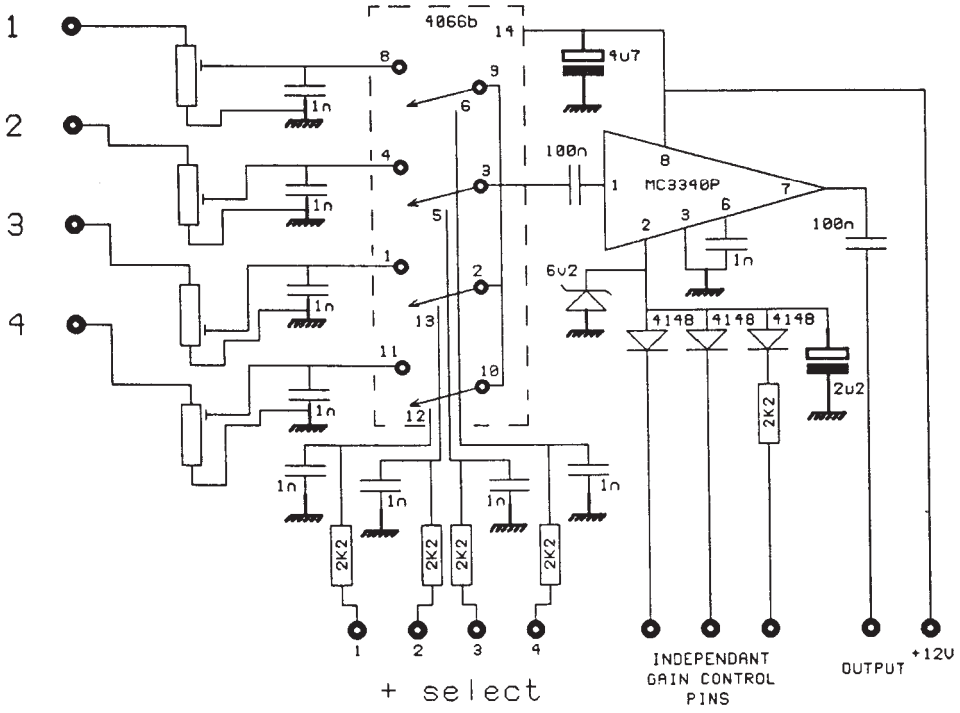
Set the bias pot, VR1, for zero voltage to the gates - fully anti-clockwise. Apply a 12V current limited power supply. With zero bias and the "control" input "high" or NC there should be no quiescent current. Grounding the control input should result in a few mA drain due to the stabiliser. Now connect a load. A standard 50 ohm device is preferred but many QRP enthusiasts like to see the results of their labours. A small 2.5V 0.3A torch bulb connected as shown will suffice. Use the same construction as for T2. In this way the bulb resistance of about 8 ohms is transformed to about 32 ohms making a better match. Next connect a source of RF CW or SSB with some provision for amplitude adjustment. With no drive turn up the bias current to about 100 mA. The RF should now drive the current up to 400mA without excessive dissipation.

Intermittant peaks of drain current as high as 1A are possible but be careful, it is quite possible to melt the solder (180 deg C) on the output transistors. A symptom of heat damage to the MOSFET's can easily be removed with a suitable rework tip and replaced after cleaning the track with solder wick. Peaking up to 600mA with SSB should be possible. Increasing the standing bias will improve the gain and linearity but again watch the temperature. An aluminium heatsink thermally coupled to the rear tracking, avoiding the grounding pins, will help a lot. In any case make measurements and calculate the power levels you are dealing with.

If a low pass harmonic filter is being used on the output make sure it is not absorbing too much precious power. The output impedance will vary with drive levels so that the 50 ohm figure is nominal. The efficiency will be adequate for such a low power device.

This Sprat I am going to give two little boards which are very useful in the Kitten but I have no doubt will find uses in many other designs.

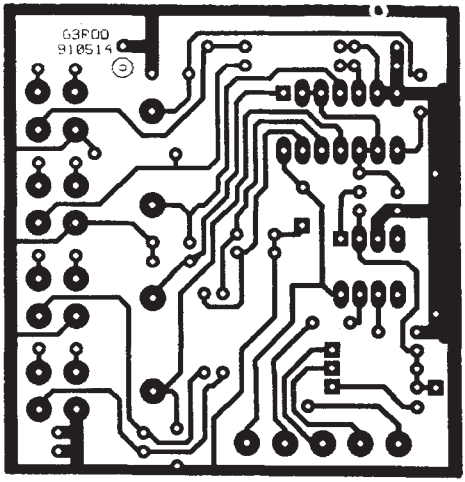
The first of these is a little audio attenuator circuit which enables us to adjust the AF volume from the front panel using a DC voltage instead of using screened cable throughout the set, a distinct advantage in my veiw. I have also included a solid state switch on this board which enables the audio from different detectors to be switched using DC control as well as preset level control for each input.



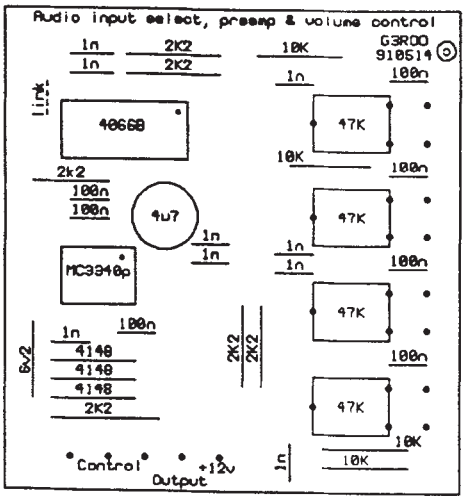
AUDIO PREAMP AND GAIN CONTROL BOARD
Ian Keyser G3ROO

This board is used to set the levels of the various detectors to similar levels and electronically select them. It also electronically controls the gain of the board which is adjustable between +13 and -60 dB. Input selection is accomplished by applying +6v (anything between +5 and +12 seems to be OK) to the select pin required. Gain control is accomplished by varying the voltage to any of the gain control pins. Three inputs are available to enable flexibility, i.e. Rx gain control on receive, sidetone gain

AUDIO PREAMP AND GAIN CONTROL BOARD



PCB



TOP

Input 1

Select 1

Input 2

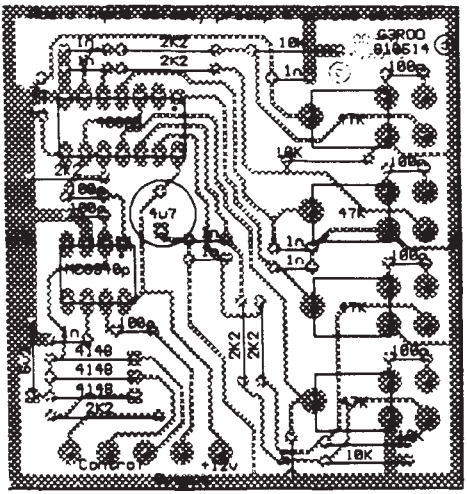
Select 2

Input 3

Select 3

Input 4

Select 4



Input 1

Select 1

Input 2

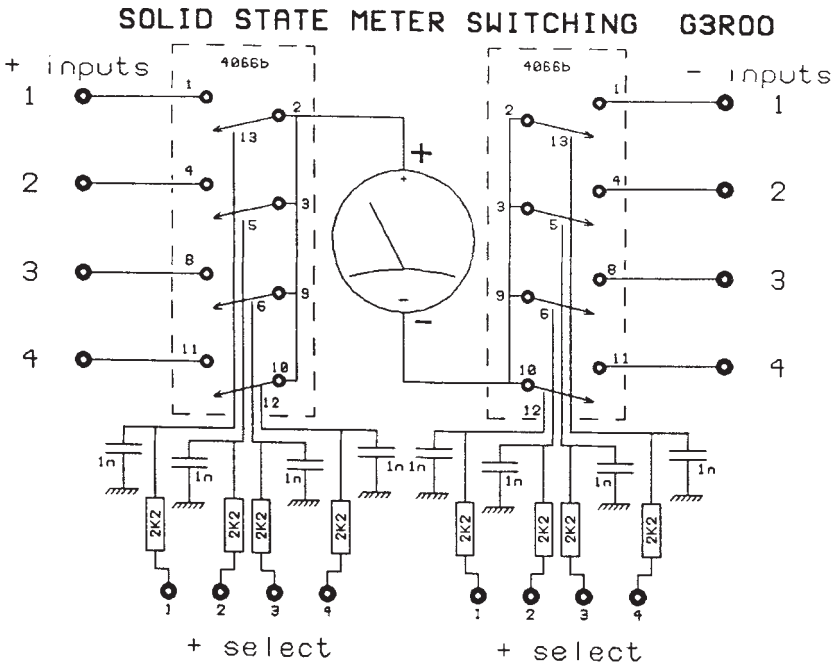
Select 2

Input 3

Select 3

Input 4

Select 4

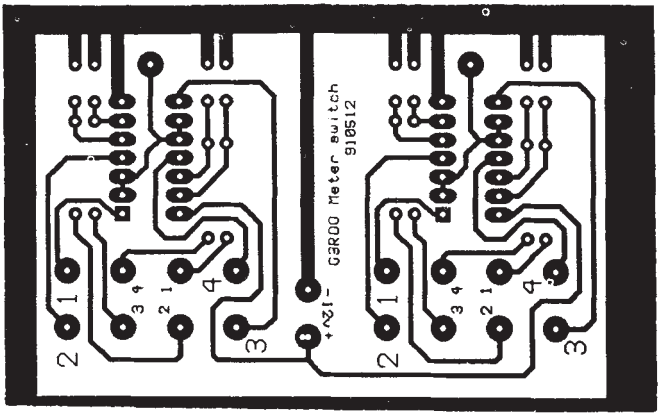


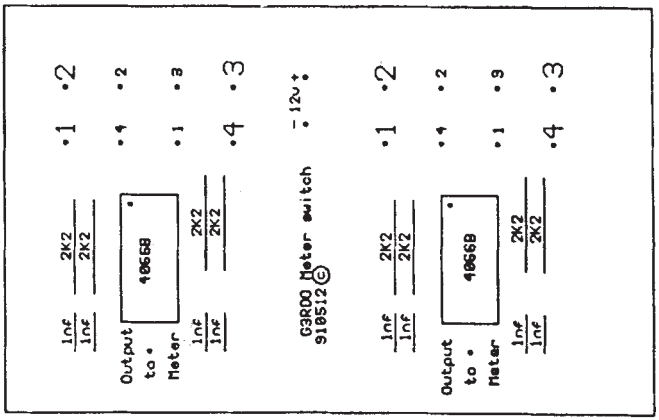
The other board is for solid state switching of the meter circuit, this enables us to measure S meter on receive and SWR, forward and reverse power on transmit. As simple as eight single pole relays with their outputs wired as two groups of four. This can be used to read different voltages while on transmit to those on receive.

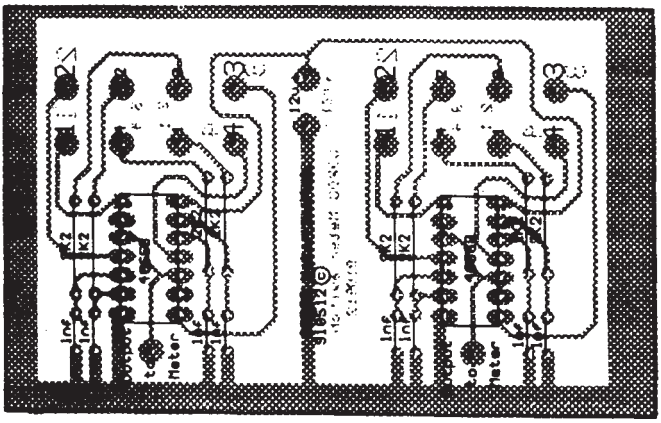
The meter is connected to the two large pads on the right hand edge of the board. You will notice that there are two identical circuit on this board, one above the other and it will make life easier if you consider that the top circuit switches the positive terminal of the meter and the bottom circuit switches the negative terminal. The inpuit 12 volts is connected between the + terminal and the grounplain. Each circuit has eight input pins labeled large 1,2,3,4 and small 1,2,3,4. The input signal is connected to the pin with the large figure and the switching control voltage to the corresponding small pin. To maintain maximum flexibility the switching pins have not been interconnected but in this application small 1 top should be connected to small 1 bottom, small 2 top to small 2 bottom etc. on the underside of the board using insulated wires.

Say we use input pins 1 for the S meter circuit we will need the control pin small 1 at +8 volts (anything between +5 and +12volts will do) during receive and zero during transmit, so this pin would be connected to the Rx+8v line. Let us use input pins 2 for the forward power and input pins 3 for the reverse power, so the select switch on the front panel would switch the Tx+8v line between select pins 2 or 3 as required. Very simple isn't it?

METER SWITCH PCB AND LAYOUT



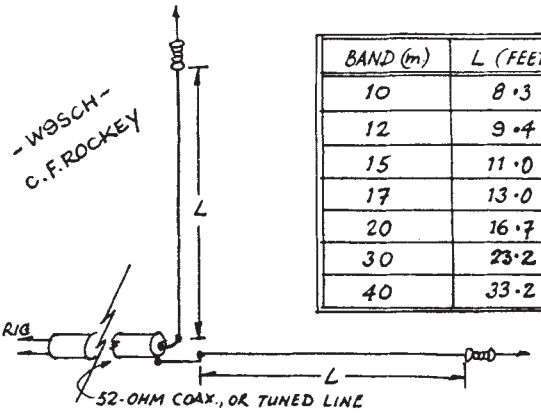




THE "UP-AND-OUTER", A GOLDEN-GOODIE

C.F.ROCKEY W9SCH - Albany, Wisconsin, USA

A few feet of wire, a few feet of co-ax - this is enough for a good antenna, or should be..... Drop a vertical quarter wavelength wire from the eave of your cottage; string another wire out horizontally and you, too, are "coupled to the universe," as Professor Ronold King so aptly put it, yet the total cost is negligible, relatively speaking.



BAND (m)	L (FEET)
10	8·3
12	9·4
15	11·0
17	13·0
20	16·7
30	23·2
40	33·2

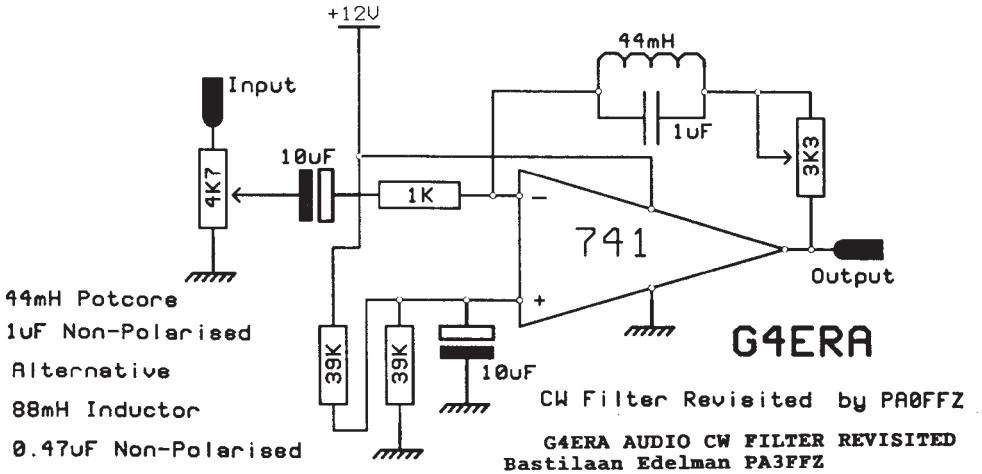
Poo-pooed by the Plutocrats, ignored by the intellectuals the good-old "up and outer" antenna so widely and effectively used during amateur radio's "Roaring-Twenties", apparently works as well during this semiconductor-age as it did in the days of the glowing bottle, - or so I have found.

Just for the fun of it I hung-up such an antenna about three weeks prior to this writing. Despite a spate of "Solar-flares" with the accompanying ionospheric disaster, during this intermim on fifteen meters CW, I have worked: Siberian, USSR, Switzerland, Italy, Spain, Japan, Argentina, Britain, Germany, Hungary, Canary-Islands, Bulgaria, Finland, Jugoslavia, Lithuania, France, European USSR, plus dozens of state-side and Canadian Stations from coast-to-coast; this with but five watts and from here in "America's Boonbocks", - Wisconsin.

Despite the base of the vertical portion being about two feet above ground-level, the radiating wires being cuddled within inches of the wooden siding of my cottage and being well-surrounded by the clutter of civilisation, this antenna seems the equal, perhaps superior to my faithful 80-meter, center-fed zepp at 25 feet, - at the effective height of 0.53 wavelenths at 15 meters. As one who has had some rather poor luck with vertical antennae from time-to-time, I am amazed by the performance of this silly thing for both reception and transmission.

Some will remark that a few more radial, quarter-wave wires would improve this antenna's efficiency and I will not dispute this point here. But since the very simple "up-and-out" configuration is so easy to erect, seems to work so well and fits so well into my physical ambience, I'll probably leave it as it is, - for a while anyway.

This is essentially a mono-band antenna but may be made for any amateur band one wishes to use, - and where it will fit. (The fifteen-meter size exactly fits my situation and taste, however.) The diagram shows the wire-arrangement, the table the wire lengths for other bands. Since the run from my rig to the antenna is so short, I feed it with an old, mouldy length of RG-58U I found in my garage, where any run greater than about one wavelength is involved, I'd certainly suggest feeding it with open-wire, tuned line, - or at least larger and more-efficient co-ax (incidentally, using RG-58-U cable, I find the SWR to be less than 1.5 across the entire 15 meter CW band when eleven-foot "elements" are used here). Try it - you may like it!



G4ERA AUDIO CW FILTER REVISITED
Bastilaan Edelman PA3FFZ

I am not surprised that G4ERA did not read my article on the FAN80 (80m CW DC Transceiver) in CQ-PA or my book "De Leidensweg van de Zelbouw as both were written in Dutch. The CW Filter in SPRAT 66 is not a new one but it is a nice one.
Placing VR1 in series with the potcore resonant circuit it becomes a variable bandwidth control. On turning the control it sounds like the background noise is fading away and the CW you require becomes louder.

Don't Squander Your Inheritance

Frank Rae GM4 TYQ

After a busy winter of homebrewing, I discovered in Spring 1986 that I had acquired a wheezy conditon and cough, despite never having smoked. After visits to the doctor and after hospital tests, asthma was diagnosed and an inhaler was prescribed. This is still necessary today.
Was this change in my health due to swimming in the Irish Sea or was it due to working in the City of Glasgow for 40 years?
By chance, I happened to read in Technical Topics in RADCOM, November 1979 some observations on an article in "The Lancet" which drew attention to the danger of breathing the fumes given off by resin-cored solder (colophony being the villain of the piece - a well-known cause of breathing difficulties.) Whilst of importance to commercial people, the reviewer felt that it whould be brought to the attention of radio amateurs.
Further emphasis is given to this matter in QST (March 1991) by Dr Bergeron in his article "Making Soldering Safer", which again warns of the danger of breathing colophony fumes. If good ventilation is not feasible the Author suggests that you should wear a special respirator with a filter element which neutralises colophony fumes. In addition, the need for washing of hands before handling food is stressed. Also the dangers of breathing the very poisonous fumes from melting plastic insulation and from PCB cleaning fluids are highlighted.
Since reading the first-mentioned article I have employed an electric fan air freshener at my elbow when soldering so that I do not breathe the concentrated fumes. This may be just sufficient as my work is done in a Victorian house with large, high, rooms.
Natural breathing is easy but once the lungs have become sensitised this happy state may not continue; so until the solder manufacturers come up with a different flux, take care of your priceless inheritance - your lungs.
NOTE: Heathkit have included a warning on soldering on the above lines in their recent kits. **G3RJV.**

PRINTING OF QSL CARDS

Due to problems with our printer cards can no longer be supplied via G4WZV. We are trying to negotiate with a printer to give members a discount. It is hoped the new printer will deal direct with members. Details should be finalised shortly and will be published in Autumn Sprat. Any members needing cards urgently should contact G4WZV (sae please) who will notify them of the new supplier's address as soon as details are finalised.

QSL CARDS IN THE BURO

The following members have QSL cards in the buro but do not have envelopes on file. If you wish to receive your cards please send a stamp and self adhesive label to G4WZV (qthr and Club Handbook). They are listed in membership number order. If more than 1 envelope is needed the number of envelopes will be in brackets after the callsign. May I remind members to quote membership number in all correspondence with club officers.

114 GW4KVJ, 140 G3RJF, 149 G8IB (2), 162 G4DVW, 228 G4FAI, 282 G4DQP, 395 G3ROO, 460 G4BSS, 476 G3LBT, 582 G4CZB, 786 G4INM, 835 G4GIQ, 869 GM4HBG, 1082 GW3COI, 1091 G3LQI, 1099 GW3ITT, 1130 G4KKI, 1376 G3RUG, 1454 GW40XB, 1851 G4HZV, 1573 G4PNH, 1642 G0GSQ, 1646 G4IWO, 1793 G2CNN (2), 1802 G4SXH, 2037 G3DOV, 2242 G4NXN, 2255 G2DZF (2), 2444 G4SOS. 2451 G4VA,. 2550 G4SBU, 2560 GM4AQP. 2743 GM4XQJ, 2942 GOFSP (2), 2954 G4WWQ (2), 2962 GWOCNK, 3089 G4XUV (2), 3193 G2BGG. 3260 G3NSA, 3334 G0BXC, 3394 G3APZ, 3422 G4ZQA, 3477 G4TYQ, 3749 G4UIQ, 3754 G3SES, 3788 G4ZXN (3), 3854 GOEIL, 3862 GOBHI, 3877 GOEVJ, 3925 G3YJU, 4070 GW4AXU, 4231 GU4VPM, 4477 G4XUG, 4739 GOCBU, 4861 G3JUD, 4998 GMOKAE, 5049 GM4HYF.

I also have stamped envelopes for the following members who ommitted to give callsign or number.

W.E.Gibba, (Exmouth). R.KEEFE, (Billericay). D.Kay (Ruishton).

FROM THE MEMBERSHIP SECRETARY:

Thanks from G4HYY to all members who responded to the reminder about their subs. It has again been a worthwhile exercise to send out the postcards. Apologies to the two or three members who had paid subs earlier but has not been updated. We have surprisingly few problems of this kind when you think of all the cheques etc which arrive at the G4HYY QTH. The reminder cards seen to solve these odd difficulties!

ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS:ADS

DENSHI SS1055: Wanted source of supply for CW Filter/FM Board and xtals for 28.5-29.7MHz. Information on how to use in on 5w CW and 8w SSB. OR SWOP for HF QRP CW Rig for all HF Bands. J.M.Raynes G0BWG, 267 Pelham Rd. Immingham, South Humberside.

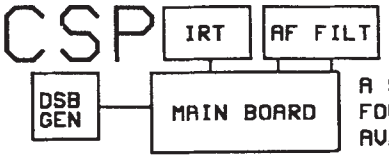
FOR SWOP WHY?: Minimitter Ham Band Converter 3.5-28MHz. 3.5 & 7MHz Band Faulty otherwise 14 to 28 OK. Pwr 240v AC. Two Valves. G3DOP, 25 Croft Parc, The Lizard, Helston, Cornwall, TR12 7PN. TEL: 0326-290711

WANTED: Circuit Diagram for Minimitter TR7, 1.8-2MHz transistor receiver. John Haliburton, GM4AQO, 32 Glenbervie Rd. Kirkcaldy, Fife, KY2 6LQ.

WANTED; Circuit diagram of A-510 "mule Radio". Little army set (Australian?) miniature valves, battery operated. I want to improve RX and shift xtal freq a bit. Bastiaan Edelman, Leemweg 10, 8395 TK Steggerda, Holland.

WANTED: HW8, in working order, Reasonable Price, Carriage to be arranged. Roy, GI4CBG, TEL: 0232-701199.

PROGRAM WANTED: Does anyone have a reliable and accurate Basic Program for calculating Great Circle distances. If so G3HNP would be pleased to receive a copy at 5 Greencourts, Winterton-on-Sea, Great Yarmouth, Norfolk. NR29 4AQ. TEL: 0493-393560.



G3ROO 14MHz Transceiver
G3RJV In Compact Form

A SIMPLE CW/SSB PROJECT
FOUR ADAPTABLE BOARDS
AVAILABLE IN KIT FORM

THE CSP 20 METRE SSB/CW TRANSCEIVER G3ROO AND G3RJV

The CSP Transceiver is a project built to order. It resulted from a request for an ssb/cw transceiver for 20m and was developed over the winter months by constant exchanges of mail, telephone calls and skeds on 40m. At one stage, design changes were being exchanged daily, so CSP means "Can't Stand the Pace"!

THE MAIN BOARD

This contains all the hard work of a single band dedicated transceiver. A bandpass filter couples the signal to the first NE602 (1st mixer/local osc) the oscillator being varicap tuned over a section between 5-5.5MHz. The IF signal on 9MHz is fed to the filter via a diode switch. The anode of D1 is biased at about 3v so current flows via R5. On ssb transmit 12v goes to the anode of D2 via a 2K2 on the dsb generator board giving about 5.5v across R5. This turns off D1 during ssb transmit isolating the receiver mixer from the filter. This prevents a possible feedback path caused by stray signal being received by the mixer and being converted to the IF on transmit.

The filtered receiver IF signal is amplified by the MC1350 ; a fairly old device with an effective agc control pin. There is no agc on this board (manual gain control) but we do need to mute the IF stages on ssb transmit to prevent inference and partially mute the IF on cw transmit to provide sidetone. We have made provision for this sidetone level on a front panel pot to adjust the sidetone level to suit the operator.

The product detector/bfo is another NE602. The crystal frequency is set by adjusting the trimmer across the crystal. Some crystals may require slight adjustment of C59 for the purist. The old favourite LM386 is used for the audio stages. Pin 7 can be used for muting : several amateur designs have used this facility. This is not stated on the datasheet but looking at the internal circuit there seems no problem in doing so - the fun of amateur radio is using a device as not intended!

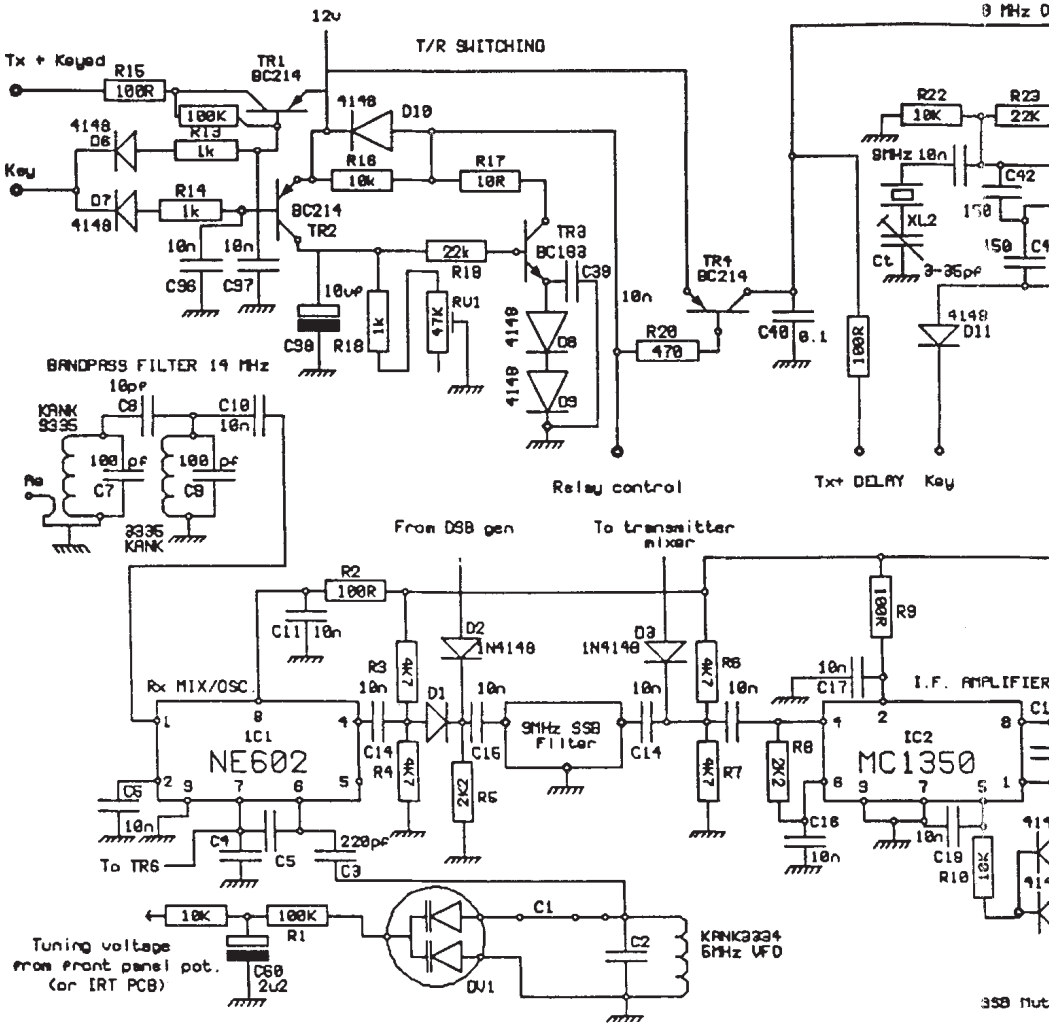
THE KEYING/PTT CIRCUIT

When the key is depressed TR1/TR2 turn on giving +12v on their collectors (PNP). TR1 supplies a keyed +12v to the PA for control. TR2 charges up C38 and turns on TR3 to activate the relay on the PA Board. After the key is released, TR3 remains on for a time based on the setting of RV1 : this "hang time" can be set between almost zero and half a second. During the hang time TR3 collector reduces to about 3v and turns on TR4 to supply the low power stages of the transmitter.

TR5 is the keyed cw oscillator and supplies a 9 MHz signal to the input of the transmitter NE602. The internal oscillator of this NE602 is not used : an external VFO signal is taken from the receiver NE602. A buffer, TR6, prevents pulling.

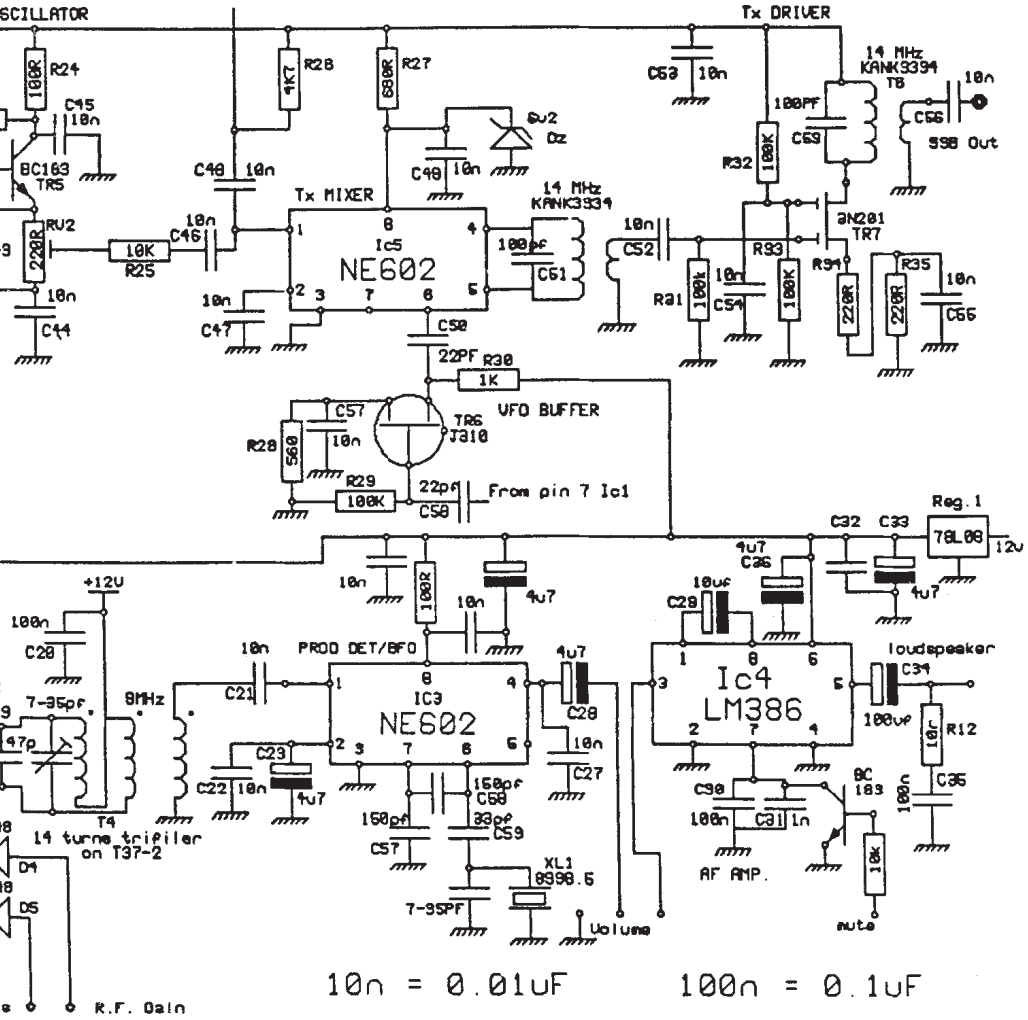
The output from the transmitter mixer is filtered and amplified in a dual gate MOSFET, TR7. The output transformer provides additional filtering and a 50ohm output. An output of some 3v peak is available to drive the PA board.

A LARGE (A3) LAYOUT DRAWING SHOWING ALL THE INTERCONNECTIONS BETWEEN THE FOUR CSP BOARDS (AND AN A3 PRINT OF THE CIRCUIT) ARE AVAILABLE FROM G3RJV : PLEASE SEND A LARGE SELF-ADDRESSED STAMPED ENVELOPE. THIS IS SUPPLIED AS STANDARD WITH THE KIT



C.S.P 20 metre

G3ROO



SSB/CW Transceiver

0/G3RJV

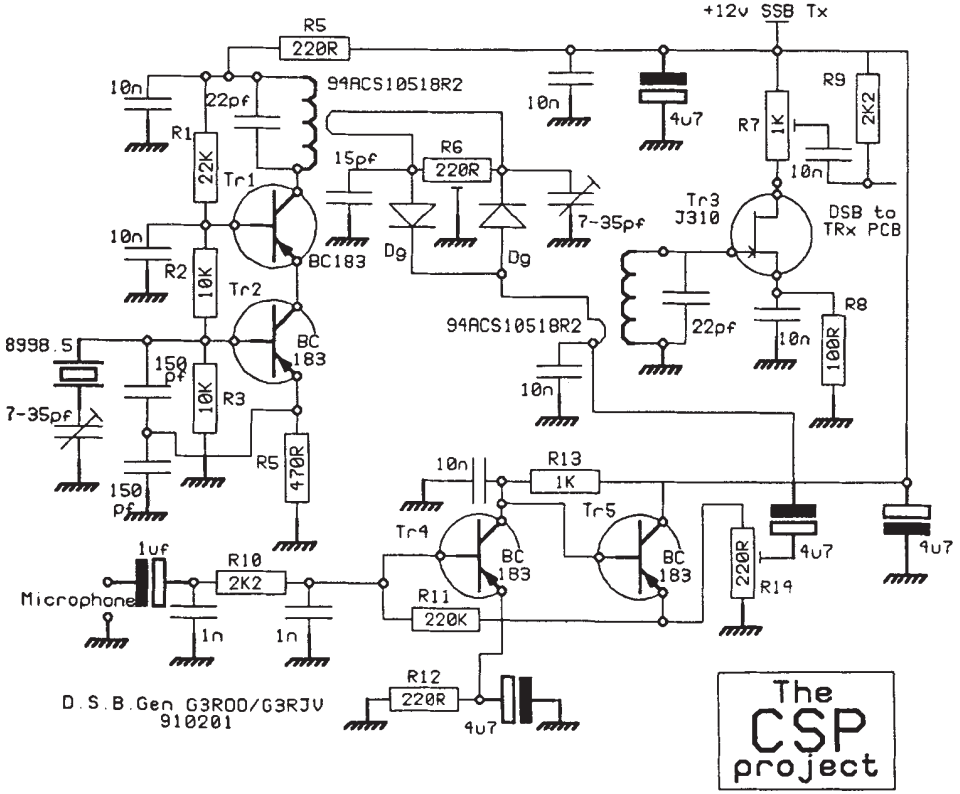
THE DSB GENERATOR BOARD

This little board is designed to drive the CSP main board but by leaving out R9 it will be a very useful board with any DSB or SSB transceiver. Its output is in excess of 5v peak/peak for a microphone drive of 25mV.

TR2 is a crystal oscillator in cascade with TR1 buffer amplifier driving the balanced modulator. R1,2,3 set up the bias for this stage giving a collector voltage on TR2 of about 4v. The 7-35pF trimmer in series with the crystal sets the frequency of oscillation to a point about 20dB down the side of the SSB filter.

The balanced modulator is a passive mixer driven from the low impedance output of T1. In practice the 2 diodes do not have to be matched as there is plenty of range in the balancing controls. The audio amplifier is TR4/5. TR4 is the amplifier and TR5 an emitter follower to give a low impedance drive to the audio port of the balanced modulator. These two stages are DC coupled, this has the advantage of accepting transistors of widely varying parameters as the system "sets itself up". A simple check that all is well is that the collector of TR4 should be about the supply voltage. R14 is used to set the audio drive to the balanced modulator.

T2 couples the output of the balanced modulator to the amplifier TR3 the load is a preset R7 which is used to set the drive to the following stages. R9 is included to switch on the SSB transmit diode D2 on the CSP main PCB in SSB transmit mode.



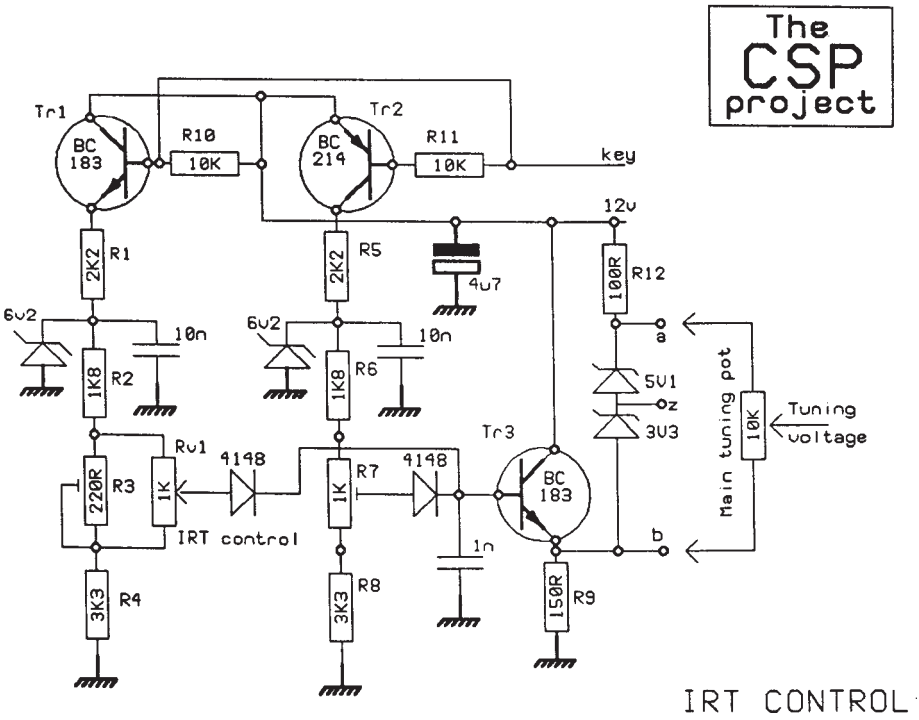
IRT CONTROL BOARD

This board provides independent frequency adjustment on receive but returns to the preset frequency on transmit allowing the transceiver to tune a badly netted signal. It also enables the transmit frequency to be adjusted in relation to the receive frequency to compensate for any pulling effect on the VFO during transmit. Transmit information is taken from the key/ptt line.

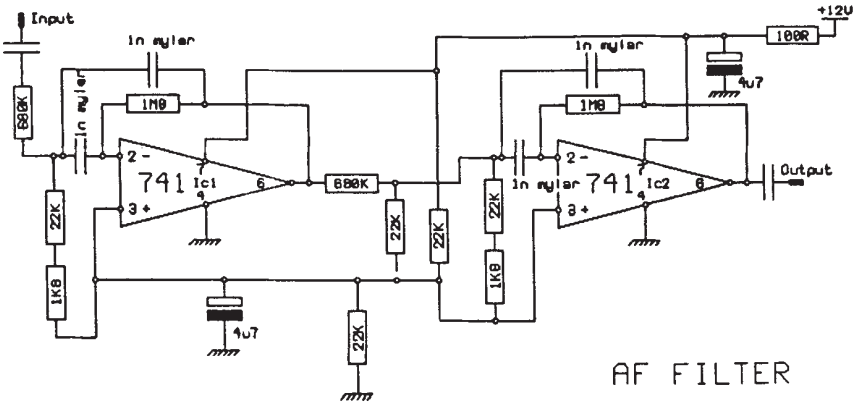
TR1/2 are switches controlled by the ptt line to switch a +12v supply to 2 resistor divider networks, R1,2,3,4 on receive and R5,6,7,8 on transmit. RV1 is on the front panel and R3 controls the voltage range (frequency shift). R7 sets the transmit frequency in relation to the receive frequency for pulling compensation.

TR3 is an emitter follower stage to drive the main front panel tuning potentiometer. R12 and the 8v zener ensure that the potential difference of the whole tuning potentiometer shifts with variation of the IRT potentiometer : the shift obtained is about constant irrespective of the position of the main tuning control slider. The zener has a second, and very important function of stabilising the tuning voltage against supply variations.

NOTE: The tuning potentiometer is capable of tuning the whole band with the BB204 varicap on the main board but this does give "lumpy" tuning at the low end. A better arrangement is to tune the band in segments by switching the voltages across a/z/b to provide two tuning ranges. Varicap tuning was employed to save the cost of a variable capacitor.

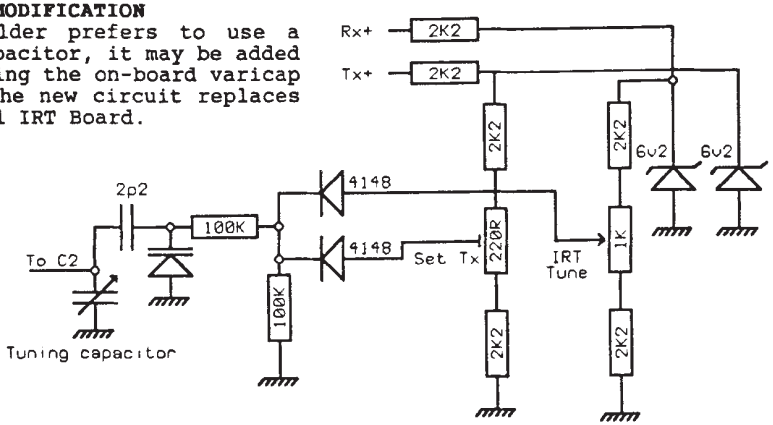


CSP AUDIO CW FILTER
A two stage active filter to improve the cw performance of the CSP Transceiver. A useful addition to any receiver or transceiver project.

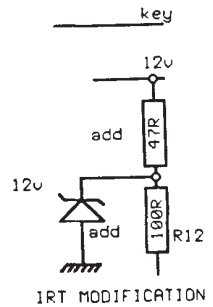


POSSIBLE MODIFICATIONS FOR THE CSP

CSP TUNING MODIFICATION
If the builder prefers to use a variable capacitor, it may be added as shown using the on-board varicap for IRT. The new circuit replaces the original IRT Board.

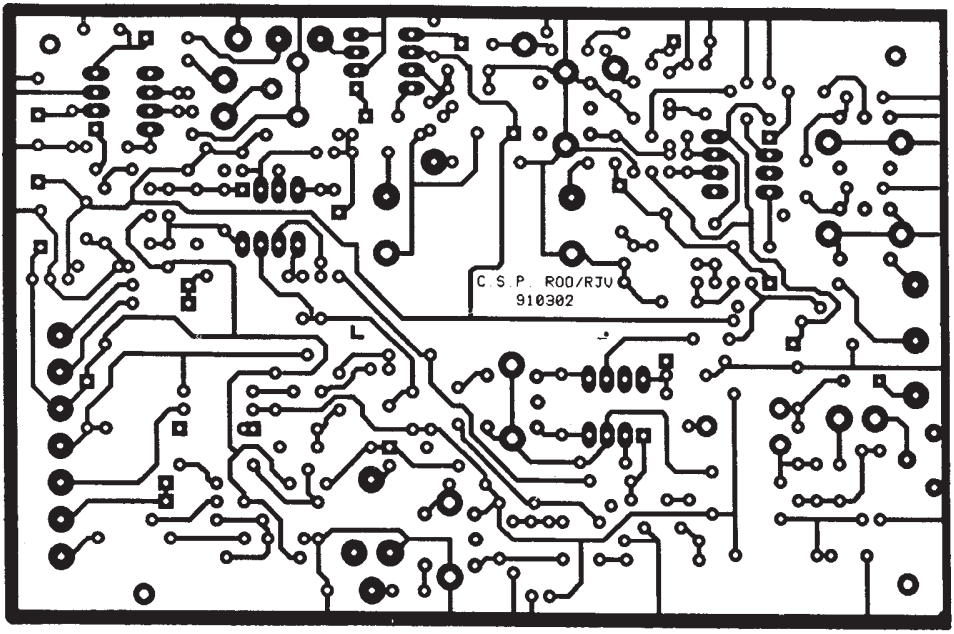


Suggested IRT circuit when using a tuning capacitor
Omit C1 and connect across C2

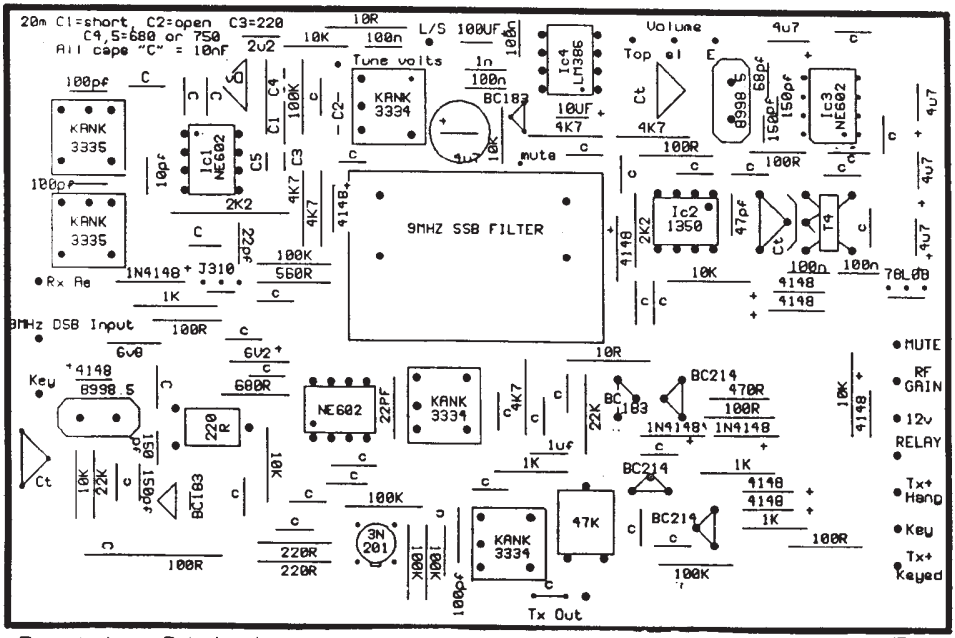


IRT MODIFICATION
Some examples of the CSP had a poor cw note which is cured by adding extra stabilisation above R12 as shown.

The CSP project



MAIN BOARD

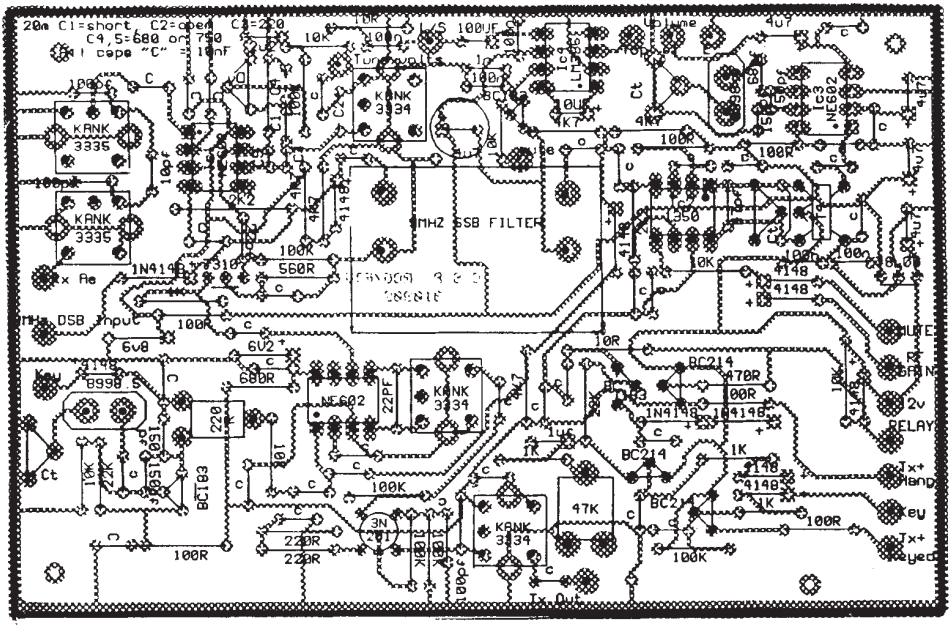


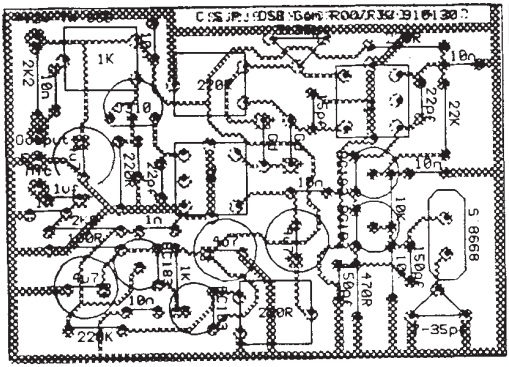
Double Sided

The CSP project

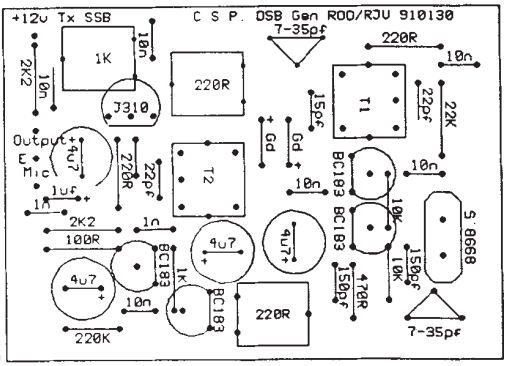
All Grounds Made to Top

DIODES + TRANSISTORS Flat J310 78L08

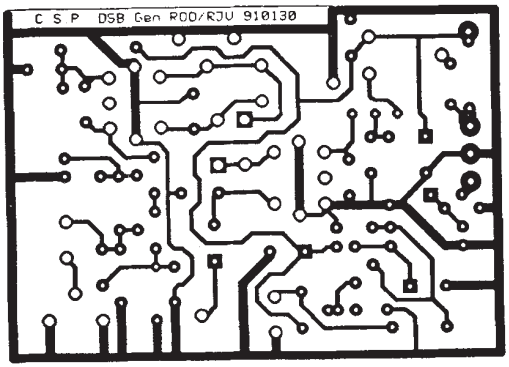




DSB GEN



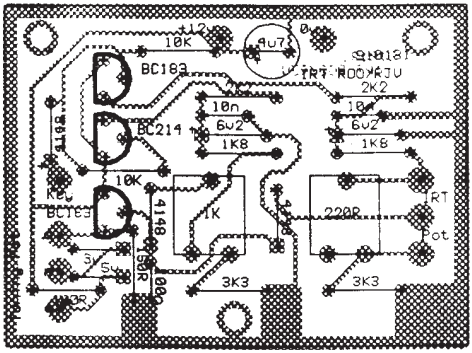
Double-Sided
Ground to Top

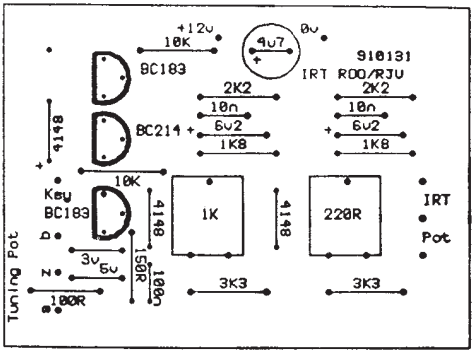


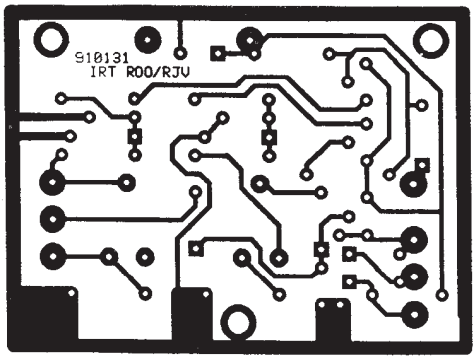
MAIN BOARD

PCB UPDATE: C14 (IC1, pin 4 to D1) is routed to wrong side of D1. WIRE UNDER BOARD from IC1 to the Junction of D1 & the 4K7s (R3/4)

The CSP project



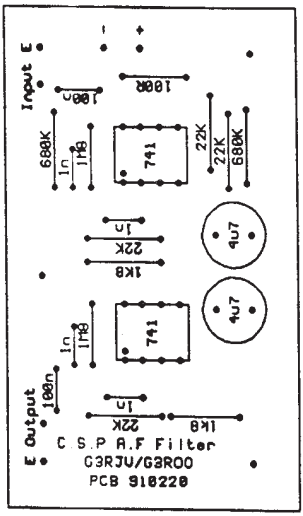




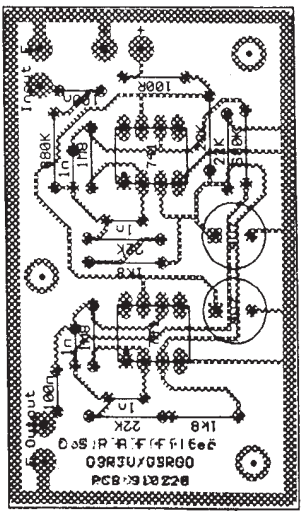
PCB

The CSP project

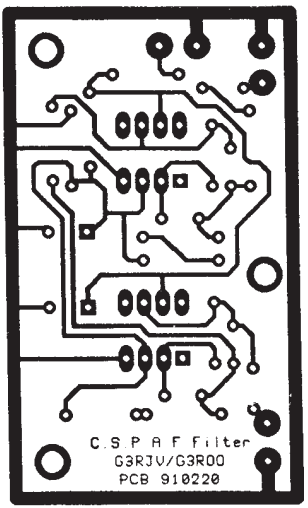
CSP KITS
A kit for all four CSP Boards with all the board components is available to members for a cost of £65 (£1 p.p.) from Dave Aizlewood, G4WZV, 36 King Street, Winterton, Scunthorpe, DN15 9TP (Cheques: G QRP CLUB) When the small stock is gone, the Kit will be available from Kanga Products.



TOP



FILTER



PCB

QRP COMMUNICATION FORUM

Gus Taylor, G8PG, 37 Pickerill Road, Greasby, Merseyside, L49 3ND

EUROPE FOR QRP WEEKEND, 27th to 29th September, 1991. This replaces the East to West QRP Weekend held last year. The rules, which appear elsewhere in this issue, have been revised in the light of your comments, and it should offer a real chance to work QRP DX - provided we have your support! Please read the rules and mark the dates on your calendar.

WHAT OF THE FUTURE? "Unfortunately many successful morse test candidates (in spite of their good intentions not to lose their hard earned skills) find the transition from the 12 wpm test speed to the 20 wpm average QSO speed too difficult a gap to bridge". These are the words of Roy clayton, G4SSH, RSGB Chief Morse Examiner. They are very true, so what can we do about it? We can devote a definite portion of our air time to looking for such beginners, calling them, and trying to give them a 100% QSO at a speed THEY CAN READ. Doing this can give a great sense of achievement both to you yourself, and more importantly, to the beginner you are working. Please think about this, and try to help beginners in the art of CW by giving them a little of your time and skill. This will be particularly important when the first UK CW novices appear on our bands.

WINTER SPORTS 1990 The winner of the G4DQP Trophy was Randy, AA2U whose log was more like a call book. The overseas runner-up was Mike, W3TS with another massive log. The best European log award went to G3LHJ, and the European If award to G3VTT. The difficult location award went to G4KKI, who did great things from the centre of town. The award for the best performance by an FOC member went to VK6LW for that memorable Sunday afternoon performance on 14 MHz. The Sportsman award went to GU4VPM who gave so many a new one on two-way QRP. A truly great event!
THE CHELMSLEY TROPHY went once again to G4CFS for a great log.

POWER MANAGEMENT IS SO SIMPLE but its proper application could make such a difference on our bands. The first requirement is to realise that signals of S9 or above are too loud and cause needless QRM to others. Signals of S7 and S8 should be the norm, and power should be adjusted accordingly. How does one do this? Firstly, switch off the linear! Or, and perhaps more sensible, do not have a linear. Instead, put some of the money you would have spent on it into improving your receiver and your antenna system, these being the two most vital technical parts of your station. Secondly, once barefoot, still regard the full 100w as something only to be used in times of emergency or extremely bad conditons. According to the type of rig, either swithch to low power or reduce drive so as to reduce your power output. It is amazing how much of the time low power will provide adequate communication - at least between reasonably proficient operators! Finally, if your are lucky enough to have a directional antenna system, use it so as to minimise interference in directions other than that in which you are transmitting. proper application of these rules could revolutionise the conditions on our amateur bands and greatly enhance the pleasure of our hobby. In a caring amateur society they would be printed at the top of every page of the RAE Manual or its equivalent. Does anybody care????

UA QRP CONTEST - OFF THEN ON AGAIN! Some time ago a message was received (via QRP radio) from Oleg, RV3GM, saying that owing to the intervention of the USSR CRC the QRP Contest scheduled for late August was off. Recently a letter has been received from Oleg saying the ban is being ignored, and the contest is one again, which is good news.

One change is that the U QRP Club HQ station call will be UZ3GXX, not as stated in the rules. Note also that the Zip Code for logs in 398043 not as previously stated. Be there 24/25 August!

WINTER SPORTS 1991 - ANGLO-FRENCH DAY is Sunday 29th December. This is the chance to work all those new French members!

IF YOU WISH TO ENSURE THE FUTURE OF CW PRIVILEGES make yourself known to the "Towards 2000" groups, set up by the RSGB and chaired by G3AEZ. The object of the group is to recomment what amateur radio should be in the next century. Almost every interest group has RSGB Committees to lobby G3AEZ and his group, one notable exception being cw operators. So, if you value the future of your cw operating, let G3AEZ know that you expect our privileges to be maintained, and also the morse test. Write to Chairman "Towards 2000", c/o RSGB, Lambda House, Cranborne Rd, Potters Bar, herts, EN6 3JE. YOU HAVE BEEN WARNED!

WHO WAS THE JA1 ON 80??? During the Winter Sports Glynn, G4CFS called CQ QRP on 3560 and was answered by a station signing JA1??? Although 339 reports were sent and acknowledged both ways local QRM was so bad that Glynn could not positively identify the JA call. Did anyone else hear and or identify this station?

VARIOUS MEMBERS REPORT SUCCESS with the G8PG 10 foot and small loop hf antennas, which is gratifying. The last in the series, a 6 foot long vertical, will appear in the next SPRAT. A 3w QSO with UH8 on 7MHz using this 6 footer has been confirmed by direct QSL. But the main objects in developing these antennas were twofold. Firstly, to demonstrate to flat dwellers and others with limited space that they can still enjoy QRP amateur Radio, and secondly to point people away from the "you must always use a co-axial cable feeder" approach taken in the EMC section of the RAE Manual. Given a well designed TX and a good atu this is not true where QRP hf operation is concerned (and often not true of QRO), as witness those big QRP signals from certain old timers using centre-fed boublets with 600 ohm open wire feeders. These fellows enjoy big signals, multi-band operation, and no TVI. If you use a good atu, capable of matching a wide range of impedances to your rig, you can pump rf into a whole range of antenna configurations, and should rarely encouter TVI problems. One such atu is the all-band Z-match, and another a good L-network (the latter for end-feed only). Such an atu allows you to experiment over a range of antennas, and eventually pick the most suitable configuration for your location. "Experiment" is the operative word here. Be prepared to try various types of antenna, each over a period, record your results, then make your decision. Also read the antenna manuals; they will teach you a great deal about this vital subject, and help you combine practical and theoretical knowledge. Remember that your rig is just so much electronic hardware until an antenna is connected to it. It the becomes an open window to the whole world.

AWARD NEWS

QRP MASTER Congratulations to G3GOP and OH9VL, who join the Roll. OH9VL made with 800mW output or less!

QRP WAC. GOFYP, G4APO

QRP COUNTRIES 100 GM4XQJ; 75 OH9VL; 50 GM0IDY; 25 GONEZ, ZL2BSJ, G4PRL, G0GZJ.

WORKED G QRP CLUB
800 (YES EIGHT HUNDRED!) GM3OXX;
300 G3YCC, GOIFX; 280 G4LQF;
260 G4XVE; 220 G3INZ, G4CFS; 200 G3FCK, GM4XQJ;
140 G4NBI, G0FTO; 100 G4JZO, G4PRL, G0EYX;
80 G4AWT; 60 G4APO, G4CZL, G3TUX, G0NEZ,
OH9VL; 40 GMODHD, Y24TG, G4UNL; 20 G4LAV.

TWO-WAY QRP. 60 GM3OXX (THAT MAN AGAIN!); 30 OH9VL;
20 G4NBI, G3DOP, G0IFM; 10 GMODHD.

Hearty congratulations to all the above.

Europe for QRP Weekend 1991
Rules

1. Dates and times. From 1600 UTC on 27 September 1991 until 2359 UTC on 29 September 1991
2. Mode and frequencies. CW only on 3560, 7030, 14060, 21060, and 28060 kHz, all + 10 kHz.
3. Power. Not to exceed 5 watts rf output. Stations unable to measure output take half their dc input (10w input = 5w output and so on).
4. Stations eligible. Any licenced radio amateur.
5. Contest exchanges. Call CQ EU QRP when seeking contacts.
6. Contest exchanges. For a contact to be valid RSt, power output, and name of operator must be exchanged and logged.
7. Scoring. Contacts with own country do not score. European stations score 1 point for each European contact and 3 points for each contact outside Europe. Stations in USSR Asiatic Republics score 1 point for each contact with another USSR Asiatic Republic and 3 points for all other contacts. Station outside the above areas score 3 points for each contact with Europe or a USSR Asiatic Republic. The final score is the sum of the points scored on each band used.
8. Logs. Separate log sheets must be used for each band, showing for each contact date, time, call, and RST, name, and power received and sent. A summary sheet must be provided showing call, name and address, claimed score for each band, total claimed score, and brief details of equipment used.
9. Submission of logs. Logs must be submitted to P. Doudera, OK1CZ, U1 BATERIE 1, 16200 Praha 6, Czechoslovakia, by 30th October 1991.
10. Awards. Merit certificates will be awarded to the four leading stations from each continent.
11.The judges decision is final in the case of dispute.

Event organised jointly by G QRP Club and OK QRP Club.

G QRP CLUB
37 Pickerill Road
Greasby
Merseyside L49 3ND
England

OK QRP Club
U1 baterie 1,
Praha 6
Czechoslovakia.

AGCW QRP CONTESTS

Dr. Gordon Bennett G3DNF

The 1991 Winter Contest under the new rules (Sprat 65) attracted a record number of entries. G-QRP CLUB was represented strongly in both the VLP and QRP classes. Out of 103 entries, 28 were from club members, many of whom were prominent among the leaders. Well done!

Contest Manager, Hal (DJ7ST) has made a plea for contestants to submit separate logs for each band. Please leave the scoring to Hal, but if you wish to "flag" the multipliers, that's OK! An IRC/SAE will bring you results and rules in full, from:
Dr Hartmut Weber DJ7ST
Schlesierweg 13
W3320
Salzgitter 1
GERMANY

Sorry we got the address wrong Hal, in Sprat 64 and 65.
The next contest in this series is on July 20/21 1991

THE RSGB HF CONVENTION 1991

So far, only two members have offered any help at the HF Convention which is on September 29th at the Penguin Hotel, Daventry. Unless there are more offers, to G3RJV, the club will not be able to exhibit.

NOVICE NEWS

Dave Gosling, G0NEZ, 31 Semphill, Hemel Hempstead, Herts. HP3 9PF.

May I first introduce myself to our Members. My name is David, I am 43 yrs old, and just about totally CW QRP on all HF Bands, since becoming Licensed in April 1990. My RAE/CW Tutor was Gus G8PG, and at the time of writing, I have 'Worked Members', 'WAC', 'Worked Countries', and am aiming for G QRP C Master. My Dad, Ron, is also Licenced as G0NNI and QRP CW.

Having completed the formalities, I will now run over what we hope to achieve within this new role. RSGB state that they expect 1,000 Novice Calls to be issued during the first year, starting in July of 1991. The Club feels that with our Members experience in Low Power work, we are in a unique position to offer operational support to all Novices, whether CW or 'phone. I came into Amateur Radio with no previous involvement, CB or VHF, and I know fully the difficulties that can arise.

I think this is the appropriate moment to illustrate the Band Plans for some mebers who are not in the RSGB; and more importantly, Overseas Members of G QRP.
The Schedule to Terms and Conditions can be found on page 14 of the June 1990 issue of Radio Communication, it is summarized below:
Note that the RF power is 3 Watts on all Bands.

Band (HF)	Mode
1950 - 2000	CW and 'phone
3565 - 3585	CW only
10.113 - 10.114	"
21.100 - 21.149	"
28.100 - 28.190	"
28.225 - 28.300	"
28.300 - 28.500	CW and 'phone
50.620 - 50.760	Data only
51.250 - 51.270	CW/'Phone/Data
433 - 435	"
1240 -1325	" plus SSTV/FAX/FSTV
10.00 - 10500	" " "

It must be stressed that this is only an extract, and not the full text. Experienced QRP operators will see that the best chance of an inter UK QSO is probably on 80M, with the 15M allocation good for Dx. My fellow Club Officers and I ask all Members to try and contact as many CW/SSB Novices as possible, giving details of the Club, indicating in the best of friendship how we can help. The Club is determined to provide maximum service to beginners in Amateur Radio. No doubt you will be asked to QRS so keep that Straight Key close to hand!
Novices Prefixes/Suffixes will be as follows:

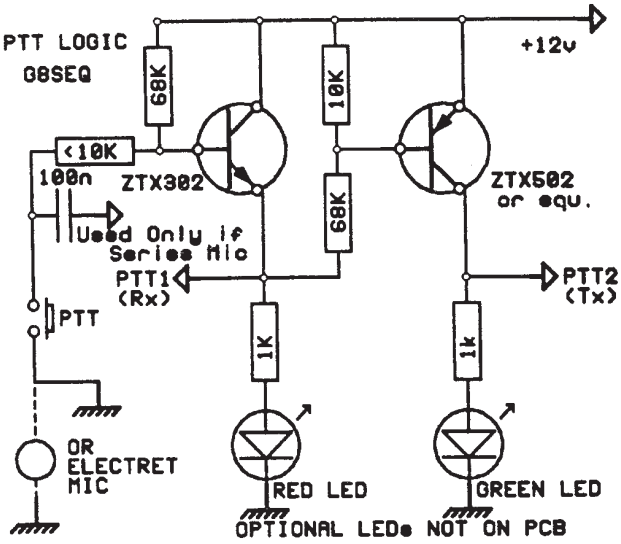
Class A 2 followed by D/E/M/I/W/U/J/ as appropriate for Country then 0/2/3/4 + 3 letters
Class B 2 followed by D/E/M/I/W/U/J/ as appropriate for Country then 1/6/7/8 + 3 letters

So that: E = England; D= GD; M = GM; I = GI; W = GW; U = GU; J = GJ
HF example :
2E0ABC = Class A in England, and 2W7ABC = Class B in Wales.
Future columns will include Novice related matters, and if you have any operational Novice problems write to me at the above address, enclosing please, an SAE.

VHF NEWS

John Beech G8SEQ, 124 Belgrave Rd. Coventry, CV2 5BH. (0203-617367)

The schematic below shows the PTT Logic for the Sequence 70MHz FM T/RX (and its 50 & 144MHz clones). The circuit was never published with the other schematics, but was always included on the PCB.



NEW SEQUENCE FM TRANSCEIVER BOARD NOW AVAILABLE

The re-designed version of the PCB is now available. Please note the board is double sided (but not through hole plated) so it needs to be "top" soldered on the groundplane side at EVERY grounded lead. Location holes are provided for grounded leads (indicated by tear drop shaped markers on the suppllied layout drawings)

The boards are available from me, G8SEQ, at cost price (£8.50 inclusive of postage in the UK).

On this Board, please note

1) THE DOUBLER for 2m operation is a small jockey board with transformer output of the local oscillator.

2) PCB layout also includes a pre-amp board which is a duplicate of the transmitter driver amplifier Q1 & Q2. It is low noise design and can therefore be used as a mast-head pre-amp. In most circumstances it won't be necessary as the RX amp is normally sufficient.

WE REGRET TO ANNOUNCE

the death of the following members: 3770 GM0DYA Ian, 1009 G3RUN Tad, 1640 G1RKU Geoffrey, 2749 G4XII Mark, 3427 GI3ZAD Sam, and a founder member of the club 007 G8KB Ron.

WANTED by G4LEG: DENCO COILS, any range, any colour or type especially Greens, for newly built regen RX and valve AM/CW station's HF Converter. Any Electroniques/Cambion data welcome! Write/Ring G4LEG 0293 - 532825 (Crawley) QTHR.

NOTE: Jackson Drives type 4511/DRF can be had for about £8 in orders over £50. Members interested in sharing an order write to G4LEG.

SSB COLUMN

Dick Pascoe, GOBPS, (2559) 3 Limes Road, Folkestone

It was very nice to see so many friends at the annual QRP gathering at Yeovil recently. A very friendly buch of chaps who love to chew the rag.
It will be written elsewhere that George 'GRV, Colin 'VTT and I represented the club at Dayton this year. Huge amounts of fun was had by all, including several new members signed up, and many old faces rejoining. I am pleased to say that I got the bargain of the show, a 'mint' Argonaut 515 which made my day.
To the news. Tim, G4EZA writes to mention that he now has 54 all time countries on QRP and worked 3A2U recently to notch another new one on SSB. He also likes trying out new aerials. Tim suggests 28.785 as a new 10m QRP frequency, what are your thoughts?
Bastian PA3FFZ has been using a converted CB rig to work all continents with 6 watts to a 5/8th vertical. He is also playing with a homebrew valve transverter 2m to 80 & 160m. He promises more later.
Peter OE/PE1MHO wrote from his holidays in Austria to make sure he was in the listings, Peter spends a lot of time on 50MHz and all his QSOs are VHF! He only needs Asia for WAC on the band. Peter also mentions that 5/8th base loaded 2m aerials tune up nicely on 6m too! (I also caught 4J1FS on 6m QRP SSB too!)
Errol, G4MET writes to correct his claim, he has worked 86 all time countries on SSB and does not use CW, but he has no entries for this year, yet.
I have been playing with the new Argonaut and having lots of fun chasing new members. The new rig is going in my van too so that on my long weekend drives I can work you all. Listen out for my calls, Saturdays & Sundays waiting in the queue at the Dartford tunnel.

ANNUAL TABLES
Latest entries

	ALL TIME			1991		
	CW	SSB	SPRAT	CW	SSB	SPRAT
G4MET		86				
PE1MHO	3	52	(vhf)	1	14	
G4EZA	54	68		20	9	

I regret that the column is lacking in news this time, but only four members wrote in with comments. What have you worked so far? What rig? Homebrew, commercial? What aerial did you use? This information can be used by newer members to advantage, so please put pen to paper and tell me all.

HEATHKIT HAVE STOPPED PRODUCING AMATEUR RADIO EQUIPMENT
It was confirmed by the Heath representatives at Dayton this year, that the company have moved completely out of amateur radio equipment.

Corrections:

IC735 Mods (Sprat 66 p 14)
line 11.....running frequency (not trimming frequency)
"Component X" is 22uF (microfarads not mF)

And a Hint:

Does your IC735 fan "chatter" noisily at low speed when running QRP? Then try fitting a very thin washer or shim under one foot of the fan motor. It can work wonders, though some "heroic surgery" is needed! Another job for a skilled mechanic, perhaps, but confidence, care and the right tools are the main requirements.

FOR SALE : MLX BOARD, the famous 9MHz SSB subsystem featured in SPRAT and Short wave magazine. From G3ROO 0304 - 821588.

MEMBERS' NEWS

Chris Page G4BUE

Alamosa, The Paddocks, Upper Beeding, Steyning, West Sussex, BN44 3JW.

Unfortunately I wasn't able to make the Yeovil QRP Convention at the beginning of May as it was the week-end after I got back from my trip to the USA and there were 101 things waiting to be done at home. One member who did make it was GØKJN who wishes to express his thanks to the Yeovil ARC for organising the event. The presentations were all excellent, especially that on grey line propagation by G3MYM. John put G3MYM's theory to the test for the first time a few days later at 0530z on 14065 when he worked LU9CV followed by ZL4IJ. John was using five watts and a G5RV inverted vee at only 20 feet, and this was his first ever QRP contact with ZL. Finally John suggests what a good article G3MYM could write for SPRAT under the heading "Greyline Propagation" - well? G3LHJ also enjoyed the Convention and reports there were 230 attendees there, which is way up on last year. Derrick was runner-up to G3BPM on 40 metres in the Fun Run, G4PRL was the 80 metre winner and G3BPM the overall winner.

It was nice to meet many of you in the QRP Hospitality Suite at Dayton this year, and to put the new Argonaut II model 535 through its paces. The G-QRP-Club combined with ARCI and the Michigan QRP gang to man two stands next to each other in one of the main halls. This worked well and made a focal point for QRPers at the Hamvention. I have already decided that I will be at Dayton 92!

If any of you are IOTA (Islands on the Air) chasers you will be interested to know that I3MDU's island, Lido Island in Venice, has now been recognised as EU131. Mike says that perhaps someone may like to qualify for IOTA with QRP. FB1MQO was planning to have a G-QRP-Club stand at the OND'EXPO Convention in Lyon over 8/9th June. PE1LIF has just received the 1000 Mile per Watt Award for a QSO with VK6PA on 50MHz. Marinus is using a PW Meon transvertor at 4w to a HB9CV antenna. EA3ERT is now active on packet. Toni is using a FT-23r at 5w to a $\frac{1}{4}$ wave antenna.

PA3FFZ is planning to do some experiments on single tone RTTY, just one tone sent by a CW transmitter in the 80 metre band around 3590. Bastian's power will be a maximum of 10 watts and he will be using a magnetic loop antenna. He would like help from a native English speaker to assist him in the translation of a book for the home constructor. PA3EKK would like to get in contact with members using the Ten-Tec PM3 rig for 20 and 40 metres together with any hints and kinks for it. See Gerard's BBS in the BBS Listing elsewhere in SPRAT, and also that of UA9CDC. Igor would like to hear from other members active on packet and he is usually QRV with QRP on 14060 at 1930z.

G4EFE has successfully used his Oner on 10 metres, although the output is rather low, around 100mW. Martin is using a 150 feet end antenna fed via a Z match and has worked most of Europe on different bands with the Oner. He is experimenting with solar panels and has had QSO's with G4FQR and GØEIL so far. "Only thing is," says Martin "my shack has a very small window and with the solar panel in place, I need to turn on the 10 watts shack light to see what I'm doing! Rather defeats the object, etc. etc.....". Finally Martin also uses the transverter output from his FT101 for QRP after disabling the PA, and suggest members may be able to

do the same with other rigs. Perhaps members can let know what success they have, and I will report the details in this column. My TS930 can very effectively be put on QRP by simply turning down the drive (carrier contol). With the drive turned fully down the TS930 gives approximately 600mW, depending on the band. Some of the newer rigs, such as the TS950 and FT1000 still deliver 8 watts with the carrier turned fully down! These rigs may be worth trying Martin's suggestion

GWØLBI worked his first ZS recently on CW and then used SSB to work UM8. Leighton has modified his FT747GX for QRP for a maximum ouput of 10 watts (to include SSB). He has been trying "milliwatting" and has snagged VE3 with 400mW CW and W2 with 200mW SSB. Leighton is a member of the ISWL, (International Short Wave League), and writes a regular QRP column in "Monitor", their monthly magazine. GØNMT is new to QRP and will be building his first (simple) rig soon.

G4GFQ describes himself as a "sleeping member" of the Club but who is now on the air with a simple "Dobbsian", (think about it!) 3w transceiver on which he has made 100 QSO's. Ron asks me to thank the G-QRP-Club in general for "breathing new life into radio for me and in particular my thanks to both Smudge and Gus for their help and guidance."

Thanks to SM6BSM for sending the latest scores for the 1991 SCAG QRP Cup. Club members have three of the top five places, SM7RTQ is 2nd, SM7KJH is 3rd and LA3CG is 5th. Congratulations to SM1CNS (523 points) for winning the 1990 Cup and to SMØDJZ (437 points) for 3rd place. The Cup was for working the most DXCC countries in each half of the year and USSR Oblasts and US States throughout the whole year, (one point for each).

GWØMOH is moving to Bath shortly to do industrial training with the MOD. Rob is on HF packet and has worked DL with 3w. He has built the 20m "Compact" transceiver and also built his own PC on which he offers an article for SPRAT.

In reply to G4XHE's enquiry about the use of AM on 160 metres , G4RGN says Richard should be within range of the "Frankly Speaking Net", the "AMPS" (Amplitude Modulation Preservation Society) net, the "Monday Night at Eight Net" and the "Naughty Uncle's Round Robin" all on 160 metres AM in the Kent and Essex area! The "Frankly Speaking Net" is on seven days a week at 10am on 1980z and callers are welcome. AMPS meet on Sunday afternoons. The equipment used varies from a pre-war CNY-1 transmitter to Codar AT5's and solid state Topper's (from August 1990 Practical Wireless).

14 years old SP5UGF has recently joined the Club. Although he only has a novice licence (for teenagers up to 18 years), Matt uses QRP on 40 and 80 metres and has worked GØNEZ and G3GVY so far. G4VPM will be in the Fife area of GM at the end of July for two weeks. Although Andy will be taking his golf clubs, he will also be taking some gear with him! If you work either GBØDX or GBØQRP it will be me operating! I often use GBØDX in contests (QRO I'm afraid), and GBØQRP for promoting QRP, such as in HF Field Day at the begining of June (at QRP power levels of course). I have received the magazine (in Spanish) of the TMCW, (Ten Meter CW QRP Club) in Brazil. It contains circuits in addition to operating news and there is obviously a great dela of interest in QRP in Brazil.

That comes to the end of the file. Please keep your news coming, either what you've built or worked or anything you want to publicise or share with your fellow QRPers. Don't forget the Summer QRP Party here in West Sussex on 3rd August, see page 40 of the last SPRAT or elswehere in this one for details. If you've never met a QRPer from the USSR and want to, then make plans to attend the party. Club member RB5IJ is planning to visit the UK at that time and will be staying the weekend of the party with me. Alex will have two other QRPers from the Ukraine with him. Let me know how your Summer goes, by 20th August please. 73, Chris

HF FIELD DAY AND QRP

by Chris Page G4BUE

I'm writing this on the Sunday evening after HF Field Day (2nd June) and I expect many of you were out with your local club. During the week-end I was active from my home QTH using five watts output with the callsign GBØQRP. I made a total of 307 QSO's broken down as follows:-

160 metres	= 47	40 metres	= 70	15 metres	= 33
80 metres	= 61	20 metres	= 59	10 metres	= 37

The purpose of the week-end was to see what QRP could achieve amongst all the European /P stations, albeit using my main station antennas. The 307 QSO's were made in about 12 hours of operating, (half of the full period), and in addition to being a lot of fun has prompted me to write this article. I'm sending my log to the RSGB so they can use it as a check log and I shall be including a copy of this article with it.

I know those of you with long memories will remember when everyone in the UK was restricted to low power, but these days the classes are a "Restricted Section" and an "Open Section", both of which permit a 20dbW power level. The difference between the sections is the type of antenna(s) that can be used.

Field Day in the USA is organised by the ARRL, (the American RSGB), and is very big business. There are a large number of classes and it is very well supported. Several of the classes cater for the genuine QRPer, (5 watts output). Now that our Field Day in the UK is held with the rest of Europe, it is also becoming big business. The leading UK stations make over 1000 QSO's in the 24 hours. So, why no class for QRPers?

The RSGB have QRP classes in several of their other contests and I realise they hold an annual Low Power Field Day, but this is only for 8 hours, on 40 and 80 metres only, is not very well supported and does not coincide with any similar event in Europe. Why shouldn't QRPers enter the main HF Field Day competing against each other in their own class?

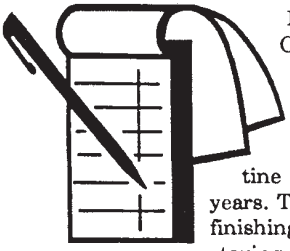
It has often been suggested that one of the unfair elements in contests is the variety of antennas used by the entrants. The nice thing about Field Day is that everyone is restricted to the same type of antenna, and if we had a QRP class, everyone in it would be restricted to the same power. The winners would then be determined by skill and operating ability.

The purpose of this article is to float two ideas. The first is whether The G-QRP-Club should lobby the RSGB's HF Contest Committee to include a sub-class to the Restricted Section to be called simply "QRP", in which entrants would be restricted to five watts output. The second idea is a fall back in case the RSGB don't like the first idea! Should the G-QRP-Club sponsor a QRP Class? This could be done by actively publicising the fact that G-QRP-Club will recognise the existence of QRPers who enter Field Day as being in a separate class. QRPers could send a copy of their contest entry to the G-QRP-Club in addition to sending it to their national society in the usual way. The G-QRP-Club could then adjudicate them and list them as a separate category. The Club could even award certificates to the winners of each country, band, etc. (I would be willing to assist in the adjudication).

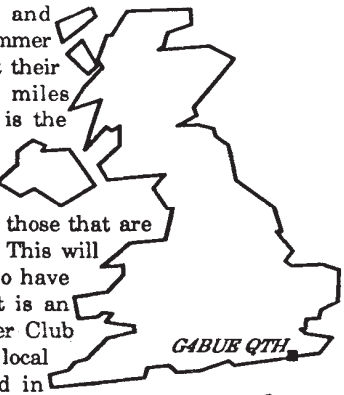
It is a lot easier to take part in Field Day when you're using simple QRP equipment and this would encourage QRPers all over Europe to take part. This in turn would provide a bigger challenge to those who already enter and there would be more /P stations active.

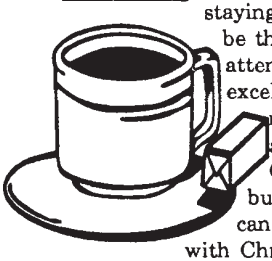
I would like to have some idea of the amount of support for a QRP class in Field Day. If you would consider taking part in a QRP class can you please let me know. Remember that Field Day applies to all of Europe and is supported by many other countries. I can be reached at "Alamosa", The Paddocks, Upper Beeding, Steyning, West Sussex, BN44 3JW, or Tel: 0903 814594 or via packet @ GB7VRB or the UK PacketCluster system.

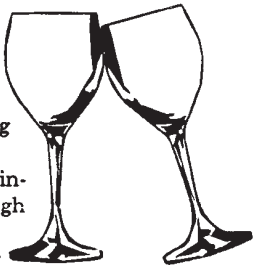
THE 1991 SUMMER QRP PARTY



Make a note now that Pam and Chris will be holding their Summer QRP Party again this year at their QTH in West Sussex a few miles north of Worthing. The date is the 3rd August 1991 and the routine will be the same as previous years. That is starting from 2pm and finishing when everyone has gone or those that are staying overnight want to go to bed! This will be the sixth party and as those who have attended in the past will know, it is an excellent opportunity to meet other Club members and some of Chris's local amateurs who are interested in QRP, DXing and contesting. If you have built something you want to show off or can't get to work or want to put on the air with Chris's HF yagi then bring it along. All items of homebrew are welcome. If you have anything you want to sell, bring it along as well.







You are asked to let Pam or Chris know you intend going so they can make sure there is enough food and drink to go round. If you live some way away and want to stay overnight, some sleeping accommodation is available on a first come and first served basis. Be quick though as the PA gang have already booked some of the beds. Telephone Pam and Chris on 0903 814594, drop them a line (see Members' News) or send a message via packet to Chris (G4BUE) @ GB7VRB.

AMATEUR RADIO FOR BEGINNERS : A NEW BOOK TO GIVE AWAY!

Amateur Radio for Beginners by G QRP Club member, Victor Brand, G3JNB, is a new publication from the RSGB designed to present the hobby to the complete newcomer.

It presents in photographs and non-technical terms an introduction to amateur radio suitable for young people to encourage them to try the hobby. Written in Victor's enthusiastic style the book attempts to bring together that huge array of interests and applications we call amateur radio. It would be easy to criticize what is missed out of the book, I would have liked to have seen at least one picture of someone operating homebuilt equipment, but it does cover a lot of ground in a few pages. I liked its practical approach : it not only tells the reader what other people do, but offers practical advice about how to get involved in the hobby. I liked the book and hope it finds its way into many schools and libraries. Its not intended for the likes of us! **BUT: If you want amateur radio to continue with new young people coming into the hobby, why not buy a copy and give it to your local school or library as a gift?**

G-QRP-CLUB PACKET BBS LISTING

GØBJJ	@	GB7VRB	G3CJ	@	GB7DXC	G6LBZ	@	GB7SIG
GØBPS	@	GB7SEK	G3RQT	@	GB7ESX	G6YBC	@	GB7CRG
GØBWG	@	GB7GBY	G3TPI	@	GB7FLG	DF5JL	@	DBØIZ
GØCUQ	@	GB7HSN	G3YBK	@	GB7GLP	DJ6SX	@	DBØEI
GØDCL	@	GB7ESX	G4BCY	@	GB7TXA	DK6AJ	@	DKØMAV
GØEIY	@	GB7PMB	G4BJM	@	GB7LWB	DL1SDZ	@	DBØAAA
GØFAK	@	GB7ZAA	G4BUE	@	GB7VRB	EA3ERT	@	EA3MM
GØGQF	@	GBBST	G4BXL	@	GB7LNX	EA3FNT	@	EA3CIW
GØJHC	@	GB7BPL	G4GIY	@	GB7GBY	F1EMT	@	FF6KDC
GØJJI	@	GB7BNM	G4GJA	@	GB7SEK	FB1MQO	@	F8BK
GØKFO	@	GB7ZAA	G4GHU	@	GB7GHU	FE1JBX	@	FE6BIG
GØKYA	@	GB7LDI	G4HYY	@	GB7CRG	KA1CZF	@	N1DCS
GØLGJ	@	GB7TLH	G4MET	@	GB7TCM	OE6WTD	@	OE6XYG
GØLGX	@	GB7ZAA	G4MUY	@	GB7PLX	PA3EKK	@	PI8DAZ
GØLKX	@	GB7HJP	G4NRW	@	GB7CRG	PA3FPJ	@	PI8DAZ
GØLXC	@	GB7IMB	G4OBF	@	GB7BSX	PE1LIF	@	PI8DAZ
GØMPL	@	GB7VRB	G4PDQ	@	GB7DXC	UA9CDC	@	GB7LDI
GØNMT	@	GB7LDS	G4SCT	@	GB7WNM	ZL2BSJ	@	ZL2AHK
GMØNRT	@	GB7CQV	G4SXH	@	GB7TCM			
GWØMOH	@	GB7ABC	G4WPI	@	GB7SIG			
G1HDQ	@	GB7TXA	G4XFD	@	GB7CRG			
G1XEI	@	GB7WRG	G4XHE	@	GB7SSB			
GM1BEA	@	GB7CQV	G4XZD	@	GB7YHF			
GM1OGZ	@	GB7MAC	GM4HQF	@	GB7CQV			

There are additions since the last list. Please help me keep this list updated by sending info to G4BUE @ GB7VRB or via the UK PacketCluster system.

SILENT KEY SALE: Yaesu FT101B: £275, KW107 ATU with internal 1Kw dummy load 10-80m: £80, KW 160m ATU: £50, KW103 SWR Meter: £30, FDK TCVR Multi 2700 2m FM,SSB,CW: £150, Yaesu FRG7 with fine tuning dial: £115, FRT7700 Receiving ATU: £60, Four sections each 20ft long of a triangular all welded lattice telescopic tower which extends to 75ft by Riley and Neate (Drawing available). Datong RF Clipper. Sure magnetic Mic, table model. Sensible offers. G0MMP in Prescot Merseyside. 051-426-6754.

FOR SALE: MILITARY TRANSCEIVER A13, 2-8MHz, 2 bands CW/AM/PM. 2w out. solid state with MOD user handbook. 12vDC. MILITARY TRANSCEIVER A14, 2-8MHz, 2 bands + 18 xtal controlled channels (no xtals). CW/AM/PM. 2w. solid state with Comms Corp technical Manual. 12vDC, chirpy signal with VFO. PLESSEY PA 338 MKII POWER AMPLIFIER, solid state. 20w out for 2w in, 2-8MHz in 3 bands. 12vDC c/w interconnecting cable allowing full t/r interface with A13/A14. ANTENNA MATCHING UNIT, covering 2-8MHz in 3 bands for vertical whip or endfed antennae. c/w meter for remote siting or will fit on top of A14. SEALED RECHARGABLE BATTERIES, quantity 4, 12vDC at 2.34AH will fit A14 and Plessey PA and will power A14 with Jumper leads. BATTERY CHARGER BCC Type for above batteries. 240vAC. HEADSET with handmic for A13/A14, HEADSET with boom mic (ex "clansman") mike not wired for A13/A14. CW KEY BCC Type complete with leg strap. WHIP ANTENNA, 5ft, collapses into 5 sections, PATCH LEAD, multiway plus x bare wire ends, 4ft long for interfacing A13/14 with Plessey PA or different headset/key. Recent acquistion of "new" military rig forces relucant sale. Would prefer to sell as complete package but would consider splitting into 2 working assemblies. Offers to Ty Nicholson (2795) QTHR as GM0LNQ or TEL: Aberdeen 210110 (work) or Schivas 385 (evenings and weekends)

NEW! DTR7 – 40m CW TX-RX

The DTR7 is building on the success of its companion, the 80m DTR3. Featuring module construction, with no less than five PCB's, the rig incorporates all the essential features of a transceiver without indulging in expensive gimmicks.

Covering the entire 40 metre band – 7.0/7.1 MHz – the Transmitter produces a clean 2 watts of CW. It requires only about 350mA at 13.8V (key down), which, combined with its compact size and light weight makes it ideal for portable operation.

The Receiver section (Direct Conversion), can resolve signals of less than 1uV. Selectivity is around 250Hz @ 6dB.
AF output, up to 1/2 watt, is for 8 ohm 'phones or speaker.
Sidetone and RIT (plus and minus 4kHz shift!) are built in.

ALL COMPONENTS AND HARDWARE INCLUDED

£84.50 (Kit) **£135.00** (Ready-Built)

NEW! PM20 POWER METER for QRP

The PM20 is a combined 50 ohm Dummy Load and direct-reading milliwatt meter. Designed specifically for the QRP enthusiast, it accepts any frequency from 10kHz to 150MHZ. VSWR is less than 1.5:1 at 150MHz, about 1.1:1 at HF.
A dual range instrument – 20 watts or 1000 milliwatts FSD – it permits readings down to 25mW to be made easily.

ALL parts (Yes! Case AND meter!) are included.

£19.50 (Kit) **£28.75** (Ready Built)

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THE V.F.O. @ £11.50, SIMPLE T/R Switch @ £ 9.00
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PCBs for the G3ROO SSB project, Phone for prices.

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