



# SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

ISSUE Nr. 109

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WINTER 2001/2



## THE REAL WINTER SPORTS IN OK2

**OK2BMA [left] G4HOM [right] in the 2000/2001 Winter Sports  
Hostyn mountains [locator JN89VJ] 844m asl, - 5°C**

**HF Selective Microvoltmeter ~ The Frequency Finder ~ Crystal Checker  
Open Feeder Current Meter & RF Sniffer ~ NJQRP "Islander" Pad Cutter  
Five Minute One Touch Tune for the FT817 ~ iTA Tuning Assistance  
Oil Powered QRP ~ Top Band Antenna with remote ATU for 160 m  
DXKEY - PIC KEYER ~ Digital Mode Audio Levels ~ Hang AGC for CW  
Variable Bandwidth Crystal Filter ~ Antennas-Anecdotes-Awards  
Magnetic Loop Antenna for 40, 30 and 20 Metres ~ Coming QRP Events  
Communications & Contests ~ SSB & Data ~ Member's News**

# JOURNAL OF THE G QRP CLUB



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

**Rev. George Dobbs G3RJV**

## EDITORIAL

Welcome to SPRAT 109.

This edition begins with W1FB Memorial Trophy entries for 2001 with the theme of Test Equipment. The winner will be announced in the next issue. Remember to enter the **W1FB Memorial Award 2002**, which is to **Design a Simple Viable HF Band Transmitter to introduce a beginner to QRP operation**. Please submit your design to G3RJV as soon as possible, with circuit sketch, all values and brief notes. The projects will be published in SPRAT and the winner will receive an engraved plaque. As usual, articles (simple and not-so-simple) on any practical subject are always welcome. Please send all contributions to me.

I look forward to be a speaker at the **FORT SMITH, QRP CONVENTION, Arkansas**, on **April 6<sup>th</sup>**. The event promises a rich line-up of **QRP Speakers** on the Saturday, a Friday night **QRP Banquet**, a free BBQ on Saturday evening – all in the context of the **Arkiecon Convention**. Details will be found on <http://www.qsl.net/kk5ku/arkiecon.html> (look at the QRP sections) or contact Jay Bromley on [w5jay@alltel.net](mailto:w5jay@alltel.net)  
I look forward to meeting many G QRP Club members at this event.

72/3

G3RJV

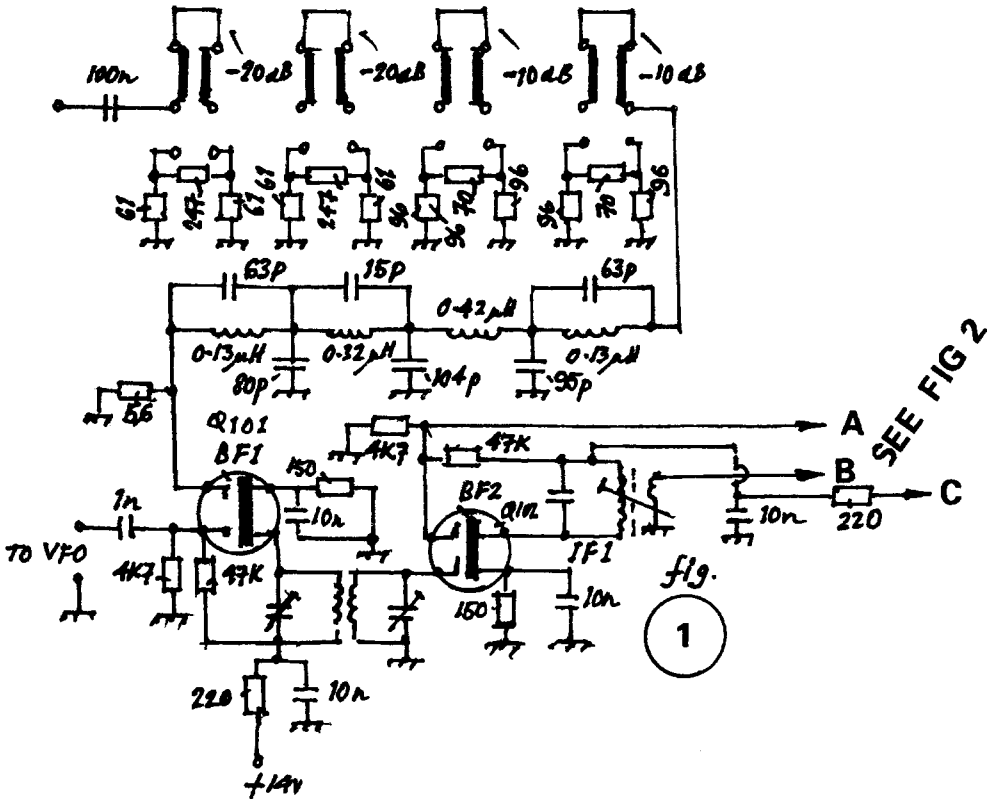
**EDITED BY GEORGE DOBBS G3RJV ARTWORK BY A.W. (MAC) McNEILL G3FCK  
Printed & Distributed by G QRP Postal Mailing**



# HF Selective Microvoltmeter

Milan Catari 9A9RA, Ilova, V. Nazora 43, 44320 KUTINA, CROATIA

A big problem that constructors meet is how to measure out of band emissions. Carefully calibrated and adjusted, this microvoltmeter can give as reliable results as any similar manufactured equipment. Maximum input peak voltage is 13.6v at 50 , that is to say 20W PEP. Basically it is a simple double superhet. First IF is chosen to be 50MHz. Second IF is determined by ceramic employed. This microvoltmeter covers a frequency range from 1MHz up to 40MHz. IC CA3089 serves as IF amplifier. Any similar IC with logarithmic detector for relative signal strength indication can be used. Low Pass filter cut-off frequency is about 45MHz. 61 resistor in the -20 dB attenuator close to the coaxial connector must be capable of dissipating at least 5W if up to 10W is to be tested. Overtone oscillator must be built on a separate PCB and shielded. S – Meter range could be calibrated so that the meter is scaled with 5dB points. To avoid possible capacitive coupling from the connector to gate 1 of Q1, the attenuator unit needs to be shielded.



SEE FIG. 1

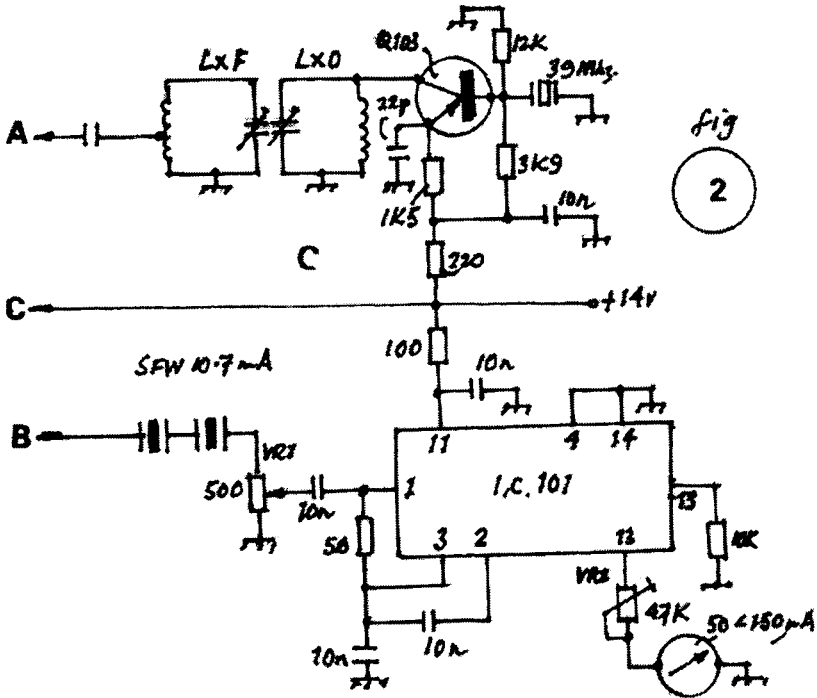


fig  
2

ADJUSTMENT – Adjust  $L_{xO}$  for stable oscillation on 39.3MHz.  $L_{xF}$  adjust for max. signal level on 39.3MHz. Drive should be measurable with an RF probe across gate 2 of Q102 (about 1V RMS). Using a signal generator, set BF1, BF2 and IF1 to give maximum indication on S – Meter. Set output voltage from signal generator to be exactly 31.6mV. Switch off all attenuators (0 dB attenuation) and with preset VR1, adjust for FSD on S – Meter (“50dB” point). Switch on next attenuators: -20dB, -20dB and -10dB and with preset VR2 adjust for only slight deflection on S – Meter (“0dB” point). There is some interaction, so this adjustment needs to be repeated several times. Next switch in one attenuator after another to achieve attenuation of -10dB, -20dB etc. and mark corresponding points (“40dB, 30dB etc.) on the scale of the S – Meter. Also mark points 5dB, 15 dB etc.

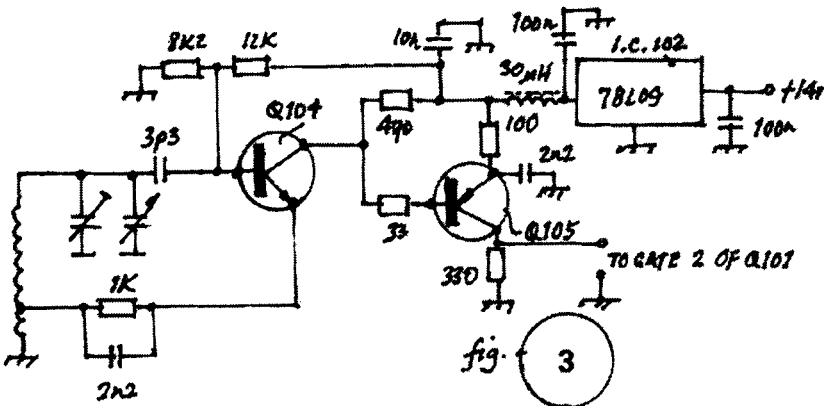


fig  
3

MOS Fets require a fairly high value of oscillator injection (about 1V RMS) for adequate conversion gain. An adequate overtone oscillator or VFO injection can be achieved by selecting a suitable tap on the  $L_{XF}$  coil or altering the resistor between the collector of Q104 and base of Q105.

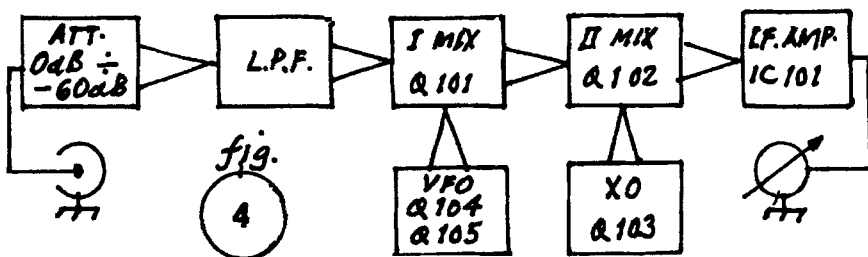


FIG1/2: Schematic diagram of the HF Selective Microvoltmeter

FIG.3: Schematic diagram of the VFO

FIG.4: Block Diagram of the HF Selective Microvoltmeter

### Tuned Circuits:

BF1 15 turns self supporting, 5mm dia, wound with 0.5mm wire ( $\approx$  24swg), trimmer capacitor air dielectric or ceramic, 7 – 35pF

BF2 See BF1

$L_{XO}$  22 turns self supporting, 5mm dia, wound with 0.5mm wire ( $\approx$  24swg), trimmer capacitor air dielectric or ceramic, 7 – 35pF

$L_{XF}$  See  $L_{XO}$ , tapped 5 turns from earthy end

IF1 19 turns wound on slug tuned former 5mm dia, wound with 0.32mm wire ( $\approx$  30swg), 3 turns secondary wound over cold end, capacitor 100pF.

$L_{VFO}$  7 turns, self supporting, 7mm dia, wound with 0.8mm wire ( $\approx$  20swg), tapped at 1½ turns from earthy end, air variable capacitor + air dielectric trimmer capacitor 5 – 35pF

### Resonant Frequencies:

BF1 and BF2 – 50MHz

$L_{XO}$  and  $L_{XF}$  – 39.3MHz

IF1 – 10.7MHz

$L_{VFO}$  – 51.90MHz

Q101, Q102 – BF960, BF961

IC101 – CA3089

Q103 – BF451

IC102 – 78LO9

Q104 – BF224, BF199

Q105 – BF451

FOR SALE: Argonaut 505 – Offers – G4DDX. 01438 368670

WANTED: TS130V QRP Transceiver, or similar [up to £150] John Armstrong, G4VPU 0191-252 2304. johnina@lineone.net



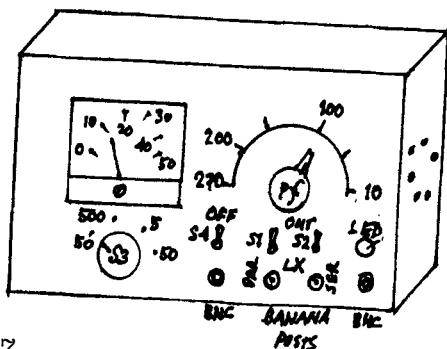
The device is ideal for checking the frequency of crystals and ceramic resonators. I have tested xtals from 72 kHz to 24 MHz and have only found one that refused to oscillate. One particular use is in checking the frequency swing of ceramic resonators. With both the SER and PAR switches IN, I found I could 'swing' a 7.200 MHz cer-res from 7.000 to 7.300 MHz. The Frequency Finder uses only one I/C, a 73HC4060, oscillator / divider chip.

This chip has a few things going for it. It works happily off 6 Volts. It has a two stage unbuffered oscillator circuit which can be configured as a Franklin oscillator. It has a 14-stage divider circuit that will divide by up to 16384. While all the divider outputs are not available, those provided can be juggled to suit our needs. In most cases a really accurate frequency readout is not required and a normal panel meter will give you an analogue readout that will do the job. If you require more accuracy for checking xtals, etc. you can of course plug in a digital freq meter to the DFM socket.

By using the square waves from the various divider outputs and a pulse counting rectifier circuit, a surprisingly linear readout can be obtained. Ranges of 50 kHz, 500 kHz, 5 MHz and 50 MHz will cover most crystal frequencies and inductance values needed by your average Ham. A 50 uA meter (3500 Ohms) was used for the frequency readout. A spin-off of this design is that various audio frequencies are available from the dividing chain. For instance, the Q13 output will give you a frequency 1/8192 of the frequency you are working on.

In use, with Q13 connected to a high impedance speaker, a tone will be heard. If you are testing a 10 MHz xtal, a tone of 10,000,000/8192 or 1220 Hz will result. A 1 MHz rock will give you a nice buzz of 122 Hz whereas a 24 MHz xtal will output a tone of 2928 Hz. A quick way of working out the resulting frequency is to multiply the oscillating frequency (in MHz) by 122. The result is then in Hz. When testing inductors, the tone will of course vary with the position of the SER and PAR switches and the calibrated capacitor setting. I used a 300-Ohm, rocking armature telephone receiver for a speaker. Incidentally, there may be some use of this wound output idea for visually impaired Hams.

When using the Frequency Finder, with NO xtal or inductor connected and the PAR switch set to OUT, the device will oscillate at about 10 kHz. This is due to the multivibrator effect of the circuit. This will result in a tick from the speaker about once per second. An LED is provided to indicate this pulse if the speaker is switched off. This LED also acts as a power on indicator as it is either ON or pulsing ON whenever power is applied. An audio (square wave) voltage of 2V p/p is taken from across the LED to the AUD output socket. This output can be used for testing audio amplifiers, etc. To find the inductance of a coil, you can use the following formula,  $25,330/C(f \text{ squared})$ , with C in pF and f in MHz. A further idea is to put the PAR switch to IN, the SER switch to OUT and set the capacitor to 100 pF. Connect the inductor and read the frequency. Inductance is now  $253(\text{freq squared})$ . (Inductance in uH, and frequency in MHz.).





## WIFB MEMORIAL PRIZE ENTRY

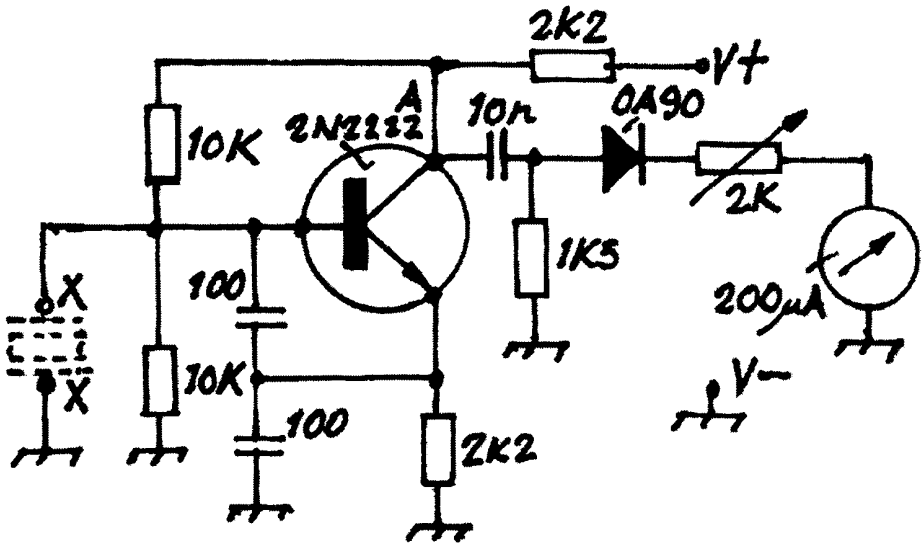
# A Crystal Checker

Walter Farrar G3ESP, 1 Barnsley Road. Ackworth, WF7 7BS

This is built into the case of a defunct small multimeter, totally stripped except for the 200uA meter movement and the "zero ohms" variable 2K resistor. The points "X" are small-insulated croc clips, to connect to any crystal, irrespective of pin size or wire ends. Although a 2N2222A is shown, any similar transistor should also work. The circuit works well with any of my crystals from 3.560 to 17.462 MHz. As shown the meter can give full-scale deflection. It will work with a 1mA meter, but maximum deflection is only 20% of FSD.

In use the oscillator output is rectified by the germanium diode to give a meter deflection, adjustable by the 2K variable. If more than one crystal of a given frequency is available, the best will give the greatest deflection.

Being a workshop instrument, power is taken from a standard 13.8 volt supply. Otherwise a 9-volt battery could be used, but might not allow full-scale deflection.



## RF PROBES TO GO:

I have a few (about 10) more RF Probes to give away at the bargain price of £15 each plus £5 for p&p. These were beta type samples from the company but work fine otherwise. As far as I know the specs are no different from the production version now being sold worldwide.

The normal price (see [www.rfprobes.com.au](http://www.rfprobes.com.au)) is about GBP 51 so it will be first come first serve only. A few members have bought a couple at the recent GQRP Convention at Rochdale and I am hoping they are thoroughly happy with their probes. If interested please email me at [vk3cca@arrl.org](mailto:vk3cca@arrl.org)

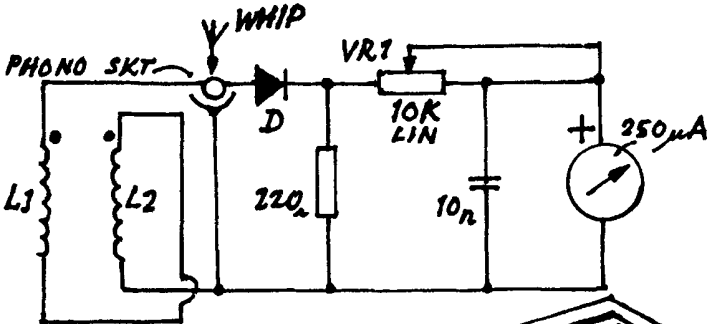
TUCK Choy MØTCC





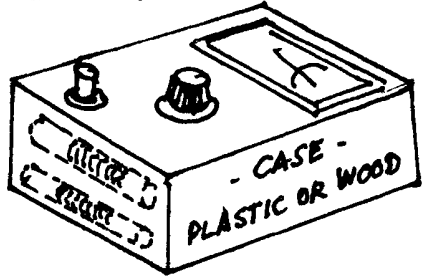
## Open Feeder Current Meter & RF Sniffer

Patrick Smith GW0VMR, Bron Awel, Brynissa Road, Brynteg,  
Wrexham. LL1 6NS. Patrick@lineone.net



*L1, L2: 10t. BELL WIRE  
ON FERRITE RODS, EACH  
1 1/2" LONG  
(3" ROD SNAPPED IN HALF)*

*BOTH RODS GLUED TO  
BOX WITH 5mm GAP.*



Like a lot of people, I don't like cutting toroid rings to make the transformer type sniffer [and you have to buy them]. So I cut a 3 inch ferrite rod in half. The feeder then goes between the two rods. It also works as an RF Sniffer and Field Strength Meter [... well sort-of]. Its difficult to cut of toroid but very easy to snap a ferrite rod ... especially when you don't want to!

## GQRP Club Sales

(For all items listed formerly from G3YCC)

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

(Non-members prices are in brackets)

All items from previous advert are available – except 48MHz crystals – these are all sold out!

### NEW ITEM!

**NJQRP Club Islander pad cutter (see article on p11)**

**Members only price £4.50 inc post [£5.00 EU & DX]**

**The TAK-893 mixers are still available – members only - £2.50 each  
(with BOGOF - buy one get one free!)**

**Cheques – payable to G-QRP Club please (cheques payable to me will be returned!)**

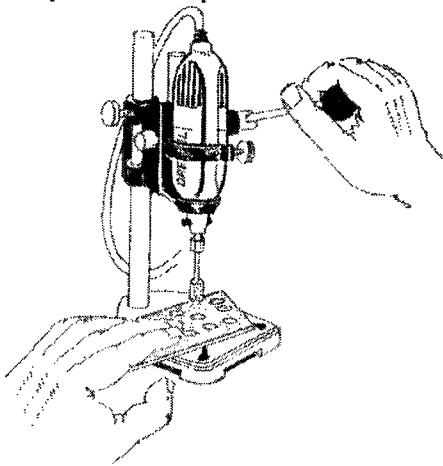
UK banks will no longer accept Eurocheques for amounts less than £20 – sorry

UK members can help reduce our bank charges by paying for small orders (up to £5) with postage stamps (up to 50p) or uncrossed postal orders - thanks

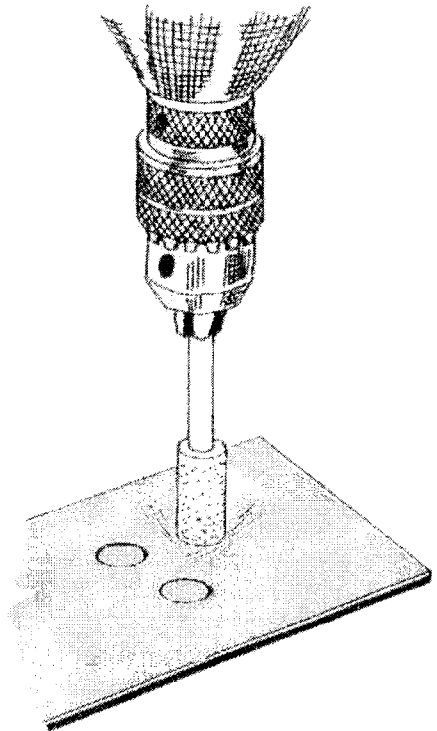
# NJQRP “Islander” Pad Cutter

George Heron, N2APB, 2419 Feather Mae Court, Forest Hill, MD 21050. USA  
email: n2apb@amsat.org

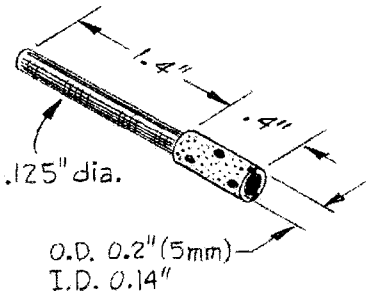
Here’s a handy and inexpensive end mill that can be used to cut “islands” into copper clad circuit board material. This technique of cutting small isolated pads right on the copper ground plane is an alternative to the Manhattan-style construction technique of creating separate pads that are glued down. The Islander pad cutter tool was envisioned by a member of the New Jersey QRP Club (**Dov Rabinowitz, AD0V**) while sitting in a dentist’s chair during a regular check-up. He later hunted down a manufacturer of a little 5mm-diameter diamond-tipped end mill, and then worked with the NJQRP to place a bulk purchase so the club could sell to homebrewing QRPers everywhere. Master illustrator **Paul Harden, NA5N** graciously agreed to help us document use of the end mill, and Manhattan-style expert **Jim Kortge, K8IQY** provided a sample circuit and photos.



NJ Islander bit can be chucked up in a bench mounted drill press, or just as easily in a hobbyist’s Dremel tool and inexpensive tool stand.



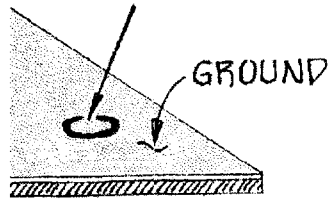
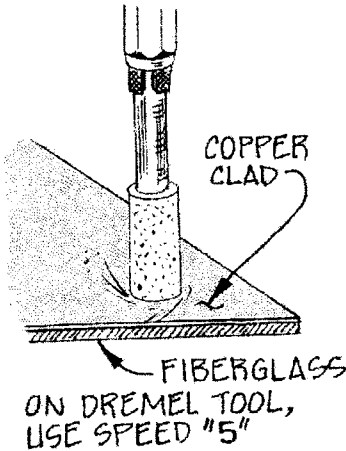
It’s important to drill the islands perpendicular to the board to prevent “bit walking”. A little water on the cutting surface helps. Be careful not to cut all the way through the fiberboard substrate, and to carefully clean out the drilling debris from the circular holes. (Check for shorts with an ohmmeter.)



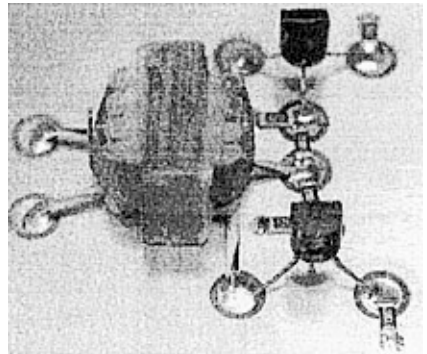
LIFT BIT

LOWER BIT AND  
DRILL THRU COPPER  
CLAD LAYER - JUST  
INTO FIBERGLASS

FORMS "ISLAND"  
ISOLATED FROM  
GROUND PLANE



SOLDER COMPONENTS  
TO ISLANDS



Make the island cuts at 90-degrees at Dremel speed "5". It's helpful to use a little soapy water to keep the soft copper from clogging the diamond edges.

Here's an example of a small circuit built using the Pad Cutter. Note the clean pads created flush to the surface of the board, allowing easy mounting of surface mount parts as well as traditional leaded ones.

[Photo taken by Jim Kortge, K8IQY, of his "Islander Audio Amp" project.]

**G QRP CLUB SPECIAL OFFER : THE NJQRP ISLANDER PAD CUTTER**

Member's Only Price £4.50 inc post. [£5.00 EU & DX] See club sales ad on page 9

**G3RJV Mail Adrift!**

During one of my periods away from home, it appears that some of my mail disappeared [put in a safe place then thrown out in error!] If you have an overdue reply -- please contact me again.

- G3RJV

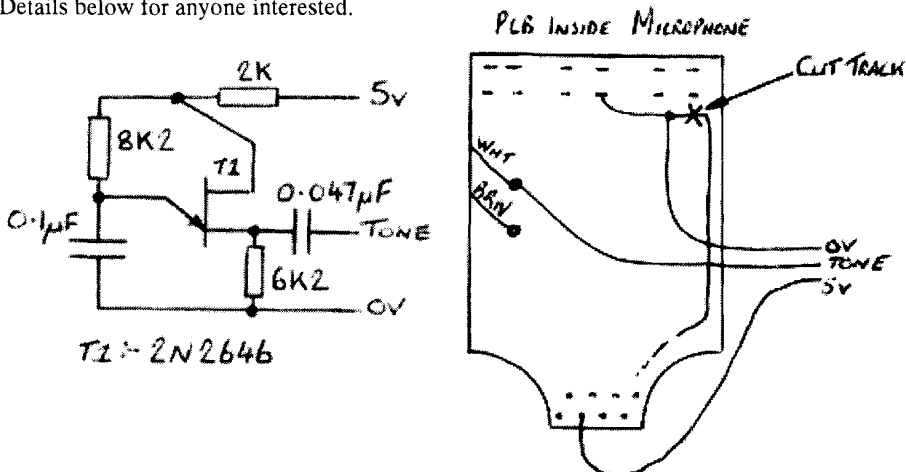
## The Five Minute One Touch Tune for the FT817

Paul M0BMM G-QRP No. 9897

(See next article for another approach from Paul)

Having just acquiring a FT817 and having built one of the Z11 auto tuners I wanted a easy way to generate carrier without having to make multiple key presses of the very small mode switches just above the display , so I came up with the simple idea of putting a audio oscillator into the microphone case. The simplest design I could find was one by G3RJV in Sprat 21 for the sidetone oscillator in the JU6 design . I quickly built this in ugly bug style, covered it in epoxy glue and when dry squeezed it into the mic's case. This mod will mean that the Fast Tune switch on the microphone will now only generate tone but for me this was not any real problem.

Details below for anyone interested.



To Use it press the PTT and then the FST button on the microphone, tone will be transmitted until you release the FST button. This can easily be done with one hand. The idea can of cause be used for many transceivers not only the FT817. The current consumption of the device is not very high, mine is about 390uA when in use. Its cheap and it works, so build one!

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

**QRP Labels:** Black Lettering on Gold with Club Logo : 200 labels £2. Post inc.

**Blank QSL Cards:** You complete your address and call. Blue lettering on white card, 5.5" x 3.5". 100 cards £4. Post inc. Sample from : M.L. Prickett [Max] G3BSK, 260 Haslucks Green Road, Solihull, West Midlands. B90 2LR.

Cheques: "M.L. Prickett" [The G QRP Club benefits from each order]

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### TWO METRES QRP CW

GI0GDF (GQR 4297) Ernie and GI4SRQ (GQR 7985) George will be calling CQ QRP most evenings from 2200 hrs Local. We will be running FT817's, W300 verticals, and 5 watts out. We will be calling CQ on 144.050 and when contact established QSY to 144.060 for QSO/Ragchew. If anyone hears us please BK us and join in.

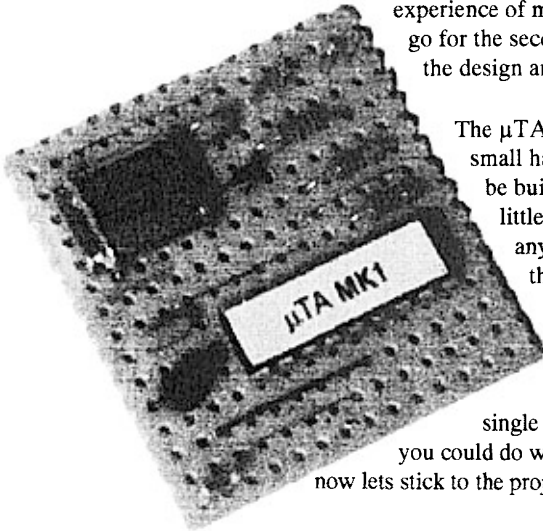
## Microcontroller Tuning Assistance $\mu$ TA [for FT817 etc.]

Paul Webb, M BMN, 40 Links Road, Penn, Wolverhampton, WV4 5RF.

E-mail :- m0bmn@hotmail.com Web Site:- <http://www.m0bmn.co.uk>

This device is intended to be used with the FT817 but could also be used with other similar radios using CAT (FT100 etc) with different code loaded. Users of such radio will know that multiple button presses are needed to generate a constant carrier for tuning purposes. I find this slow and annoying so what can we do about it?

Well we could rush out and buy a ready made One touch tune device for about sixty UK pounds and not really understand how it works or learn anything from it, or we could build our own. Being a member of the GQRp club and having had some experience of micro controllers in the past I decided to go for the second option and build my own, I now offer the design and code for you to make your own.



The  $\mu$ TA is very simple to build and only needs a small handful of components, it should be able to be built by just about anyone even with very little experience in homebrew I haven't given any case details but I'm sure you can sort that yourself.

The same module with extra code could also do other functions like extended memories, favourite freq/mode with a single push button in fact just about anything that you could do with a P.C. connected to the radio, but for now lets stick to the project at hand.

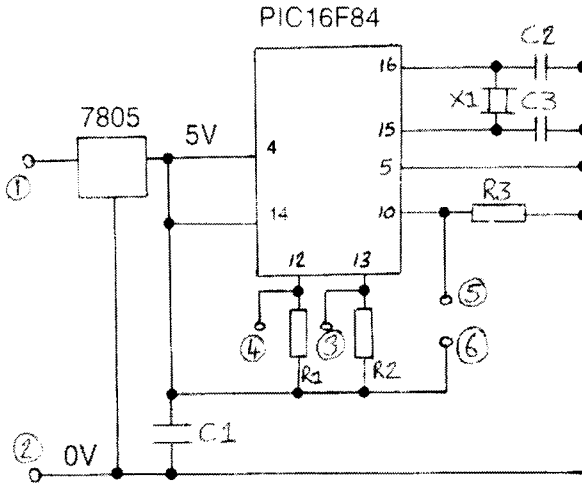
### How the TA works

When the user pushes the  $\mu$ TA's button the microcontroller sends a request to the 817 for details of the operating mode, this information is stored in its built in memory. Next the  $\mu$ TA sends out two data strings to switch the radio to FM mode and activate the PTT line. By using FM instead of AM for tuning means that the users current power level is used for tuning in case a none QRP auto tuner is being used that will only just work with the 5 watts from the 817. The 817 will continue to supply solid carrier until the user releases the  $\mu$ TA button.

When the user does release the button the  $\mu$ TA sends out two more data strings to reset the 817 into the mode the user had selected and to drop carrier. After this the  $\mu$ TA shuts down and waits for the next time its needed.

The  $\mu$ TA does have one problem, the device draws current from the 817 all the time it is connected, approx 4mA, the microcontroller only draws 1 or 2 micro amps when its in standby and about 2mA when active i.e. tuning, but the 7805 voltage regulator draws a standing current of around 3-4mA even when not driving any other device. The overall current consumption could be reduced to the micro amp level by using a more expensive regulator

with a low standing current. Since I normally use an external supply with the 817 in the shack I'm not too worried about the extra drain for the few times I get to take the 817 out in the field, but if you drop me a line and I will let you know which ones may suit you more.



## PARTS LIST

**C1:- 0.01µF**

**C2:- 22pF**

**C3:- 22pF**

**R1:- 10K**

**R2:- 10K**

**R3:- 10K**

**X1:- 4MHz**

**IC1:- PIC16F84 or PIC16C84**

**REG:- 7805 5 volt reg**

**Pin1: To CAT Socket (13.8Volts)**

**Pin 2: To CAT Socket (0Volts)**

**Pin 3: To CAT Socket (RTD)**

**Pin 4: To CAT Socket (TXD)**

**Pin 5: To Switch**

**Pin 6: To Switch**

## Setup

The µTA is very easy to build and can quickly be put together on a small piece of Vero board, but don't forget to cut the tracks on the "X"s on the above Vero (stripboard) layout if you use it! Once built you need to set the CAT rate on the FT817 to 9600 baud plug it in and away you go.

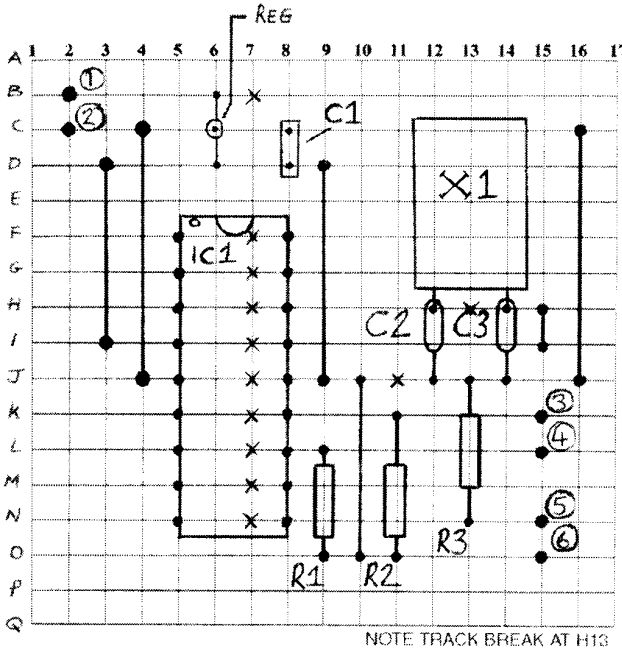
## Conclusion

The µTA is not anything clever, it's just a simple use of a microcontroller, the code is crude and I'm sure that it could be written to be much more efficient in terms of memory usage. If you want to use it please feel free to make your own, I have put the code on my website (<http://www.m0bmn.co.uk>) and include the circuit below. If you want to make one and prefer not to blow your own chip then I can supply and blow one for you at cost. So even if you have

bought a black box rig some of your set-up can be homebrew. If you would prefer I can always e-mail you a copy of the code.

If you need any help or have any comments then please feel free to contact me, my e-mail address is m0bmn@hotmail.com

Let me know how it works for you.



**Suggested  
Veroboard  
Layout for  
the  $\mu$ TA**

## Pottenstein-Treffen 2002

Das traditionelle Treffen in Pottenstein fuer Mitglieder des G-QRP-Clubs findet auch 2002 wieder am letzten Wochenende im April (26/27/28) statt. Weitere Informationen gibt es von DJ3KK, POB 801, D-25698 Meldorf (bitte SASE) und auf der Homepage

<http://www.g-qrp-dl.de>

vy 72 es awds Bernd,DK3WX - Fred,DJ3KK - Klaus-Dieter,DL8MTG - Franz,DJ9EO

The traditional meeting in Pottenstein/Germany for members of the G-QRP-Club will be held on the last weekend of April 2002 (26/27/28). Further information via DJ3KK, POB 801, D-25697 Meldorf (pse SASE) and on our homepage

<http://www.g-qrp-dl.de>

vy 72 es hpe cu Bernd,DK3WX - Fred,DJ3KK - Klaus-Dieter,DL8MTG - Franz,DJ9EO

## A QRP Radio powered by QRP power supply based on an lamp oil ! by PA2LIA Frits Ogg (pa2lia@amsat.org)



COPYRIGHT 2004, W.T.KIRKMAN

A very old principle has led to a nice little power supply that is affordable and is based on wasted heat. Heat is transformed into electricity by a so-called thermo electric generator. Seebeck a German scientist discovered in 1820 this so called Seebeck effect, on which a thermo electric converter is based. The principle was already used to generate electricity in Russia. There are examples of thermoelectric converters made during and after WW2. During the world exhibition of 1958 these Russian converters must have been shown to the public ([www.dapllc.com/lampguild/bboard/archives/Q0000019.htm](http://www.dapllc.com/lampguild/bboard/archives/Q0000019.htm)). Later space research brought new developments. Related to this technique is the peltier effect, that is for instance used in low voltage cooling boxes and cooling

elements for microprocessors and is yet wide spread. The Seebeck effect is now used in converters from 0,001W to 5kW, but these are very expensive. Imagine there is already a watch that is powered by the warmth of your body!

### The Seebeck Effect:

When a temperature gradient is applied across a homogeneous conductor(e.g. wire), a voltage potential is induced. Since the kinetic energy of small particles increases with temperature, the electrons at the colder end of the conductor have less thermal energy than those at the hotter end. Therefore, on average more conduction electrons will move from hot to cold than from cold to hot. This net accumulation of electrons at the cold end gives a potential difference across the conductor, with the cold end being the most negative.

Eight years a Belgium company did research on an affordable solid-state application, to use this effect. They didn't succeed. An American company GWI that took over the research did, within one year!. The result is a power supply of app. 2,25W (4,5V by 0,5 Amps) for \$ 59.95 Main stockists are W.T. Kirkman ([www.lanternnet.com](http://www.lanternnet.com)) and GWI, but businessmen look out!, they are searching for dealers ([www.radiolantem.com/dist.html](http://www.radiolantem.com/dist.html)). In Europe, a new dealer is the "Blue Lantern Shop" (Dr. Detlef Bunk) at [www.bunk-online.com](http://www.bunk-online.com) There are four models for different types of lamps. In a Swedish research project converters are used on wood stoves (2x 20W) (see [www.hi-z.com](http://www.hi-z.com)). Perhaps someone will come up with an idea that uses solar energy. It isn't PV (PhotoVoltaic) anymore then but TV (ThermoVoltaic). Hi



# Top Band Antenna with remote ATU for 160 m

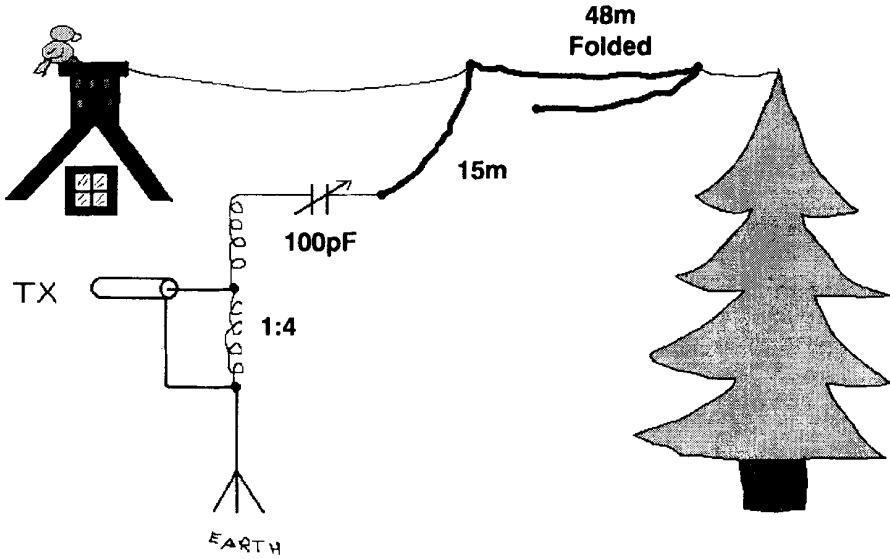
**Jesper Fogh Bang OZ1XB DK-3500 Vaerloese Elmevej 10 foghbang@mail.dk**

The antenna is a normal reversed L-type, approx. 60 m long end fed wire with a sloping vertical section of approx. 15 m and a simple 2 m ground rod. The horizontal top section is folded back in order to limit the ground space requirements of the antenna and also to reduce the horizontally polarised radiation, which is not really wanted on the 160 m band.

According to John D. Kraus's book Antennas, the input impedance of a  $0.35 \lambda$  wire in free space is approx.  $200 + j 400 \Omega$ , equal to a total length of 57 m on the 160 m band. The exact input impedance depends on the antenna height above ground and the shape of the fold back section. The inductive part of the impedance ( $+j400 \Omega$ ) is tuned out by the variable capacitor and also by the top hat section of the antenna itself. The antenna length is adjusted for an input impedance close to  $200 \Omega$ . If an impedance bridge is not available, try adding a piece of extra wire and check whether the output is increased. If not, remove the extra wire and fold back part of the free end of the antenna until the output is no longer increased.

The antenna is connected to the  $50 \Omega$  coax cable via a 1:4 Unun (unbalanced-unbalanced) working as an unbalanced, step-up auto transformer. The Unun is made as a 1:4 Balun with 2x25 turns on two, stacked T-200-1 Amidon cores (frequency range 0.5 to 5 MHz and a total  $A_L = 500$ ). A single T-184-1 core or two, stacked T-157-1 cores can also be used. The transformer/capacitor ATU is placed in a box at the feed point of the antenna, remote from the station and it is fairly broadband. The T-xxx-1 cores are not readily available, but JAB Electronic components in Birmingham have been very helpful getting the cores from Amidon.

**Drawing by Malene, daughter of OZ1XB**



# **DXKEY - PIC KEYER CW x DXer in PILE-UP, TEST, QRP, EME**

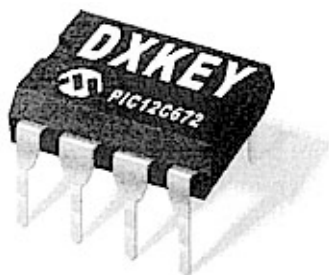
**Stefano Macerini Papini, IK5XCT, Via Sarzanese Valdera,64/M - 56030 Cascine di Buti (PI) ITALY**

## **DESCRIPTION**

**DXKEY** is a Microprocessor of the Microchip PIC Family (Dip 8 Plastic Package), internally programmed so as to be able to carry out the functions of a powerful and versatile KEYER for telegraph operators using JAMBIC keys.

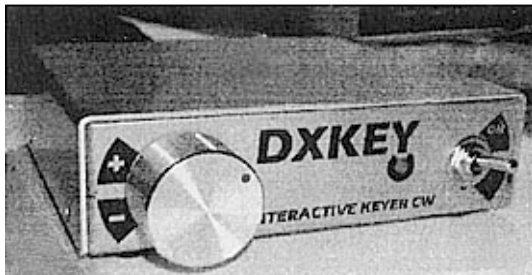
**DXKEY**, besides being a normal Keyer, has been optimized to be used in DX, facing the stress of PILE-UP or CONTEST, automating all the repetitive procedures such as hail-transmission, in call or in answer, of your own Call, of the Progressive one or of the Special Suffix.

This CHIP can also result useful to DXer QRP or EME since you can program a CQ call repeating it at your liking with a time Calling/programmable Calling; meanwhile, in the time between a call and the other one, it is possible to hear if there are any answers without stopping the process started.



## **CHARACTERISTICS**

- **KEYER SPEED 5-60 WPM**
- **SPEED ADJUSTMENT THROUGH POTENZIOMETER** in any moment (without any programming)
- **JAMBIC Programmable A or B** (with compensation)
- **WEIGHTING** Programmable Line/Point ratio 3:1 / 4:1
- **BEACON Mode** Available, with **DELAY** Inter-Message programmable from 5 seconds to about 1 minute at the speed of 20 WPMs
- **MEMORY FOR 4 INDEPENDENT MESSAGES** programmable up to 200 characters each one (excluding spaces) using **DXKEY-MACRO** language
- Possibility to activate a **COUNTER from 000 to 9999** to be used in CONTEST, to be introduced inside your own messages; this counter can be **Incremental or Repetitive** e.g. you can have one contest-answer assembled in the following way UR 599 (incremental counter) DE IK5XCT; every time that you send the message in execution you will hear a Progressive increasing of a unity. Nobody forbids to program another message (one among the 4) with a sentence such as UR 599 (repetitive counter) DE IK5XCT; every time that you send this message in execution you will hear that the same progressive number is transmitted. This formality is useful to repeat a progressive which has not been properly heard by the correspondent.
- Possibility to activate a **TOGGLE-SPEED** which makes **the speed of the outgoing message lower than 30%** so as to increase the intelligibility toward Your correspondent (even DX, in a PILE-UP), this parameter can be introduced inside your own messages; ie. you can have an answer assembled in the following way: UR 599 DE IK5XCT (TOGGLE-SPEED) IK5XCT (TOGGLE-SPEED) 73 TU; in this message the 2nd IK5XCT is heard slower than 30% in comparison with the speed normally planned.
- Possibility to vary in any moment your own **CALL** in comparison with the one



written inside the CHIP, during the initial making.

- Possibility to activate a **FIXED TONE** for the tuning of the transceiver.
- Possibility to Restore the initial conditions of the CHIP, for this operation DXKEY will ask you a Password (written in Dxkey's Data Sheet)
- Possibility to Build, through the electric scheme enclosed to this Date Sheet, a KEYER which preserves all Your Memories for a Month.
- Talk between operator and CHIP directly in CW telegraphy, CHIP "**understands**" the given orders in CW with paddles.

### **KEYER JAMBIC**

At the Turn ON, DXKEY is predisposed as a normal KEYER with the following parameters: JAMBIC B (with compensation), Weighting 3:1 (standard ratio Line/Point)

### **TRANSMISSION OF THE MESSAGES**

Inside DXKEY 4 Messages can be memorized (up to 200 characters excluding spaces) through a Macro-language.

The 4 Messages are transmitted with a combination among the Paddle (DIT e DAH) of KEYER and two Buttons that we will call BT1 and BT2 (on Special KEY), the simultaneous use between Keyer and Functional Keys makes the messages as an integral part of the manipulation that so results to be precise and natural.

### **Fast Memory Access & Immediate Manipulation Automatic/Manual Change**

With Palmar Special Functional BT1/BT2 KEYS

### **STRUCTURE OF THE MESSAGES**

The messages are built through the use of 4 type **macro-components**:

- 1) **CALL** (1 Field), It can be personalized with 12 Characters (Letters, Numbers, Symbols)
- 2) **Abbreviation/Radioamatorial Sentences** preset (26) of common use (AR K, BK, DE, PSE, INFO, QRP, 5NN, QSL, K, CQ, TEST, UR, VIA, BURO, DX, TU, 73, MY NAME IS, MY QTH IS, MY RIG IS, MY ANT IS, MY PWR IS, TNX FER NICE QSO HPE CUAGN, QSL IS SURE VIA, 73 TO U AND FAMILY GB GDX)
- 3) **OPTIONS** (5 Fields) for a total amount of 50 characters (Letters, Numbers, Symbols) to be used as completion of the presetted Sentences
- 4) **Functional components** (3) such as:
  - ⇒ **Incremental** numerical counter for the contests that can transmit in from 000 to 9999,
  - ⇒ Numerical counter which does not increase, but **repeats** the last transmitted
  - ⇒ 30% speed reduction gear, to increase the intelligibility

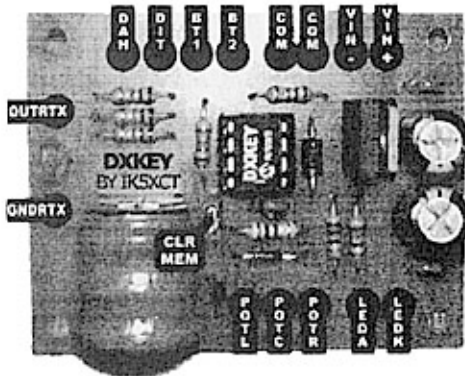
Everyone of these Macro-components can be recalled through an identifiable code by using a Letter from A to Z or a number from 0 to 9 (see chart in the manual)

Every Message have the ability to fill 12 Macro-cells with 12 Macro-components (e.g. to transmit the message UR 599 DE IK5XCT you have to fill the Macro Cells with the following Codes of Call: U H D C Y) it won't care to insert a space after the Code of Call, DXKEY automatically adds it. You can compose in this way any type of Messages.

The manual, the program examples, the project of DXKEY Card with Battery to memorize messages for a long time (Electric Scheme, PCB and Components) can be looked at

WEB INTERNET address: <http://www.qsl.net/ik5xct/dxkey>

or to send an E-mail to Stefano [ik5xct@amsat.org](mailto:ik5xct@amsat.org) or Phone +39.0587.72.38.16



## **Setting Audio Levels When Using The Digital Modes**

**Phil Cooper GU0SUP, 1 Clos au pre, La Hougue du Pommier, Castel,  
Guernsey, C.I. GY5 7FQ. [pcooper@guernsey.net](mailto:pcooper@guernsey.net)**

First of all, perhaps I should introduce myself. I am Phil GU0SUP, and I am the 'members rep' for BARTG. My main interest is RTTY, and chasing DX on the digital modes. I have tried most of the modes available, such as MT63, Hellschreiber, PSK, MFSK, etc, but RTTY is my favourite mode.

I presented a lecture at the 2001 RSGB DX Convention about getting started on the digital modes with a soundcard, and it was apparent that the biggest hurdle for most folk was actually getting the soundcard levels set correctly. A fellow traveller on this trip was Paul GU4YBW, who is a G-QRP club member, and he attended the lecture I gave. It was partly his suggestion that I offer the following advice for other G-QRP club members.

PSK has become very popular over the last few years, and it is mainly due to the fact that it works so well at low power levels.

The most important part of setting everything up is getting the audio levels right. I would advise you to play around and adjust the settings several times, so that you feel comfortable with what you are trying to achieve, as the more you do it, the easier it will become.

If you use SSB, you don't shout into the mic with the gain turned down, and similarly, you don't whisper into the mic with the gain all the way up. You speak into the mic in a normal voice, and then adjust the mic gain to suit. Now, with a soundcard, you are trying to use the controls of the soundcard to achieve the same balance as you would with SSB.

I found it useful to have one channel of the speaker output from the soundcard wired into a separate speaker, so that I could hear what levels were being transmitted, although you may prefer not to listen to your own transmitted signal.

For setting up the soundcard, I prefer to use the G3PLX PSK31 program, as it has a TUNE button to help you through this part, and that helps a great deal, as you will see.

To go through the next stages, you'll need to open the soundcard mixer box by double-clicking on the speaker icon in the task bar.

### **RECEIVE**

The first thing you need to do is to set your receive levels, and this should be fairly easy with many of the PSK programs. The waterfall needs to be readable, and not overloaded; otherwise you won't distinguish any signals at all.

Start off with the volume slider at the bottom, and increase it slowly. If you raise it too high, you won't see the difference between signals and background mush. You want to see a dark background, with signals showing up as a brighter white or grey colour.

Also, make sure the setting isn't muted. Some have check-boxes for MUTE, while others have check-boxes for active. Just make sure you have yours set correctly.

### **TRANSMIT**

Now, to set the transmit side, you will need to go to the PLAYBACK part of the mixer, and to do that, click on OPTIONS, and then PROPERTIES and select PLAYBACK.

To check that you are not going to overdrive the transmitter, first set the mic gain control to the normal level used for SSB voice, and set the output power for about 20 watts (or maximum, if you are using a QRP rig). Next, set the soundcard output level at zero on the mixer control panel, (the one usually marked WAVE BALANCE).

Now, from your PSK program, you need to transmit a tuning tone. Slowly turn up the soundcard output level while watching the transmitter output power. Stop when the power is just reaching 20-watt, or maximum, level. At this point, the ALC meter should just start to read. This is hopefully the correct setting. Now you can go back to receive.

OK, so now you've got a basic set-up, and the best way to check how good it is, is to start typing, and see what happens to the transmitted power level. If you have it right, it should drop by about 50 percent. This change in power is what you are looking for, and is due to the fact that you are alternating the phase of the tones.

If the power only drops by about 20 or 30 percent, then you'll be overdriving the rig, and you will need to go through the process again. It may take a while to get past this stage, but it is well worth taking the trouble to get it right now, as it will save a lot of trouble later on.

If, by chance, the transmitter power jumps to maximum on the first step of the output control, you will need to make an attenuator to reduce the soundcard output level going to the transmitter.

Peter G3PLX states in his help files that it is quite OK to let the transmitter ALC line operate on PSK31, as the ALC line will control the drive level without clipping in the same way that it does on voice operation. However, I would suggest that you get used to backing off the mic gain so that ALC does not show.

So, there you are. A few simple steps and you can be using PSK31 to work DXCC. And remember that 5 watts is more than adequate most of the time. I have made many QSO's using around 1 watt with stations as far away as VK, JA and most of South America. I have also found that 10 metres can be very good after dark, even with very low levels of power. As an example, I had to reset my audio levels after playing around with some software, and as it was late at night, I felt that tuning up on 10m wasn't going to affect anyone. I'd got the levels about right, and power was dropping by about 50%, so to make sure that everything worked OK, I hit F1 a few times, which sent out a CQ call. My eyes were glancing between the screen, the power meter on the ATU and the ALC level on the rig, when I spotted an answer to my CQ! It was an LU8 station, right down at the bottom of the continent, and he was surprised to see me. Well, I was just as surprised to see him, as my output power was around 1 watt. Once he knew what power I was running, he reduced his power, and we made it both ways with about 1 watt each. The QSO went on at this level for about 30 minutes before it became difficult, but it was way past midnight by then.

Many thanks for taking the trouble to read this, and I hope you enjoy PSK. It is an excellent mode, and power levels of less than 5 watts can work wonders!

If you have any specific questions, I would be more than happy to answer them. I am QTHR, but you can also email me. I cannot accept UK stamps, as they are not valid in Guernsey (just in case anyone sends an SASE). Web: [www.guernsey.net/~pcooper](http://www.guernsey.net/~pcooper)

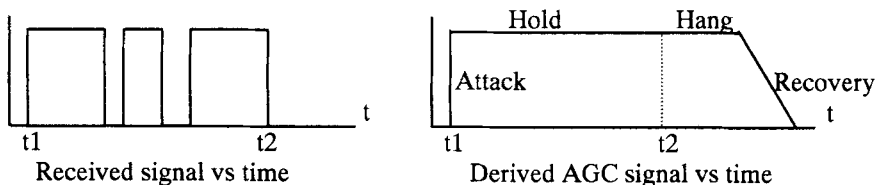
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CLEAR OUT:- Built Howes Kits: DCRX80,CVF80,CTX80 make a good starter rig. Also CVF30, MTX20- All have worked Collect the lot free or £5 postage. GØUFT 01347 838891

## A Hang AGC Circuit for CW Reception.

Dr Andrew Smith, G4OEP, 15 Dyrham Close, Henleaze, Bristol BS9 4TF

Achieving satisfactory AGC action in home-brew CW receivers remains a problem despite the availability of dedicated AGC chips and multifunction IF chips. One reason is that it is often required that the AGC action should be derived from the audio signal rather than the IF signal. This is necessary when part of the system selectivity is controlled by audio filters, as in direct conversion receivers, or when a SSB filter is used for CW reception. Additional difficulties arise because of the on-off nature of CW signals. Full receive signal power comes on instantaneously when the other end hits the key, and disappears absolutely for some time when he pauses for thought. The system must deal with rapid rises and long delays. Very fast AGC response (attack) is needed if annoying crashes are to be avoided when sending begins, and long, steady hang is needed if noise is to be kept at bay during pauses. In addition, fast, smooth recovery of IF gain is needed when a strong transmission ends. Fast attack, steady hold/hang, and smooth recovery after the hang period are characteristics of a good AGC system for CW reception. (Fig 1).



**Fig 1. Idealised AGC response**

Typically, systems which operate well for audio-derived SSB are unsatisfactory for CW because a longer hold/hang period is required. If the capacitor controlling the hold/hang period is increased, the attack time is also extended, and so good CW hang operation is only achieved at the expense of loud initial transients caused by too-slow reduction of gain. The problem is overcome by the circuit shown in Fig 2, which uses separate capacitors and support circuitry for the functions of 'AGC memory' and 'hang time'. High charging rate for the 'memory' capacitor and the use of low-leakage techniques give rapid attack and steady hold, while a dedicated timer chip allows hang period and recovery rate to be controlled independently of the memory function. This enables a flexible approach which can be adapted to give good performance in a variety of different systems.

The circuit uses a quad FET-input op-amp (TL084) in an active peak-detector circuit. The memory capacitor (C1) is included in the feedback loop, giving very fast attack, while the low input current of the op-amps allows a decay time-constant of several minutes (steady hold). The hang period is defined by a 4047 CMOS retriggerable monostable, whose Q output discharges C1. When an audio signal is present, C1 is charged through D1 from the output of OA1, which saturates, giving a large output voltage and correspondingly high current. OA2 responds to charging pulses through

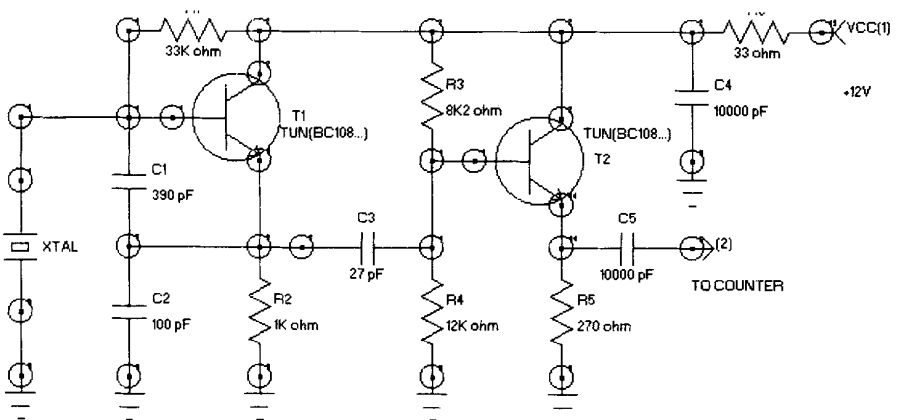


## Variable Bandwidth Crystal Filter

Tasic Sinisa-Tasa YU1LM, Petefijeva 41/15,11000 Belgrade,Yugoslavia  
stasic@eunet.yu

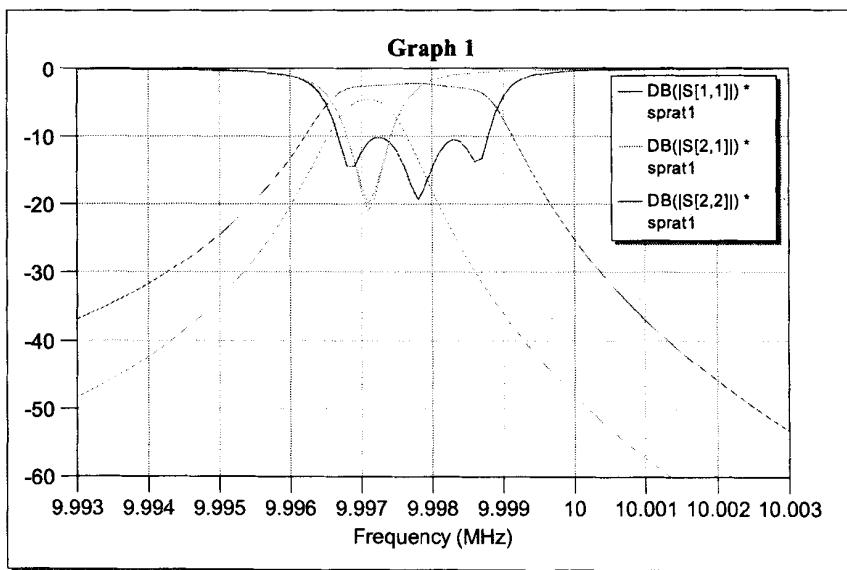
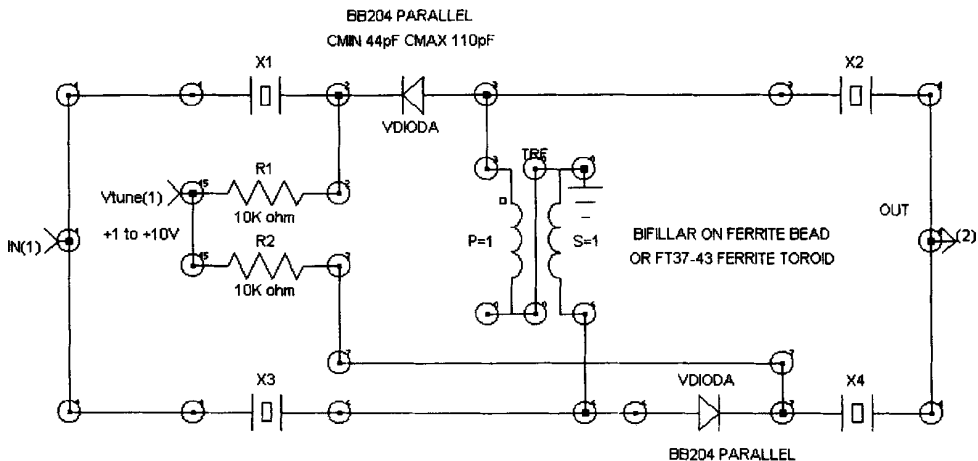
I like to have crystal filter with variable bandwidth which will satisfy SSB/CW use and I try some design with ladder crystal filter. I felt disappointment with results, first filter insertion loss was change very much with change of bandwidth and second input/output impedance was far away from 50 Ohms. I adore modules with 50 Ohms impedance because it is very easy to "play" and make new receiver/transmitter design on board it's like RF "LEGO" brick. Here is results of design , see figure 1, I made in very mighty RF CAD Program Microwave Office 2001 which is possible to free download on address <http://www.appwave.com> as 30 days trial version. Practically I made this crystal filter, some kind of half lattice filter, and agreement with design was very good. To obtain good agreement it is necessary to match crystal units in some kind test oscillator see figure 2

During the matching crystal units we are measuring frequency on the counter and the difference between units for good match is less than 100Hz. Crystal units are very cheap about 1.5 DEM or less and it is possible to use this design for any crystal frequency in crystal fundamental mode practically to the 25-30 MHz. Also is possible to use crystal units from old PC boards than the price is practically near zero. Crystal filter is near 50 Ohm system and it is possible to cascaded to obtain better filter skirt. I suggested that crystal filters are between IF amplifier (very easy build with MMIC MAV11 from Mini Circuits or similar type ). Varactor diode is for the FM receivers BB204 type, it is two diodes type in one package and for this purpose I connected this two diodes in parallel. Control voltage is changing on R potentiometer from 1V to 10V and I appreciate to use stabilised voltage .If we have intension to use crystal filter only for CW work it is possible to decrease bandwidth (-3dB) down to 200Hz or even less if we connect parallel C to diodes (for example 47pF) than the relative change of filter bandwidth will be reduced also we shall increase insertion loss .One more thing for CW detection it is necessary to use USB carrier. Also if we don't like to have variable bandwidth it possible to use fixed capacitors instead varactor diodes. Experimentally it is necessary to determinate fixed capacitors because values depend from crystal type and wanted bandwidth. Some practical guide for SSB C has to be small (typically around 47p) and for CW (C around 100-200pF). I made few crystal filters this type for other frequencies (8MHz, 10.7MHz and 20MHz) with fixed bandwidth and filters are very good especially for the CW use.



CRYSTAL TEST OSCILLATOR





FOR SALE: JBS TX - as per Low Power scrapbook - built into small box - nicely finished £15. Nicky's TRF on 40m tunes 7.0 to 7.1 - beautiful Rx in matching box £20. PSU, 1A 13.6 v. "TC2" 2m SSB TRx version of the Drew Diamond design 3w PEP out £20. Sprat conversion of CB1050 to 10m (G3PTO) with data £20. Julian G8HCZ 01473 314151(ipswich), julian@pjiredale.freemove.co.uk.



## IGOR GRIGOROV'S URBAN ANTENNAS. VOL.1.

[notes from G3RJV]

Readers may know Igor Gigorov, RK3ZK, from inventive projects in SPRAT. Igor begins this book from the realistic standpoint of many radio amateurs - How to make a viable antenna, which could be invisible or nearly invisible in the urban situation. In the course of this, Igor presents a range of antenna ideas including some that are new to many "western" radio amateurs.

The book is divided into three main sections: **Invisible and Substitute Antennas, Antennas for Special Bands and Frequencies and Special Antennas.**

The book is no mere description of ideas and theories; it contains many practical examples for the reader to try.

The first section is of obvious help to the QRP'er with

limited space or the need to conceal the presence of an antenna. The second section deals with antennas for 136kHz and the CB Band. The former being more useful to QRP'ers than the latter. The final section has innovative chapters on Underground & Spreading antennas, Making antennas with coax, Making TV antennas work for Amateur Radio and Multi-Purpose antennas. I found the book to be easy to read, informative and full of inspirational ideas. For someone like me, who relies upon others to give me "worked out" antenna ideas, the 220 pages of Igor's book will keep me going for a long time. It's probably a *must-have* for an amateur radio book collection.

The book is available from **AntenneX** in choice of softcover or eBook (PDF format) versions.

The eBook may be purchased by download (11MB) directly from the website, or shipped on CD-ROM. You may order your choice of soft cover or eBook directly online from the Secure Website, [www.antennex.com](http://www.antennex.com) or by FAX, telephone or postal service.

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**Corpus Christi, Texas, USA**

## Radio Projects for the Amateur Volume 2

by **Drew Diamond, VK3XU**

- which follows on from "Radio Projects for the Amateur", is now available. The book offers "more plans for the construction of receivers, transmitters, antennas, test equipment and some handy workshop hints and tips" in a similar style and presentation to Vol 1. Contains details of about 30 projects including power supplies, a 3- HF band superhet receiver, low-power CW transmitters, 40 W MOSFET linear amplifier, "swinging-link" HF antenna coupler and several useful items of test equipment. The workshop section includes details of a neat little sheet-metal bender for radio/electronics and modelling work.

132 Pages, A4 format. Available direct from the author and publisher;  
Drew Diamond (VK3XU), 45 Gatters Road, Wonga Park, 3115, Australia.

Price is \$24.95 (Australian dollars) which includes air-mail to Europe.

## FROM THE MEMBERSHIP SECRETARY

**John Leak. G0BXO. Flat 7. 56 Heath Crescent. HALIFAX. HX1 2PW**  
Tel:- 01422-365025. Email:- g0bxo@ggrp.com

### SUBSCRIPTIONS 2002

Subscriptions for the year 2002 are now due. Please see the centre pages of this issue of SPRAT for details of methods of payment. I can accept payment for more than one year at a time. If you wish to do this, please show clearly how many years you are paying for.

**It is a very great help to me in processing payments if members respect the following procedure.**

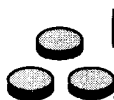
**If paying by cheque, please write your membership number and callsign (if any) on the back of your cheque. I list cheques on bank payment slips under your membership number so that I can trace a cheque in the event of a query. The callsign serves as a check.**

**Please make cheques payable to "GGRP CLUB" only, not to me personally, nor to SPRAT. I will return cheques made out to SPRAT and cheques made out to me. Please do not staple your cheque to the form or letter.**

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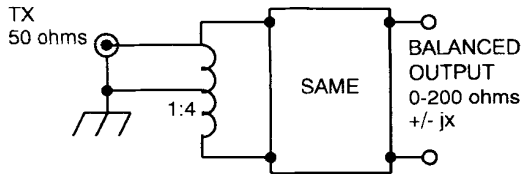
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## L - type ATU SPRAT 108

Unfortunately, the top left drawing on page 19 is wrong. In order to have a balanced output (with reference to the TX ground) the TX coax shall be connected with the screen to the middle of the balun and the centre conductor to one side of the balun. The text is OK. (Jesper, OZ1XB)



### LED RF Test Probe [SPRAT 108] Tip

I made up George Burt's LED RF test probe from SPRAT 108 page 9, with components from Bowood Electronics. A simple little device that didn't take long to make but would it work? I messed about with it for a long time, rebuilt it with new components and tried it in its raw state - before putting the heat shrink on. It worked!

The trick is to bend one of the legs of the hyperbright LED upwards after soldering is finished, put on the heatshrink, then bend the leg down outside the heat-shrink so in use you make a ground-plane connection with your fingers. 73 Me! G0GQX

**6th RED ROSE QRP FESTIVAL Sunday 26<sup>th</sup> May, 2002,**  
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**To promote interest in low power operating and home construction.**  
**Trade and club stands, including RSGB, GQRP, FIST, etc.**  
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**Huge free car park, disabled facilities. Delicious refreshments at QRP prices! Bar. Display of Morse keys and QRP rigs. C.W. "Sign in".**  
**Talk in on S22. Admission still £1. Some tables at £5 but please book early.**  
**For further details, please contact Les Jackson, G4HZJ,**  
**g4hzj@btinternet.com or 01942 870634**

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# ANTENNAS - ANECDOTES - AWARDS

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

NOTE This time our antenna article is on the next two pages.

## AWARD NEWS

### QRP MASTER

Congratulations to DL2BQD on his admission to the Worshipful Company.

### QRP COUNTRIES

250 W7CNL ( Magnificent !), 125 2EoAOZ (Great stuff), 75 G4LDS, DL2BQD, 50 2Eo000, 25 M1DUD (all 6m), M5AEF, G3JSR.

### WORKED G QRP CLUB

1400 GM3OXX (What can one say ! ), 560 G4NBI, LZ1SM, 220 GWoMY, 200 DJ3LR, 140 GWoVSW, 120 GoUAP, 80 G3JSR, 60 G3HOH, 40 2Eo000, 20 ZL4SEA,

### TWO-WAY QRP

20 2Eo000, 10 G3JSR.

Congratulations to all the above on their achievements.

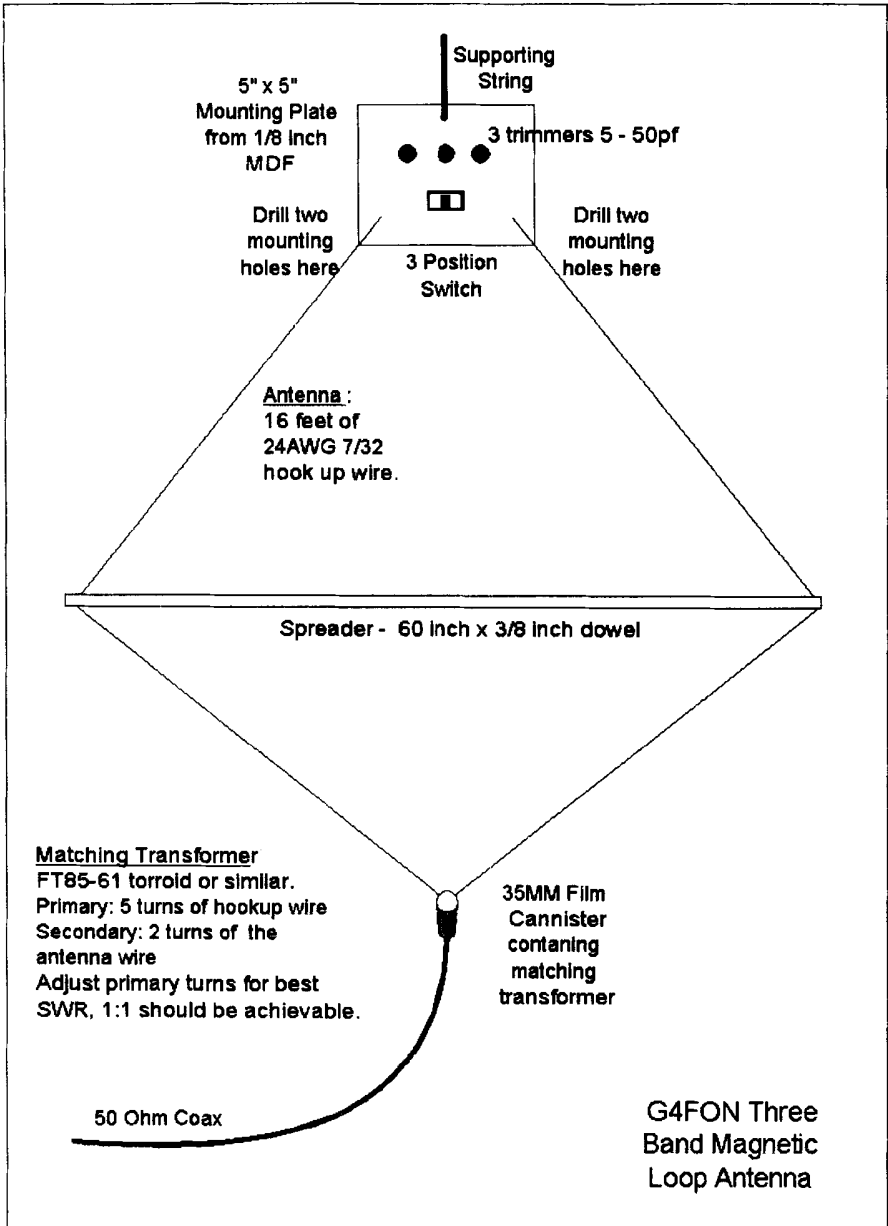
## POWER LEVELS FOR QRP

THE INTERNATIONALLY AGREED POWER LEVELS FOR QRP DID NOT HAPPEN BY ACCIDENT ! They were the result of many months of consultation involving every QRP Club of any size in the world, with G8PG acting as co-ordinator on behalf of the World QRP Federation. At that time the only generally used data type transmissions were radio teletype which did, and hopefully still does, use the same 5 watt limit as cw. This being the case it is difficult to see why any other power limit should apply to the various more recent data modes, particularly as their users continually highlight their superiority over other modes of communication. As far as ssb is concerned, it is interesting to note that at no time during the discussions which lead to the present power levels being accepted world-wide did anyone raise any difficulties or problems in measuring the 10 watt ssb level. If such difficulties have come to light in more recent times, one feels that it should not be beyond the skills of the many expert communication engineers amongst our ranks to produce a reasonably simple piece of equipment to measure the output power of a 10 watt ssb rig. As an alternative it may be possible to suggest an unmodulated rf carrier level which could be used thus simplifying the measurement. One thing that one feels would be counterproductive is to modify something that has world-wide agreement, which took a long time to achieve, and which has stood the test of time . If it is not broken, don't try to fix it !!

## CW NOVICE AWARD

May we once again draw the attention of members to this Award, which is administered by G QRP C on behalf of the European CW association. The basic requirement is for the Novice to work 50 different cw stations during the first six months of operation as a novice. Full details appear on page 27 of the Members Handbok. Both QRP and QRO versions are available.

**A QRP Magnetic Loop Antenna for 40, 30 and 20 Metres**  
**Ray Goff G4FON, 27 Harley Road, Oxford. OX2 ØHS**



## **Introduction**

Described here is a simple multi-band magnetic loop antenna designed for 20, 30 and 40 metres, but by changing the overall length of the wire coverage of other bands is feasible. For its size, the performance of the antenna always astounds me, although it is never going to replace a Yagi! The antenna is made from 16 feet of 24AWG 7/32 hook up wire. At the top of the antenna is a mounting plate which supports the three position band change switch and the three tuning capacitors. Each capacitor resonates the loop on one band. A piece of string is attached to the top of the mounting plate to support the antenna during operation. The matching transformer, at the bottom of the antenna, is wound on an FT50-61 torroid (this component does not seem too critical, but you may need to adjust the turns ratio, see later), which is housed in a 35mm film canister for protection. At the bottom of the film canister I have fitted a cable strain relief for the coax cable.

## **Construction**

First mount the three position switch and the tuning capacitors on the mounting plate. At the top of the plate drill a hole for the supporting string, at the bottom of the plate drill two pair of holes in each corner to support the ends of the wire.

Measure 16 feet of hook up wire and find the midpoint by folding the wire back on itself. Pass the wire through the torroid and then pass one end through again to give two turns. Drill a hole on the opposite sides of the 35mm film canister and pass one end of the wire through each hole.

Drill a small hole about ½ inch from each end of the spreader and pass each end of the wire through one hole. Next pass the ends of the wire through the two holes in the mounting plate, making an overhand stitch pattern to act as a strain relief. Put a bit of insulating tape on the antenna wire at the halfway point on each side to prevent the wire slipping through the spreader.

One end of the wire is connected to the common of the switch. Each position of the switch is connected to a single capacitor and the other side of the capacitors are commoned together and connected to the other end of the antenna wire.

Onto the ferrite torroid wind a further five turns of hook up wire and connect the ends to the coax cable.

## **Alignment**

Aligning the antenna is straightforward, first set the switch to the first band position (20metres) and adjust the corresponding trimmer capacitor of maximum noise on receive. Move the switch to the second position and adjust the corresponding trimmer for maximum noise on 30 Metres. Repeat this for 40 metres. If you cannot obtain resonance on 40 metres, it may be necessary to add a second trimmer in parallel.

Once the antenna is roughly tuned, apply some RF through an SWR bridge and fine tune the capacitors for the lowest SWR on the QRP frequency of each band. Make sure you switch to receive while adjusting the trimmers as there are high voltages across the capacitors when on transmit.

Finally, experiment with the number of turns on the primary of the torroid to achieve the lowest SWR on all bands, switching between bands to check after each change. Changing the turns ratio may affect the resonant frequency of the loop.

If you have access to an antenna analyser, such as the MFJ range, then the job of final alignment is simplified.

## **Notes**

I have used this antenna in hotels in Europe and the US to great success. To improve portability, I cut the spreader into three 20 inch sections (20 inches happens to fit in my suitcase). I found that the outer casing of empty felt tip pens made an ideal joining sleeve for the spreader.

If I cannot find a suitable 'sky hook', such as a light fitting, to hang the antenna from, I use a short piece of 'duct' tape to attach it to the ceiling of the room.

## COMMUNICATIONS AND CONTESTS

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

Conditions on the HF bands during October/November have been outstanding, and it would be nice to think they will continue for this year's **WINTER SPORTS** (26<sup>th</sup> December to 1<sup>st</sup> January inclusive). I suspect they will drop off a little, before picking up again during the Spring, but let's make the most of the opportunity to work plenty of Dx QRP stations before the bands suffer during the coming sunspot minimum. Let's also make good use of the WARC bands (see the Members Handbook for suggested frequencies), where conditions are just as good, but qrm much less.

My spies tell me that not only have HF conditions been good, but that 6m has been really buzzing this Autumn, with good Dx contacts frequently available. This seems an ideal opportunity to remind you that **VHF/UHF** logs are always welcome for the **WINTER SPORTS** activity period. Remember, it is not a contest, so no need to worry about working out points scored. Just use QRP on whichever band(s) you wish, and send me your log by the end of January. The G4DQP Trophy will be awarded to the best (most interesting) log of QRP contacts made during the event.

### **CZEBRIS 2002**

The date of this event has been moved slightly, in an attempt to clear severe qrm from other contests. Having discussed various dates with Karel, OK1AIJ, we have decided to hold the 2002 event between **1600z Friday 1<sup>st</sup> March**, and **2359z Sunday 3<sup>rd</sup> March**. The usual frequencies around 3560, 7030, 14060, 21060 and 28060 kHz (QRP cw only) will apply, but we will also be delighted to receive VHF/UHF logs, should the event coincide with a suitable opening on those bands. A reminder of the scoring:

<u>Your location</u>	<u>QSO with station in</u>			
	UK	OK/OM	Eu	Non-Eu
UK	2	4	2	3
OK/OM	4	2	2	3
Eu	4	4	1	2
Non-Eu	4	4	2	1

No multipliers. Final score is total number of points scored.

Separate logs for each band showing (for each qso) date, time, callsign, exchange sent/received, and a summary sheet showing your name, callsign, claimed score for each band, and brief details of your station, should be sent by the end of April to G3XJS (UK entries). All other entries go to OK1AIJ (Karel Behounek, Na sancich 1181, 53705 Chrudim IV, The Czech Republic). We are both happy to accept logs by email – my address is g3xjs@gqrp.com, and Karel's is karel.line@seznam.cz. Last year's Non-UK positions were: 1. OK1FVD, 2. OK1DEC, 3. OM2ZZ, 4. OK1DMS, 5. OK1DVX, 6. EU6DA, 7. OK1DNM, 8. OM3CUG, 9. OK1SRD, 10. OK1AIJ, 11. OK1FYY. Karel reports 194 different callsigns in their logs!

### **EUCW/FISTS QRS PARTY 2002**

We are really short of space this month, but brief details of this event are:

From 00.01 UTC on Sunday 28<sup>th</sup> April to 2359 UTC on Saturday 4<sup>th</sup> May. CW only, all bands except WARC. I will try to include full details next time, but can supply the information on receipt of a SSAE, or email.



**G4EDG** deserves our congratulations for achieving 1<sup>st</sup> place in the QRP section of the AGCW QRP Winter Contest 2001, and 4<sup>th</sup> place in the VLP section of the QRP Summer Contest. He also set a new European 28MHz QRP all time record in the 2000 CQWW CW Contest. Well done Steve!

### **EUCW 160m CONTEST 2002**

Saturday 5<sup>th</sup> January                    2000z to 2300z

Sunday 6<sup>th</sup> January                    0400z to 0700z

Frequencies: 1810 to 1840 kHz. Mode : CW

#### **Classes.**

A: Licensed members of a club affiliated to EUCW using 150 W HF or more.

B: Licensed members of a club affiliated to EUCW using 10 to 150 W HF.

C: The same, but using 10 W HF or less.

D: Other stations, no power limitations.

E: SWL

#### **Reports exchanged.**

Classes A,B,& C : RST/name/Club/ membership number.

Class D : RST/name/NM (non-member).

Class E : Full report on each station in QSO.

#### **Points.**

**Classes A,B,C & D:** 1 point per QSO with a station in the same DXCC entity.

2 points per QSO with a station in another DXCC entity but in same continent.

5 points per QSO with a station in another continent.

**Class E:** 2 points for each complete report.

A QSO with the same station may be made on Saturday and again on Sunday.

**Multipliers.** One multiplier per EUCW Club contacted per day.

**Scores:** the number of points multiplied by the number of multipliers.

**The EUCW affiliated clubs are:** AGCW-DL, BQC, BTC, CFT, CTCW, EA-QRP-C, EHSC, FISTS, FOC, G-QRP, GTC, HACWG, HCC, HSC, HTC, INORC, I-QRP, ITC, MCWG, OE-CW-G, OHTC, OK-QRP, RTC, SCAG, SHSC, SPCWC, UCWC, UFT, U-QRP-C, VHSC, YL-CW-G, 3A-CWG, 9A-CWG. **Associated non-European clubs:** QRP-ARCI (USA) CWAS (Brazil) GACW (Argentina).

**Logs.** Date/time GMT/callsign/report/ points claimed/ multipliers. The list of multipliers for each day. Summary on a separate page giving details of the station equipment including the antenna, entry Class, power, and points claimed. Finally a declaration that the regulations as well as the license conditions have been respected, followed by the signature of the operator. Where possible please submit entries by an ASCII file – either by floppy or by e-mail sent to the corrector.

NB: Special callsigns will not be classed.

**Entries** to be sent before 8th February 2002 to: F5YJ,

Jacques CARRIER, 12, rue Henri Delaunay, F-93110 ROSNY-sous-BOIS. France.

Email: "jacar@club-internet.fr" or "f5yj@qsl.net".

### **SOMERSET HOMEBREW CONTEST 2002**

Once again your chance to win the £50 voucher (to be used towards any Walford Electronics product) first prize. Tim Walford has for some years now been sponsoring this event, which actively encourages the use of homebrew equipment. Either the TX or RX (or both) MUST be home made, but not necessarily by you. Other details:

24<sup>th</sup> March, between 0900z and 1200z. Any mode is permitted (including cross mode) on 80m and 40m, around the usual QRP frequencies (CW and SSB). Any station may be claimed once per band. Call "CQ HBC Contest" (SSB) or "CQ HBC Test" (CW). Exchange rst/SC serial/power (eg 589/SC108/3W). Your SC serial number must start with any random number of your choice, not

less than 100, and increment by one throughout the Contest. Stations not in the Contest may send any serial (eg 001).

Each 2-way QRP contact scores 5 points, contacts with QRO stations score 1 point. The final score is the total number of points (there are no multipliers), BUT deduct 25 points from your total if you did not build either the Tx or Rx yourself. Entries by the end of April to G3XJS, with log sheets showing times, band, stations worked, reports sent/received, and points claimed. Please supply details of equipment used, power, and antenna(s), together with a declaration that your station was operated in accordance with the Contest rules. In the event of a tie, the winner will be drawn from Tim's hat!

### **YEOVIL QRP CONVENTION 2002**

Confirmation that the 18th Convention will be held on Sunday April 21st 2002, preceded by the dinner on the evening before. The **Constructional Challenge** this year is to construct a VXO to operate from 9 volts, using no more than 15 components. The winning entry will be the one exhibiting the greatest stable frequency swing. In the event of a tie, the number of components will be taken into consideration. Entrants will be expected to demonstrate that the frequency is stable from 'switch on' – ie. that (in the opinion of the adjudicator) it is capable of being keyed. YARC will provide a HC25/U, 30pF parallel resonance, 7030kHz crystal, a 9 volt power supply, and a frequency counter with 50mV sensitivity. Enquiries to G3ICO (QTHR, or eMail to "george@mudford.fsnet.co.uk").

The **Yeovil FunRun** details are:

Monday 1<sup>st</sup> April to Thursday 4<sup>th</sup> April inclusive, 1900z to 2100z. 3560kHz and 7030kHz, both +/- 10kHz. Contacts should be between QRP stations with a maximum of 5 watts output CW.

However, contacts with QRO stations are permitted but with reduced points value (see below). All stations may be worked ONCE EACH EVENING, on EACH BAND. FunRun Bonus Stations will be operating each evening randomly for one hour on each band.

**FunRun Bonus Stations:** GB2LOW from G3ICO nr Yeovil (3558 & 7028 +/- 2kHz), G4PRL nr Okehampton (3563 & 7023 +/- 2kHz), PA3CLQ in Geertruidenburg (3553 & 7033 +/- 2kHz).

**Call**"CQ FR". **Scoring:** Each qso with another QRP station scores 10 points. Each qso with any FunRun Bonus Station scores 25 points. Each QSO with a QRO station scores 3 points. All duplicates **MUST** be marked and no points claimed. Points will be deducted for unmarked duplicates at twice that particular qso score! **Exchange:** RST/Serial Number/Output Power/Name. The three figure serial number must start with any random number of your choice not less than 100, and increment by one for each qso throughout the **WHOLE** of the Contest. However, the three Bonus Stations listed above will all commence with 001. Entries: Separate log sheets for each band, with sub totals for each evening, preferably in the RSGB format. A separate RSGB style cover sheet stating the rig, output power and aerial. Entries (to arrive no later than Thursday 18<sup>th</sup> April) to G W Davies G3ICO, Broadview, East Lanes, Mudford, Yeovil, Somerset BA21 5SP, or "george@mudford.fsnet.co.uk". Certificates will be awarded (after lunch during the Convention) for the highest score for any **THREE** evenings out of the four, on each band, and also for the highest overall total score for any **THREE** evenings on both bands. A certificate will also be awarded to the station consistently using the lowest power. Listener reports will be welcome, with a certificate for the listener submitting the most comprehensive report.

### **NEW ARRL QRP DXCC AWARD**

As I write this, details (available at "<http://www2.arrl.org/awards/dxcc/qrp/>") are emerging of a new award, specifically for QRP operation. At the moment, 5 watts output is the stated power limit for SSB (as well as CW) stations, rather than the 10 watt SSB requirement stipulated by G-QRP, and

most other QRP organisations. It is a pity ARRL seems to be adopting its own standards, rather than falling in with existing widely recognised QRP power limits. Let's hope they have a re-think.

That's it – I've taken too much space already! My very best wishes for Christmas, and the New Year. See you in Winter Sports ... 72 de QRPeter

## 2002 QRP CALENDAR

1 <sup>st</sup> Jan	Last day of Winter Sports	
1 <sup>st</sup> Jan	0900z-1200z	AGCW Happy New Year Contest
5 <sup>th</sup> -6 <sup>th</sup> Jan	1500z-1500z	AGCW Winter Contest
5 <sup>th</sup> Jan	2000z-2300z	EUCW 160m Contest -
6 <sup>th</sup> Jan	0400z-0700z	EUCW 160m Contest
1 <sup>st</sup> Feb	Last Day for Winter Sports logs to G3XJS	
2 <sup>nd</sup> Feb	1600z-1900z	AGCW HTP (Straight Key) Party.
15 <sup>th</sup> Feb	Last Day for Chelmsley logs to G3XJS	
1 <sup>st</sup> Mar - 3 <sup>rd</sup> Mar	1600z Friday - 2359z Sunday	CZEBRIS
24 <sup>th</sup> Mar	0900z-1200z	Somerset Homebrew Contest
1 <sup>st</sup> Apr	1400z-2000z (Every Easter Monday) Slovak Low Power Sprint	
1 <sup>st</sup> -4 <sup>th</sup> Apr	1900z-2100z (each day) Yeovil FunRun	
28 <sup>th</sup> Apr - 4 <sup>th</sup> May	EUCW/FISTS QRS Party	
21 <sup>st</sup> Apr	Yeovil QRP Convention	
30 <sup>th</sup> Apr	Last Day for CZEBRIS logs to G3XJS and OK1AIJ	
17 <sup>th</sup> Jun	IARU Region 1 International QRP Day Contest	
6 <sup>th</sup> -7 <sup>th</sup> Jul	1500z-1500z	Original QRP Contest
17 <sup>th</sup> Jul	Last Day for International QRP Day Contest logs to G3XJS	
20 <sup>th</sup> -21 <sup>st</sup> Jul	1500z-1500z	AGCW Summer Contest
12 <sup>th</sup> Oct	Rochdale QRP Convention. (Date to be confirmed)	
17 <sup>th</sup> Nov	HOT Party	
26 <sup>th</sup> Dec - 1 <sup>st</sup> Jan 2003	G-QRP Winter Sports	
28 <sup>th</sup> -29 <sup>th</sup> Dec	Original QRP Contest	

Please advise G3XJS of any errors/omissions.

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# SSB & Data Report

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

Vic GW4JUN writes: I am pleased to announce the birth of K2 number 1926 last weekend. Father and rig are fine. 5 watts pep into a 264-foot inv V draped over roof of house. Best DX so far is VP2E & VQ9IO. The club Treasurer Peter G3PDL will be delighted to hear how good these are as he has just taken delivery of a K1 that his wife Diane won at Dayton.

Peter, 9V1PC turned on his newly completed 80m SSB Epiphyte 3 transceiver called CQ on 3799 and BINGO! Rich K7ZV comes back with 45 report. A distance of 13500km. Not bad for 80m and 4 watts. An hour later worked Otto, W5YU at 14,400km.... fb. Well done!

Bill N2CQR has been having a great time from the Azores on 17-meter phone using homebrew Double sideband rigs. My first rig puts out about 5 watts PEP DSB and I've worked all kinds of DX including many FB "rag chew" QSO's with VK/ZL (with a simple dipole). My second rig is intended for portable operation and has only 1 Watt out, but I've already had many solid QSO's with the European mainland. I urge fellow QRPers to give DSB a try. You can find details on <http://planeta.clix.pt/n2cqr>

Richard G3UGF writes, with the rise in popularity of the FT817 - and its 5 watts max output, there is also greater interest in both SSB and PSK This means the potential for QRP SSB is increased - check out the "HF Pack" SSB net channels Sat 16.30z 18.157, 14.242 or 1700z. 28.337. 21.437.

QRP SSB is beginning to appear. Charlie M5RFD writes; "after many years of being a G6, I finally got an M5 and I decided to try the QRP route with 8 watts of SSB from my FT101Z, Now THIS is fun!! Hard work but fun"

The debate over power levels was finalised over the Convention Weekend at Rochdale. Overall I have received mostly strong support for the suggested power levels as under. Only two members wrote to say they were against the proposal. I have to assume that those who didn't contact me were happy with the suggested levels,

These are: That the **maximum power limit for an SSB contact** to be eligible for club awards is **5 Watts PEP** measured with a single tone. For all **Data modes** the maximum power limit is **5 Watts**. (NB in all cases the power is measured at the transmitter, NOT the antenna). These alterations to the club standards are not retrospective but will come into operation 1<sup>st</sup> January 2001.

If any club guru's are able to design suitable KISS mode measuring equipment members would be grateful. Your news and views to me by February 15<sup>th</sup> please.

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**Dick Pascoe, Seaview House, Crete Road East. Folkestone. CT18 7EG**

# MEMBERS' NEWS



by Chris Page **G4BUE**

Highcroft Farmhouse, Gay Street,  
Pulborough, West Sussex RH20 2HJ.  
Tel: 01798 815711 Fax: 01798 813054  
For the next **SPRAT**:  
312 Quail Avenue, Sebring, FL 33872, USA  
E-mail: g4bue@adur-press.co.uk

First an apology! To those who sent information for *Members' News* by e-mail and which has not been published. It is not because I did not like it, or did not have room for it, but is because I lost it, at least I think that is what happened! If yours was one of them I am sorry. I don't know how it happened, whether it was operator error (mine) or something else (it was at the time when a virus was very prolific, especially on messages being sent to the Club Reflector). No photographs this time! Please let me have some (including digital form via e-mail) for future columns.

Congratulations to Elisa and Chris, **G3TUX**, on purchasing the freehold of their shop in Haslemere, Surrey (7 Kings Road) on 28 November. Chris says, "This will enable me to start spending money on essential repairs and then develop it into a 'real radio' shop, specialising in kits, keys and QRP. I shall be holding a Grand Sale on Saturday 19 January 2002 with plenty of components, discontinued kits and a mountain of honest to goodness junk for disposal at attractive prices". Make a note of 19 January in your 2002 for some bargains! **GM3MXN** has a new transceiver, a FT817. Tom says, "It is a pleasure to use, however I would recommend to any prospective buy-

ers to purchase the optional 500Hz filter for serious CW working. In a few hours running 2½W I worked a W1 on 40m and FG and VP5 on 15m running 2½W to a doublet 2 x 15m long at 5m high".

**OK1NR** was QRV from the Aland Islands as **OHØ/OK1NR/P** in July. Jan says the "weather was not so bad but the propagation was quite terrible". His friend Jarda, **OK2PBM**, is planning a trip to the Channel Islands and Jan may go with him. At 1630z on 20 October **DJØGD** had a QSO on 15m with **DU9/G4UNL** (page 39 **SPRAT** 108). Peter said Richard was running 5W to a 4 ele yagi. In May he worked **G3TXF** who was QRV as **VK9CXF** and then worked him again in September when Nigel was QRV as **ZL7/G3TXF**. Peter received QSLs for both QSOs within two weeks! He has also worked 3DAØ, VP2V, H44, FH and V8 recently. Did anyone QSO **T15/NØKE** recently? Just prior to the CQ CW Contest Phil had been QRV on 40m running 5W and was such a strong signal at 0800z on 23 November that I called him also running 5W and made my first two-way QRP QSO with TI on 40m.

**G4EDG** spent 34 hours QRV in the CQ CW Contest on 15m with his FT1000MP at 5W and a borrowed 5 ele monoband yagi. Steve was hoping for a high placing with his 657 QSOs and 217k points (36 zones and 122 DXCC) until he heard how well the 6Y9A 'team vertical' had done using a K2 and verticals on the beach. He says, "Although their country and zone totals were down on mine, their QSO total was a huge 1800. How can I compete against that?! They also operated QRP single-band on all of the other bands (also using K2s), and it looks like they have made a clean sweep, smashing current world records". **N8ET** was QRV all bands in the CQ CW Contest running QRP and Bill was a very good signal on 40m when he called me while I was running higher power. **G1ØGDF** gave the contest his "best shot" with his FT817 and 5W and worked 75 DXCC. Ernie would like to borrow a manual for the Datong FL3 filter.

"My interest in QRP has been rejuvenated by two recent events", writes **G3NKS**. Derek continues, "a stimulating talk by Tim, **G3PCJ**, of Walford Electronics, and an 80m

QRP CW activity evening, both organised by the Cheltenham Club. I dusted off my crystal controlled OXO transmitter for the activity evening, using it with a Drake R4C. I have now completed the Walford Godney 80m QRP transmitter kit". Another member returning to QRP is **G4GZG**. Larry says, "I have become a born again QRPer and homebrewer in the past few months. I have recently finished a K1 kit for 40 and 20m and found it easy to put together even after 10+ years away from serious homebrewing. I have worked VK, and W using 1W into a 66ft doublet at 25ft - this on 40m so it must be working, and have also put together an Emtech ZM2 Z match ATU which even loads up the curtain rail!"

When **G0VXG** went to Cala en Porter, Menorca on holiday, he was surprised when the security staff at both airports waved him through as he was carrying his just built transceiver for 30m in his carry-on rucksack. Richard says, "Near the beach, on a piece of scrub land, were some bamboo plants. I borrowed three 8ft poles to make a support for my inverted vee dipole. The three were lashed together to give a total height of 22ft and a five litre water bottle acted as a base. I used a concrete post at one end of the villa and a wall at the other end to support the ends of the dipole. The coax ran through the window seal and into the rig. The SWR was about 1:1.2 and the power 2W. I had arranged sked times with members of the Telford Amateur Radio Club before I left the UK and, although conditions were not perfect, I was able to work them everyday". Richard also worked **HB9IAG** who gave him 599 and there was "a certain amount of disbelief" as he told him he was only using 2W! Richard concludes, "Although I only operated for about 30 minutes a day I thoroughly enjoyed making the contacts and hope this will encourage others to do the same when on holiday".

**AL7FS** was working into Europe from Alaska in November with 5W and a KT34A tri-band beam at 40ft. He worked **LZ2TW**, **2E0000** (vertical) and **M5AJ0** (loop) all running QRP also. He was planning to be QRV from **KL7Y**'s contest QTH north of Anchorage. Jim has to make a 60 mile drive

to get there but the antennas there make the drive worthwhile. They are for 10m - four stacked Hy-Gain 105CAs at 125/100/75/50ft; 15m - four stacked Hy-Gain 155CAs at 125/100/75/50ft; 20m - Hy-Gain 205BA at 125ft and Hy-Gain 204BA at 60ft; 40m - Hy-Gain three element shorty forty at 160ft; 80m - two element wire beam at 140ft and four sloping dipoles at 125ft; 160m - inverted vee at 150ft and shunt fed 20m tower.

**GW4JUN** built the K2 at the end of October and the first weekend using it with his 264ft inverted vee dipole at 25ft over his house bought him 63 QSOs and 27 DXCC, including PY, VP2E and VQ9. Vic's first QSO was with **G0DVZ/P** who was also running QRP with his FT817 and 6ft whip. Needless to say Vic was "thrilled with the result". **DF20F** has been working in Yokohama, Japan since May and has been QRV as **7N4INM**, mostly on 15m. Matthias only needs Africa for a QRP WAC and his best DX is **LW2DLL**, who "I worked from my /P QTH on 15m over a distance of 18,000km, while testing a home-made end-fed half-wave vertical on a **DK9SQ** fibre mast with 2W! I almost fell off my chair, when he answered my call!"

**M0CZP** built the DXR20 together with the S meter and the external audio filter. Tim was very pleased with it and went on to build the matching AT160 transmitter. He says, "The DC receiver was straightforward to build and set up and the performance is excellent. The audio is of good quality and the receiver is very sensitive. There is a jumper on the board for attenuating the signal which is well worth bringing out to the front panel - it can get very loud otherwise. The S meter is an audio derived circuit and will give you some indication of the strength of the incoming signal but it will not give you accurate S points (what S meter does?). The additional frequency counter is worthwhile. If you want to do much CW work then the audio filter is *very* worthwhile (and easy to build). All in all it is a nice little receiver. All the Howes kits are good - I have a complete station including ATU and SWR meter/load".

"Following his successful QRP QSOs on 136kHz with his Marathon QRP transmit-

ter, (page 37 SPRAT 108) **GW4ALG** was kind enough to let me have his prototype for testing on the air”, writes **G6RO** from Shipley in West Yorkshire. Ron continues, “The results have been absolutely amazing and within a few days I made some splendid QSOs, first with John, **G3CCH**, in Scunthorpe (80km), then with Mal, **G3KEV**, in Scarborough (100km) and then, very fittingly with Steve himself in Chepstow (228km). Truly amazing, I thought, but I almost fell out of my chair when Tom, **G3OLB**, near Honiton, Devon (355km) called me with a RST 559 report and we had an excellent very solid QSO. Later that day I worked Dave, **MMØALM** in Stonehaven (360km) and the whole of the QSO was heard by a SWL in Holland at 482km. Since then I have worked Finbar, **EIØCF**, at Malin Head (405km) twice. Four countries with only 5W of RF (about 4mW ERP) isn’t bad on 136kHz. My antenna is three inverted Ls about 11m high, two with tops of 33m long. The verticals are joined at the bottom to a loading coil with a built-in variometer, thence to earth. The band desperately needs an influx of new blood. What about it you QRPers? Why not become Lowfers as well?”

**G3ZHE** says that in October his friend Dave, **GØRVW** (who is not a Club member) was dragged into a local (Cheshire) craft shop when out shopping. Albert says, “During a browse he spotted a very out of place Heathkit HW7. He enquired about the cost and was told £5. It looks brand new with a handbook and works a treat. I am digging out HW7 mods from SPRAT for him. Perhaps I can get him to join the Club! He could pay a few years subs and still be in pocket. A *fiveer*, I can’t believe it!”. Referring to the Leonids meteor shower in November, **GØTPH** asks “I wonder if anyone managed to complete a QRP MS QSO, especially with the WSJT mode? Please let me know as I am interested in trying during the next shower”. Good luck Alan.

What a surprise I had on 12m when I was QRV from Florida on 10 November when **GM3OXX** called me. George was running his usual 1W and had already worked **ZL1AMM**, **ZL/PAØMIR**, **HF5ØWAT**,

**XE2A**, **JF2IWW**, **LW9DAH**, **EA6NB** (QRP) and **CT3/DL7DF** earlier that day and only needed a North American station to complete WAC, and “as if by magic there was **W4/G4BUE**, so what a great day”, writes George. Sadly I was running 100 watts to my UK Field Day antenna (132 inverted vee at 40ft centre fed with open wire feeder through an ATU). Referring to the good DX conditions on 6m in November, Roger, **G3XBM**, says, “A friend at work (who as far as I know is not a member of the G-QRP Club) tells me he managed to work W and VE this weekend (559 report) on 6m CW using nothing more than 3W to his full-wave loop in his loftspace! He has already worked ZS with the same set-up and is now on the lookout for early morning Far East DX! Propagation was F2. Anyone manage anything similar?”.

Mel, **GØGQX**, writes, “When I was 14, a good many years ago, I built a one valve regen receiver that worked a treat first time. Apart from a high voltage PSU, I made only a few things, most of which didn’t work. Then earlier this year I put together the Stockton bi-directional watt meter and, after a minor blip which John from Kanga Products told me how to put right, it worked a treat. What a useful instrument it is! The point of this story is that now I have recaptured the construction bug. I made up **GM3OXX**’s LED RF test probe from page 9 of SPRAT 108 with components from Bowood Electronics. A simple little device that didn’t take long to make but would it work? I messed about with it for a long time, rebuilt it with new components and tried it in its raw state - before putting the heat shrink on. It worked! The trick is to bend one of the legs of the hyperbright LED upwards after soldering is finished, put on the heatshrink, then bend the leg down outside the heatshrink so in use you make a groundplane connection with your fingers. A very clever and a very useful little tool”.

Please let me know how your winter goes, by 20 March please. My next column will be written from Florida, so please send snail mail to 312 Quail Avenue, Sebring, FL 33872, USA. E-mail can continue to be sent to my normal e-mail address.

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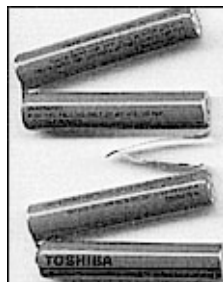
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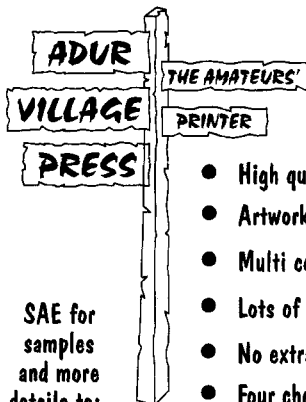


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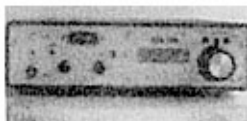
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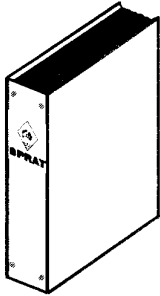
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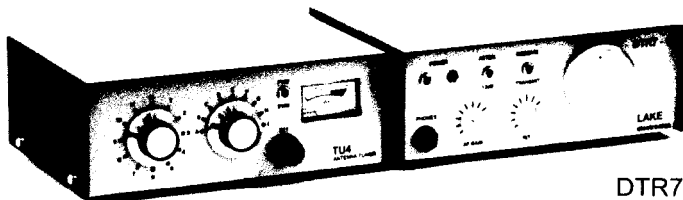
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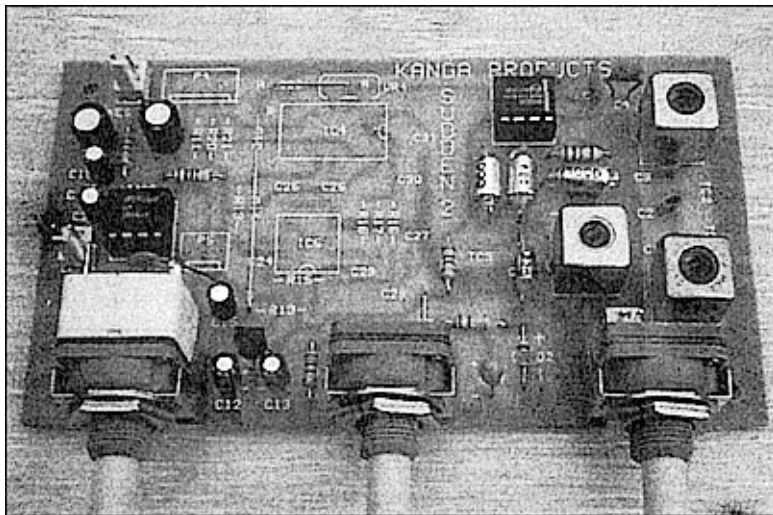
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