SPRAT

THE JOURNAL OF THE G QRP CLUB

DEVOTED TO LOW POWER COMMUNICATION

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A rare picture! George, G3RJV, assists Jo-Anna, G0OWH, (Mrs. G3RJV) at the Rishworth Buildathon.

Easy Five Receiver ~ Plasma Nuller ~ Morse Talker
K8DD ~ 4m Receive Converter ~ Simple VLF Converter
Test Equipment You Can Build ~ Simple SSB Exciter/Receiver
Off-Centre Dipole ~ The Forgotten Transistor ~ Subs News
Limerick Transmitter Kit ~ Antenna – Anecdotes – Awards
Communications & Contests ~ QRP Calendar
Member's News ~ Club Sales

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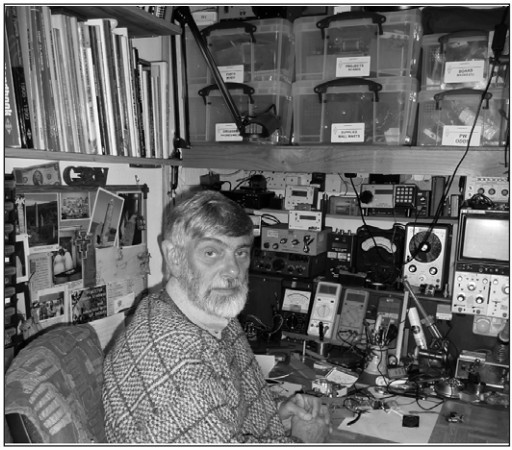

Rev. George Dobbs G3RJV

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Welcome to SPRAT 145. This issue was a tight squeeze. There were several non-technical items that had to be included, so some articles have been held over until the next issue. Having said that, I still need material for the next issue. So please keep sending your projects to share with other members.
The year ends with plenty of opportunity to be active on the air with the G QRP Club Winter Sports from December 26th to January 1st and the FOC Straight Key Weekend on January 1st and 2nd.

May I wish all members a happy and fruitful year in 2011!

72/3

G3RJV

The W1FB Memorial Award 2010/2011

The project is to **Design a Useful Accessory for a QRP Station.** This can include any useful station addition with extra consideration given to innovation. Improvements on existing designs could be accepted. Please submit your design to G3RJV by the **end of March 2011**, with circuit diagrams, all values and brief notes.
The projects will be published in SPRAT and the winner will receive an engraved plaque.

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The "Easy Five" Receiver

Rev. Keith Ranger, G0KJK, 144 Newton St. Macclesfield SK11 6RW
keithcath@ranger144.fsnet.co.uk

Some years ago I contributed to "Sprat" entitled "The MB4 Receiver" a four transistor regenerative design which was subsequently made into a kit by Kanga Products and built by a number of G QRP Club members. Satisfactory results were reported by those who constructed the circuit, which as a prototype covered the 17, 20 and 40 metre amateur bands, CW and SSB, and could be operated either standing on a desk or hand-held. It used some ten feet of wire as a throw-out aerial and a crystal earpiece, the latter XYL/OM friendly in that one could listen to the DX with one ear and what she/he was saying with the other, a feat less possible when wearing headphones!

Although an effective basic design, and despite its coverage of harmonically unrelated bands such as 40 and 17 metres, something not so easy to achieve with many direct conversion receivers (which either cover just one band or some harmonically related bands), the MB4 left possibilities of significant improvement without sacrificing the principle of very basic circuitry. So here is the "Easy five", a minimalist design which can be built in a small aluminium enclosure, similar to that which housed the MB4. The component count is kept really low and the circuit is about a straightforward as it gets but five transistors coupled with extreme simplicity give access to five amateur bands – 17, 20, 30, 40 and 80 metres, using the same aerial and crystal earpiece as the MB4. Among the first 35 DXCC entities received using the prototype were stations in Europe, Asia, Africa and both North and South America, all during daytime listening.

Please peruse the "Easy five" circuit. You will notice that the same very simple inter-stage bias and coupling method is used between the RF amplifier and Detector and the three AF amplifier transistors. Use of an AF volume control (absent in the MB4) means easy resolution of weak signals and avoidance of eardrum-splitting bursts from the QRO fraternity. For ease of construction I tend to use the excellent 18-way tag-strips I get from much appreciated Bowood electronics, which regularly advertises in "Sprat". The internally mounted PP3 or rechargeable equivalent 9v battery can be expected to deliver hours of service. The "Easy Five" (living up to its name!) uses some 5 milliamperes of current!

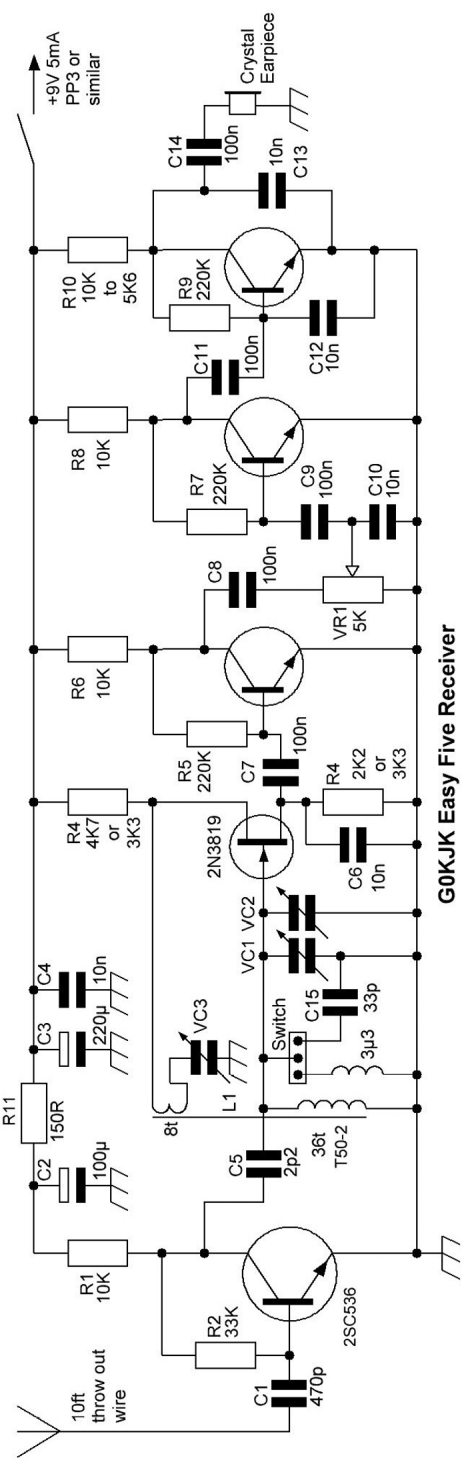
A basic 36 turn coil mounted on a T-50-2 toroid core with an 8 turn overwind in the opposite sense for the regeneration connection, tuned by a 150pf variable capacitor with a 5pf bandspread capacitor, forms the tuning heartland of the "Easy Five". As it stands, this will probably give you the 30, 40 and at vanes almost fully closed 80 metres. I used a moulded 3.3 micro-henry inductor in parallel with the 36 turn tuning coil (as you will know, inductors in parallel give a higher frequency coverage) to give me the 17 and 20 metre bands. A simple toggle switch (centre off) give me three possibilities and if 80 metres is not obtainable with vanes closed simply place a 33 pf ceramic capacitor as an option on this switch and all should be well!

Unlike the MB4, because if the lay-out you choose avoids close proximity of RF and AF wiring which could cause unwanted feedback and instability, meaning that the volume control can barely be advanced without a squeal of protest, I do not offer point to point advice. Put this circuit together in sensible sequence and it should serve you well. With it standing alone on a desk without an earth connection, there might be evidence of slight hand capacity on the higher HF bands of 17 and 20. Operated hand held (my personal preference) your body will provide what the receiver sees as an earth and on all bands should be rock stable. Also, please feel free to contact me if you have problems which you think I could perhaps help you with in connection with the "Easy Five". Good listening!

Notes

1 R3 and R10 choose by experiment, using lower values first, for best results.
2 All three AF transistors could be BC109C or by 2SC536 (5 for 50p) from G QRP Club Sales).
3 VC1 and VC3 could be 140pf Polyvaricon from Club Sates (cheap, and economical on space). VC2 should be a top quality 5 pf air-spacer component, for effective 5SB and CW reception.
4 Switch is a 1P2W miniature toggle with centre off.
5 Feel free to experiment. Most component values are not critical.
6 I wound 36t on my toroid core in three piles of 12t, for higher inductance. If closewound (about 30 s.w.g.) use 39 or 40t. For 8t overwind, I used single strand plastic covered with wire. Be prepared to experiment.
7 C15 (33pf) may need to be higher in value, up to say 68 pf.
8 Instead of 3.3 uh moulded choke, you could try 30k on T-50-2 toroid. As always, be prepared to experiment to give you the frequency coverage you want.

The Easy Five with Dymo decals by Hannah; my 9 year old Granddaughter!


G0KJK Easy Five Receiver
+9V 5mA PP3 or similar
Crystal Earpiece
10ft throw out wire
2SC536
2N3819
Switch
L1
8t
36t T50-2
VC1 VC2
VC3
R1 10K
R2 33K
R4 4K7 or 3K3
R5 220K
R6 10K
R7 220K
R8 10K
R9 220K
R10 10K to 5K6
R11 150R
R4 2K2 or 3K3
VR1 5K
C1 470p
C2 100µ
C3 220µ
C4 10n
C5 2p2
C6 10n
C7 100n
C8 100n
C9 100n
C10 10n
C11 100n
C12 10n
C13 10n
C14 100n
C15 33p
3µ3

WIFB MEMORIAL ENTRY

The Plasma Nuller

Pat Smith, GW0VMR, Bron Awel, Bryn Issa Rd. Brynteg, Wrexham. LL16 6NS. Gw0vmr@tiscali.co.uk

Earlier this year I built a valve superhet and a 10 watt 807 power oscillator transmitter for 80 metres. Then my next door neighbours bought a plasma TV. That was the end of all my hard work because the QRM from the TV completely wiped out the lower HF spectrum.

With this null steerer I am able to completely null out the neighbour's plasma TV, without the nuller the 80 metre band is unusable. Connect the nuller to your receiver with only its noise aerial connected and align L1 and L2 for maximum signal as you would for any receiver front end. Next connect your main aerial.

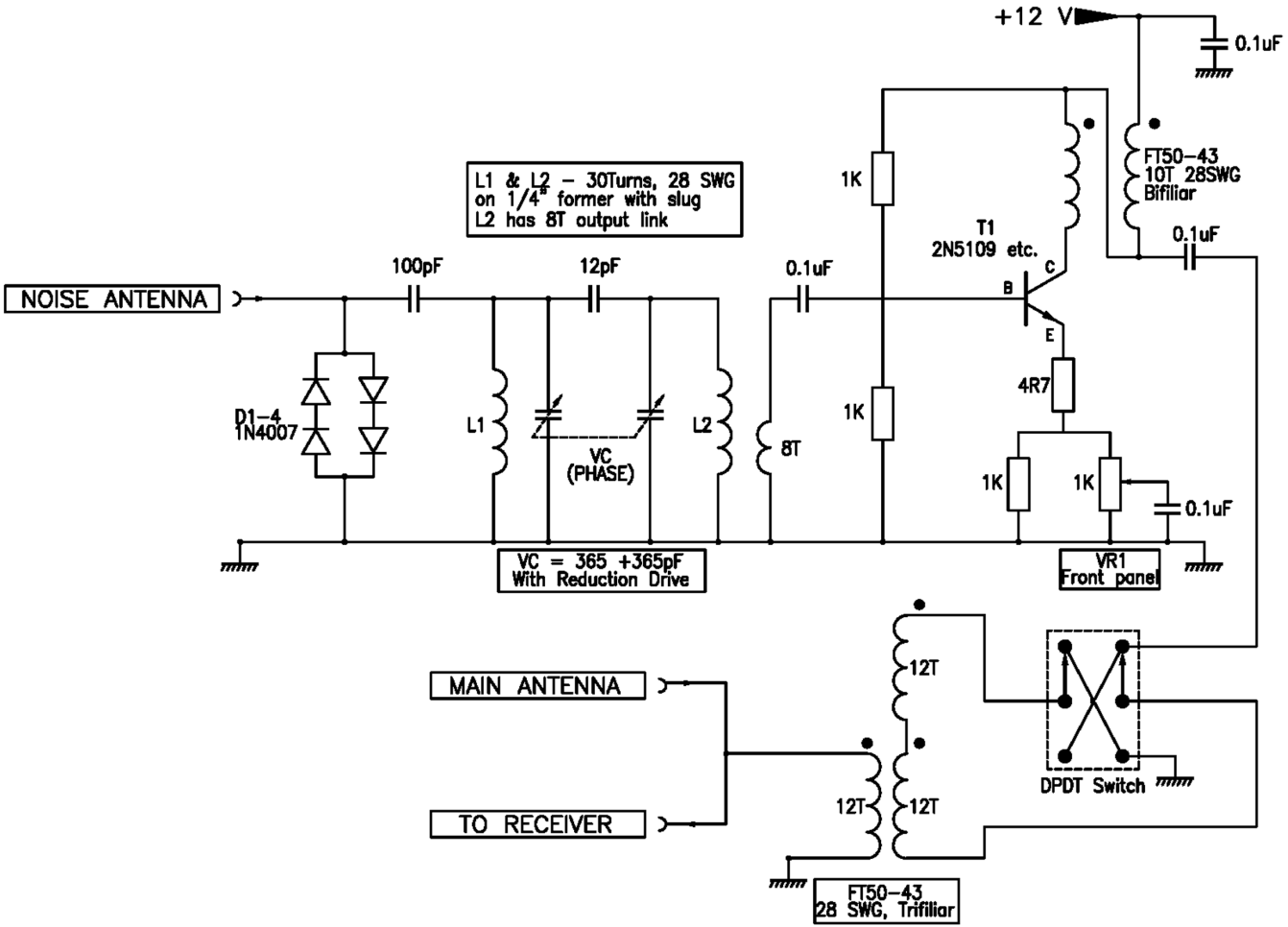
In use, tune the VC for maximum noise then gently adjust the VC (phase) while at the same time adjusting the gain pot. If you are unable to get a null, then throw SW1 and start again. It is a fiddly procedure and both controls are interdependent.

The secret of the nullers success is a good noise aerial, my own is 70 feet of wire, coax fed, and run very low down and wound around my garden shed, and the aerial as close to th source of noise as possible. The nuller reduces most forms of local QRM at this QTH, even my old BC221! The nuller's range, as shown, is from 3MHz to 11MHz. The building of the nuller has been the saving of my hobby. My hope it that it will be of similar use to others.

G-QRP-DL-Treffen 2011

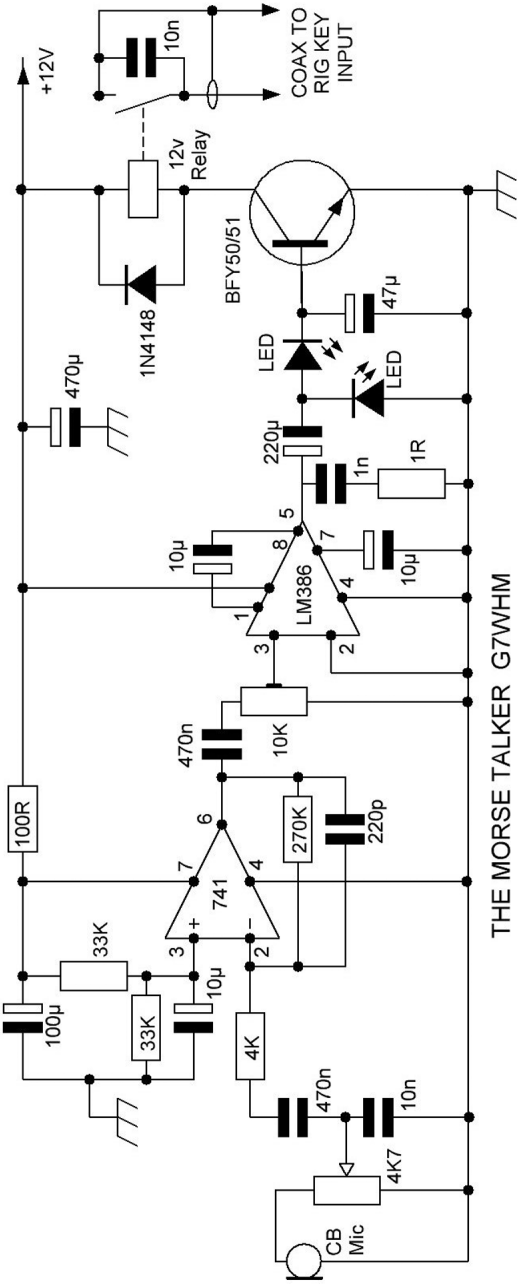
Das traditionelle G-QRP-DL-Treffen fuer Mitglieder des G-QRP-Clubs findet auch 2011 wieder am vorletzten Wochenende im April (15/16/17) statt – **in Waldsassen,** in der Nähe von Cheb/OK – unsere QRP-Freunde aus OK sind herzlich willkommen.
Weitere Infos gibt es von
DJ3KK, POB 801, D-25697 Meldorf (bitte SASE) - oder auf der Homepage:
http://www.g-qrp-dl.de
Zu Vortragsthemen und Beiträge usw. bitte Bernd via DK3WX@DARC.DE kontaktieren
– vy 72 es awds DJ3KK, DK3WX, DF6MS, DL2MGP

The traditional G-QRP-DL-meeting for members of the G-QRP-Club will be held at the last but one weekend of April 2011 (15/16/17) in **Waldsassen near Cheb/OK** – our QRP-friends from OK are welcome.
Further infos via DJ3KK, POB 801 , D-25697 Meldorf (pse SASE) and on our homepage: **http://www.g-qrp-dl.de**
Lecture and article etc., please contact Bernd via DK3WX@DARC.DE
vy 72 es hpe cu DJ3KK, DK3WX, DF6MS, DL2MGP


+12 V
0.1uF
L1 & L2 – 30Turns, 28 SWG
on 1/4" former with slug
L2 has 8T output link
1K
T1
2N5109 etc.
C
B
E
FT50–43
10T 28SWG
Bifiliar
0.1uF
NOISE ANTENNA
100pF
12pF
0.1uF
4R7
D1–4
1N4007
L1
VC
(PHASE)
L2
8T
1K
1K
1K
0.1uF
VC = 365 +365pF
With Reduction Drive
VR1
Front panel
MAIN ANTENNA
12T
DPDT Switch
12T
12T
TO RECEIVER
FT50–43
28 SWG, Trifiliar

The Morse Talker

Andy Howgate G7WHM, 7 Caledonian Way, Belton, Great Yarmouth



The article in Sprat 141 by Michael Rainey AA1TJ set me thinking about those people who had lost the ability to use a Morse key due to arthritis or some other affliction. Morse is often taught by the sound of the characters ie C may be written and spoken Dah di Dah dit so one could use the voice to send Morse by talking it. A few hours on the bench yielded the circuit below. The Morse Talker as I have called it, was used initially to key the side tone of a sig without transmitting; however I used a Morse decoder which was listening to the side tone – the result I am pleased to say had the Morse decoder reading what I was sending thru the Morse talker circuit. Now I figure if the Morse decoded can read it then on air it should be read OK by another operator.

The circuit is rather crude and basic stuff using components likely to be in your junk bin or parts drawers. A standard CB mike can be used – the circuit is a high gain amplifier driving a pair of LEDs which will illuminate and rectify the audio from the amplifier stages, which when smoothed, turns on the BFY 51 transistors operating the small relay that keys the transmitter. When using your voice to talk Morse in Dahs and Dits, you don't even need a side tone. Another advantage is that there is no conversion from thinking Morse to a movement of the hand, and you are less likely to get cramp or be stiff or tired, hi hi!

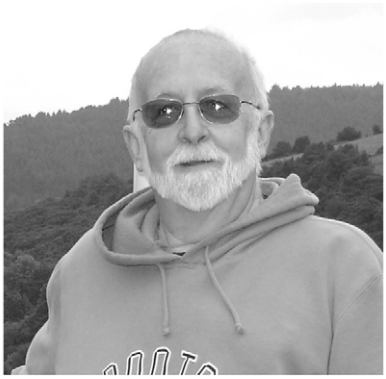
There are other uses for this circuit. One may use it to send pre-recorded Morse tones either from a computer's sound card output or a taple or digital recorded. To test the Morse talker circuit I used an old Datong Morse tutor with the output or a tape or digital recorder. To test the Morse talker circuit I used an old Datong Morse tutor with the output fed to the Morse talker simply because I wanted to test the reliability of the relay so it was left sunning at something close to 20 wpm for several house without any problems. Another very amusing moment was to place the microphone close to a rig's speaker with the rig tuned to a Morse signal, the Morse talker's relay now keying the |Datong's inbuilt oscillator and then wearing a pair of headphones to listen to the t Morse tones coming not from the rig but from the tutor's oscillator. The thing is one has the almost perfect audio filter but that is not true in a real sense, the tutor's in build oscillator is producing Morse tones which is a facsimile of the original as taken from the rig – inevitably one needs a filter ahead of the Morse talker circuit and whilst this use is not perfect fro Morse reception, I am sure it could be developed further.

There are few things that need to be observed for the keying wires from the relay to a rig - I used mini 50 R coax and the relay and all associated wires needs to be kept well away from the amplifier especially the preamp a nd it maybe prudent to put it in a cheap alloy box. Setting up is easy – the 10K preset is adjusted for the suitable sensitivity required and the 4.7K pot is taken into consideration allowing for adjustable gain when the device is completed and lid is on. A standard inexpensive CB type dynamic microphone is used with an impedance of 500 R. Although not shown on the circuit the microphone line can be switched inside the CB mike but one must be aware switch noise may trip the relay and or a noisy PTT button may also cause a pip to be transmitted. The Hyperbright LEDs can be mounted thru the box and will give an indication when the Morse talked is keying nicely, one may also send Morse using the light display pretty much as we may have done

as children with a torch but if no illumination is wanted, then a pair of IN4148 diodes will do in place of the LEDs. All one has to do now it talk in normal voice the rhythmic Morse sounds of dahs and dits, it does not take much effort and you may find you can run away with the lip and tongue a bit to quickly till you get tongue tied hi hi. But at the end of the day it can be good fun using it. One final thought, one may have to assemble a Morse Talker before an affliction happens or get a friendly constructor to assemble to it for you after the misfortune.

Henry (Hank) Richard Kohl K8DD (SK)

Dick Pascoe G0BPS



When I made my first trip to Dayton with George G3RJV in 1989. One of the first people to offer us help was a guy called Hank K8DD. He spent a lot of time with us making sure that we had all we needed. That first weekend was the start of a close friendship that lasted over 20 years. My wife and I shared holidays with Hank and his wife Kathy and we even managed to show them some real history when they visited and we took them to see Dover Castle. They then showed us some US history when we stayed with them.

Hank was the kind of person that always seems to be busy doing something behind the scenes but never wanting the limelight. He had been on the Board of Directors of QRP-ARCI for many, many years and when offered the chance of being Vice President told us to get lost. He ran the clubs 'Toy Store' where he sold club goodies for well over ten years, he arranged the hotel rooms for FDIM and spent most of his time at the Dayton Hamvention and other shows behind the table serving. Hank was also a superb high speed CW operator and a pleasure to watch operating. Hank passed away on November 13th 2010 after a short illness.

QRP-ARCI and QRP in general will be poorer for the loss of Hank K8DD RIP

QRP in the Country 2011

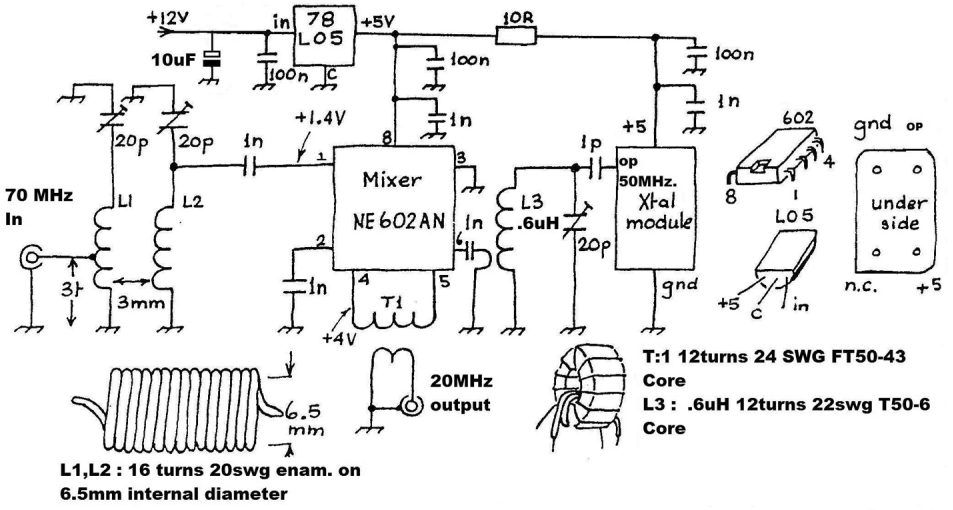
Tim Walford G3PCJ is pleased to announce that, following the very successful first occasion for this event this year, he will be hosting it again in 2011 at Upton Bridge Farm, Long Sutton, Somerset.

The date will be July 17th 2011. The theme will be low power radio operation and home construction, in a country setting! Outside in the field (like this year) if it is dry, or in the farm barns if wet. Tim is particularly keen to increase the attendance by West Country Clubs or individuals who are able to show off their activities; just drop him a line at walfor@globalnet.co.uk

4 Meter Receive Converter

G8LJO John Ricketts 4760 email: g8ljo.jon@googlemail.com

This Circuit is a pure lift and copy of the 6 meter converter published by GQRP club in Drew Diamonds VK3XU book *Radio Projects for the Radio Amateur Volume 2.*
ISBN 978-0-9549302-3-3



The need to have a listen on 4 Meters CW & SSB necessitated the construction of a simple converter to go in the front of my FT817 rig.
Drews excellent 6 meter design was just what was required for simple construction using paddy board construction.
The circuit above shows the modifications required for 4 meters use. The use of 50MHz. as the local oscillator gives an IF out at 20MHz. (It also useful as a 6 Meter Marker).
L3 and 20pF variable capacitor is a simple trap to remove the unwanted harmonics from the output of the TTL Oscillator, if looked at on a scope it will almost be a sine wave.
The 50MHz oscillator output capacitor can be any value from 1pFup to 2.2pF, or a gimmick capacitor made up from 2 X10 mm lengths of solid insulated wire twisted together.
The construction using paddy boards is very easy and consists of old scrap PCB material being cut with straight lines using a junior hack saw or a mini drill and router. The components being sub assembled before mounting on the main PCB. But very importantly the tracks and pads must be checked that the pads and tracks are open circuit (no copper whiskers) before the components are mounted, a short on the PCB after the integrated circuit is soldered in is a nightmare to find.
Alignment is straight forward with a signal generator or weak off air signal tweaking L1 & L2 for best reception, then tweak L3 and capacitor for best signal to noise.

For the final test the converter was taken to my nearest hill near Winchester (SU529 277) at 170 M asl with a simple dipole and the following were heard,GB3WSX, GB3BAA, G4JNT/P and GB3Ral in Oxfordshire.
All the components including the book by VK3XU are available from the club and the TTL Oscillator part no 90-0740 from Rapid Electronics or other U.K. suppliers.

Bring-a-Book-Buy-a-Book

Richard Constantine, G3UGF, g3ugf@norcomm.co.uk

Wow! A big thank you to everyone who supported the third and biggest yet, "Bring-a-Book-Buy-a-Book" event at the GQRP Rishworth Convention , in aid of the BBC Children in Need. We had some amazing books to sell and they just kept coming all day! I was overwhelmed by the generosity of many people who carried cherished books in back packs, shopping bags and boxes to the convention, in aid of a good cause. The stand was so busy that I never got to see anything else or get much of a break all day, but it was absolutely great. At times the buyers were standing 3 deep. The range and quality of what was on offer was simply stunning. We must have sold a couple of hundred books - I really have no idea how many and there were but some great cherished items and bargains that you simply would not have found elsewhere. The star attraction had to be an original first edition, mint, and autographed copy of a Ladybird basic electronics book by a certain G.C. Dobbs. The highest bidder donated a superb £20.00 to the cause and is now its proud owner. We were also able to donate some unsold RAE and educational type books to the radio students in India. The bottom line is that the total raised on the day is a staggering £335.00!

Prime Mover of the EA QRP Club now Silent Key

An appreciation of EA3EVG by Vicenç, EA3ADV

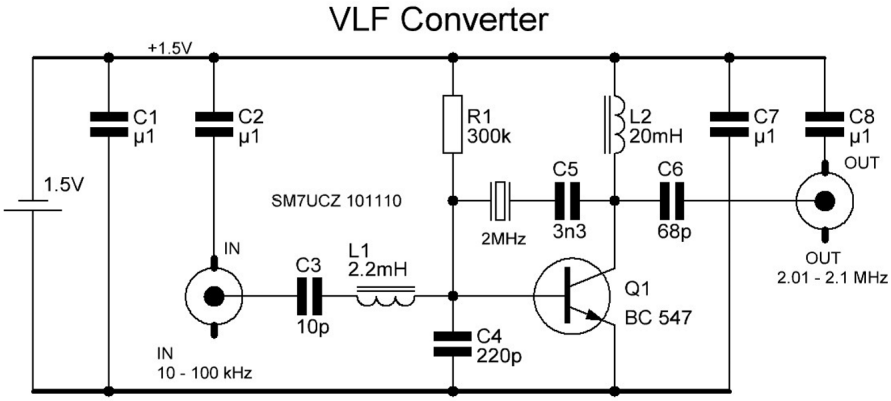
Miguel, EA3EGV, passed away on the 25th of September after a hard year fighting against his illness. Miguel was the EA-QRP Club #1 and undoubtedly the soul and spirit of the club. Thanks to his generosity and hard work the club got in shape and started to grow steadily. We will never be thankful enough for his contribution to the development of QRP in Spain. Miguel was an excellent CW operator and a great person. I had the chance to share with him, Mike, EA3FHC and Xavi, EA3GCY the foundation of the EA-QRP Club and must say that he was really the one driving the club as president and also with his fair behaviour.

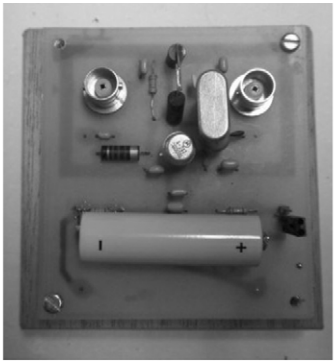
Retro 75 Winner

At November 23rd Branch 56 NZART radio club meeting, the Retro draw was drawn under supervision.
The winner is G4AWY Richard Mekka.
David ZL3DWS

Simple VLF Converter

Johnny Apell SM7UCZ, Ekedalsvägen 11, S-373 00 Jämjö. Sweden





This VLF converter I build many years ago for listening to Grimeton on 17.2kHz. I found it when tidying the workshop.

I tested it again today and it was no problem to hear the English time on 60kHz, the German on 77.5kHz and a lot of U-boat traffic …. who always send blind.

Other crystals could be used here, but the scale on the receiver is true if the choice is 1, 2, 3 or 4MHz.

EDEN IF AND DIGITAL AGC – SPRAT 144 CORRECTION

I spotted an error in the Eden IF strip schematic. C10 in the microphone amplifier is shown as 100uF. At this value, you will have a long time for the microphone amplifier biasing to arrive at its operating point, during which you will not be able to transmit. This capacitor (which is actually a decoupling capacitor) should be shown as 0.47uF. In practice any value from 0.1uF to possibly 1uF will work here. Please take a pen and amend your schematic accordingly. Apologies for any inconvenience.
Ron Taylor G4GXO
Ron has sent a corrected schematic which G4WIF has uploaded to the club web pages. http://www.gqrp.com/sprat.htm#errata
Source and hex files for the audio AGC system described in SPRAT 144 are at http://www.cumbriadesigns.co.uk/Downloads.htm

Modern Test Equipment Kits You Can Build – Part 1

Gereon Ostermann – DJ1WY – Hauptstr. 35, D-55568 Staudernheim, Germany

Intro: Modern advanced test equipment that you can build yourself

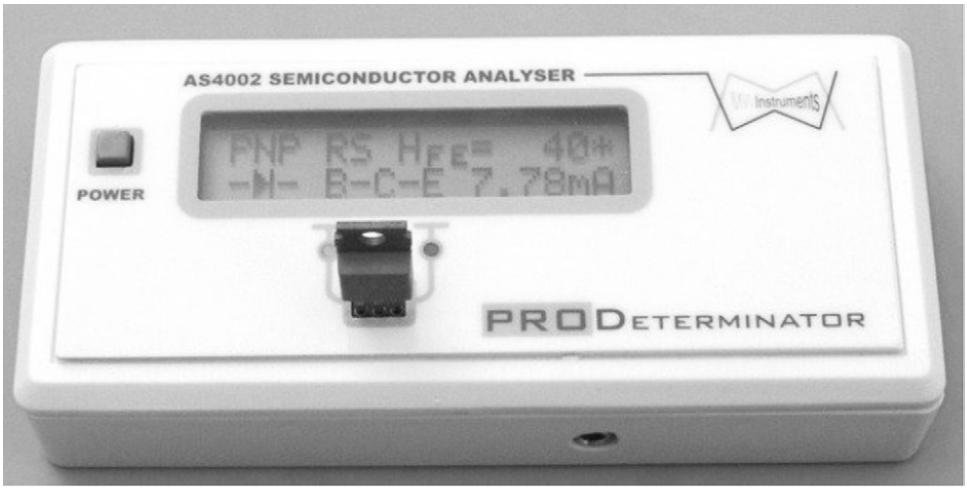
It does not matter if you are an experienced homebrewer or rather new into this fascinating hobby, sooner or later the need for some test equipment beyond the capabilities of a standard Voltage/Ohm/Ampere-meter is felt deeply. Among a lot of other possible and useful gear I would like to draw your attention to the following kits which have quite a lot of features and performance despite their small size and moderate price-tag. And you can build each of them with ease, if you follow the clear instructions given with each kit. In this small series DJ1WY will describe several pieces of modern test equipment which are available as kits for the avid homebrewer.

Part 1: Semiconductor-analyzer from MW Instruments

This little marvel does simultanously the following with each semiconductor, which can be randomly attached to the test-sockets:

1. Identifies the type of semiconductor (see below)
2. Identifies the pinout of the device under test – regardless which pin is plugged where
3. Measures relevant semiconductor static parameters like h_{FE}, I_{DSS}, R_{DSON}, V_{TH}, V_D…
4. Tells if a semiconductor is defective

The analyzer identifies and tests the following types of semiconductors outside of a circuit: Ge/Si-diodes, bipolar Ge/Si-transistors (PNP & NPN), low power Darlington-transistors, JFETs (N- & P-channel), MOSFETs (N- & P-channel), N-channel DepletionMOSFETs, Thyristors/ SCRs(„Silicon Controlled Rectifiers“), Triacs, UJ-transistors, optocouplers (with a little add-on circuit, see below)



The kit contains some 40+ parts including a nice little case, already fully prepared to take the PCB, display and battery. An 8-page b/w-instruction manual helps you to build the kit step-by-step. Everybody with just a little experience in soldering can master this little kit with ease in an evening or two. No SMD components to worry about! After the pcb has been fitted with all components but the PIC, a first "smoke-test" shows if you made a fundamental error or not. After passing this test and fitting the PIC in place, it is time to complete the LCD-display-assembly and to finish the analyzer. After that has been achieved, there is just one simple adjustment of a potentiometer necessary for the visual contrast of the display. When all is done, the automatic calibration procedure is activated with just one jumper. After a few seconds the unit has itself calibrated and the jumper has to be removed. Fit everything into the case, add a 9V-battery and –BINGO- you have successfully assembled a modern semiconductor analyzer – a device you soon will never want to be without with in your electronic hobby. I do recommend to use the additional test-leads with clips – it is much easier to test a wide variety of semiconductors without the need to bend their leads to fit the small socket on the analyzer. These test-leads can be easily homemade or bought ready-made, see below.
If you want to reduce the battery drain (some 80mA) with the backlight of the display switched on, you may try DL3HRT's modification of R16: a 100 Ohm resistor instead of the original 51Ohm type still gives enough backlight while reducing the drain to about 43mA with the backlight switched on.
The device is manufactured as a kit ("AS4002" aka "ProDeterminator") by MW Instruments of France and sells for 65,-EUR plus S&H in France, see their website (in French & in English): www.mwinstruments.com. For the rest of Europe, QRP-Project is the supplier (see below), for USA and Canada please visit the website www.m3electronix.com . The completed analyzer measures only 13x6x3cm (LxWxH).
I bought my kit for 68,-EUR from Peter DL2FI of "QRP-Project" in Germany, with a german assembly manual plus a comprehensive german user's manual. The manual also explains how the device measures each parameter and which limitations apply. This gives a lot of extra background knowledge on the semiconductors you work with! The test-leads and the optocoupler add-on are available for 17,-EUR each. See the website (also in English) of Peter's business: www.qrpproject.de
DJ1WY Gereon

GQRP CLUB WINTER SPORTS

EVERYDAY – DECEMBER 26th to JANUARY 1st
Call "CQ QRP" on the International QRP Frequencies

The Winter Sports is not a contest, although it is usual for operators to exchange their G QRP Club membership number. Those taking part are invited to submit logs and comments to the G QRP Club Communications Manager, Peter Barville G3XJS, Felucca, Pinesfield Lane, Trottiscliffe, West Malling, Kent ME19 5EN. email g3xjs@gqrp.co.uk. The G4DQP Trophy is awarded to the station making the best overall contribution.

A Simple SSB Exciter/Receiver or From DC to Superhet

Dusko Kostic, YU1RK. dusko.kostic@ratel.rs

In the early seventies we were all fascinated by the exciter/receiver module, the schematics of which was published by Plessey Semiconductors (Reference 1), since their legendary SL600 series integrated circuits were built in it.
The idea of using a simple module as the heart of the exciter/receiver is still present, as witnessed by many designs found in magazines and on the Internet.
I hope this paper will be of use to some of the enthusiasts devoted to this hobby.

Concept

Most designers are very familiar with the block diagram of the DC (direct-conversion) receiver, as well as with its advantages and disadvantages.

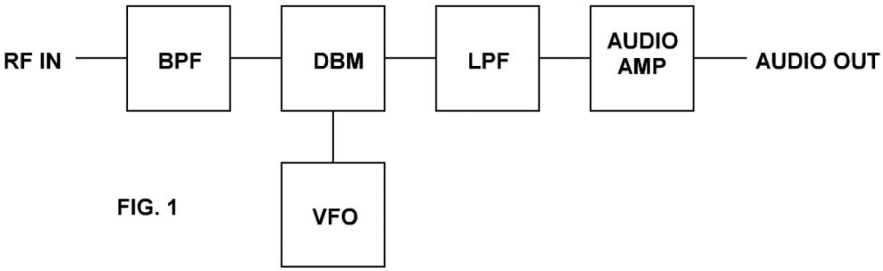


FIG. 1

The receiver shown in Figure 1. has no image rejection, so additional stages are necessary for achieving image rejection. Also, in order to generate an SSB transmitting signal, the number of necessary stages is close to that of the receiver. Designing the DC and SDR (software defined radio) receivers and transceivers during the past several years, I came to the conclusion that hard work was necessary for benefiting from undisputable qualities of such a concept. But, taking the complete picture into consideration, I believe that the superheterodyne principle is a simpler solution for the average designer. In order to achieve maximal simplification of the superheterodyne receiver, the DC receiver was implemented, as shown in Figure 2.

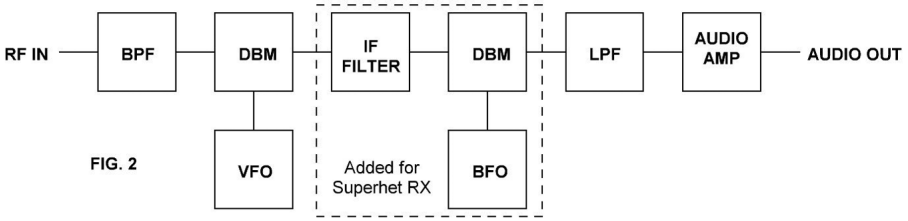


FIG. 2

A superheterodyne receiver is built by adding a crystal filter, a BFO and another mixer. Another benefit from this concept (DBM-crystal filter-DBM, with no amplifier in

between) is bidirectionality, which can be used for transmission purposes. The diagram of the complete module is shown in Figure 3. **(See centre pages)**

While considering this concept I always had in mind the receiver noise factor being higher than 20 dB. However, when I realized the test module, it turned out that the receiver functioned quite satisfactorily, especially in lower bands. An RF preamplifier can be optionally added to the receiver input in order to decrease the noise factor, i.e. increase sensitivity, as is the case with most transceivers manufactured by well known companies.

Module operation

Module operation is very simple. At the input, the RF signal comes to the mixer via a BPF (band pass filter) to be converted to the intermediate frequency; the crystal filter then extracts the desired sideband and the next mixer, serving as product detector, produces the audio signal. The amplifier which follows the mixer – product detector has been described in DC receiver designs many times (W7EL). It is followed by a chain of operational amplifiers which serve as LPF (low pass filter), then audio amplifier, another LPF and finally a MUTE switch realized with a FET. Two LPFs were built in not to increase selectivity, but to decrease noise above 3 kHz. The output audio amplifier is not a part of this module.

For transmission purposes, it is necessary to activate the relay and bring the microphone signal to the remaining operational amplifier. Using the same components as in the case of receiving, but in the opposite direction, the RF SSB signal is produced at the BPF output.

Design

The module design should pose no problem to the fairly experienced designer. The BPF at the input has two resonators. The printed board layout allows for various filter configurations. Transformers before and after the crystal filter serve to match the filter impedance to 50 Ω, which is necessary for the DBM. In particular, the transformers used between the crystal filter manufactured by “Institute Mihailo Pupin”, Serbia, which has the impedance of 390 Ω, and the mixers, have the total of 20 turns round the Amidon FT-37-61 toroid cores, with the tap at the seventh turn counting from the cold end.

The VFO and BFO design is not considered here, it is only important that both oscillators give + 7dBm at 50 Ω.

Adjustments

Under the assumption that you have tuned the BPF, it only remains to adjust the level of the microphone signal. Namely, in order to secure the correct operation of the balance modulator, a maximum audio signal of 350 – 400 mV p-p is necessary at the two 56 Ω resistors split (R21/R22). Depending on the particular microphone, the microphone amplifier feedback resistor (R19) should be set to the mentioned value for normal voice transmission. The -32 dBm RF SSB signal can be expected at the BPF output if the 400 mV p-p audio signal is brought to the IF input of the balance modulator.

CW

CW signal can be generated in two manners:

By bringing the keyed audio signal, for example 700 Hz, to the microphone input, under the condition that the signal level at the balance modulator IF input does not exceed 400 mV p-p,
or By bringing the keyed DC voltage to the (IF) input for unbalancing the balance modulator, while simultaneously shifting the BFO frequency towards the central frequency of the crystal filter by app. 700 Hz. In this case the RF CW signal at the BPF output will be app. -22 dBm. The author favors the second method, since in that case the RF signal will not contain the suppressed carrier signal nor the harmonics of the keyed audio signal.

Finally, we shall list the advantages and disadvantages of this concept:

Advantages:

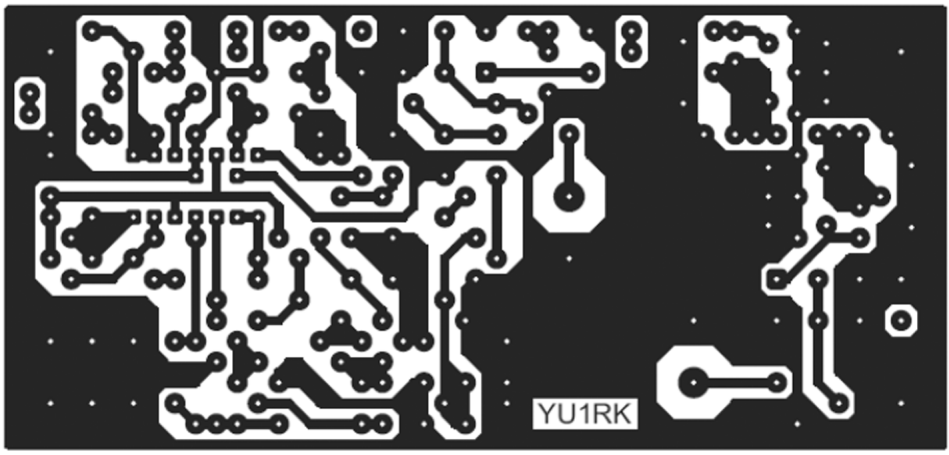
Simple design,
Simple changeover,
Simple adjustments,
No exotic components except for the factory manufactured crystal filter,
Low price, especially if the crystal filter and mixers are built by the designer himself,
Resistance to strong signals, especially if compared with the concept using NE602.

Disadvantages:

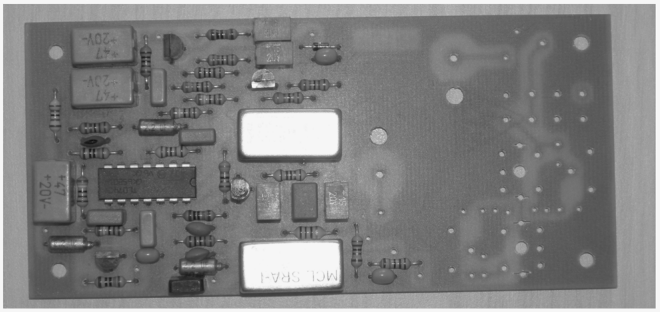
High noise factor (NF),
Low SSB level. In order to get 5 W output, it is necessary to amplify the SSB signal by 70 dB. Care must be taken while designing the appropriate amplifier since the occurrence of RF self-oscillations is possible.

References:

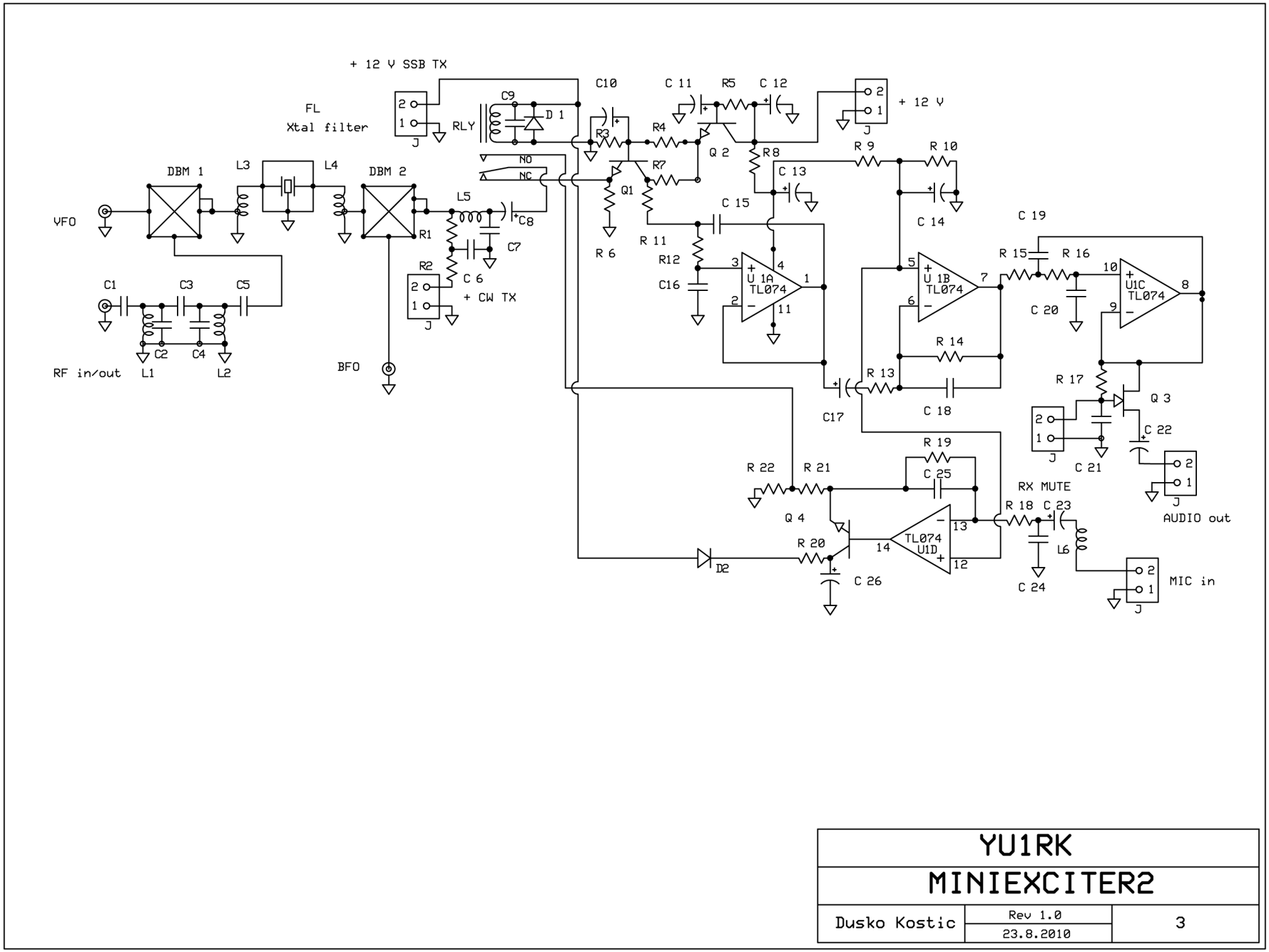
1. An SSB Transceiver Using SL600 Series Integrated Circuits, Appendix B, SL600 Series Communications Circuits, Plessey Semiconductors Handbook
2. Renaissance of HF DC Receivers, YU1LM/QRP, 2000.
3. Solid State Design, ARRL, 1977.



PCB with components from DBM2 to the end



SSB/CW transceiver, 7 MHz, 3 W, using old version module



YU1RK		
MINIEXCITER2		
Dusko Kostic	Rev 1.0 23.8.2010	3

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Any other overseas, Tony Fishpool G4WIF, GQRP Club, PO Box 298, Dartford, Kent. DA1 9DQ [Europe: £10 GBP / DX: £12 GBP]

Short off-centre fed dipole for 80-10m

Jesper Fogh Bang OZ1XB, Elmevej 10, DK-3500 Vaerloese, Denmark
[fogh.bang@gmail.com]

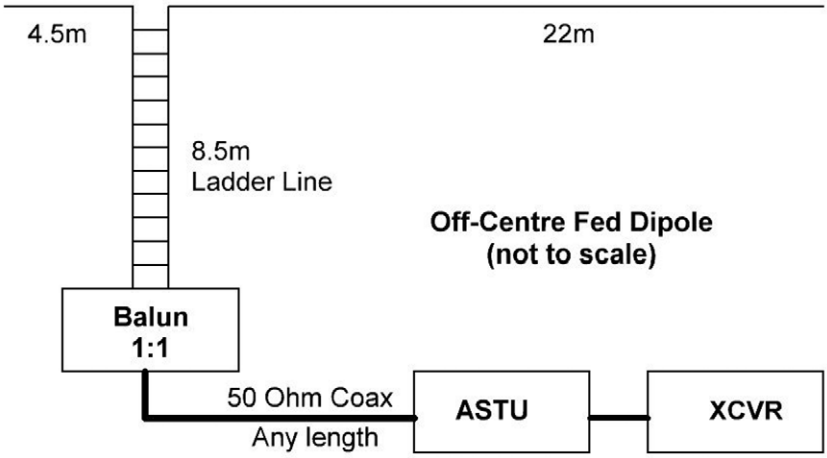
The design of this short off-centre fed dipole has been discovered in an old German booklet about Windom and off-centre fed antennas [1]. It is a multiband antenna covering 80–10m. I have built and tested this antenna for several weeks and compared signals with my ordinary 80m dipole. It works fine on 80m despite the short length which makes it ideal for the small garden or for field days.

The feeder can be either 450 Ohm Wireman or a homemade ladder line. I used a simple 1:1 current balun at the junction between the Wireman line and the coaxial feeder together with an ASTU [2] close to the transceiver. Obviously, it would be better to have the ASTU placed at the feeder junction where the balun is shown on the schematic, however, the present layout is more convenient.

The 1:1 balun can easily be made as a coaxial cable balun with RG58U wound in a single layer on a non-magnetic form according to the following table:

Band	Cable length [m]	Windings	Diameter [mm]
8 0 m	6.1	7	275
80 - 30 m	3	7	135
80 - 10 m	5.5	9	195

[1] **F**unkamateur Bibliothek No. 15, June 2000, page 73
[2] Phi-C tuner, SPRAT No. 138, any other type will do the same job



BD139: the forgotten transistor?

Steve Hartley, G0FUW, 5 Sydenham Buildings, Lower Bristol Road, Bath. BA2 3BS

Some semiconductors seem to gain popularity and become almost ubiquitous parts in every new design that appears (e.g. 2N2222, NE602, IRF510) whilst others never seem to make it into the 'top ten'; the BD139 is an example of one of these. Most folk I have mentioned them to ask 'isn't that an AF device?'. No, I say, you can have 5W of HF out of them, and they cost just a few pence from most component suppliers.

I first came across the transistor in 1995 when it was mentioned in the modified Mongrel transmitter (SPRAT 52). Steve, G4RAW, identified as a useful device in an article in Practical Wireless and I have since discovered that Gerald, G3MCK, used it for a top band 'Universal' Tx (SPRAT 87). However, my Mongrel didn't bark very loud and the BD139 was dispatched to my junk box.

Recently, I found myself on one of those trails that starts with project X and in trying to bottom out a wee problem you find circuit Y, and then Z, and before you know it a completely different project is on the bench and you wonder how it got there. This one started with preparation for the Rishworth Buildathon when George, G3RJV, sent me the project details; a version of the good old W7ZOI 'Universal' Tx. Having killed a couple of 2N3866 PA transistors, the BD139 was brought out of retirement and gave a full 1W out.

Soon the 'Universal' morphed into a 'Twofer' giving a good 2W output. Then I read about the W7ZOI 'Universal Mk2' in the *International QRP* book. This is an updated and expanded circuit providing a more polished and more powerful version of the old faithful using a couple of 2SC5759 transistors as driver and PA. I then stumbled across an article by Ross, KB1KGA, where he had used BD139s to build a 'Universal Mk2'.

Before I knew it I had worked out a component lay out and drilled some PCB material using the copper as a top-side ground plane and soldered it up using point to point wiring underneath. Sure enough, the circuit worked as it should and the BD139s were producing 6W on 7MHz. A small tweak of the drive pot had it QRP legal.

I have now tried the BD139 in three different transmitters and it works every bit as good as other more popular transistors that I have tried. I have not pushed it above 20m, but with an FT of 180MHz, it should be fine across the whole HF spectrum. I can thoroughly recommend this humble device, but take care with the pin configuration, and note that the tab is 'live', being connected to the collector. The Universal Mk2 is also highly recommended, it may look a little over engineered, but it is very much a worthy successor to the original 'Little Joe' two transistor Tx.

PS: There are some very useful corrections and updates on the Universal Mk2 article at http://w7zoi.net/mark2.pdf

Membership News
Tony G4WIF

- New Overseas Subscription rates.
- Membership renewal.
- New Italian & New Zealand representatives.

As reported in the summer Sprat, our overseas rates have risen, so please refer to your member's handbook or Sprat 144 for details. (12 Euro for Europe or $18 for USA members). Anyone paying the old rate will be sent only three Sprats in 2011 with a reminder on the label. If your Sprat label says "expires end of 2010" then you will be due to pay on the 1st January 2011. UK members with existing standing order arrangement with their banks need do nothing until your Spring Sprat arrives. If your expiry date hasn't incremented by then, assume something has gone wrong and please contact me. Important - the standing order mandate must quote your membership number or we won't know who has paid.

For UK members who want to switch to paying by standing order, there is a new UK bank standing order form in this Sprat to send to your bank (and not me) in time for your payment which must be timed for the 15th January 2011. We also offer online payment via PayPal. Please only use the special form on the club website which will add a little to cover PayPal administration charges which are designed to be the equivalent of what it would have otherwise cost you to buy a stamp and post your subscription.

Please contact me for membership/sprat distribution matters. Not Graham in Club Sales or George the Club Secretary – as it causes them extra work. If you write by post please always include a stamp if you expect a reply.

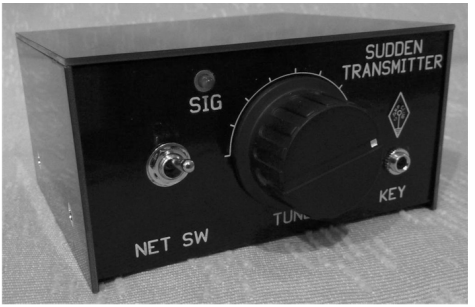
As always *please* no staples in your letters. Cheques never get lost in the envelope if you don't staple - but they do stick in my fingers while removing them. Also quote your club number as well as your name and callsign in all. All cheque payments should be to "GQRP club" and not in the name of any club officer.

My grateful thanks to all overseas representatives who give up their time to deal with local members throughout the year. Please refer elsewhere in this issue for the list of DX representatives to whom you can pay in your local currency. For the remainder of the world without PayPal access you can pay by international banker's draft (in pounds sterling). Cash in UK Pounds, Euro or U.S. Dollars will be accepted - but sadly each year many of these payments never arrive and you send cash at your own risk.

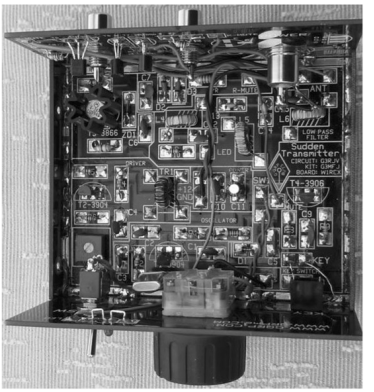
My special thanks to new volunteers Italy. Fabio Bonucci - IK0IXI who takes over from Gian Moda I7SWX. We also welcome Phil Tarrant ZL2NJ who is our new man in New Zealand.
Finally I would like to mention the handbook which lists members. Despite the paragraph that says "please forgive errors", over 40 members didn't and wrote to me complaining that they were not listed. Only one member was actually correct and the rest had not checked properly. If you wrote by snail mail and did not include postage (so I could write back) then you were definitely in that category.

The New G-QRP Limerick Sudden Transmitter Kit

Graham Firth G3MFJ



We are pleased to announce the second of the new range of club kits. George has been busy designing again, and this is a fairly simple CW transmitter, initially for 40m, but with more bands to come. It is designed to match our Limerick Sudden receiver kit. The circuitry is a VXO, followed by a buffer and the PA is a 2N3866. The output is around 2 watts, the VXO & buffer are keyed by another transistor and there is muting on the RX antenna feed. There are 4 toroids to wind – a coupling transformer, and the 3 inductors of the 7 element low pass filter. Due to the built in receiver muting, the transmitter operates full QSK.



The kit uses the "Limerick" method of construction, as used in the earlier receiver. The pads are actually etched on the board (like surface mount), and the interconnections between them are PCB tracks, hidden under the solder masking. No "through hole" connections are made, although "through hole" components are used. The kit includes all components, the complete case, and knob. All you need to supply is a soldering iron and solder, and a few simple hand tools. The iron should be of a reasonable size, as the case is made by soldering the parts together, and a low power iron may not be "man" enough. The transmitter output is 50 Ohms and will need an ATU unless the antenna presents the correct 50 Ohm load. The kit is now available for 40m and we are working on versions for 160m through 20m. The cost is £34 plus postage - £2 (UK), £3 (Eu) , or £4 (DX), and should be ordered from club sales – see the back page. You can download the full manual from the club website. Finally, we are already working on the next kit and this will be a matching all band ATU.

Antennas Anecdotes and Awards

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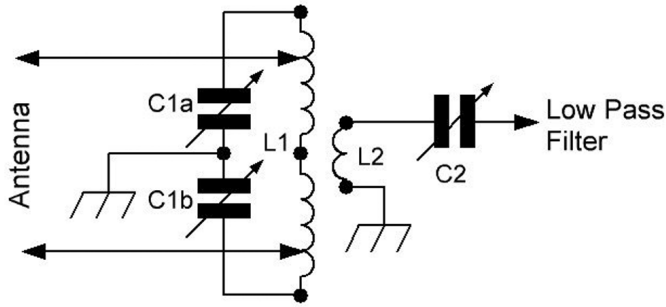
G3vtt@aol.com

My thanks to those of you who have sent articles and notes for me for inclusion in AAA. Who sent me a clipping of an F.G. Rayer G3OGR article about a balanced ATU from the Humberside area? There was no call sign information save a note saying it worked for you. Many thanks 'Mr X'!

G3MHT 6M AMU

From Ted G3MHT who writes 'Apart from a few local contacts several years ago I never really ventured onto 6m but recently I thought I would like to have another go. Unfortunately having downsized my garden and having thought for close neighbours I would not contemplate erecting any sort of beam. My existing aerial was a 100 foot top approximately 32 feet of which is fixed to a (*wooden*?) beam in the highest point in the roof space and the ends exit via two convenient air bricks at either end and finished 6 feet from the ground tied to the garden fence. It is fed at the centre with 300 ohms feeder down through the ceiling to the AMU in the shack.

The aerial performs very well on HF with QRP and I wondered how it would load and radiate on 6m. To satisfy my curiosity I built breadboard fashion a balanced coupler. It produced a most satisfactory 1:1 SWR and fortunately an opening was in progress at the time and I called an IZ4 who gave me 5/9. This was with something less than 10w SSB from my IC703. Later an SP2 was called with a 5/5 report. Due to commitments I have not had time to pursue further contacts but it does show what can be done without a beam. C1a and C1b are 50pf plus 50pf, C2 is 100pf, L1 is 9 turns with a .25 inch gap at the centre. L2 is two turns of RG174, the braid acts as a Faraday screen and is fully meshed with L1 at its centre. L1 and L2 are 1 inch internal diameter.



That W3EDP again…..and again

Dan KB9JLO writes 'I had a W3EDP up for a while. It worked well on a FT-817 with an LDG auto tuner. At least it seemed to. I had a 10:1 balun on it. I mounted the balun outside and fed it with 75 ohm coax (I have lots of 75 ohm coax). I mounted the counterpoise to the ground lug on the balun then grounded the tuner to station ground as well. This worked but I was always wondering what or if I should have used a balun at all. There's practically no way for me to put the tuner at the end of the antenna. Should a balun be used or how can I feed it with coax? My house has steel siding and my shack is in the basement on the 'wrong' side of the house'

***G3VTT Comments*.** This sounds like my holiday set up Dan for the W3EDP. I use a 12 to 1 balun, (rated at 500 watts a gift from my neighbour!), with the coax from the K2 auto tuner to the 50 ohm unbalanced side and the two wires, antenna and counterpoise, to the balanced output of the balun. I can tune all bands with that arrangement.

I've also had a letter from Doug KA7ZVW who has sent me further tips about the W3EDP. Doug says 'Richard KI6SN has written an article in the online version of World Radio for April 2009. In this article Keith describes using the EDP as an antenna for the operators looking for a trail friendly antenna. The article shows the counterpoise wire hanging beneath the antenna suspended at regular intervals by 7 inch insulators making it easier to hang from a tree or cliff as a single line without the trouble of finding a support for the counterpoise wire'.

The PAC-12 Vertical

Doug goes on the say that the PAC-12 Vertical antenna is shown on the NJ QRP website. Take a look at that website at www.njqrp.org/pac-12/ for details of this multiband centre loaded vertical which covers 80m to 10m including the WARC bands and is around 10 feet tall. A further site is the same website but http://www.njqrp.org/qhbextra/index.html where details are given of using the 'Slinky' toy as a coil. There are plenty of pictures to aid construction and according to the latest Radcom you can buy the Slinky coils in Brighton. This antenna has been tested and show good efficiency over a full size quarter wave at least on HF. This is an ideal project using simple materials for those of you on the move with the IC703, K2, K1 and SGC2020.

G3HJF Portable Antenna Ideas

Greetings Colin. As a very new member of the G-QRP Club I was delighted to read your column in SPRAT. Antennas are a favourite subject of mine as they are one of the few things that cannot be miniaturized effectively these days. I am always puzzled why some QRPers try to make do with poor antennas. With QRP we are already at a distinct disadvantage and having a poor antenna makes success even more difficult. Making a resonant dipole is a very simple job and even if it cannot be raised to optimum height or has to be wound around the garden to fit in, it will still work efficiently. Better yet, working portable from a local park, sports field, school playing field (during the holidays) or best by far, from a beach, enables a QRP rig to do its best. I have a small garden but can just fit in a 40m Inverted Vee dipole. Fed with 300 ohm slotted line and with a 4:1 toroidal balun the K1 auto ATU copes well. For portable work I use 'unit constructed' 20, 40, 30m dipoles.

The 40m dipole works well on 15m. The antenna radiator comprises two pre-cut quarter wavelength legs. Each end is looped through a short length of plastic tube as reinforcement. The feed end of each has a 6in. “tail” terminated with a spade plug. Quarter wave legs are pre-cut for other bands. The feeder is thin low loss coax rescued from a remote uhf antenna for an early model GPS unit, fortunately already terminated in a BNC plug to suit the K1. At the antenna end the coax goes into a small plastic box whose only function is to terminate the coax in two screw-down terminal posts.

The mast is a tripod with a short aluminium telescopic section, extended by a fibreglass fishing pole to about 16 feet. In use the two antenna legs are extended, joined at the feed point with a nylon cable tie and looped over the top of the mast and the spade plugs fixed to the feeder box terminal posts. The mast is then extended and finally each end of the dipole is fastened with a length of garden twine to a tent peg

Useful accessories include a reel of the green polypropylene twine with a wire insert for making ties etc. and a similar roll of plain gardening twine, useful for temporary guys if the wind starts getting playful. I attach a couple of photos.

Hello, dear Colin**,** This afternoon I got a hint from good friend, GQRP DF2OK, that it would be worth dropping a quick additional note especially for newcomers on attaching the two lines to a porcelain egg as shown in SPRAT 144, pages 31 and 32: Please mind to fasten the two lines, (antenna and halyard), in such a way that they hold themselves in case the insulator breaks. Page 32 is right and is related to the line and its fastening. Page

31 shows only the knot. Used in a real antenna arrangement the knot at page 32 should of course be tightly brought up to the egg. You can find a correct drawing Fig 5 ANTENNABOOK ARRL 19th edition chapter 20.Just to be on the save side .;-)72, Dieter DL2BQD

Awards.
There have been no new awards received this quarter so on to the Anecdotes section.

Valve QRP Day November 7th 2010
There was plenty of activity for the most recent QRP Valve day but so far only one report has been received - from G3MCK. Gerald was active with his latest CO/PA rig using a 2E26 in the PA, (what a scrummy little valve that is!), giving him 5 watts out. Gerald worked 9 other stations mostly using old time valve rigs with outputs from 1w to 100w. The most active seemed to be G3TYB from Sittingbourne and G3VTT/MM from the Medway Estuary on board a lightship with G3YVF.At G3VTT/MM we were using a version of the Paraset with Geoff G3YVF alongside using his latest creation – a three valve transceiver using the EF50's in receiver and his usual 6V6 as transmitter. I'm planning another **Valve QRP Day for Sunday April 17th** but want more reports on contacts and the equipment used. Please let me have your reports by post or via g3vtt@aol.com. This is just a radio activity day and is not a contest so just get on the usual QRP frequencies wherever you are in the world with your old time valve equipment. Remember you can use either a valve (tube) transmitter, receiver or transceiver to take part - or just get on with whatever you have to support the activity. Please let me know what the line up is and if it's unusual how about a circuit for Sprat?

Depending precisely when you receive this issue of Sprat may I invite all of you active on QRP with straight (pump) keys or maybe a bug key to join the **First Class CW Operators Straight Key Weekend** on January 1st and 2nd 2011? If you are at all interested in CW then you will receive a warm welcome from even at slow speeds from the FOC gang. Just listen around 25 KHz up from the band edges. Many other CW clubs have been invited so I hope there will be plenty of activity. Many years ago somebody told me CW would die out……

Finally, as this is the Winter 2010/11 edition of AAA may take this opportunity to wish you all a Happy Christmas and a healthy New Year and I hope to work as many of you as I can in the **GQRP Winter Sports** from December 26th to January 1st.

Editors Note
I failed to fit in the full FOC Straight Key Weekend material in this issue.
The FOC Public Website is at www.g4foc.org for full details.
Please send your comments on contacts and working conditions to G3VTT by e-mail at g3vtt@aol.com or post to them (QTH page 30) before the end of January. A log is not needed but comments about the types of keys heard and the best 'fist' would make interesting reading..

COMMUNICATIONS AND CONTESTS

Peter Barville G3XJS, Felucca, Pinesfield Lane, Trottiscliffe, West Malling, Kent ME19 5EN. E-mail g3xjs@gqrp.co.uk

Regular readers of this column will know that I have had a couple of previous periods this year operating /MM, but with disappointing results. However, TA4/G3XJS/MM was on the air again in October, using an FT-817 with 5W CW and 6m vertical, and this time with much more success. The best contact was with Ari **OH9VL** on 17m, who was running just 700mW. Some of this success is down to improved antenna arrangements on the boat, but probably more resulted from the much improved HF band conditions. The improved conditions should encourage us all to get on the bands more, and fly the QRP flag – hopefully during some of our activity periods and contests.

CZEBRIS 2011

The details (below) of this event will be familiar to most, but that's no reason to skip over them without making a suitable entry in your diary. This used to be a really well supported and much enjoyed event but has not received as much support recently. That is a pity, and so surely now is the time to make amends and have an enjoyable weekend working other QRP stations in a friendly and relaxed manner. Submit your log, and there is every chance you could win!

1600z Friday 25th February to 2359z Sunday 27th February, around the usual QRP cw frequencies: 3560, 7030, 14060, 21060, 28060kHz, +VHF/UHF if conditions permit.

Your Location	**QSO With Station In**			
	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. Your final score is the 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). Non-UK entries go to OK1AIJ (Karel Behounek, Na sancich 1181, 633705 Chrudim IV, Czech Republic). We are both happy to receive logs by email: "g3xjs@gqrp.co.uk" and "karel.line@seznam.cz".

WINTER SPORTS

This is one event that needs no introduction, and remains the highlight for most in their QRP Calendar. Depending when you receive this edition of Sprat, Winter Sports may already be in full swing (26th Dec to 1st Jan inclusive), in which case you need to put down Sprat immediately and get yourself onto the bands! It is just possible that this reaches you after the event, in which case I sincerely hope you haven't missed all the fun!

EUCW BULLETIN 3/2010

I have just received the latest bulletin, and will be happy to forward a copy to anybody who is interested to see it. Just drop me a line.

Please remember to send your **Winter Sports** logs to me – the more the merrier – in good time for inclusion in the next SPRAT, and in good time to clear the decks in time for **CZEBRIS**. Let's all make a New Year Resolution to make the best of improving conditions and to make those QRP frequencies hum with activity!

The deadline for inclusion in the next issue is the beginning of February.

72 de QRPeter

2011 QRP CALENDAR

1st Jan	Last day of **Winter Sports**
1st Jan 0000z-2359z	**FOC Pump Handle Party**
1st Jan 2000z-2300z, 2nd Jan 0400z-0700z	**EUCW 160m Contest**
1st Feb	Last Day for **Winter Sports logs** to G3XJS
10th Feb	Last Day for **Chelmsley 2009 logs** to G3XJS
25th Feb 1600z to 27th Feb 2359z	**CZEBRIS**
6th Mar	**AGCW QRP Contest**
18th Apr to 22nd Apr	**EUCW / FISTS QRS Party**
25th Apr 1400z-2000z (Every Easter Monday)	**Slovak Low Power Sprint**
30th Apr	Last Day for **CZEBRIS logs** to G3XJS and OK1AIJ
2nd June 1900-2300z	(Each Ascension Day) **QRP-Minimal Art-Session**
17th Jun	**IARU Region 1 International QRP Day Contest**
16th Jul	Last Day for **International QRP Day Contest logs** to G3XJS
10th Sept	**HTC QRP Sprint** (2nd Sat Sept)
Rishworth QRP Convention	Date to be announced when available
20th Nov 1300-1700z	QRP Contest Community **HOT PARTY** (3rd Sun in Nov)
26th Dec - 1st Jan 2011	**G-QRP Winter Sports**

(Please advise G3XJS of any errors, or omissions.)

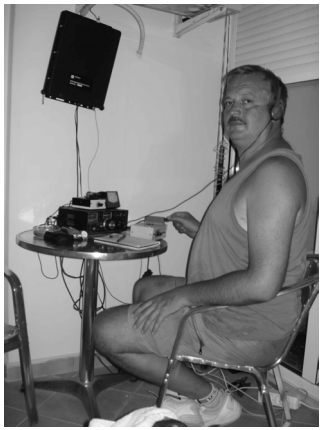
MEMBERS' NEWS

by Chris Page, N4CJ (G4BUE)

Highcroft Farmhouse, Gay St
Pulborough, West Sussex RH20
E-mail: chris@g4bue.com

The world of QRP was a sadder place on 13 November when **K8DD** became a Silent Key after being hospitalised during the ARCI Fall QSO Party. **W4DU** writes, "Those of us who initially knew him through amateur radio remember a top notch CW operator, skilful traffic handler, DXer, contester, avid QRPer and a welcoming voice into amateur radio. Hank embraced all aspects of the hobby with enthusiasm and excitement. These attributes were evident when anyone walked up to a hamfest booth staffed by Hank. Many of us were welcomed into QRP by his friendly smile as you were greeted by Hank. When people would comment 'Life is too short for QRP', Hank would reply with a smile, 'Life is too short not to have fun with all parts of our hobby', and would then proceed to make a new friend and probably a new member of QRP ARCI". **EA3FHC** passes the sad news that Miguel, **EA3EGV**, founder of the EA-QRPC, became a Silent Key some weeks ago.

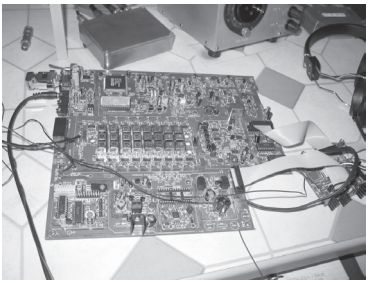
GØFUW reports 12 places have already been booked for the fourth Bath Buildathon on 8 January when attendees will build a 20m superhet receiver. There will also be Intermediate assessments and exams for five more on the same day. The Buildathon crew (Steve, **G3VTO** and **G4YTN**) helped out at the recent Rishworth Buildathon. **G3XJS** reports that following the 'QRP in the Country' event in 2010, **G3PCJ** will host it again on 17 July 2011 at Upton Bridge Farm, Long Sutton, Somerset. Tom says the theme will be low power radio operation and home construction in a country setting, outside in the field if it is dry or in the farm barns if wet. Tim is keen to increase the attendance by West Country clubs or individuals who are able to show off their activities.



The picture far left shows **YU7AE** QRV from his apartment balcony in Herceg Novi, Montenegro while on holiday with his family this summer. Karolj used an Atlas-210x (40 or 5W QRP) with a SGC SG-230 ATU and two keyers (PIC and Z80 CPU). His antenna was a random wire (16 feet on a fishing rod and 50 feet wire dropped down from the balcony to a tree). He made 530 CW QSOs that included 15 QRP and 10 two-way QRP QSOs, the best band being 40m. **G3CWI** reports **LA1KHA** has suggested a 'QRP Challenge' on the SOTA Reflector: how many contacts can you make using a standard PP3 battery (alkali) to power your station? Richard says several SOTA people are rising to the challenge with their Rocknites but maybe some QRPers would like to join in too? His total is 35 contacts in 9 DXCC with a single PP3/MN1604. The battery is only down to 8.7V so there should be plenty more to go. Most of the contacts have been short but on 21 November he had a nice ragchew with Wang, **DK4AN**, while running about 300mW on 10116kHz.

On 2/3 October **IA5/IKØHBN** planned to be QRV from Giglio Island (EU-028) with his KX1 during a sea kayak trip around the island. **GM4VKI** has his Russian R354 working with a 6V battery (not a mains PSU like the original) and has been listening to **G3ROO's** CW net on 3560kHz± at 1830z. Mike says he was hoping to work, "Cross fraction, as they say, spy to spy". **MI5MTC** recently bought some home-brew QRP equipment built by **GM3RFQ** in a Silent Key sale on *eBay* and says the handwork, some of it dated quite recently, is very good. Michael is wondering if anyone knows anything about **GM3RFQ**? **GØNSL** thinks he might have been a 'sparks' as he traced him to Leith Nautical College in the early 1980s.

M5AKA says NASA have released a video in which astronaut Doug Wheelock, **KF5BOC**, demonstrates the amateur radio station on board the International Space Station, <http://www.youtube.com/watch?v=3Dh73EYcyszf8=20>. Trevor says it is a QRP station, the Kenwood D700 is set to run just 5W output on 145800kHz FM (5kHz deviation). **F6EJU** has started a *Yahoo* Group 'The Paraset Friends' <http://groups.yahoo.com/group/LesAmisduParaset/>, and says there is much technical information in the files section; **G6YBC** has started a new *Yahoo* Group for the FOXX-3 at <http://uk.groups.yahoo.com/group/foxx-3/>. and **VE7GTU** reports a new *Yahoo* Group for Heathkit HW9 owners has started at <http://groups.yahoo.com/group/Heathkit-HW-9-users-group/>. **G4HZJ** noted on the Kanga website, <http://www.kanga-products.co.uk/> that a new 80m SDF receiver was to be launched on 23 October at the QRP Convention.



The photograph right shows **GM4YLN** sitting in **GM3OXX's** shack on 1 September, when Chris visited George to show him the newly built board of his PIC star (right photo) calling it 'Ancient and Modern'. George says, "I really envy Chris's ability to work with SMD stuff but alas it's not possible for me to do that, but I still manage with the older stuff".

MØCGH says his winter construction season is in full swing: a Super Tuna kit (from the Rishworth Convention) has been built and is waiting to be joined by it's buddies: the Sudden Storm and Tuna Helper from QRPme. Colin has also built a paddle key following the suggestions of **IK1ZYW** in *SPRAT* to go with his Rocknite 20, and is half way through constructing a 74HC240 transmitter for 40m by **JA9MAT**. He has also kitted the parts to make both a **G3RJV** regenerative receiver and a FETer transceiver by **G3XBM**. **HB9DRV** has been working on SDR software to analyse very weak signals, <http://www.sdr-radio.com/News/tabid/185/EntryId/56/IQ-Data-File-Analysis.aspx>, where you can see 657kHz over 24 hours, the difference between the strongest and weakest signals is up to 180dB (the zig-zag signal is a TX with a xtal oven). Simon says, "SDR is the future, as I can hardly see the SMD components, I keep to the software side, it's a lot safer".

F6HIQ has been using QRP for less than a year (SSB and PSK31) and has 69 DXCC from his Toulouse QTH using a three-band GP antenna. However, Hervé says he likes operating portable, especially at the seaside. He is also QRV from London (where he works) and in November was **M/F6HIQ/P** from Clapham Common (photo left) making good QRP QSOs on 20, 40 and 80m with his FT817, Heil Traveller headset, external 7Ah battery and a short ATX-1080 antenna directly into the TCVR working with a home-made turnable counterpoise: eight feet length of wire for all bands (G3EJS design). He said the weather conditions were rather poor for a man coming from the south of France (cold, rain and fog), but he had fun.

Hervé was QRV SSB from the top of a cliff at Bidart, close to Biarritz on the Atlantic coast, in August with **F6HQM** using his FT817 again with a Buddistick and 20m dipole on a light 16 feet mast (below right), and in September from a beach between Port-La-Nouvelle and La Franqui on Mediterranean coast close to the Spanish border with the same equipment, and a home-made aluminium 16 feet mast (1.6 feet collapsed aeroplane baggage) supporting a 20m dipole (above right). On this occasion he made SSB QSOs to W, JA, 5B, 4X, UP, UA9 and YO. **G5CL** mentions 'big gun' **KG9N** is QRV most afternoons on 17m looking for QRP stations. Ryan

and **G3ICO** regularly work him with 'flea' power. **GØEBQ's** 20m BITX has developed a fault with the change-over, but he QSO'd **CO6LC** on SSB with his 17m version. If you want to understand more about LF and HF propagation, Trevor suggests looking at his free ebook at <http://www.southgatearc.org/news/november2010/propagation_ebook.htm>.

MØMJH has QSO'd JW with his PAC-12 and 5W from his Blackpool QTH. **GØROT** asks we call CQ more often, even when the band appears to be dead. On 31 August Mike was setting up an old rig (Yaesu FR-50B and FL-50B) with 5W to a 40m inverted L when **DL9FI** answered his CQ. Michael was running 2W to a dipole. Using his K3 and Cushcraft A4S at 100 feet, **LZ2RS** has been 'milliwatting'. On 6 September he QSO'd **ZL2MS** (using a GP on the beach with eight radials in the water) on 20m LP. Rumi received 589 at 5W, 549 at 1W, 539 at 100mW and 329 at 10mW; on 11 September he received 569 at 5W, 559 at 1W, and 339 at 100mW from **ZS6AYU** on 15m, and on 15 March received 559 at 1W, 539 at 100mW and 339 at 10mW from **KH6MB** on 20m, all with CW. On 17 October **IKØIXI** QSO'd **N1IX** on 14060kHz running 3W from his homebrew rig, despite many stations being very close to them due to the **PJ7E** split. Fabio QSO'd **5V7TT** the next day on 15m SSB with his 3W and GP antenna. **SM6EQO** also QSO'd **5V7TT** on 15m in October and **PJ4B** on 40m RTTY on 17 October, both with QRP. **G5CL** also QSO'd **5V7TT** on 18 October for 137 QRP DXCC in 2010.

What's **G3HJF** doing on his local village cricket ground this summer (right)? Jim says, "The Spring issue of *SPRAT* encouraged me to get the Elecraft K1 and K2/QRP from the shelf and dust them off. In the last three months I have had so much enjoyment, particularly operating /P, and it has reawakened my interest and reminded me of what real amateur radio can still be. I have found it is a good idea to call CQ, and calling 'CQ QRP' at a modest speed can be very effective; it keeps the 'heavyweights' away and encourages another QRPer to try. In the photograph I am using an Elecraft K1 and paddle, and a 12 volt gel-cel. The antenna is a very light weight 40 metre dipole carried on a short telescopic tripod telescopic mast with a fishing pole extension about 15 feet. The location is usually the local village cricket field, which I have all to myself during the week, and Boswell, my loyal companion, is sitting under the operating table".

On 19 August **DL8TG** made 130 CW QSOs around Europe, mostly on 40m, operating /MM from the light vessel *Elbe 1* between Cuxhaven to Helgoland Island and back, with his K2 limited to 5W and the ship's vertical (used for 500kHz) tuned by a Smart tuner. **G5CL** made 121 QSOs in the FOC QSO Party on 23 October, 43 with 5W and 26 with 10W. Highlights for October for **GM3OXX** were receiving his **ZK3OU** QSL and QSOing **XX9TLX** for a 'new one'. George's frustration was having **FK8IK** answer his CQ on 25 October on 14060kHz but, despite trying for ten minutes, was unable to complete a QSO! **G3YMC** QSO'd **N2KW** on 10m on 24 October for his first USA QSO on the band since February 2004, while 15m gave Dave **5V7TT** and **ZS6X,** and 12m gave him **5N7M**.

The picture right shows **DL7ATR**'s 5W PSK31 operation as **SP/DL7ATR/P** in Poland in October. Hans's equipment was a FT817, a Fuchs antenna and NUE-PSK modem with which he worked around Europe. **G3CWI** has been experimenting on the effects of location and has been surprised how large the differences are on the HF bands (especially 15 and 17m) when using many wavelengths of steeply falling ground in the required direction. **G4GXO** and **PAØRDT** both refer to the same conclusions reached by Les Moxon, **G6XN**, and reported in his book *HF Antennas For All Locations*. **MW1LCR** is able to QSO VK and ZL stations on 40m with very basic antennas and low power, which he puts down to his location: on top of a 1500 feet hill with a clear take-off in most directions and antennas within 100 feet of a sheer vertical 1000 feet drop! Adrian also refers to Les Moxon, and to the *ARRL Antenna Handbook,* that indicate your antenna take-off angle is according to the terrain, the Fresnell Zone around 2-10 wavelengths from the antenna, with gently sloping pasture land being very good, and sheer cliffs excellent.

On 24 August **G3XBM** ran an earth electrode transmission test with **G3XDV** 38 miles away in Welwyn Garden City. Roger put his QRSS3 8-10uW ERP beacon on and Mike took regular screen shots through the day until mid-afternoon. Although unable to copy the message in QRSS3, when using QRSS30 speed for reception the start and end of the message sequences (9 minutes 7 seconds apart) could clearly be seen, and he was able to precisely detect when the beacon was turned off. Mike estimates another 6-10dB should allow him to read the message properly. Signals were weaker later, possibly because of rain at Roger's QTH altering the effective loop size within the ground. Roger finds this quite amazing and says the perceived wisdom is that 136kHz needs big antennas and lots of power etc, but these tests, using a 20m spaced earth electrode 'antenna' and a few microwatts ERP, prove that with decent signal processing at the receive end, useful distances can be spanned.

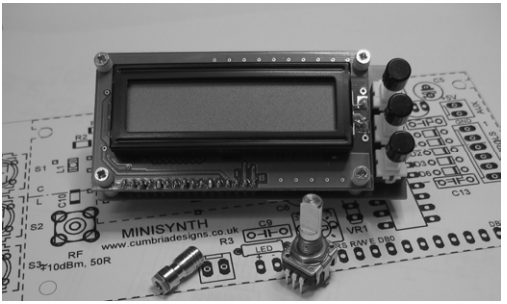
GM4WZG often works abroad and carries QRP equipment so he can be QRV from hotel rooms, or if he gets a chance, to operate portable. Bernie says hotel rooms can provide amazingly good results and he once got third place in the non-QRP 20m section of the King of Spain Contest with a Zepp dangling from a hotel room window. He also tries to meet fellow QRPers on his travels and recently talked to EA8AGF while in the Canary Islands. They subsequently spent a very nice day in Alberto's shack high in the mountains 5250 feet ASL where, with 5W, they tried out a new doublet antenna to make several CW QSOs around Europe, the USA, and even a 5W SSB QSO with **ZS3Y** on 10m. Bernie says Alberto works many modes, enjoys QRP and gives CW classes at his local radio club in Las Palmas. He reminds us of the annual EA QRP Contest held over the third weekend of April when many QRP stations are active. The picture shows Bernie (left) and Alberto.

On 20 October **G3XBM** quite unexpectedly, got a string of reports on 500kHz WSPR from **OH1LSQ** in KP03sd at an astounding distance of 1076 miles. Roger says, "To me these are amazing reports pushing my best DX on the band with just a few milliwatts ERP to new levels. What surprises me is how well a very simple vertical wire loop works as a transmit antenna; the wire is just 1mm diameter, with an area of around 230 feet square, with part of the loop laying on the ground buried in wet grass. Even more than before, I now believe almost anything is possible. Now I just need to repeat this on 137.5kHz....".

GM3MXN's comment about contests in the last *SPRAT* provoked some interesting comments: **DL8TG** agrees but says to switch off is not the best way for our hobby. Klaus changes to the WARC bands, and often finds conditions there seem to become better. **G4ADE** also agrees with Tom who, in turn, agrees with Klaus that the WARC bands are the answer. Mike gets annoyed when the SSB contests spread into the CW portions of the bands, especially on 160m.

My thanks to all the contributors, without you this column cannot exist. Please let me know how your winter goes, and any other news and views about QRP, including photographs, by 15 February.

KITS AND MODULES FROM CUMBRIA DESIGNS



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Look at 'www.celticpilgrim.com' for Amateur Radio in a Lovely Place

G3RJV has a Wooden Lodge situated in the Dyfi Valley in central Wales close to the Irish Sea and in the Snowdonia National Park. It has been completely refurbished with a large living area, conservatory, double bedroom, twin bedroom and a double bed sofa in the living area. Naturally there is a small amateur radio station with a QRP HF transceiver and a 2m multimode. An easy to use station in a quiet location.

Look on the webpage above or for leaflet write to G3RJV or email g3rjv@gqrp.co.uk

GQRP Club Sales

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

Antenna Handbook – 2nd edition – members £6.00, non-members £10.00 plus post	} £1.40 (UK); or £3.40 EU
Radio Projects volumes 2, 3 & 4 – by Drew Diamond – members £5, non-members £10	} or £5.80 DX per book
6 pole 9MHz SSB crystal filter 2.2kHz @ 6 dB, 500ohm in/out **£12 plus post**	} £1.30 (UK); £1.50 EU
Polyvaricon capacitors – 2 gang (A = 8 to 140pF, O = 6 to 60pF) c/w shaft ext & mtg screws - **£1.20 each**	} £2.00p (DX)
Pair LSB/USB carrier crystals HC18U wires - [9MHz ± 1.5kHz] **£4 pair**	} **All components**
HC49U (wire) crystals for all **CW** calling freqs – 1.836, 3,560, 7.028, 7,030,	} plus **postage**
7.040, 10.106, 10.116, 14,060, 18,096, 21.060, 24,906, & 28,060 - **£2.00** each	} **(ANY quantity)**
HC49U (wire) crystal for DSB on 40m – 7.159MHz - **£2.00 each**	} £1 (UK),
HC49U (wire) crystals – 1.8432MHz, 10.111MHz – **50p each**	} £1.50p EU,
HC49 (wire) crystals – 3.500, 3.579, 3.5756, 3.5820, 3.6864, 4.000MHz	} £2.00p (DX)
4.1943, 4.433, 5.00, 6.00, 7.00, 8.00, 10.0, 12.00, 13.50, 25.00MHz	} If
27.00, 28.500, 32.00, 35.50, 43.00MHz – **all 30p each**	} ordered
Ceramic resonators – 455kHz, 2.0MHz, 3.58MHz, 3.68MHz & 14.30MHz **– 50p each**	} with
Schottky signal diode – 1N5711 low fwd volts for up to vhf/uhf **20p each** } max of 5	} toroids,
General Purpose silicon diode - 1N4148 10 for 10p	}
Varicap diodes – **MVAM109** – 40pF @ 9v, 500pF @ 1v. **50p each** } max of 2 of	} binders,
– **MV209** – 5pF @ 12V, 40pF @ 1V **35p each** } each per member	} or
SA602AN - £1.50 (note – I may supply NE or SA, 602 or 612 as available. All are fully interchangeable.	} filters,
MC1350 - £2.00	} use
PICAXE-08M – as used in Rex's kits – 8pin - £2 each	} that
LM386N-1 - 4 to 15v, 300mW, 8pin **DIL** - **£0.40 each**	} postage
LM386M-1 - 4 to 15v, 300mW, 8pin **SMD** [0.2" (4mm) x 0.25" (5mm)]- **£0.35 ea**	}
TDA7052A - 4.5 to 18v, 1W 8pin **DIL** low noise DC vol control – **£0.60 each**	} If
CA741 op-amps 8pin DIL **– 5 for £1**	} ordered
TA-7642 Radio IC – direct equivalent of **MK484** (& ZN414) – **75p each**	} with books
2SC536 transistors (npn) fT - 100MHz, hFE-320, VCBO +40V **- 5 for 50p**	} or CDs
MPSA92 transistors (pnp) fT - 50MHz, hFE-40, VCBO -300V **- 5 for 50p**	} add this
2N3904 transistors (npn) fT - 300MHz, hFE-150, VCBO +40V **- 10 for 50p**	} postage
2N3906 transistors (pnp) fT - 250MHz, hFE-150, VCBO -40V **- 10 for 50p**	} as they do
2N3819 N channel JFET – 12p each	} do not travel
2N7000 N channel MOSFETs - 10p each	} well together
IRF510 FETs - £1.00	}
10K 10mm coils still available as the last issue - all 75p each	}

Toroid Cores – **priced per pack of 5 – max of 2 packs of each per member**
T37-2 – 75p; T37-6 – 75p; T50-1 - £1.00; T50-2 – 90p; T50-6 – 90p; T50-7 - £1.20;
T50-10 - £1.20 ; T68-2 - £1.80 ; T68-6 - £2.20;
FT37-43 – 80p ; T50-43 - £1.20 ; FT37-61 - £1.00 ; FT50-61 - £1.20;
BN43-2402 - £1.00; BN43-202 - £2.00; BN43-302 - £2.00; BN61-202 - £2.00
Ferrite beads – FB73-101 (3.5mm dia x 3.2mm long, 1.2mm dia hole) – 40p for 5
All toroids are plus postage – up to 5 packs = 60p (UK), £1.20 (EU), £1.70 (DX). Each additional 5 packs, please add 50% of the same postage. (Please note – if you order 2 packs of any type – you will probably get all 10 in one pack).

Magnet Wire – 20, 22 SWG – 5 metres for 40p; 24, 25, 27SWG – 5 metres for 30p;	} postage
30, 33, 35SWG – 5 metres for 20p. This is solderable enamel insulated	}
max of 5m of each per member (I have to measure and wind this!)	} as
Axial lead inductors (they look like fat ¼W resistors) these are low current – a few hundred mA	}
10uH, 39uH, 47uH and 100uH - all 15p each.	} components

Binders for Sprat - the original 'nylon string' binding type! Black with club logo on spine **£3.75 each plus postage** (one: UK – £1.20, EU – £2.00, DX - £2.50. More – add £1, £1.20, £1.50 each)

Sprat-on-CD V4 – 1 to 140 (see Sprat 140) – members price - £4 plus post UK - £1.00, Eu - £1.50, DX - £2.00

Please note - I only have stock of the above items – I do not sell anything else. Anything in previous advertisements and not shown above (except coils) is out of stock – if it becomes available again – it will be in the next magazine.

Cheques (UK) and payable to G-QRP Club. Sorry, but cheques in other currencies are uneconomical to us due to bank exchange charges!

MINIMUM ORDER for cheque or PayPal payments is £5 **For orders less than £5 – please use postage stamps (any denomination £1 or less please) - any quantity of stamps is OK, or cash. I can accept cash in GBPound, or US$, or uros – but please send securely! You can order via e-mail and pay by PayPal. Use g3mfj @ gqrp.co.uk – pay in GBPounds and you MUST include your membership number and address please**