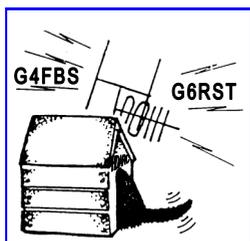


Horndean & District Amateur Radio Club Journal

Volume 3

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Deverell Hall

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Founded in 1975

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Articles, letters of interest, photographs are always needed and should be sent to the Editor :- Sean Grant 51 Winchfield Crescent Havant PO9 3SR Tel : 07429639890 & Email : M3SGO@Hotmail.co.uk

It would be appreciated if submitting typed script that it is of good quality bold lettering. This allows me to scan it in direct. Saving me time retyping. Copper plate handwriting most acceptable. I use Microsoft Publisher 2013 to produce the journal so am happy to accept articles/photographs on a CD providing it is compatible and can be read in Word. If you require the material to be returned please enclose a SAE. Opinions expressed in the journal are not necessarily those of the HDARC. The editor has the right to reproduce the articles for our affiliated club journals/newsletters. The Editor decision is always final.

Closing date for next journal is : 3rd of March 2017

Editorial

Hiya Folks

Happy New Year everyone and hope everyone is well, or recovering .



As you would have seen the journal is getting smaller over the last few issues; this is due to lack of articles although many of you have sent me great articles over the many years I've been doing the journal, I still require more to keep the journal going. I think you'll agree, there is a good read with a diverse of articles in this issue.

Talking about the journal, I have spoken to the committee and made it known I would like to hang up my pen after 50 journals; now we're on number 41 so there is plenty of time, but I'm on the look out to train a new editor, so if you think you would like to become the new journal editor please contact me, and I will help you with all you will need including software etc to enable you to become the next successful editor.

Anyway I would like to again thank those who continuously keep the journal full with interesting articles to read, and please keep up the good work, as without you this journal wouldn't happen

73

Sean M0XAN
Journal Editor HDARC

Railways on the Air

Sunday was going to be my first proper club event as a licensed amateur, and whilst I was really pleased with most of the day, I did get a few things wrong. So, a bit of this article is intended to be a 'what did I do wrong', just so I can make a point of doing better the next time.

I was (in my mind) very well prepared for the morning, batteries for my camera and hand held were all charged up, I made sure I had spare batteries for my external flash unit, I even brought my tripod.

Railways on the Air celebrates the running of the first passenger train between Darlington and Stockton on 27 September, 1825. ROTA always takes place on the weekend closest to the 27th of September (not sure what happens if that is a Wednesday). Our regular station is Medstead and Four Marks on The Watercress Line. Did you know that the line gets its name from one of the end Stations, Alesford, which is the home of Hampshire's watercress industry – which continues to be very active? I didn't know that. Look for the Watercress Festival, which happens on the third Sunday in May – gets a bit busy by all accounts.

I arrived at the station early, before everybody else, even the gates onto



the platform were locked. Not a problem to hang around for a bit, and it didn't take long for station staff to start arriving. The first person I introduced myself to was one of the porters, Bob Davies. It turned out that Bob lives in Gosport, not that far from me and was definitely interested in amateur radio, and hopefully may join the club (or may not, let's wait and see).

Next to arrive was Tony Storey, the signalman. Tony very kindly let me follow him up into the signal box, which really was very exciting, and whilst he was getting set up, gave me a quick explanation as to how things work. He did invite me to come back later and see the signal box in action, sadly I didn't do that. Something that I will have to fix next year.

I realised then that Chris was on site getting things ready for the day's operation, so I went over to see if there was anything I could do to help. Not really, he quickly had everything up and running with a cup of tea ready to go. Then Julia, Simon, Christine and Frank arrived. We could get down to business.

I had a good look at the antenna setup, always happy to take ideas as to how I hope to get things set up in my shack – when that happens.

Julia very kindly let me have first crack on the 2m rig, a Kenwood TM-D700. First lesson here, when using a radio for the first time, make sure you know which way round the mic is supposed to be!

In very quick succession I had about half a dozen really good contacts, and although they are all written up in the log, did I make a note of them for this article – no. I can only remember one, and that's Rob, M6PIQ from Hayling Island and who was on my foundation course! And another good one from



Andover. I worry about my brain, as I've realised I'm lousy with remembering callsigns. All my calls were over and done with before the first train ran. But they felt good, whether they really were or not I can't say, Simon very kindly said they were.

During the course of the morning Nigel MONAF turned up for a very welcome visit, and the station staff came in for a look around. I made a point of taking some pictures of them, and have passed copies of them on to Peter Grose and Bob Davis, it was here that we found out about Bob's interest – and as I say, he may or may not join the club.

After I had my session on the Radio, things went quiet on 2m, so we sat and had a cup of tea and a chat, and on the other side of the waiting room, we could hear Chris being quite busy on the ICOM718 with the MFJ Intellituner, operating on 40m. Up to when I left, his best contacts were with Berlin and Aberdeen (I really must get the callsigns for these).

Did I take any pictures of our set ups, and anybody (even me) operating the radios? No, I didn't – too busy photographing the trains and porters and talking!

Next lesson; take pictures of the set up – especially in use.

Then it got even more exciting when the trains started moving. The problem with the station, was that people were using it as just that, a station and weren't hanging around long so we didn't have that many visitors to the shack. So, my thought is – why not take the radio to them? Next year, I'd like to have hand held and a small desk sign (a replica of the banner perhaps) and then move up and down the train, trying to make contact every so often, that would significantly raise the profile I think.

Final lesson; some times, you really do have to commit a whole day to things you enjoy doing! Here's to Railways on the Air 2017.



Design notes for 30/40W HF amplifier by Rob, M0RZF

Previously I designed and sold amplifiers based on Mitsubishi RD16HHF1 FETs. This design produces more power, and has these extended features:

- Use lower cost transistors
- Automatic band switching
- Include 160m-10m low pass filters
- SWR monitoring
- Bias control
- Use boost power supply

MOSFET Choice

All modern HF amplifiers (except >1kW) use MOSFETs and they largely determine the performance of the amplifier. A long search was undertaken for these parts, there are thousands of types on the market.

The RD70HHF1 from Mitsubishi is an obvious choice but was rejected, because -

- It is expensive, at over £30 each
- Not readily available in the UK
- Anecdotally the linearity of this part is not very good

Switching FETs can put out more power and have better linearity than the widely used RD16HHF1 devices, but have these disadvantages -

- Need a heat-sink insulator as their tab is drain (hot)
- High transconductance makes their bias point unstable
- The input and output capacitance is high

All manufacturers of MOSFETs were investigated to find a device with low transconductance and low gate capacitance. These two parameters always follow each other. Many previous amateur amplifiers used the Infineon IRF510. This has low gate capacitance but is now very old. A major point against the IRF510 is the die-case thermal resistance is high, which means poor heat dissipation.

A lot of CB radios use the OnSemi/Fairchild FQP13N10, which has low capacitance and better thermal characteristics than the IRF510. So an obvious choice.

Recent developments in FETs produced devices capable of switching 600V with relatively low capacitances. The STW13N60M2 from ST Micro

was identified as the lowest capacitance in a larger TO247 package, with good thermal characteristics.

A critical test is to compare the FQP13N10 against the STW13N60M2. The nature of switching FET data sheets means the only way to test them is in a real amplifier circuit, so a PCB was designed to accept TO247 and TO220 FETs as alternatives.

Class AB Topology

This design is a traditional class AB amplifier design. Class J and class F are too complicated for me to get into working with at the moment. Inefficiency is a big problem with class-AB. There is no major advance to be made in class AB amplifier design, and so far no alternatives to class-AB are offered on the amateur market...

Output Transformer and Supply Voltage

Many traditional amateur amplifiers use “tube and bead” link coupled transformers. These have awful insertion loss as shown in this plot. Brown trace=insertion loss 5-30MHz, green=SWR.



This will waste energy, and the metal tubes which fit closely inside ferrite beads are difficult to buy. A very awkward and poor performance design!

If the supply voltage can be controlled, the drain impedance can be set. This allows a 1:4 Gaunella type transformer which has much lower losses.

An advantage of the Guanella balun is it can be made cheaply with twisted wires and 50p ferrite beads. A transformer can be made for a pound.

Input circuit

A switching FET has high input capacitance of 500pF typically. Most of this capacitance has to be absorbed in a resistive load, which reduces the gain of the circuit. Despite the non-linear nature of the input capacitance, I found it is possible to partially compensate for it. This improves the gain above 20MHz. Further work has to be done to check for side effects of matching the non-linear gate capacitance.

After blowing a pair of FETs, I realised why many amplifiers step down the input impedance. A power level of 1W corresponds to a 20W p-p voltage. The gate-source breakdown voltage of most FETs is only 20V. So exceeding 2W will push beyond the maximum ratings. Using a 4:1 Gaunella balun at the input reduces gain but avoids popping FETs at drive level above 1W. It was found the gain is still >13dB at 14MHz.

Boost Converter

There are lots of ICs on the market for making a boost converter. I looked at having my own boost converter on the board, but the cost was over £15. A cheaper way to generate a supply voltage above 12V was found to be Chinese boost converters designed for LED driving.

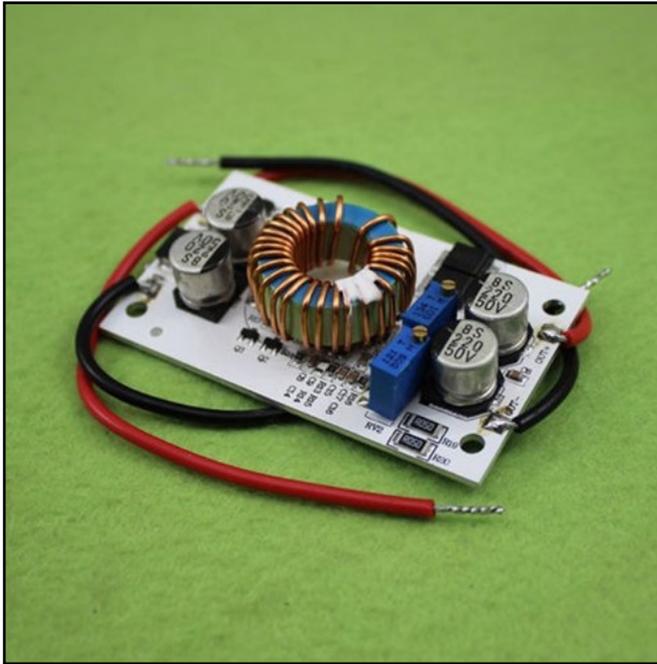
A 250W module is only £3.50. The boost module give constant supply voltage and thus drain impedance down to 8V. Ideal for portable battery operation.

Plans for designing my own boost converter were abandoned.

The boost voltage determines the output impedance of the amplifier as in this formula.

$$Z_O = 2 \frac{(V_s - V_{sat})^2}{P_{out}}$$

Where V_s = supply voltage, V_{sat} = saturation voltage. Assuming saturation voltage is low $\sim 1V$. Z_o is targeted to be 12.5Ω with 1:4 transformer at 40W. Supply voltage comes out at 17V. A picture of the Chinese boost module follows. Working towards a prototype.

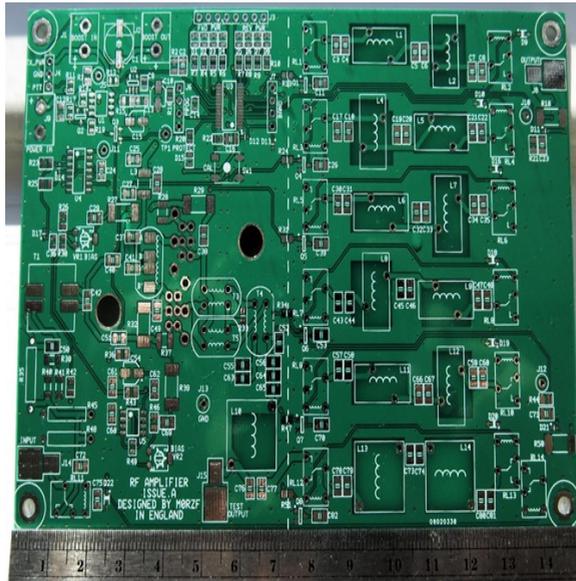


An intense week of late evening sessions produced the circuit diagram and PCB layout. Added features are:

- Micro-controller and software
- SWR metering on small LED bar-graphs
- Voltage and temperature monitoring for further circuit protection

This became quite a complex project! After all the bugs are worked out, the central concept is to get most of the parts automatically placed, so saving on assembly time. The board can be offered as a kit, with only the inductors to be wound, and a limited number of thru-hole parts to be fitted.

The PCBs are about £5 each, including delivery from China. Their quality is OK.



The amplifier section is on the left, filter to the right. If anyone wants a low-pass as a separate project, it can be split off by cutting along the dotted line!

Heatsinking Issues

Switching FETs have their tab “hot” so a thermal insulator is needed. Having the best heatsink possible is the only non-electronic way of ensuring survival of the FETs. The best heatsink insulators are 3W/m-k (watts per metre kelvin) or better. I found the 6W/m-k insulators are either only available from the USA or are very expensive. A compromise is SIL PAD-2000 from Bergquist at 3W/m-k, which is about 50p each.

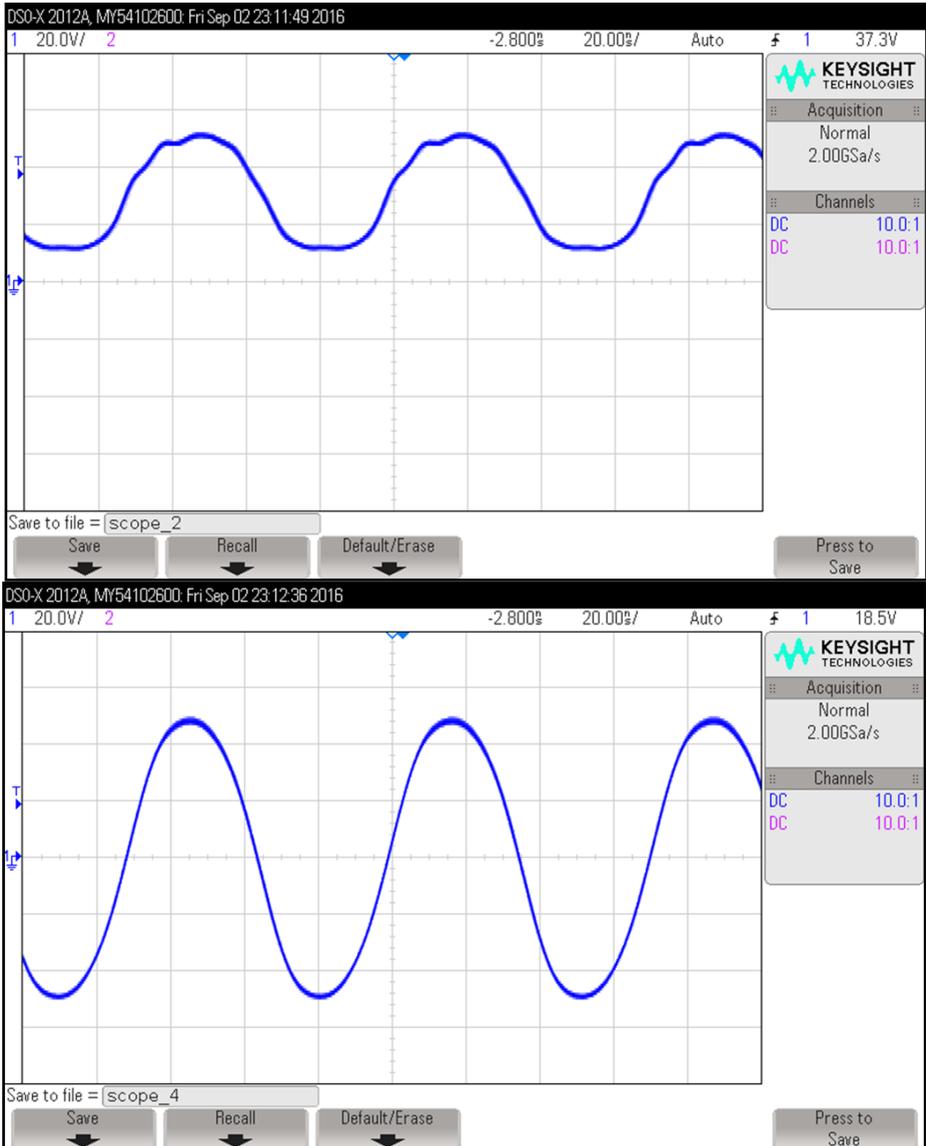
Beyond 50W dissipation heat-sinking gets more difficult with heat spreaders and finely polished surfaces needed. Here the compromise of the 40W power level can be seen as reducing costs considerably.

The truth is that switching transistors are not ideal for RF amplifiers. Getting the heat away from them pushes the limit of what can be done in a TO-220 package. A good reason why RF transistors are in special and expensive packages.

Preliminary Measurements

Using a digital oscilloscope, some waveform measurements at 14.1MHz, 25W output were taken. The first plot shows the drain waveform of Q9, using FQP13N10:

Notice the bottom is flattened off, something like in the textbook drawings.



The second plot is the test output, after the 30MHz 3-pole low pass filter. Just this limited filtering has cleaned up the shape to very close to a sine wave (no harmonics). This justifies the decision to have only a 6 pole low pass filter bank included on the PCB. During this test the amplifier was putting out 25W at 14.1MHz.

Final Results

The final amplifier produces 40W peak, but can only put out 30W CW due to overheating. Writing the software for SWR protection was particularly difficult because the FETs have a tendency to explode with no load! Eventually the problems were solved and two prototypes were made. One has the lower power RD16HHF1 FETs and the other FQP13N10 FETs.

The 600V TO-247 FETs had strange bias quirks and didn't perform any better than the FQP13N10 which is half the price. The STP14NF12 FETs from ST Micro were tried, but showed a tendency to expire which I would rather avoid.

Quite a lot of time was spent writing software for a Texas Instruments MSP430G2553 micro-controller. It is a 28 pin device and every pin is used. Two small 4 LED bar graphs are driven by the micro-controller, to show forward and reverse power.

The PCB has a strip-line type SWR bridge. This allows monitoring of high SWR condition as well as showing the forward and reverse power on the LEDs. There is a switch on the board to automatically calibrate the forward SWR power for each band. Pressing the switch in transmit stores the highest power level, then takes that level as a reference.

There are a lot of further developments which can be made on this amplifier. Perhaps I will write a further article for the club sometime!

Rob M0RZF

Sound Card Interface - by Doug G4BEQ

I claim no originality for this project as I am sure many have gone down the same road before and like myself found suitable circuits in various publications or on the internet.

Although my preferred mode of operation is Charlie Whisky I occasionally get the urge to look at other modes which, I might add, only confirm my belief that cw is preferable and more reliable regardless of the fact technology has moved forward at a rapid pace. Apart from that, operators do not go into the “waffle mode”.

When I first started to look into going digital it was obvious an interface was essential and of course interfaces such as Signal Link and various other names were available, at a price, if you wanted something off the shelf. Not the answer for a true amateur.

Were they really necessary? Surely there must be a simpler way. Why do I need a separate sound card when there was a perfectly good one in my laptop? Why do I need to use a serial port to control the PTT? My laptop did not have one. Most schematics I found on the internet seemed to require it to control the PTT. Oops! Sorry. Should have said Press to Talk.

All modern rigs have VOX so surely using the audio generated by your computer sound card into the microphone socket would key the rig. All that would be needed would be to turn on the transceiver’s VOX feature and adjust the VOX gain and VOX delay controls.

As for signals received, a connection from the phone or extension speaker socket to the computer is all that is needed.

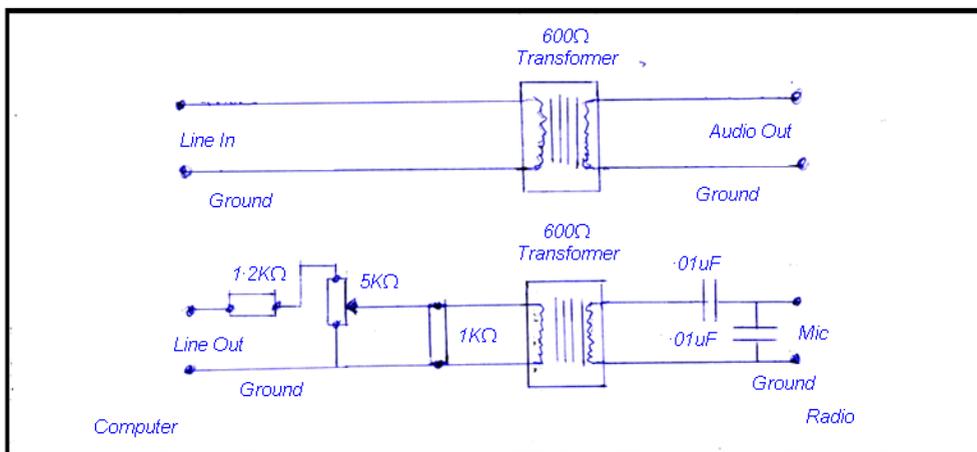
Sounds easy but will it work? First I needed a program for the computer to work digi modes and there are quite a few freeware programs available. I downloaded DigiPan which is a fairly basic program.

Making up a couple of leads I gave it a whirl and to my surprise it worked very well and a few PSK31 contacts were made.

For the uninitiated, like me, what is PSK31? Basically it is an acronym for Phase Shift Keying and the 31 is a bandwidth of 31 hertz. The DigiPan program asks you for a serial port when setting up, as I was using VOX

there was no need for one. I left the setting at none. Although this worked well, in all my reading up on interfaces there was great stress on the need to isolate the computer and transceiver to prevent different voltage potentials and the risk of ground loop noise. To prevent damage to the computer or radio it would be advisable to insert isolating transformers on the TX and RX lines. You can pick up small 1:1 (600ohm) isolating transformers quite cheap on Ebay. I paid £1 for a pair, I also obtained from the same source 5 Vero type Strip Boards for 99p, and all include postage..... From China of course; how do they do it? Something else I found out during my research was these transformers work fine up to 1200 baud operations but do not have the correct frequency response for 9600 baud operations. Possibly a piece of useless information if you are only thinking of PSK operations, as I was.

I settled for the following circuit which I built on a piece of strip board.

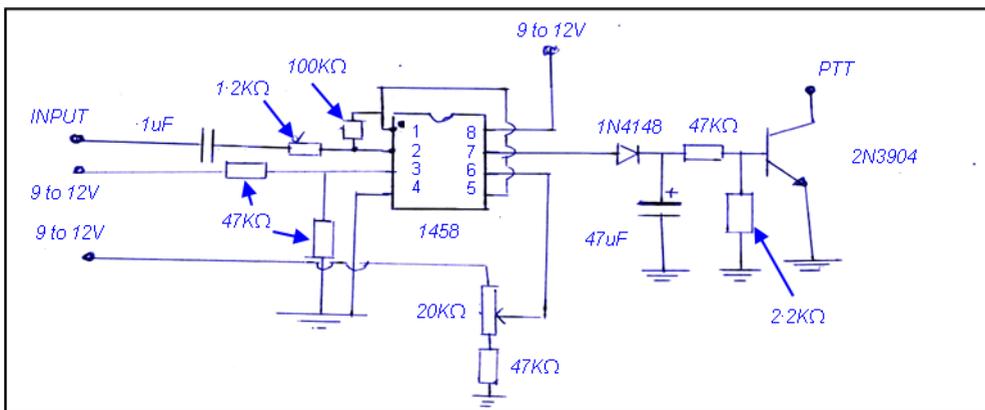


Being a very sensitive and easily offended person, the sight of a twin adapter in the phone socket so that I could use it for both my phones and my new interface, as well as having something plugged in to the mike socket, (my FT450D has never had a mike attached to it, and it is still unwrapped in the box it came in), became a source of irritation. The interface had to go. Why did I want PSK31 anyway? Not being a fast touch typist it meant using preset macros and after a few QSO's I lost interest.

My interest was rekindled at HMS Collingwood Open Day when, as part of the team operating from the RNARS HQ shack, one of the members set

up a SSTV station which seemed to go down well. So I thought I would give that a whirl from the home QTH. Not keen to go back to my previous set up I did what all good amateurs do when all else fails “Read the rig’s instruction manual”. All modern rigs of course have a digital socket at the rear of the rig but it meant resolving the problem of the PTT control. The VOX does not operate here. So back to the drawing board. In the past when rigs did not have VOX as a standard for those who wanted this facility it was usual to make up a VOX unit as an add on. None of my elderly radio manuals were of any help finding a solution to the problem so an appeal to a few of my amateur friends quickly produced a suitable circuit. The one I selected used an 8 pin dual op amp type 1458 which I obtained for the princely sum of 35p at the Andover Rally.

Later I discovered, when looking up its specifications, it was really two 741 op amps in a handy parcel. Had I looked up the spec’s earlier I would have been 35p richer as I already had a couple of 741’s in my junk box. You live and learn. If anyone has seen this circuit before you will see that some of the values of components used do vary from the original circuit but this is only because I used what resistor/capacitors I had to hand. They were near enough and the PTT operated successfully. Amateur rule 2.” Suck it and see”. If it works, leave well alone. I can see the purists amongst you going red in the face and blood pressure rising at that statement.



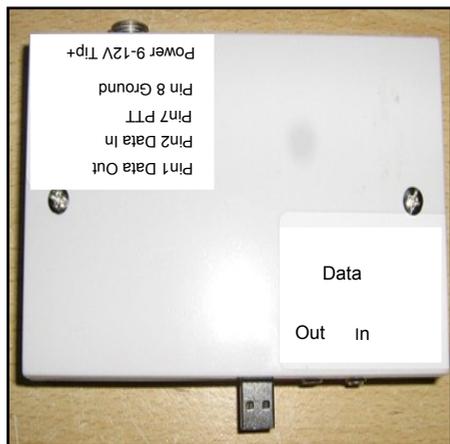
I made several QSO’s using the freeware program MMSSTV and received favourable reports on pictures sent. Flushed with success I decided, having noted that I could purchase an USB external sound card adapter for £1:97, including post and packing, again from China, I could go the whole hog and produce a USB Sound Card Interface.

On receipt of the unit, which took about 2 weeks, I first plugged it into the computer to check it was working correctly and then with a fine knife split the case open to reveal its contents. It was then a simple matter to attach wires to the input and output sockets and feed them into Line In and Line Out sockets already built into the unit. This meant I had the choice of using either the computer sound card or using it as an independent unit. To also give it flexibility I fed all wires going to the computer into a socket at the back of the unit so that should I change or use another rig I could make up a suitable lead without having to open up the unit to swop leads.

The photos attached show the completed unit. In true amateur style and using the KISS principle I balked at the idea of paying out for a die-cast box so managed to scrounge a external twin socket box from a local electrician who was working close by, which I lined with bacon foil to complete the project, albeit it cost me a mug of coffee and chocco biscuit.

So for around £5 I had a unit that worked well and did all I required of it as opposed to paying some £80 for an all-singing off the shelf unit.

Having satisfied my curiosity and urge to try digital communication, the unit is now back in the junk box and I am back to my preferred mode of operation, but it was an interesting and absorbing time and kept me out of mischief for a short period. Having proudly informed one and all that showed interest and assisted me with this project I was quickly brought down to earth when one fellow amateur asked had I visited the G4ILO site on the Internet. He had gone down that road long before me and produced a far tidier solution than the one I came up with. So if you are tempted to build an interface I suggest you look him up first.



The Travails of a Founder – Part 3 - by Bill M6BBB

OK, So, I have been a radio amateur for 6 months now and I don't even have a decent shack set up. What kind of amateur does that make me? I'm not sure.

I have plans, some might say grandiose – a shed at the bottom of the garden, with an 8 foot earthing pole, a 32 amp ring main and a good MLS or Wimo end fed antenna in addition to my white stick. I've talked to my wife, Elayne about this. She's agreed that I can go ahead and do it. Trouble was, she was laughing as she said yes.

Antennas are terrifying – RF can leak from the ends of them and burn wood. There's no way I'm having a loft antenna – it'll all have to be out in the open. My temporary “shack” will be the spare bedroom 2nd floor, front of house – nowhere to put an earthing pole. Do I need one if I am just having one radio and a Comet GP-15N white stick. I've decided that for the time being I will focus on 2m and 70cms. I'm not ready for HF yet, although I may dabble with 6 & 10m as my FT8900R is capable of doing them, but obviously, I will need the antenna for them, and like I say – antennas are terrifying. But I will do this. I will also do the (proper) shack. Only one problem, I do not do DIY, never have. Don't know why – I think my Dad was probably one of the most practical people around – it didn't help that he left us when I was six – I was then brought up by Mum and my three sisters. DIY is terrifying!

In the meantime, I have my Baofeng UV-5R. I don't know what you think of them, but for the price, they are a brilliant piece of kit. And, thank heaven for GB3IW, that has introduced me to quite a lot of hams in the Meon Valley area and the IOW – I am a regular early morning walker and am getting a lot of use out of the 5R in the “early morning Breakfast Club” a group of amateurs who are either commuting or acting as “eye in the sky” (Peter, 2E1PHW on the IOW) providing personalised traffic reports to Dave G7EPE on his daily commute from the New Forest to Portchester, Jean-Paul M6UKG joins in, as well as hearing M6PIQ Rob occasionally. It's nice to have contact with club members, and I am hoping that once I get my Comet up, I may be able to access the net – also, Sean M0XAN – do you ever hear us – it is quite early between 0600 and 0700 so you may not? I know that some club M6 members are eager for the intermediate course to start, and obviously I hope it does as well, but I am quite happy as an M6 for the time being and am quite content to go with the flow.

I am hoping to make the Kempton Rally in April; it'll be the first one I've been to so should be interesting, and as it is just around the corner from my sister-in-law, I've agreed that Elayne and I should have a day out, and she can go visiting.

Between Christmas and New Year, I did another RAYNET event – The Horndean Pub-2-Pub. A thoroughly enjoyable, and well organised day out – good tail-enders Alex 2E1CNM for the run (not actually running) and Clive G4EFB tailing the walkers with his dog Misty (actually walking) both made for a very smooth event shutdown. My name is in for the Stubbington run on the 15th of January, looking forward to that and I have also been warned about the Winter Meon Plod – unfortunately I can't make that one as I have a commitment I can't break – honestly Guys.

Until next time then, so long and thanks for all the fun.

Bill

A plea from the Editor :- I urgently need more articles please.
The information on the formats required and the deadline
for submitting them the next journal is always on page 3 :-)

" I'm Selfish, impatient and a little insecure.
I make mistakes, I am out of control and at
times hard to handle.

But if you can't handle me at my worst, then
you sure as hell don't deserve me at my best."

- Marilyn Monroe

For Lexophiles (lovers of words)

1. The short fortune teller who escaped from prison : a small medium at large.
2. Those who get too big for their britches will be exposed in the end.
3. When you've seen one shopping centre, you've seen a mall.
4. If you jump off a Paris bridge, you are in Seine.
5. When she saw her first strands of grey hair, she thought she'd dye.
6. Bakers trade bread recipes on a knead to know basis.
7. Santa's helpers are subordinate clauses.
8. Acupuncture: a jab well done.
9. Marathon runners with bad shoes suffer the agony of de feet.
10. You are stuck with your debt if you can't budge it.
11. Local Area Network in Australia. The LAN down under.
12. He broke into song because he couldn't find the key.
13. A calendar's days are numbered.
14. A lot of money is tainted: 'Taint yours and 'taint mine.
15. A boiled egg is hard to beat.

Originally by G4IRN and reproduced with permission of the Chiltern DX Club (CDXC) Digest editor.

How to Govern a Woman Electrically.

If she wants her allowance doubled – **Resister**

If she talks too long – **Interrupter**

If she is something of a devil – **Transformer**

If she picks your pocket – **Detector**

If she meets you half way – **Receiver**

If she is too excitable – **Controller**

If she goes up in the air – **Condenser**

If she is hungry – **Feeder**

If she is a poor cook – **Discharger**

If she sings out of harmony – **Tuner**

If she is wrong – **Rectifier**

If she indulges too much in gossip – **Regulator**

If she gets upset – **Reverser**

If she is too thin – **Amplifier**

If she wants to go home to mother – **Transmitter**

If she doesn't know the way – **Director**

If she doesn't fit in with the neighbours – **Integrator**

If she walks unsteadily – **Semiconductor**

CHRISTMAS 2016 WORDSEARCH ANSWERS

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19		
			R			N	A	M	W	O	N	S		Y		N			1	
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E		R	E	E	D	N	I	E	R	S	R	E	T	S	I	S				18

Helpful Winter Car Hints

Here are some helpful hints that could make your winters easier to deal with ...

Keep your headlights clear with car wax! Just wipe ordinary car wax on your headlights. It contains special water repellents that will prevent that messy mixture from accumulating on your lights - lasts 6 weeks.

Squeak & Streak-proof your wipers.... Wipe the wipers with a cloth saturated with rubbing alcohol or ammonia. This one trick can make badly streaking and squeaking wipers change to near perfect silence & clarity.

Ice-proof your windows with vinegar!.... Frost on its way? Just fill a spray bottle with three parts vinegar to one part water and squirt it on all your windows at night. In the morning, they'll be clear of icy mess. Vinegar contains acetic acid, which raises the melting point of water---preventing water from freezing!

Prevent car doors from freezing shut with cooking spray!..... Squirt cooking oil on the rubber seals around car doors and rub it in with a paper towel. The cooking oil prevents water from melting into the rubber.

Fog-proof your windshield with shaving cream!..... Spray some shaving cream on the inside of your windshield & wipe it off with paper towels. Shaving cream has many of the same ingredients found in commercial defoggers.

De-ice your lock in seconds with hand sanitizer!..... Just put some hand sanitizer gel on the key and the lock, and the problems solved!

Hope these hints help even just one time.

Club Clothing

Sweatshirts Polo-Shirts T-Shirts Fleeces

Sizes: Small = 36 - 38" - Medium = 38 - 40" - Large = 40 - 42" - XL = 42 - 44"

Available with club logo only or logo, name & callsign

Cap - One Size only: with adjustable strap - Stitching in Yellow

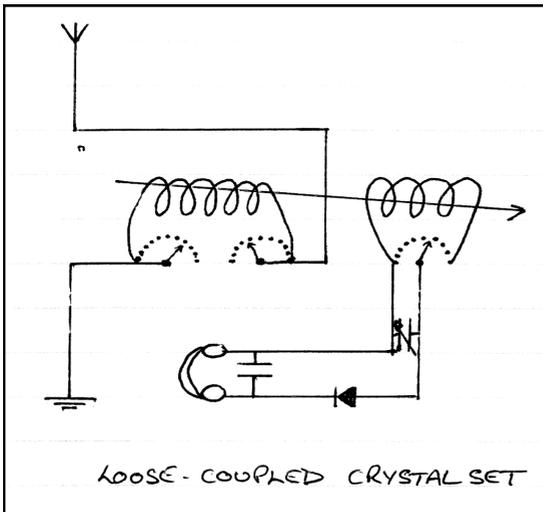
Available with callsign only or callsign and/or name

Some items available in various colours, see **Stuart GOFYX** for details

Crystal Radio Receiver.

By Alan M6ADG / 2E0KIT after Winning the Novice Constructors Award in 2009.

Reading about various crystals sets inspired me to have a go and make one. The one I selected was based on an experimenters set, a design that was introduced in the 1920's which consisted of a loose-coupled set with two types of detector and a variable capacitor, (or should I say condenser as we are talking 1920's?) that is switchable between the various tappings to aid selectivity. A potentiometer was also added to the circuit. A cat's whisker and Perikon detectors are something I would like to make to go with the set if and when I can obtain them, in the mean time I am using an OA91 diode which seems to work well.



The loose-coupled set consists of two inductor coils allowing the secondary, which gets its induction from the primary, to complete the separate circuit that leads to the phones

The first part of the construction was to make the coils. In order to do this I found a suitable cardboard former and wound 20 turns of 28swg wire tapped every 2 turns. The secondary coil also consisted of a cardboard tube, which I made up, that fitted closely inside the first coil without actually touching it. It had to slide in and out for tuning and was wound with 36swg and similarly tapped for fine tuning.

Working with this fine gauge of wire takes care and patience as not only are the tappings very fiddly but care must be taken not to part the wire

Next was the front panel. I used a sheet of paxolin and having decided on size and what holes were to be made and where I drilled and cut to the marks made. I did however make the mistake of putting the stubs in the panel before fitting the switches; this made things difficult when lining up the components as I had not taken into account the arc/sweep of the switches. The switches I made using brass and the spring contacts housings were constructed by squashing a brass tube in the vice and later cut to size, drilled and bent into shape. Whilst doing this rather fiddly job my mind went back to the original constructor working with what was to hand all those years ago. I did cut corners a little by using modern knobs and not resorting to the lathe to make them up, I did however take the trouble to find ones that looked the part and modified them to give an authentic look.

A small square of paxolin was cut and used at the back of the set to fit the brass rod which was tapped and drilled for the aerial and earth contacts.

News of club members

We welcome new member Alan Waller SWL from Gosport. Good to know that you will be starting the Foundation Course, and we wish you good luck.

Thank you to Julia GØIUUY for organising the Club Xmas meal on December 9th. A good time was had by all.

Thank you to John MØHTE and his friends for entertaining us musically at the December 16th club meeting. Also, a thank you to Julia GØIUUY and Christine M6UBI for running a Christmas quiz on the same evening. Well done to Neil M6LPI who won the quiz, and received a (triangular!) chocolate bar as his prize.

Diary

Friday January 20th Annual Quiz evening. Trophy to the winning team to retain for a year. Other clubs are being invited to take part.
Friday February 3rd Natter night/social evening
Friday February 17th History of Portsmouth Part 2, by Andrew Negus
Friday March 3rd Natter night/social evening
Friday March 17th HCC Emergency Planning by Ian Hoult

This 'n' that

The 2017 series of RSGB Club Championship monthly contests starts in February and finishes in July. There is a CW, SSB and Data (PSK/RTTY) contest each month. They are on 80m, from 2000-2130 clock time. February dates are SSB on the 6th, with Data on the 15th and CW on the 23rd. March dates are Data on the 6th, CW on the 15th, and SSB on the 23rd. This is a club event so please try to take part on behalf of HDARC. If in doubt, please contact me (Stuart). The full rules for these contests are at <http://www.rsgbcc.org/hf/rules/2017/r80mcc.shtml> .

In the RSGB AFS HF CW contest on January 8th, there were three entrants for the HDARC team. Mick G3LIK claims 170 points, Stuart GØFYX 115 points, and John MØHTE 48. So a total score of 333 points. Conditions on 40m were such that no G stations could be heard, and only contacts with GM (Scotland) and further afield could be made. 80m was its usual lively state with most of the contacts made in the contest on that band. The SSB leg was on January 14th. I will report the results of that in the next issue of the club journal.

If you have any equipment for sale, or any questions about any aspect of our hobby, let me know and I will put it out in the weekly e-mail for members.

Horndean & District A.R.C Information.



Club Call signs *G4FBS (Held by MØKTT); G6RST (Held by G4WQZ)*

Club Website <http://www.hdarc.co.uk>
(Maintained By Neil M6LPI)

Club Yahoo Group *Administrator is Stuart GØFYX*

Club Meetings *Held at Deverell Hall, 84 London Road, Purbrook,
Waterlooville PO7 5JU, on the 1st and
3rd Friday of each month. Commencing at 1900.*

Club Nets *All times are local and frequencies plus/minus QRM.*

Sunday *0900 CW until about 0930 then SSB on 1950 kHz.
Net controller:- Stuart GØFYX*

*2000 FM 433.450 MHz
Net controller:- John G4WQZ*

Monday *1930 SSB 1950kHz
Net controller:- Stuart GØFYX*

Wednesday *1930 FM 145.375 MHz
Net controller:- John G4WQZ*

Club Membership

Joining fee £2 . Annual fee £26. Those aged 10-18 pay half this rate, and under 10's have free junior membership. For Europe and rest of the World fees please contact the Membership Secretary. All annual fees payable on November 1st. If fees not paid by the following January 31st, membership is ended.

Club Awards

Full details from Stuart GØFYX (details on committee page).



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N type connector (part: 7367).....£6.50

BNC type connector (part: 7379).....£6.50

Aircell 7 per metre.....£1.99 price per 102m drum.....£179

PL259 connector (part: 7390).....£2.65

N type connector (part: 7392).....£5.25

BNC type connector (part: 7391).....£5.25

Aircell 5 per metre.....£1.39 price per 102m drum.....£125

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