



SURREY RADIO CONTACT CLUB

80th Anniversary Year - Founded in 1935

MARCH 2015 — No: 871

CLUB NET 1.905 MHz Sunday 9:30am
 CLUB NET 145.35 MHz +/- 25kHz Friday 9.00pm

CLUB Internet WEB Site: <http://www.g3src.org.uk>

Hon. Sec. John Kennedy G3MCX
 22 Croham Park Avenue
 SOUTH CROYDON
 Surrey CR2 7HH
 020-8688 3322
 E-Mail: secretary@g3src.org.uk

MONTHLY MEETINGS 1ST AND 3RD MONDAYS 7.30 FOR 7.45pm

Meetings at Trinity School, Shirley Park, Croydon CR9 7AT

1st MEETING: Monday 2 March. Spring Surplus Equipment Sale.
 Featuring our favourite auctioneer Gareth G4XAT.

2nd MEETING: Monday 16 March. Fix-it, Move-it-On and Informal Chat.
 Led by John G8MNY.

SRCC Committee 2014/15

Chairman & Club Meetings	G4FDN Pat McGuinness	020 8643 0491
Vice-Chairman	G3ENG John Mathews	020 8652 6604
Secretary & Communications	G3MCX John Kennedy	020 8688 3322
Treasurer & Membership Records	G4FFY Ray Howells	01732 357474
Contest Co-ordinator, Newsletter Editor, Publicity	G8IYS John Simkins	020 8657 0454
Web Master	G4FYF Steve Jones	020 8406 0919
Chief Fund-raiser, Liaison, Recycling, Equipment	G4DDY Maurice Fagg	020 8669 1480
Committee Member	M0LEP Rick Hewett	01689 851472

Dear Members & Friends,

Hello and welcome to the March 2015 issue of the Newsletter, edited by John G8IYS. About a day after dispatching the February Newsletter, the Wi-Fi card in my laptop died. I could have got around that by means of a physical Ethernet connection to my Home Hub, but would have been tempting fate with my 3 year old grandson around. I do have another laptop – running Microsoft Windows 7 Pro with Word 9, whilst the ailing old one ran Linux Ubuntu OS, with Open Document Text. In an endeavour to modernise, I decided to make the transition. In any case, the newer one does not crash regularly like the old one. Transferring file templates offers a bit of a challenge since emulators are usually pretty good, but do not always deliver identical formatting. I know, because they haven't! It will actually be a return to Windows, since the original was Ray G4FFY's Win97 template,

dated 2003. Setting up for this Newsletter has been an interesting experience.

Another advantage of running in a Windows environment is that I can use the CAT facility on a couple of rigs for the first time. This will simplify rig management by allowing me to input software-based data and also employ PC-monitor display and control, rather than use the multiple button-pushes of menu systems.

By the way: I thought Mister Smile had been around the IYS QTH for a disturbingly long time. We woke up to a cold house on Friday 20 - not just because of the snowfall overnight. The boiler had gone out! Domestic attempts did not effect re-ignition and no competent person proved to be available to fix it. It was mended (failed gas control valve) on Tues 24. Various electrical heaters were employed to raise the temperature of the house to survival level, but hot water was

available only in kettle and saucepan volumes. Just in time for the arrival of daughter in law Anna's Mum for the weekend! Is this called anti-serendipity?

Special Note – 2015 AGM.

Please note that accompanying this Newsletter is formal notice to members of the 2015 SRCC Annual General Meeting, which will be held on 13 April (second Monday), together with a slip for nomination to the Committee or the post of Hon Sec. An Agenda & Minutes of the 2014 AGM will accompany the April issue of the Newsletter.

THIS MONTH'S MEETINGS

First Meeting: Monday 2 March Spring Surplus Equipment Sale.

Just as for the Autumn Sale, the format of this event will differ somewhat from that of the normal run of SRCC Surplus Equipment Sales.

Members will know that the SRCC web-based sale of SK and other items has just ended. All successful bidders have been advised directly. Some time and a suitable area of the meeting room will be put aside for consequent collection of items and settling of accounts in cash. More on this is in the Chairman's blog.

For the evening sale, business will be conducted in the following order:

Members having items for sale will be up first. Please have each item marked with the current owner's callsign or other identifier and what it is.

Next to be taken will be some items remaining unsold from the SRCC web-based sale and stocked donations.

Now for some Rules:

It is very helpful for sellers to be in the meeting room by 7:30pm and to bring no boxes of "rubbish" please.

All members and visitors whom they have brought along must sign the attendance book and all must be conversant with the rules.

Note that the club accepts no responsibility for goods sold at this private sale, and the purchasers buy on the understanding that they are capable of determining the usability, fitness for purpose and SAFETY of goods obtained.

The following also apply:

1. Only SRCC members are permitted to sell.
2. All items not donated must be marked with the name or call-sign of the vendor, a brief description and details of any reserve price.

3. Bids shall start at 50p and increment in steps of 50p up to £10 – unless determined otherwise by the auctioneer.

4. Visitors are welcome but must be introduced by a member who is responsible for informing them of the rules.

5. All members and VISITORS must sign the attendance book.

6. Sellers will not be paid until all buyers have settled up.

7. The club levies 15% on all transactions. Please try and arrive early to allow start by 7.45pm.

8. Please do not obstruct the doorway. This will facilitate escape in case of fire.

9. The school premises are NO-SMOKING

Second Meeting: Monday 16 March. Chat and Fix-it Evening.

As usual, this will be a mix of repair activity, technical/operating advice and informal chat.

LAST MONTH'S MEETINGS by Hon Sec John G3MCX

Monday 2 February 2015. Chat and Fix-it led by John G8MNY

Even with two consecutive Chat and Fix-it Meetings, this one was still well attended. Apart from John's fix-it activities, much else is going on with small groups in deep discussion. Any members who have not been to one of these meetings recently should give it a try. They are worth a visit. More details of this meeting can be found in the Chairman's blog.

Monday 16 February 2015. Understanding and using the FUNCube 1 and Saudi-Sat Amateur Radio Satellites by Mike Parkin G0JMI of Alton Antenna Arrays.

While we were waiting for Mike to arrive and set up his presentation, our Chairman Pat McGuinness made several announcements:

The G2HBA SK Sale was in progress and would finish on Friday 20th. Items won would be available for collection on Monday 2nd. March at our next meeting which would also be a Surplus Equipment Sale.

All Members should be aware of the SRCC club policy regarding donations of equipment.

Arrangements are being made for the Club's 80th Anniversary Celebration to be held on Sunday 12 July. The SRCC Annual General Meeting will be on Monday 13 April, not the first Monday of the month due to the Easter break. The May meetings are on two succeeding Mondays: 12 and 19 - also due to Bank Holidays.

Pat then continued with a welcome back to Mike Parkin G0JMI to give us a presentation on the FUNcube 1 and Saudi-Sat Amateur Radio Satellites. Mike responded by thanking Pat for inviting him again. He also apologised for being late, having been held up in traffic. He went on to say that traffic on the M25 appears to go backwards when it rains. The FUNcube should pass directly overhead at 9.19pm. but it runs slower when it is raining!!

Mike began by telling us that he was first licensed in 1977 as G8NDJ and became G0JMI in 1988. Trying to write up his presentation would not do it justice. The whole presentation can be found on the Club Website www.g3src.org.uk under 'Meeting Downloads'. Mike kindly made this available to the SRCC for the benefit of all members. You will find details of dates, times, frequencies, the workings of both satellites, coloured pictures, maps and diagrams. These will be far more interesting than anything that I can summarise.

The presentation lasted about forty minutes and with a late start and time for tea/coffee and biscuits and questions it was time for a live demonstration. Many of us ventured out into the rain to listen for FUNcube 1 as it passed over just before 9.20. Mike said there was a chance about five minutes either side of the time when it could be heard. We were aware that the rain might lessen our chances but towards the end of the window we heard a German station's signal coming back on 145.950 MHz USB. This concluded a very interesting evening and Pat thanked Mike for coming over again and making the presentation. For those members who have no access to the Website, a black and white printed copy of the presentation can be provided.

Junior and Junior-Junior Operator's Slot

You do not have to be a member to feature in these pages. It is sufficient to be related to one and might in the fullness of time become one of

our number. Thus, courtesy of Steve G4FYF, our Web Master, I am delighted to be able to publish a pic of his granddaughter Zoie testing some capacitors. Steve says: It was more about reading small numbers, effect of switches and buttons (other than mobile phone and TV remote!) and a bit of manual dexterity with crock clips. Gareth G4XAT suggested that the next step was to learn the resistor colour code – a skill for life!



Zoie (aged 4) busy at the ESR Meter

Chairman's Blog by Pat G4FDN



On things electrical: In my last blog, I mentioned the new Amendment No. 3 to BS 7671:2008 (IET Wiring Regulations) had just been published. This amendment comes into effect on 1 July and includes a new regulation

requiring consumer units and similar switchgear assemblies in domestic premises to have a non-combustible enclosure. I highlight this so that any member who is having a consumer unit replaced between now and the implementation date to seriously consider insisting that the consumer unit supplied meets Amendment No 3 standards.

The actual wording of the regulation is as follows:

421.1.201 Within domestic (household) premises, consumer units and similar switchgear assemblies shall comply with BS EN 61439-3 and shall:

- (i) have their enclosure manufactured from non-combustible material, or
- (ii) be enclosed in a cabinet or enclosure constructed of non-combustible material and complying with Regulation 132.12.

NOTE 1: Ferrous metal, e.g. steel, is deemed to be an example of a non-combustible material.

NOTE 2: The implementation date for this regulation is the **1st January 2016**, but does not preclude compliance with the regulation prior to that date.

Note that the implementation date of the respective regulation is later than the effective date of the Amendment No. 3 itself. This is apparently to allow sufficient time for stocks of non-compliant consumer units to be sold and installed. NB: the regulation also only applies to new installations, or changes to existing installations where the consumer unit needs to be changed.

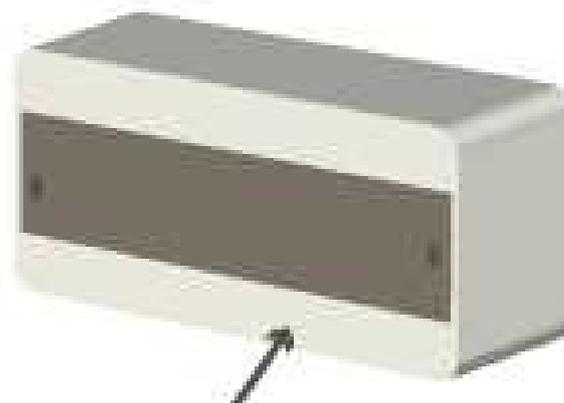
Why the new regulation? Apparently, a main factor has been data from the London Fire Brigade showing increases in domestic household fires with the consumer unit as the cause. Here is the data:

Number of fires

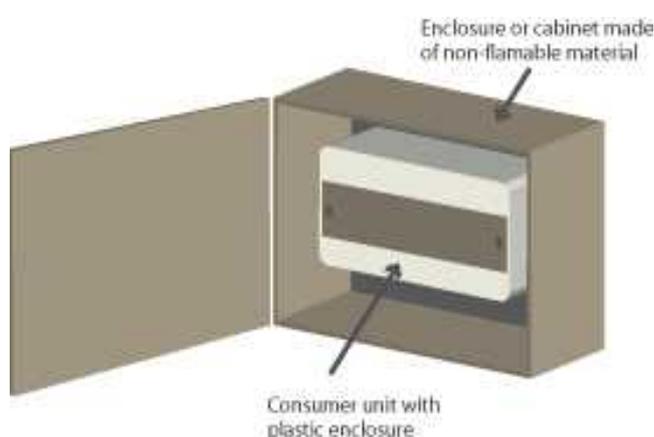
- 2005/06 - 27
- 2006/07 - 28
- 2007/08 - 33
- 2008/09 - 21
- 2009/10 - 54
- 2010/11 - 73
- 2011/12 - 71
- 2012/13 - 220
- 2013/14 - 253

from <http://www.london-fire.gov.uk/...airs.asp#.VCxE-PIdUm1>

The diagrams that follow illustrate the two ways that the regulation can be complied with:



Consumer unit with cabinet made of non-flammable material



(Diagrams courtesy and © IET)

Still on things electrical, and how to waste half an hour: I wonder how many of you would agree with my assertion that problems with fault finding are less likely to be caused by a lack of sufficient knowledge but more likely to be caused by incorrect assumptions? Let me illustrate:

I recently fitted a PIR switched external light to the front of my workshop at the end of our back garden to illuminate the path leading to it when walking towards it. It replaced an existing non-PIR light. On switching on, after fitting, I tested it but it did not work. I double checked the wiring and checked the voltages reaching the light, and all was as expected. I was just about to take the light fitting down when I noticed the light did not have the bulbs fitted! I had wrongly assumed they were already in the light fitting. Needless to say, the light worked perfectly with the bulb inserted.

A delayed welcome to new members Norman Davis of Camberwell, and David Levett M6EUH of South Norwood. Norman joined in November and David in January. We don't yet have a picture of Norman but the picture of David below was taken at a recent Fix-it meeting.



SRCC SK sale: Those who participated in the recent email based auction will have been notified of the outcome and successful winners will be able to pick up their items at the start of Monday's surplus equipment sale, unless they have requested and agreed alternative arrangements with our Hon. Sec. John G3MCX. Any member who didn't take part in the bidding, but wishes to see the auction results should ask our Hon. Sec. John G3MCX - preferably by email.

Forthcoming Surplus Equipment Sale 2nd March: It will be helpful to our Equipment Officer, Maurice G4DDY, for any member intending to sell or donate items, if they could email in advance secretary@g3src.org.uk indicating where possible the quantity and type of items. This will allow Maurice to better estimate how many stocked club items to bring along for disposal. As always, sale of member's items will be offered first.

Fix-it meeting 2nd February: This was a well attended event, and one at which John G8MNY kindly tested the Ameritron AL-811 and Heathkit SB-200 HF linear amplifiers that were donated to

the club by the family of late member G2HBA. Both linear amplifiers were found to be in good working order. The Ameritron, along with a number of other items as advised in the Sale Catalogue, will be retained for Club use.



John G8MNY



Ameritron AL-811 and Heathkit SB-200 Linear Amplifiers



John G3ENG's Chinese LCR Tester

Also on demonstration, and pictured above, was a Chinese LCR tester owned by John G3ENG. It seems similar in concept to the Peak Atlas testers and auto-detects the type of component connected to it.

80th Anniversary: It is hoped that ticket prices (subsidised) will be announced in next month's newsletter along with the details of the fare to be offered. As mentioned last month, this will be on Sunday 12th July 2015 at the QTH of John G3MCX and XYL Sandra, in South Croydon. Please reserve this date in your diary.

Sign off: I hope to see you all next Monday. Please bring plenty of cash or items for sale or donation. This is one of the main fund raising events for the club, so please support it in that vein. 73. Pat G4FDN.

Reminder of 2015 RSGB Affiliated Societies (AFS) events.

EVENT	DATE	BAND	MODE	TIME UTC
HF AFS (CW)	Sun 11 Jan	80m	CW only	1400 - 1800
HF AFS (SSB)	Sat 17 Jan	80m/40m	SSB only	1400 - 1800
432 MHz AFS	Sun 8 Feb	70cm	Mixed mainly SSB	0900 - 1300
50MHz AFS	Sun 18 Oct	6m	Mixed mainly SSB	0900 - 1300
Club Calls (160m AFS)	Sat 14 Nov	160m	SSB only	2000 - 2300
144 MHz AFS	Sun 6 Dec	2m	Mixed mainly SSB	1000 - 1600

As I write this, the results for HF AFS (CW) are to be announced imminently. The SRCC team comprised John G3MCX, Quin G3WRR, operating G3SRC, and Alun G4WGE. All I know about HF AFS is that G3SRC was on the air – operated by Quin G3WRR and that the change this year to a two-band event has proved to be welcome and successful. Unfortunately, given my diversion onto personal medical matters, I was unable to set up my 432 MHz station and, indeed chase up others, to take part in the 432 MHz AFS event. It is worth mentioning that most of the half dozen-plus clubs local to SRCC each manage to put around 10 stations on the air in many of these events. Quin G3WRR has proved

to be a very resourceful manager of HF events. Clearly I shall have to give this more attention from the VHF/UHF and Overall point of view.

Radio Fairs Rally at Kempton Park

Make sure that you have in your diary the correct date for this event. It will be held on Sunday 19 April, not as previously announced in some other journals. More info will be in the April edition of the Newsletter.

G4FYF – Project 2015.

Some members may remember the BITX20, 20 meter SSB QRP transceiver, I built largely from reclaimed parts (see Newsletters Dec 09 – Aug 10) [<http://www.phonestack.com/farhan/>]. For such a simple design - about 5 Watts into a wire dipole, its performance was remarkable. Since then it has undergone various modifications and is now looking very untidy. Added to which, I've lost the plot due to not making sufficient notes about what I've done along the way!

So I decided to upgrade afresh. Based on a design by G6LBQ, this uses the same BITX philosophy but with additional features; 11 MHz 6 pole filter, USB & LSB, MC1350 2nd IF with adjustable gain, adjustable gain mic amp, adjustable AGC and S meter, 15 W linear using parallel proper RF FETs (RD06HHF1). I will also use a modified version of the club project DDS VFO with auto switching of band and low pass filters and sideband appropriate for the selected band. CW provision will also be included.

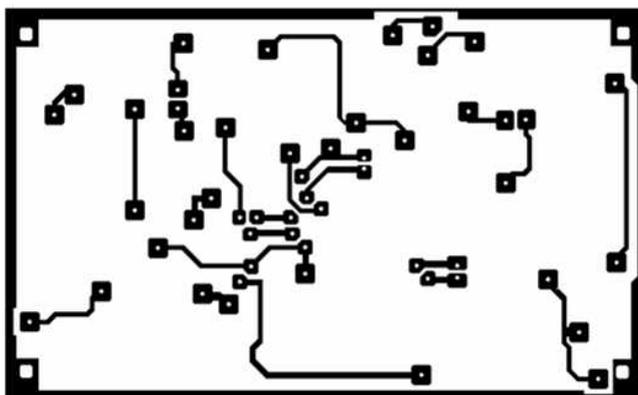
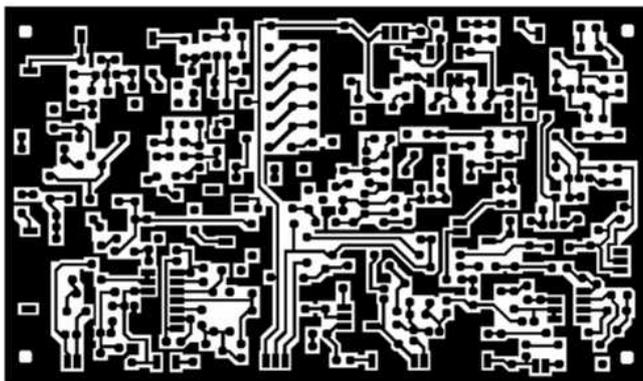
This has taken me into areas of construction and calculations not ventured into before!

PCB

This will predominately be built using surface mount components. In liaison with Dave, WB4CHK, a PCB (21 x 13 cm) was produced using the toner transfer method with hot domestic iron and glossy photo paper. By the way, I found that glossy photo paper from the 99p Store (2 x packs of 10 A4 sheets for.....99p) has worked the best!

Components are mounted on the upper surface and wired vias connect to the bottom surface. This is my first venture into double sided PCB etching! Top layer etched then 1mm holes drilled at some via points into which were placed drawing pins. These 'reference points' were used

to position the printed pattern for the bottom surface. During etching with ferric chloride, sides - not to be etched - were covered with several, overlapping, layers of gaffa tape.



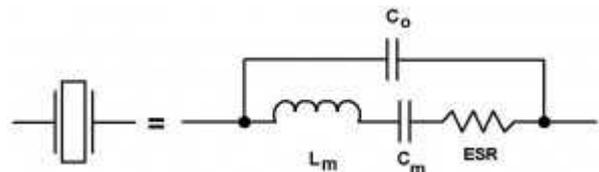
Board was then cleaned, the rest of via holes drilled and soldered using wire. The top surface was then populated with component parts.

Ladder Filter and USB/LSB Oscillator Crystal Matching

I found this quite interesting (whatever floats your boat!) and required some research. Again, uncharted territory for me!

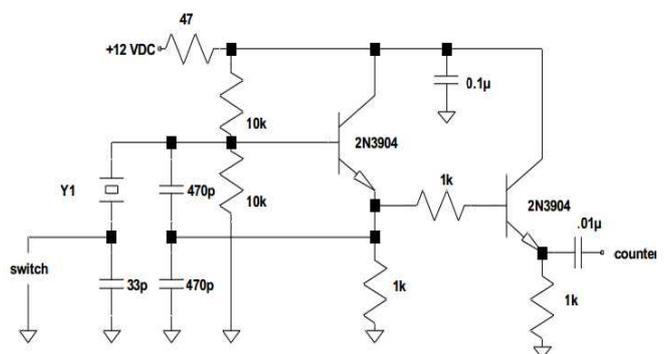
I got a batch of 20 11.058 MHz crystals for £3 from Ebay. These are manufactured in thousands for various timebase applications and I guess these fail tolerance tests so their absolute resonant frequency cannot be guaranteed. I needed 6 matching crystals for the ladder filter and two for the sideband oscillators. Those for the ladder should match within 50 Hz and 100 Hz for oscillator crystals.

To determine this, three parameters need to be measured; L_m – motional inductance, C_m – motional capacitance, and C_o – parallel capacitance of the crystal holder.



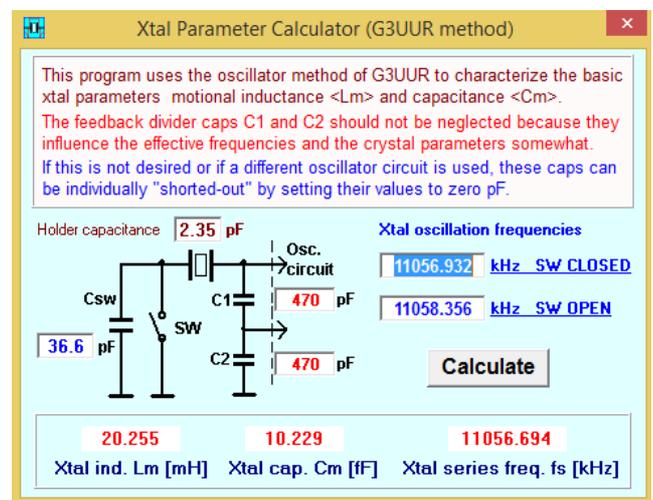
This can be achieved using the ‘G3UUR method’. Here, the test crystal is inserted in a simple Colpitts oscillator with a frequency counter connected to the output. A low value capacitor is then switched in series with the crystal and the two resulting frequencies recorded.

Shifted frequency G3UUR method



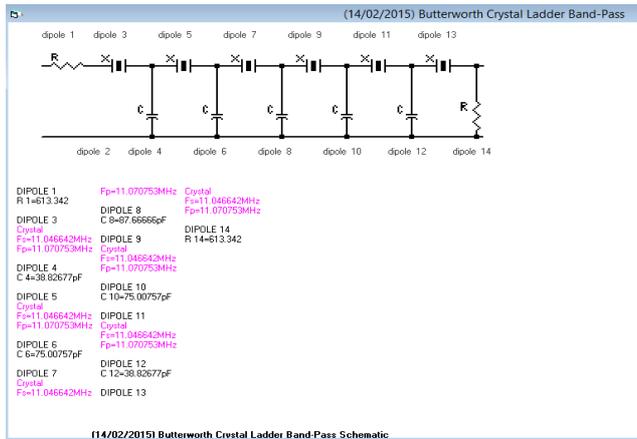
Oscillator used for G3UUR crystal parameter measurement method
Frequencies recorded with switch open and closed are used to calculate L_m and C_m

I measured C_o with my capacitance meter. C switched in and out frequencies and C_o are plugged into the G3UUR equation (details of which I won't bore you with) to calculate C_m and L_m . To minimise mental gymnastics, I discovered a program by DJ6EV (Dishal ladder filter calculator – free download) that has a module to do this for you.



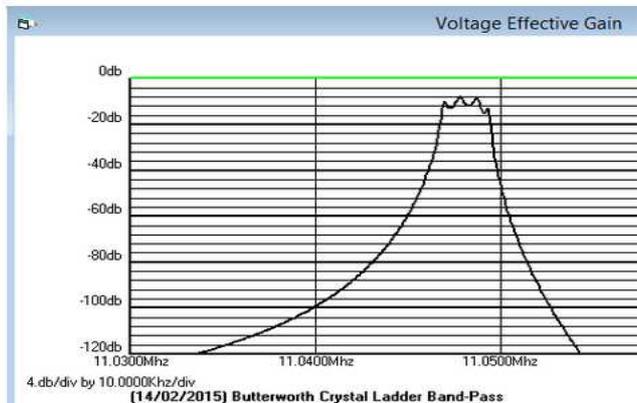
Do this for each crystal and I could select crystals from the batch that meet match requirements. Using AADE Filter Design software (free

download), the average values of Cm, Co, Lm are entered and the required filter parallel capacitor values calculated.

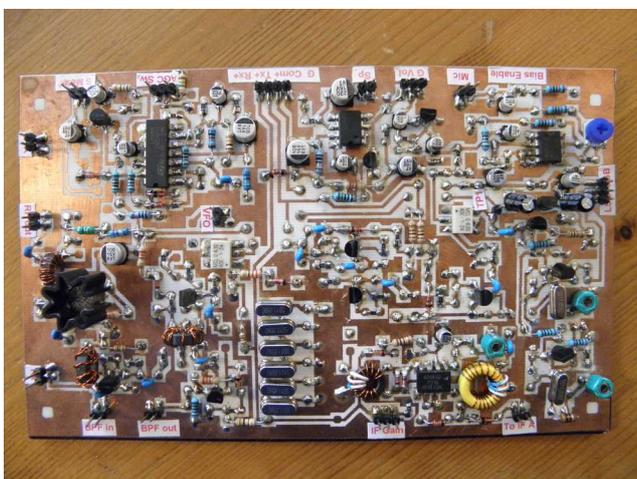


For those who do not wish to zoom: The captions of the figures above and below read: "Butterworth Crystal Ladder Band-Pass". Those who do, will reveal the important data. Ed.

To avoid different capacitor values, I rationalised values to 68pF for these and then analysed the theoretical filter shape. I'll run with that for now.



So Far:



All the above is fine and dandy, in theory!

Actually, the board turns out to be about 85% SMD. Surface mounted wired components have to be used in places to bridge tracks, otherwise the board design just gets too complicated.

Well, having recovered a senior moment confusing 47Ω and 4.7kΩ SMDs, voltages on transistors and ICs are as expected; the USB/LSB oscillators oscillate and the mic and audio amps amplify. Does it all work? That's for next month!

73, Steve.

February News from the Brooklands Museum - Radio Section by Peter G3ZPB

Apologies for no news for a few months but not a lot news-worthy happened during the winter and then suddenly it has all started happening....

1> First of all a warm welcome to several potential new Volunteers - Terry, John and Steve. With their help we should be able to fill some gaps in our coverage of Fridays and Saturdays.

2> During the past couple of weeks, we have built a second display "shelf" which has almost doubled the space available for exhibits - see the attached picture taken yesterday. Our particular thanks to Ted Angiolini who did most of the work in getting the materials and carrying out the actual construction work. We hope to get the Exhibit Identification Labels and further details on all the exhibits in place next week.

3> Future notable dates include Saturday 25th April (International Marconi Day) and Saturday 20th June (Brooklands Radio Centenary Day).

We will have our Amateur Radio Station GB1BM on the air for both events. The Centenary Day is to celebrate the world's first successful two-way voice communications between and aircraft and the ground which took place at Brooklands during the Summer of 1915. Other events planned for the day include a re-enactment of the voice messages, a number of technical/historic talks and, hopefully, an Amateur Radio Rally on-site.

4> The R1155/T1154 "Ground Station" system is now complete with a "cross-needle" DF Meter. If someone would like to take on the project of

getting a working DF system up-and-running, please let me know.

5> Our second restoration project is to get our Collins 618T operational; this is an ex-VC10 400W SSB Transceiver that covers 2 to 30MHz.

The main power supply (24 to 28Volts at 50A) is well advanced and we have purchased the special 60-pin connector that carries just about everything (power, audio, R.F. etc).

We still need to source the Collins 714E Control Head (and connector); if anyone can lay their hands on one, please, please let me know. (At less than the \$250 advertised on eBay please!!!)

6> And finally, as several of you may know, the Museum has been successful in achieving its bid for a £4.68M Lottery Fund Grant for the Brooklands Aircraft Factory and Race Track Revival project. See:

<http://www.brooklandsmuseum.com/index.php?/news/story/brooklands-museum-secures-hlf-investment> for full details or <http://www.bbc.co.uk/news/uk-31506646> for the BBC News broadcast.

This is going to mean a lot of work and upheaval at the Museum but in the long term will enable us to provide more room for many of the exhibits including our very own "Brooklands Wireless Communications Collection".



That's all for now. Best Regards, Peter G3ZPB.

FUTURE SRCC MEETINGS

2 Mar 2015	Spring Surplus Equipment Sale
16 Mar 2015	Fix-it, Move-it-On, Advice Clinic
13 Apr 2015	SRCC AGM
27 Apr 2015	Fix-it, Move-it-On, Advice Clinic

11 May 2015	TBC
18 May 2015	Fix-it, Move-it-On, Advice Clinic
1 Jun 2015	TBC
15 Jun 2015	Fix-it, Move-it-On, Advice Clinic
6 Jul 2015	TBC
20 Jul 2015	Fix-it, Move-it-On, Advice Clinic
3 Aug 2015	TBC
17 Aug 2015	Fix-it, Move-it-On, Advice Clinic
7 Sep 2015	TBC
21 Sep 2015	Fix-it, Move-it-On, Advice Clinic
5 Oct 2015	Autumn Surplus Equipment Sale
19 Oct 2015	Fix-it, Move-it-On, Advice Clinic
2 Nov 2015	Short Talks Evening
16 Nov 2015	Fix-it, Move-it-On, Advice Clinic
7 Dec 2015	SRCC Construction Contest
21 Dec 2015	Informal pre-Xmas Social

OTHER CLUBS' MEETINGS

27 Mar	<p>Wimbledon & District ARS</p> <p>Building an 80m Transceiver Kit by Eric G0KRT.</p> <p>Contact Jim Noon M6AVV - 020 8337 4940. email jamesanoon@hotmail.co.uk Web site:- http://www.gx3wim.org.uk</p> <p>Meetings are usually at 8pm on the 2nd and final Friday of each month at Martin Way Methodist Church, Merton Park (corner of Buckleigh Avenue), SW19 9JZ.</p>
19 Mar	<p>Sutton & Cheam RS</p> <p>How Valves Work by Dave Smith M0SXD</p> <p>@ Vice Presidents Lounge, Sutton United Football Club, Gander Green Lane, Sutton – 8pm. Sec: John G0BWV 020-8644 9945</p>
17 Mar. 2.	<p>Bromley & District ARS</p> <p>High Altitude Ballooning. Speaker tbc</p> <p>Normal Meetings 7.30 for 8.00 pm @ Victory Social Club, Kechill Gardens, Hayes, Bromley, Kent.</p> <p>Contact: Andy Brooker G4WGZ 01689 878089</p>

6 Mar	<p>Crystal Palace R & EC</p> <p>Video Evening. Propagation and Making Bright-Emitter Valves.</p> <p>All Saints Church Parish Rooms, Beulah Hill from 7:30pm. Bob G3OOU 01737 552170 (Meet normally monthly on 1st Friday) http://www.g3oou.co.uk/</p>
24 Mar	<p>Dorking & DARS</p> <p>Suzy Radio by John G8MNY.</p> <p>Contact: Garth Swanson G3NPC 01737 359472 email G3NPC@swansons.org.uk</p> <p>Meetings held at The Friends Meeting House, Butterhill, Dorking, RH4 2LE. Meetings commence at 7.45 pm. Web site:- www.ddrs.org.uk</p>
9 Mar	<p>Coulsdon ATS</p> <p>Saudi Sat and FunCube1 with Mike G0JMI.</p> <p>Meetings normally held @ St. Swithun's Church Hall, Grovelands Rd, Purley 8pm 2nd Monday each month.</p> <p>Steve Beal G3WZK. Secretary@catsradio.org. Tel: 01883 620730.</p>
25 Mar	<p>Crawley ARC</p> <p>DC to Light with Derek G4ZCS Pt 2</p> <p>Hon Sec: Phil Moore M0TZZ</p> <p>Normally meets last Wednesday of each month. 7.30 for 8pm. Venue not declared on their website, that I can see. Contact: secretary@carc.org.uk for more info.</p>
5 Mar	<p>Horsham ARC</p> <p>Club Junk Sale</p> <p>Guide Hall, 20 Denne Road, Horsham, West Sussex, RH12 1JF. www.harc.org.uk. Hon Sec Alister Watt email: g3zbu@hotmail.com</p> <p>Meetings normally held on 1st Thursday each month at 20.00 hours</p>

Sign Off

And that completes this month's Newsletter. 73.
John G8IYS.