



# SURREY RADIO CONTACT CLUB

**OCTOBER 2010** – No: 817

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

Hon. Sec. Ray Howells G4FFY  
 16 Handel Walk  
 TONBRIDGE  
 Kent TN10 4DG  
 01732 357474

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

**E-Mail:** [secretary@g3src.org.uk](mailto:secretary@g3src.org.uk)

**MONTHLY MEETINGS 1<sup>ST</sup> AND 3<sup>RD</sup> MONDAYS 7.30 FOR 7.45pm**

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

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**"A" MEETING 4<sup>th</sup> Oct 2010 Autumn Surplus Equipment Sale**

**"B" MEETING 18<sup>th</sup> Oct 2010 EGM – Election of Hon. Secretary**

Chairman & Club Meetings	G4FDN Pat McGuinness	020 8643 0491
Vice-Chairman & Publicity	G4WAY Roger Holyoake	020 8689 7089
Treasurer, Liaison & Equipment	G4DDY Maurice Fagg	020 8669 1480
Secretary, Membership & Communications	G4FFY Ray Howells	01732 357474
VHF Co-ordinator	G8IYS John Simkins	020 8657 0454
Committee Member	G3MCX John Kennedy	020 8688 3322
Committee Member - Technical	G4XAT Gareth Evans	020 8462 2837
Committee Member	G4FYF Steve Jones	01689 845568
Recycling	G4DDY Maurice Fagg	020 8669 1480

## Dear Members & Friends

Hello and welcome to the October 2010 Newsletter which is being edited Ray G4FFY. September was busy in preparing for and taking out two Great Rail tours, firstly to Austria and Oberammergau for the Passion Play, and then to the Moselle Valley later in the month.

Anyway to the Newsletter and we are indebted to Pat G4FDN, but firstly:

29<sup>th</sup> Sep 2010

73 Ray G4FFY

### This month's meetings:

For the "A" Meeting on Monday 4<sup>th</sup> October we have the Autumn Surplus Equipment Sale, The "B" Meeting on Monday 18<sup>th</sup> October will be an EGM to elect a new Hon. Secretary. More about these below:

**NEXT "A" MEETING: Monday 4<sup>th</sup> Oct 2010  
 Autumn Surplus Equipment Sale 7:30pm for  
 7:45pm**

**W**e hope there will be a good turnout for this **Autumn Sale**, when members can bring along items for sale and also items to be donated to the club.

It is very helpful, as in the past, for sellers to be in the meeting room by 7:30pm, and no boxes of "rubbish" please. All members and visitors 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 applies:

1. Only SRCC members are permitted to sell.
2. All items not donated must be marked with the name or Call-sign of vendor, brief description and details of any reserve price.
3. Bids to start at 50p and should be in steps of 10p up to £1 and 25p thereafter (may be revised on the night)
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.
8. Please try and arrive early to allow start by 7.45pm
9. **PLEASE KEEP THE DOORWAY CLEAR FOR FIRE PRECAUTIONS.**
10. The school premises are NO-SMOKING - thank you for adhering to this.

**NEXT "B" MTG: Monday 18<sup>th</sup> Oct 2010: 7.45pm  
 EGM – Election of Hon. Secretary**

**T**he "B" meeting on Monday 18<sup>th</sup> October at Trinity School will be an EGM for the Election of Hon. Secretary. The calling of this meeting has already been announced to members by email on 18<sup>th</sup> September where I advised of my resignation from this post to concentrate on my new family and plan my wedding to Caroline at the end of this year.

We look forward looking forward to the SRCC becoming even stronger with your support and help.

## The CHAIRMAN's BLOG - September 2010



**Last 'A' Meeting:** we were pleased to have a talk and presentation by member and committee member Steve G4FYF on his homebrew QRP 20M transceiver based on the Bitx20 design by Indian amateur Ashhar Farhan. This was the transceiver that won this year's club construction contest.



Steve gave us a philosophical overview of his approach to construction and experimentation that was used in the project.

The web page for the Bitx20 project is located here: <http://www.phonestack.com/farhan/bitx.html>

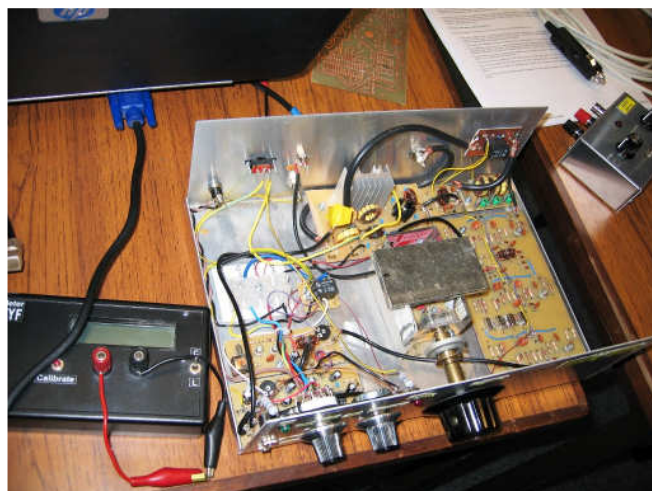
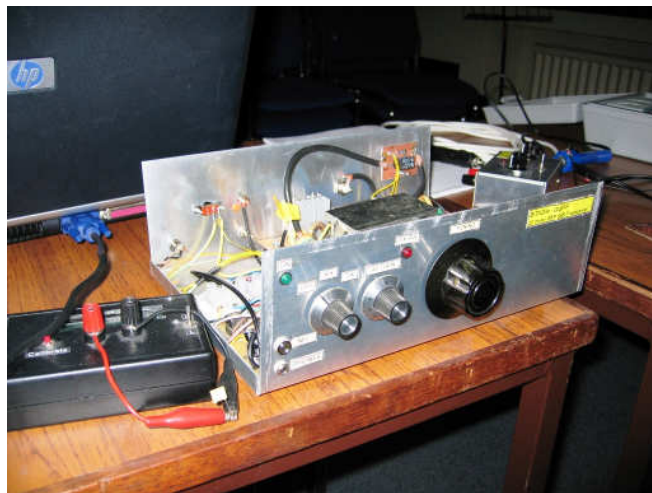
The background to the original design was that Indian hams have often been handicapped by a lack of low cost equipment to get them on air. A mono-band, bidirectional design using ordinary NPN transistors was developed to cater to this demand. The design can be adapted to any particular ham band by changing the RF section coils and capacitors and the VFO frequency.

BITX evolved over one year from the excellent S7C receiver described in the ARRL book Experimental Methods in RF Design into a bi-directional transceiver. The resultant rig has sensitive receiver capable of strong signal handling, a stable and clean transmitter capable of enough power to make contacts across the World.

All the parts used in BITX are ordinary electronic spares components. Instead of expensive and hard-to-get toroids, we have used ordinary tap washers. Broad-band transformers have used TV balun cores. The entire transceiver can be assembled in India for less than Rs.300. I have designed a single side PCB with large tracks that can be easily etched at home or by any PCB shop.

Steve designed, etched and drilled all the PCBs used in the transceiver, and experimented with several VFO solutions before deciding on his final arrangement. He also highlighted the need for carefully matched crystals when making the crystal filter.

Also on display were several items of home brew test gear built by Steve and used in the testing and alignment of the transceiver.



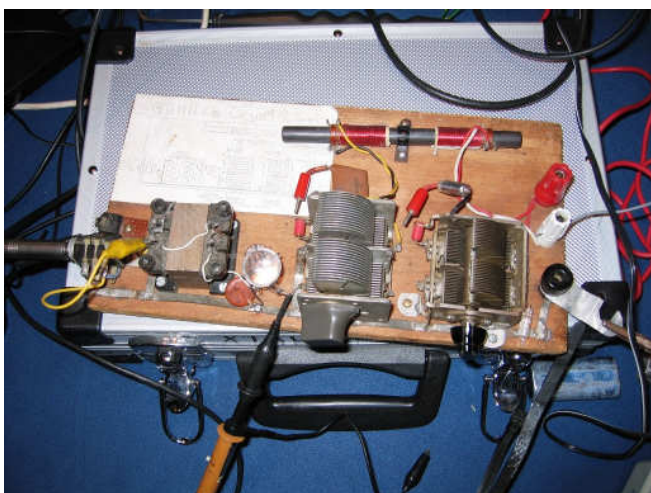
**Last 'B' Meeting:** This had been pre-arranged to be a Crystal Set evening with John G3BFP and John G8MNY both bringing along sets and demonstrating them.



Thanks also to G8MNY who put up the long wire antennas to power the sets. John also set up an oscilloscope to demonstrate the effect of tuning and various components on the signal and audio output.



John's crystal set has been the subject of a packet bulletin. Details of the set are also included in this newsletter in case anyone is interested in replicating his design.



Good signals were received from the local commercial AM stations at Crystal Palace.

**Surplus Equipment Sale next 'A' Meeting Monday 4<sup>th</sup> October:** Please support this event by bringing along items for sale or donation for club funds, and also by bidding for items for sale by others. The money raised at these events keeps our subs at a very low rate.

**Noise Reduction on Top Band and 80m:** Here are a couple of ideas that have worked for me:

1. Galvanically isolated earth system, i.e. buried insulated radials, i.e. high resistance to earth as a result of the insulation. I found no loss of radiated signal compared to when it was bonded to an earth stake, but reduced noise levels by a dB or so. How to do a quick test to see if it makes a difference to you? – disconnect your existing connection and substitute a temporary long insulated wire on the ground, i.e. a counterpoise in effect.
2. This goes hand in hand with the above. Have earth lead chokes on all your mains powered

radio equipment. I have used Shaffner IEC inlet filters. For anyone interested, technical details of the filter are at: {Sec's Note – Changed Link} [http://www.schaffner.com/components/en/product/productL22.asp?level=3&language\\_id=12](http://www.schaffner.com/components/en/product/productL22.asp?level=3&language_id=12) I have also installed the filters on the computer power supplies in my house – a 'belt and braces approach'.

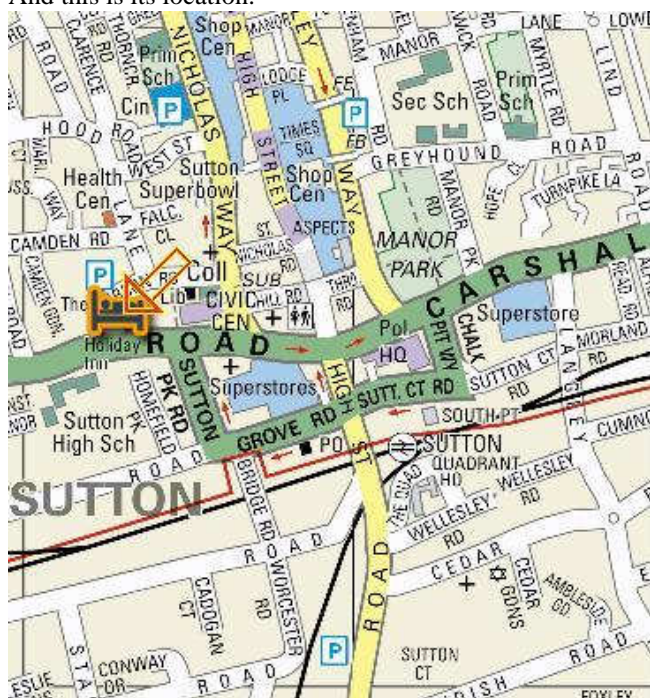
3. It needs to be borne in mind that not all noise is picked up directly on the antenna. It can come through the earthing system too, and quite commonly as common mode on coax feeder and supply leads, which is why judicious use of common mode chokes on both of these cables can pay dividends.

**75<sup>th</sup> Anniversary Lunch Sunday 10<sup>th</sup> October 2010 at the Holiday Inn, Sutton:** Reception opens at 12.30 with the buffet lunch starting at 13.15. On arrival tea, coffee and soft drinks will be served and a cash bar will be open also. Free car parking is available at the hotel and there are special places for disabled parking. The Holiday Inn is adjacent to Sutton Civic Offices & Library. It is a few hundred yards walk from Sutton Railway Station. All members who committed to attend should have been contacted by John Kennedy G3MCX regarding payments.

This is the Holiday Inn, Sutton:



And this is its location:



**Operating:** John G3BFP, as usual has managed to dig out the DX and e-mailed me recently with a new log extract:

40m: 5P5L

30m: OE50VIE, RA9LL, EM0IX, HF200CHOPIN, 9H3UM, TM2NN

20m: WB2NIC, EC8AUZ

17m: 5N7M, 5N50, AD4EB, SM7NGH/P, P43JB, N4NO, K2VV

15m: JY4NE

**Sign off:** That's all from me this month. I'm looking forward to seeing you all next Monday 4<sup>th</sup> October at the Surplus Equipment Sale.

73, Pat G4FDN

27<sup>th</sup> Sep 2010

## THE CALENDAR SECTION

### SRCC and Local Club Meeting Dates:

1 <sup>st</sup> Oct	Crystal Palace: Repairing Vintage Radios – David Smith MOSXD @ All Saints Church Parish Rooms, Beulah Hill from 7:30pm. Bob G3OOU 01737 552170 (Meet normally monthly on 1 <sup>st</sup> Friday) <a href="http://www.g3oou.co.uk/">http://www.g3oou.co.uk/</a>
4 <sup>th</sup> Oct	<b>Autumn Surplus Equipment Sale</b>
7 <sup>th</sup> Oct	Sutton & Cheam RS – 'Natter Night' @ Vice Presidents Lounge, Sutton United Football Club, Gander Green Lane, Sutton –8pm. Sec: John G0BWV 020-8644 9945 <a href="http://www.scrs.org.uk">www.scrs.org.uk</a>
8 <sup>th</sup> Oct	W&DARS: On The Air @ Martin Way Methodist Church, Buckleigh Avenue, MERTON PARK SW20 9JZ – 7.30 for 8pm 2 <sup>nd</sup> & last Friday's Details: Jim M0CON on 020-8874 7456 <a href="http://www.gx3wim.org.uk/">http://www.gx3wim.org.uk/</a>
11 <sup>th</sup> Oct	CATS: Talk on WSPR by Walter Blanchard, G3JKV – Meetings normally held @ St. Swithun's Church Hall, Grovelands Rd, Purley 8pm 2 <sup>nd</sup> Monday's. Contact Andy Jackson G8JAC on 020-8651 2727 <a href="mailto:g8jac@btinternet.com">g8jac@btinternet.com</a>
18 <sup>th</sup> Oct	<b>EGM – Election of Hon. Secretary</b>
19 <sup>th</sup> Oct	Bromley & District - Meetings normally on 3rd Tuesday's @ Victory Social Club, Kechill Gardens, Hayes – 7.30 for 8. Paul M3PGW <a href="mailto:bdars@greenwand.net">bdars@greenwand.net</a> or <a href="http://www.bdars.org.uk">www.bdars.org.uk</a>
21 <sup>st</sup> Oct	Sutton & Cheam RS – 'Coping With Weak Signals On HF' by Stan Rudcenko G0KBL @ Vice Presidents Lounge, Sutton United Football Club, Gander Green Lane, Sutton – 7.30 for 8pm. Sec: John G0BWV 020-8644 9945 <a href="http://www.scrs.org.uk">www.scrs.org.uk</a>
21 <sup>st</sup> Oct	Reigate Amateur Transmitting Society – Main meeting 3 <sup>rd</sup> Thursday's at RNIB, Redhill College, Philanthropic Road, Redhill 7.30pm. <a href="http://www.qsl.net/rats">www.qsl.net/rats</a> or <a href="mailto:rats@qsl.net">rats@qsl.net</a>
26 <sup>th</sup> Oct	Dorking & District Radio Society – Behind the scenes at Bletchley Park in WW2 - Brian Oakley. Meetings normally @ Friends Meeting House, Butterhill South Street, Dorking – opp. Spotted Dog. Details: David Smith M0SXD on 07808 579501, <a href="http://www.ddrs.org.uk">http://www.ddrs.org.uk</a> or <a href="mailto:ddrs.secretary@yahoo.co.uk">ddrs.secretary@yahoo.co.uk</a>
29 <sup>th</sup> Oct	W&DARS: Annual General Meeting @ Martin Way Methodist Church, Buckleigh Avenue, MERTON PARK SW20 9JZ – 7.30 for 8pm 2 <sup>nd</sup> & last Friday's Details: Jim M0CON on 020-8874 7456 <a href="http://www.gx3wim.org.uk/">http://www.gx3wim.org.uk/</a>
10 <sup>th</sup> Oct	<b>75<sup>th</sup> Anniversary Lunch –Sutton Holiday Inn</b>
1 <sup>st</sup> Nov	<b>TBA</b>

SRCC Meetings indicated in **BOLD** at venue of Trinity School

### Rally Calendar, etc:

1 <sup>st</sup> -2 <sup>nd</sup> Oct	<b>National Hamfest</b> George Stephenson Pavilion, Newark & Nottingham Showground, Lincoln Road, Winthorpe, Newark NG24 2NY. Further details and ticket information, visit: <a href="http://www.nationalhamfest.org.uk">www.nationalhamfest.org.uk</a>
8 <sup>th</sup> -10 <sup>th</sup> Oct	<b>RSGB 2010 Convention</b> Horwood House near Milton Keynes. Further details and ticket information, visit: <a href="http://www.rsgb.org/rsgbconvention">www.rsgb.org/rsgbconvention</a>
7 <sup>th</sup> Nov	<b>West London Radio &amp; Electronics Show</b> Kempton Park Racecourse. Open 10:00. Parking, Trade Stands, Club Stands, Bring & Buy (CATS), Catering, Disabled Facilities. Further details and ticket information, visit: <a href="http://www.radiofairs.co.uk">www.radiofairs.co.uk</a>
21 <sup>st</sup> Nov	<b>CATS 33<sup>rd</sup> Annual Radio and Electronics Bazaar</b> 1 <sup>st</sup> Coulsdon Scout Group Headquarters, Lion Green Road, Coulsdon. Open 10.00 – 13.00 Parking, Trade Stands, Bring & Buy, Refreshments. Contact <a href="mailto:enquiries@catsradio.org">enquiries@catsradio.org</a> or <a href="http://www.catsradio.org">www.catsradio.org</a>
Rally List	<a href="http://www.rsgb.org/events/index.php">http://www.rsgb.org/events/index.php</a>

### Members News

#### Ted G3EUE - Operating Report

Ted has submitted last week the following Band Report:

40 metres SSB

GB2OWM Orkney Wireless Museum

30 metres CW

VK5CZ S. Australia

TF/DF1LON Iceland

20 metres CW

VK9W Willis Group

US4LXF/P Ukraine

18 metres CW

9M2CNC Malaysia

3G3FZ Chile (Heard)

15 metres CW

5B4AGM Cyprus

UR8LV Ukraine

AA4V USA

12 metres CW

VQ9LA Chagos Islands

5B4ASJ Cyprus

10 metres CW

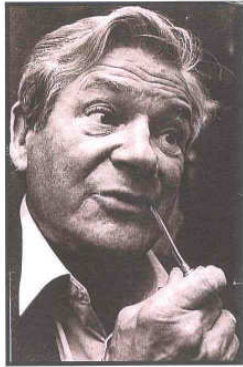
CX7CO Uruguay (Heard)

**Arthur G3YRB - Silent Key**

Maurice G4DDY kindly sent me the order of Service for Arthur's recent funeral:

In loving memory of

*Arthur Thomas Simpson*



*15<sup>th</sup> September 1918 - 17<sup>th</sup> August 2010*

Service at  
Croydon Crematorium  
Monday 6th September 2010  
at 1:30 pm

*Order of Service*

Conducted by John Williams

**Music**

"What a Wonderful World"- Louis Armstrong

**Welcome**

**The Tribute**

**Music**

Cello played by Martin Thomas

*[Faded text, likely names of attendees or family members]*

The Lords Prayer

The Committal

Closing words

**Music**

"I Will Always Love You" - Dolly Parton

*Depart from the Chapel*



*Do not stand at my grave and weep  
I am not there; I do not sleep.  
I am a thousand winds that blow,  
I am the diamond glints on snow,  
I am the sun on ripened grain,  
I am the gentle autumn rain.  
When you awaken in the morning's hush  
I am the swift uplifting rush  
Of quiet birds in circled flight.  
I am the soft stars that shine at night.  
Do not stand at my grave and cry,  
I am not there; I did not die.*

Donations in memory of Arthur to MacMillan Cancer Care via:  
Funeral Care  
100 Brighton Road  
Purley, CR8 4DA

"The word is "yes"!"- Arthur Simpson

*Siggy Dault*

**SIGNING OFF:**

That's it for this month, apologies if I have missed anything while compiling this newsletter. For our main meeting on Monday 4<sup>th</sup> October we are holding our Autumn Surplus Equipment Sale at Trinity School. The "B" meeting is on October 18<sup>th</sup> at Trinity School and will be an EGM for the Election of Hon. Secretary. Don't forget we now start at 7:45pm

*Ray G4FFY*

73 and 88

Posted: 29<sup>th</sup> Sep 2010

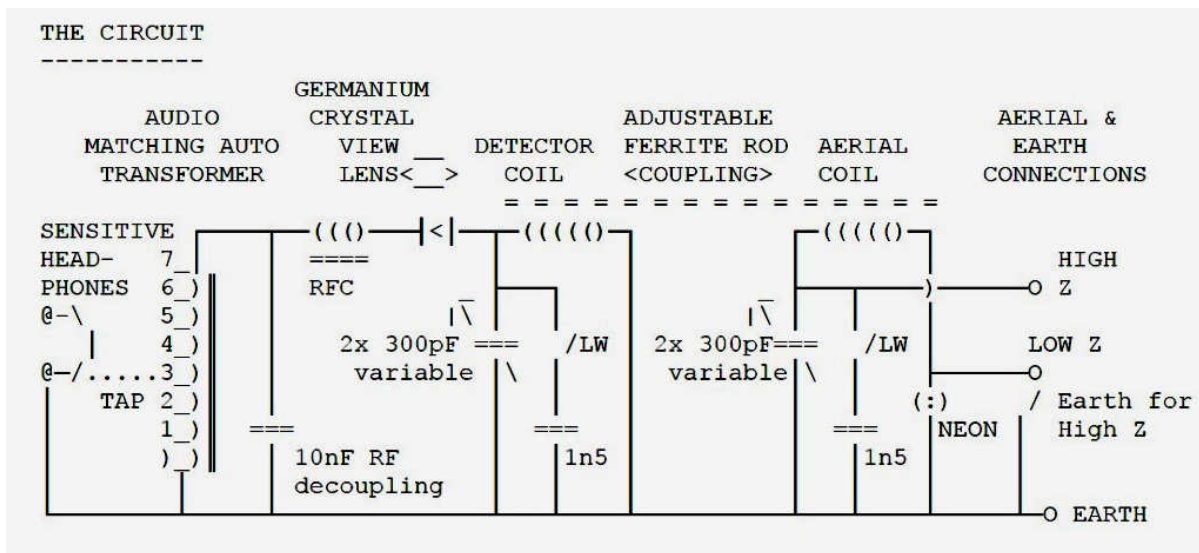
## G8MNY Crystal Set

Here is my design using fairly modern parts. With it I came 1st in my local radio club home construction contest a few years ago, mainly because it was so LOUD.

It gives VERY good sensitivity & selectivity. In South London with 40M of aerial wire it can pick up 7 MW & 4 LW stations (3 French). The stronger ones can even just about drive a good small 8 ohm LS.

### FEATURES

- 1/ DUAL TUNED CIRCUITS for Selectivity.
- 2/ VARIABLE COUPLING for Sensitivity/Selectivity.
- 3/ VARIABLE INDUCTANCE also widens the tuning range.
- 4/ DUAL BAND, MW & LW, plug in capacitors extend range to LW.
- 5/ HIGH & LOW AERIAL IMPEDANCE option, for best matching.
- 6/ AERIAL NEON gives visible protection against High Aerial Voltages.
- 7/ LENS to see "CAT's WHISKER on the CRYSTAL"
- 8/ R.F.C. to improve diode linearity & sensitivity performance.
- 9/ TAPPED AUDIO MATCHING TRANSFORMER for optimum loudness.
- 10/ HIGH EFFICIENCY HEADPHONES home made.



### PARTS & TIPS

#### THE BASE

Use a wooden base board about 1x 25 x 10cm. Fit rubber feet so that underside protrusions don't scratch.

#### CIRCUIT WIRING

Use tin plate strips tacked down, this is easy to solder to & support the smaller components.

#### HEADPHONES

Use a coat hanger wire head band to connect 2x 40 ohm 1970s telephone inserts (type 4T) rocking armature type. These are the most sensitive transducers made & peak @ 3kHz. They are around 10dB louder once matched than any high Z moving iron diaphragm, moving coil, or crystal types.

Make a headband from a single piece of coat hanger wire looped at each end & flattened (hammered) as the common connection under 2 of the terminal nuts. Bend the wire to angle the inserts to sit on your ears comfortably. They can be connected permanently to the set with flexible leads or with a plug & socket for comparing with other headphones.

## **AF TRANSFORMER**

For best load matching & volume, I used 8 equal windings of an old telecoms line transformer that had 2x 600 ohm windings in sections each. The first 2 windings are paralleled up for low Z loads to reduce the winding resistance loss for low Z loads.

Adjustable connection is made with a small wander crocodile clip to the linking straps. Typically 2-3 of the 7 taps gives the best for the 8 ohm headphones. Mount it well to the base board (e.g. 2 screws tapped into the 4 plastic corners not near the winding!) as it is heavy component. If a suitable comms transformer is not available try some small mains transformers that can give 4:1-3:1 e.g. 110V to 15-0-15V, try fine ratio adjustment by 1st using it as a straight transformer then as an auto transformer with the 0V windings in series, & try adding or subtracting 15V the secondary (reverse connections) to alter the N ratio & use which ever gives the loudest volume. You may also try paralleling the headphone earpieces to change the load.

## **10nF CAPACITOR**

This is used for blocking RF from the AF circuit. Theory says yes it is need, but it is not really necessary component as it works without it.

## **R.F. Choke**

Approx 20 turns of enamelled copper wire (0.5mm) on small polo mint sized (12mm dia) toroidal RF ferrite core. Again theory says yes it is needed as it will keep the diode conduction angle high & hence reduce the diode resistive losses, but it does work without it. It will also makes the load impedance on the tuned circuit 2x higher as mean not peak voltage & currents are reduced by 1/2. Mount with an insulated screw (not to cut into the turns) through the middle.

## **GERMANIUM DIODE**

Viewable old large glass bubble type e.g. an old OA91. Mount a small plastic lens (from cardboard slide viewer) 2cm in front of the crystal with shaped paper clip wire, so that the surface of the crystal & the internal cat's whisker can clearly be seen.

## **GANGED 300pF VARIABLES**

Two needed, air spaced ideally. Large value gives best tuning range, so the sections are paralleled up. Put knobs on the shafts & mount them well to the baseboard, as they get a lot of tweaking.

## **1n5 LW CAP**

Two needed. Connected one side to ground & the other to a 2mm wander test plugs/sockets to give the Long Wave coverage.

## **FERRITE ROD**

Standard radio type 14cm long, 8mm dia. It gives plenty of L adjustment & coupling variation. With the coils the ferrite gives high Q tuned circuits, many times higher than it's wire air space coils! Mount with plastic cable clip in the middle with high enough packing/washers to allow coils to be moved. The ferrite rod is quite fragile, if it does get broken just glue it back together with a 2 part epoxy resin, removing as much glue gap with pressure while setting as possible.

## **COILS**

Two standard MW radio type with tags, e.g. about 30 turns of 0.5mm enamelled copper wire on a loose fitting paper tube with connection tags. 30 turns. Connect with twisted flexible leads as they will need sliding along the ferrite rod to vary the inductances & coupling.

## **NEON**

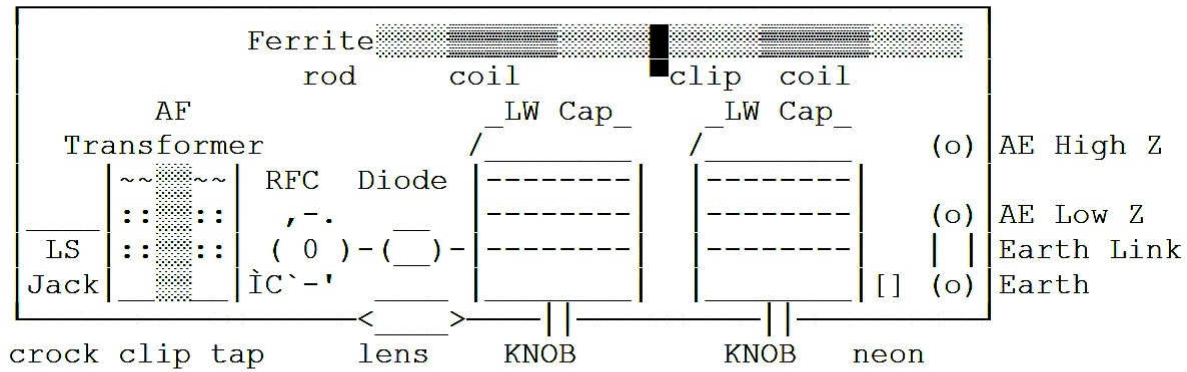
Wire ended 80V bulb type. Used to safety, it gives a dramatic discharge indication when the aerial is in the low Z mode, when static is around. It also protects the Caps from much higher voltage flashovers!

## **CONNECTIONS**

4mm socket with screw up type for Earth & the 2 Aerial options, with a swinging earth link plate, to make the high Z aerial configuration. For the headphone, I used 6mm (1/4") Jacks, but screw-up 4mm are fine also.

LAYOUT

wooden base with feet



TUNING IN

- 1/ Connect an earth, mains earth can be noisy, old Gas & Water pipes are better earths as long as they are not PLASTIC! Try a counterpoise along the ground if there is too much mains QRM on water pipes etc.
  - 2/ Connect the aerial to either the High Z or Low Z options. Short aerial wires compared to a 1/8 wave length are always high Z. Higher & longer aerial wires are always better, as they pick up more RF power.
  - 3/ With the coils close together, adjust the detector & aerial variable capacitors for a station of interest.
  - 4/ If the station is loud enough, but can't be separated from another one try adjustment of the 2 variable capacitors at once, also reduce the coupling by moving the coils apart & try again. Note the affect of tracking both variables, there is a best matching sweet spot for optimum loudness.
  - 5/ Adjust the auto-transformer tapping for loudest output, note that there is some treble difference as the match changes the Z on the RF decoupling Cap.
  - 6/ Try the other aerial impedance option & see if other stations are heard.
  - 7/ If the station is too HF or LF for the tuning range, try moving the coils more to the middle for LF, or to the far ends for HF.
  - 8/ With the LW capacitors connected the tuning is less effective & moving the coils gives more frequency range.
- For Demonstrations, connect an AF amplifier right across the full transformer for a few 100mV of good quality AM audio!