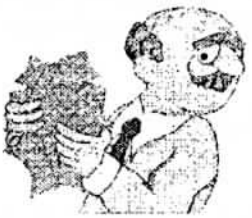
Mar 1998

P5 NEWSLETTER

CHAIRMANS REPORT



Welcome to the first of the News Letters for 1998. The year of 97 was very successful regarding all the projects and fund raising. A full report will be accountable at the AGM on 30 April 98. This year I will be handing over some of the Severnside Jobs to other members due to the arrival of a baby boy called Peter. I hope to still carry out the Chairman's function, but the group will need support in the rallies and fund raising if we are to look to the future in providing a wider coverage and operation of the repeaters. Frank Field (G0CEN) will now take over P5 production as the editor I hope you will support him.

SURVEY 97

I received no more survey forms since November 97 so I will now produce a set of results for the next P5.

GB3ZZ

The Repeaters Alford Slot Aerial needs to be serviced or replaced due to input receive losses occurring last year. It is the groups intention to carry out a major overhaul of the Aerials some time in the spring, weather permitting. The aerials were last serviced 10 years ago, we have been lucky that they have not failed sooner.. To improve your picture quality when transmitting you could try selecting one of the sellectable Yagi antennas using the DTMF codes e.g.(★03#).

GB3XG

The repeater will soon be fully functional. We know it has taken some time to achieve the original plan, but at these frequencies things are very technical. I would like to thank those involved on behalf the group for their commitment to this project after the upheaval of the frequency band plan changes enforced upon us.

Annual General Meeting

The groups AGM will be held on Thursday 30th April 1998, 7.30 PM at the Pavilion, Filton Parish Council, Filton, Bristol. It is the same building as the socials. I hope you will try to attend, as the meeting will be no longer than one hour with a swift departure next door for a drink. Those who attended last year enjoyed this formal but social event.

INTERESTING

Last time I wrote an article on radio frequency equipment it caused quite a few replies even to the extent of the BATC members commenting. Unfortunately, this may not have been obvious to some of the readers as my name and details were all muddled up. Well here goes again !!

I was reading an article about "Wireless Head Phones" that will no longer be breaking the law in Britain following a Europe-wide agreement on radio frequencies for Headphones. This immediately grabbed my attention as I am interested in HI-FI and radio equipment. The article was based on the elegal use of Radio Stereo Headphones that are worn around the house using the Amateur Band Frequency of 433 MHz. They were finally legalised on the Narrow Band spectrum of 49 MHz but the sound and range was poor.

To improve matters it was agreed by the European Telecommunication Standards Institute (ESTI), to free a slice of the spectrum 1 megahertz wide from 863 to 864 to enable multiple stereo transmission. Britain will be the first to free the frequency once the DTI has formally announced this.

The new frequency will allow the band to be split into Twelve 300 kHz channels each wide enough to carry a FM Stereo signal. Neighbours can chose different channels to avoid interfering with each other. The transmitter is limited to 10 milliwatts and has radiated up to 150 metres. Last week I briefly listen to such a pair of Headphones. Unfortunately, I was unable to check the frequency they were operating on but for domestic use I was admirably impressed with the quality and operating range. The cost of the Headphones were around £60 from a well known electronic retailer.

73 Paul Stevenson G8YMM

Packet Address	G8YMM @ GB7TJZ
Email	g8ymm@cableinet.co.uk

A.G.M & SUBSCRIPTIONS

SUBSCRIPTIONS NOW DUE

This issue contains your subscription renewal form. We hope you will continue to support the group by renewing your membership. Please make cheques payable to "SEVERNSIDE TELEVISION GROUP".

ANNUAL GENERAL MEETING NOTICE

Formal notice is hereby given of the Annual General Meeting of the Severnside Television Group. This will take place on Thursday 30th April 1998 at 7.30 PM, Elm Park Parish Pavilion, Elm Park, Filton, Bristol.

All members are asked to attend the meeting. Guests and non-members are welcome, but will not be able to participate in the voting.

AGM NOMINATIONS

Nominations are now invited for the following posts ; Chairman, Chief Engineer & Vice Chairman, Honorary Secretary, Honorary Treasurer and up to five committee members. All nominations must be deposited in writing no later than 23rd April 1998 with the Secretary Mr. Mike Stevens G7GTN, 13 Downs Rd. Westbury, Bristol. BS9 3TX.

A suitable nomination form is included in this issue of "P5".

Nominations will be sought at the AGM for the non-committee post of Honorary Auditor.

RESOLUTIONS

Members wishing to propose Resolutions at the AGM must submit them in writing to the Secretary no later than 23rd April 1998. Each resolution must be proposed and seconded by two fully paid up members of the Group, who should be prepared to address the AGM when the resolution is discussed. Members should note that whilst there will be an opportunity to discuss minor matters under "Any Other Business" at the AGM, constitutional or major matters must be submitted in advance as a formal resolution.

CURRENT COMMITTEE

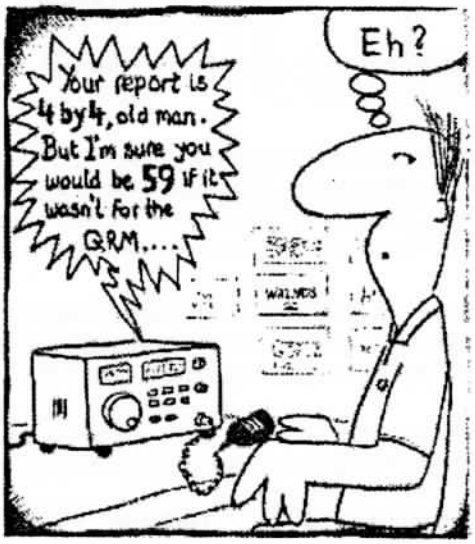
For your information, the current committee is listed below:-

Chairman	Paul Stevenson. G8YMM
Chief Engineer and Vice Chairman	Ian Bennett. G6TVJ
Secretary	Mike Stevens G7GTN
Treasurer	Alan Tink. G7DRU
Committee Member	Frank Field G0CEN
Committee Member	Matthew Bell. GOECM
Committee Member	Ross Wilkinson G0WJR
Committee Member	Ivor Green. G1IXF

1998-18

BRISTOL EASTER ACTIVITY CONTEST 1998

organised by the RSGB Bristol Group



Sorry the following looks rather serious, folks, but then you've gotta have rules...

1. **The object of this activity contest is for Bristol stations to make contact with as many other Bristol stations as possible in the period from 0700 UTC [0800 local] on Good Friday, 10 April, to 1700 UTC [1800 local] on Easter Monday, 13 April 1998. An important aim is also to encourage activity by as many new and Novice licensees as possible [70cm].**

2. **'Bristol stations' are defined as those located within any of the [old-style] Bristol BS1-28 postcode areas according to the Royal Mail Postcode Atlas of Great Britain and Northern Ireland, 1989. These are also the postcode areas to be quoted in this activity contest.**

3. **Bands and modes: 144 MHz [2m] FM [F3E] or SSB [J3E]**
   430 MHz [70cm] FM [F3E] or SSB [J3E]

4. **Operation must be strictly within the terms of the licence. All contacts claimed must be recorded in the main log.**

5. **Stations taking part may be fixed, mobile or portable. Contacts made via repeaters [or satellites] will not count for points.**

6. **There will two sections: a) 144 MHz transmitting or SWL**
   b) 430 MHz transmitting or SWL

   Entries will be accepted for either section, or both.

7. **Points as follows:**

   5 points for each Bristol station worked/heard each GMT calendar day. Repeat QSOs will only score if started on different GMT calendar days and the start times are at least 6 hours apart.

8. **Each contact must include an exchange of BS postcode areas. Each Bristol postcode area worked/heard will count for a multiplier of 2 to the final score.**

9. **The log information required will consist of Date, Start Time, Mode, Station Worked/Heard, BS1-28**

1998-1D

Postcode Area, Points Claimed and Multiplier [if any]. Please submit separate log sheets for each section.

10. Duplicate contacts recorded will incur a penalty of 10 points. Contacts with mobile/portable stations will count for one post- code area only on any one GMT day.

11. Contacts within the Bristol postcode area will count towards the Bristol Activity Awards. Details from G3JMY.

12. Please send completed log sheets to Martyn Phillips, G3RFX, 17 Richmond Hill, Clifton, Bristol BS8 1BA to arrive no later than 9 May 1998. Completed log sheets can also be e-mailed to g3rfx@compuserve.com. Any logs generated by computer logging programme and forwarded by post on floppy disk must be accompanied by a hard copy/paper print-out.

13. Ensure that all points are added up and a total score included on the last log sheet. The winners in each section will be the entries with the most adjudicated points. The adjudicator's decision is final. Any entries with illegible handwriting may be disqualified.

14. This is intended as a fun contest. However, there will be six prizes in each section. These will be in the form of either Marks & Spencer or John Lewis vouchers.

a) 144 MHz Transmitting or SWL 1st Prize: £15
2nd Prize: £10
3rd Prize: £5

b) 430 MHz Transmitting or SWL 1st Prize: £15
2nd Prize: £10
3rd Prize: £5

15. Prizewinners will be announced at the RSGB Bristol Group meeting on Monday, 25 May 1998.

Return to Front Page

1998-1E

NEW RAE EXAM

RADIO AMATUER EXAMINATION 7650

THE NEW EXAM IS A 2 1/4 Hours Multiple Chioce Paper
In 2 parts Part A *Licencing Conditions and 0perating Procedures. 25 Questions*
A PASS IN THIS MUST BE OBTAINED BEFORE THE PART "B" CAN BE MARKED
Part B. 55 Questions on Principles and Practice.

This is the first exam of the new *SINGLE EXAM FORMAT and the first exam is MAY 1998*
This exam also contains questions on *VALVES* and associated circuits.

The changes are made to Improve the exam for the MILLENIUM.

A sample is available for a small sum from City &Guilds .

We hope that the new exam will help others to take up the hobby in the near future as our numbers are growing smaller by the year.

The FEE AT BRISTOL IS £51 and is a universal for all local colleges, as most of them are
in the same group anyway.

The new RADIO SOCIETY ..... UKRS..... is now fully working and has had it,s first audit and other tests . This one has come in very quietly and after some minor problems has now sorted itself out. This does mean there is now 2 radio society's in uk
What a difference this makes you will have to wait and see.
But it is cheaper at £15 for full and £10 for retired people.Just like having 2 supermarkets really they are already working together ,and are recognised by R.A. ....IARU and all other amatuer bodies in the world today.
So many changes for a first issue .

The new news editor for P5 is me G0CEN and I am happy to hear from any of the members as to their views on the NEWSLETTER for the Future

F J FIELD,
19, THE MAPLES,
NAILSEA,
N\SOMERSET.
BS48 4RT. OR Tel, 01275-790306.

Full-duplex single antenna operation on 23cm ATV

or only one aerial, only one feeder, only one hole in the wall!

For two-way operation on 23cm ATV (for example watching GB3ZZ whilst transmitting into it), two aerials are normally required, each with its own feeder. This means double the expense, and probably more than twice the wind-loading on the mast. Those stations using only a single aerial would be required to switch it between transmitter and receiver (ie half-duplex operation), and could therefore not receive another signal whilst transmitting.

Given the significant frequency separation between the 'ZZ input and output frequencies (67 MHz) it should be possible to employ frequency-division duplex (FDD) and use a single aerial, so long as this is tuned for broadband operartion. FDD requires an aerial splitter unit (diplexer) which can separate the signal into two bands, centred on 1249 and 1316 MHz, and give considerable isolation between these two ports. If there was only, say 20dB isolation, then one hundredth of the transmit power would appear at the front-end of the receiver: how long would your GaAsFET preamp last with 0.2 watts fed into it? However if an isolation of 80dB could be achieved, then only 0.2 microwatts would be transmitted to the front-end: not enough to de-sense it, let alone destroy it.

The next question is of course how may this diplexer be constructed? It basically consists of two bandpass filters, one centred on 1249, the other on 1316 MHz, connected together. Bandpass filters for 23cm based on "interdigital" resonators are not uncommon, and can sometimes be had at rallies, or may even be constructed by some elementary metalwork [1,2]]. Recently, Ivor G1IXF furnished me with two of these to try, one of which was a commercially-built 7-resonator design, the other a 5-resonator type of amateur construction. Having tuned these for minimum loss (~1.8dB) and flattest passband, all that was required was to connect them together.

Dual passbands and port-to-port isolation of prototype diplexer formed from two interdigital filters. The RX passband shape is poor because the filter was modified from 1.5 GHz.

The interconnection of the two filters to a common port, in this case an N-type T-piece, is the tricky bit. To do this right, we need to understand a little of how the filters work. These interdigital filters are reflection-types, in that they attenuate unwanted frequencies by reflecting them back from their inputs. This means that they have a low SWR in the pass-band, and a very high SWR in the stop-bands. For the proper interconnection of the two filters we also need to pay attention to the phases of these reflections. We want the stop-band of the RX filter to look like an open-circuit (ie. as if it wasn't there) in the pass-band of the TX filter, when viewed at the T-piece, and vice-versa. If we get this wrong, and make it look like a short-circuit, it would then be as if we'd placed a short across the feeder at the T-piece, and most of the wanted signal energy would be reflected back.

Happily, the phase of the reflections may be altered simply by varying the length of line connected to the filter's input: each additional (electrical) quarter-wave reverses the phase, turning a short into an open-circuit. All we need to do is cut exactly the right line lengths to connect each filter to the T-piece. At 23cm, with standard polyethylene-dielectric cables, a quarter-wave is only 38mm, so we need to be very careful with the cable lengths!

Even with the ability to measure the phase of the reflection coefficient, allowance must still be made for the electrical length of the connectors and T-piece, before calculating the length of cable required. A more straightforward, if laborious method is just to measure the peturbation of one filter's passband when the other is connected to the T-piece: this just requires a swept-frequency source and a power detector.

First make up two cables to connect the filters to the T-piece, but cut them a good 200mm longer than is physically required to reach between the two units. The connector at one end of each should be a good-quality clamp-type, which can be fitted temporarily without solder: if you make the centre conductor slightly longer than usual, it will make a good enough temporary contact to the inside of the pin. Measure the response of the TX filter, connected through the T-piece, but with the other arm of the "T" open-circuited. Then connect up the RX filter to the "T" and check the response again. If there is a noticeable degradation in passband shape or loss, then shorten the cable connecting the RX filter to the "T" by 5mm. If this makes the situation worse, cut off an additional 30mm and start again. You should soon reach either the limit of your patience or the required optimum length! Having done this, repeat the process with the other cable, while checking the RX passband. Finally don't forget to solder up the centre pins of the connectors, and your diplexer is complete.

Using this method, I've now built three of these diplexers, one of which was taken out portable by Ivor recently. Operating from Dundry, near to the GB3XG (and GB3USK) site, he was able to simultaneously transmit 25 watts and receive with a preamp, using a single "Alford slot" antenna. Furthermore, I was able to send pictures back to him whilst watching his signal, using a single G3JVL loop yagi at the G3KAC club station. This was not even a line-of-sight path, so a reflection off the side of another building had to be used.

This first trial of full-duplex two-way operation using only one aerial each was a great success, and will no doubt be repeated through the coming year. It will certainly make portable operation a great deal easier, only to have one aerial and feeder to set up! The system could even be used to run a repeater of a single aerial.

If you're going to try single aerial working for yourself, don't forget to use a broadband-tuned aerial which matches well at both frequencies. Generally, the more tunable elements in each filter, the better will be its stop-band rejection, and hence the isolation between the two ports of your diplexer.

FInally, if you need to use a low-noise preamp at the masthead, then the only way to do this is to install the entire diplexer unit there, and even then the system noise figure will be degraded by the insertion loss of the RX filter. Separate TX and RX Two will be required, but you could always put the TX PA up the mast too, to maximise your erp!).

Acknowledgments

Thanks to my fellow members of the Severnside TV Group, especially Ian G6TVJ for his helpful suggestions on this article, and Ivor G1IXF for supplying the original filters, and for going up to Dundry in the middle of January to test the system out.

References

[1] RSGB Microwave Handbook Vol 3, p 14.30.

[2] RSGB VHF/UHF Manual, p 9.20.

Ross J. Wilkinson G0WJR. February 1998.