



September 2017

RADIO SOCIETY of GREAT BRITAIN
CITY of BRISTOL GROUP
NEWSLETTER

Monthly meetings at the BAWA, 589 Southmead Road, BS34 7RF

NEXT MEETING MONDAY 25 SEPTEMBER 7.30pm

“TX FACTOR” AMATEUR RADIO TV PROGRAMME

Nick Bennett 2E0FGQ & Mike Marsh G1IAR



Anyone active in Amateur Radio over the past two years or so will have heard about the “TX Factor”. This is a professionally produced television programme dedicated to amateur radio, as practiced in this country. I say that to distinguish it from the many American programmes available, most of which seem rather too long and in need of good editing. “TX Factor” is available on Youtube and 17 editions have now been produced.



A team of three radio amateurs, who are broadcast professionals, have travelled all over the country to film clubs, contests, rallies and to review the latest kit. Two of the team will be with us to talk about the project and show some video out-takes that cannot

be broadcast. This promises to be a very entertaining evening and I hope that as many of you as possible will make the effort to attend.



You can watch the programmes from the following link;

<http://www.txfilms.co.uk/txfactor/>

MAGNETIC LOOP AERIALS

Dave Boniface G3ZXX



At our August meeting, we had a capacity attendance to hear a very interesting, informative and entertaining talk about magnetic loop aerials by Dave Boniface G3ZXX. Dave started by mentioning Nicola Tesla, whose fundamental work he considered prepared the ground for Marconi and Edison.

The magnetic or small loop aerial is not a new idea; work was done on these during the 1930's by the Royal Signals, the Patterson US Army loop in the 1950's and by Pat Hawker G3VA in the 1960's. The loop is typically circular in shape, although it can be square, rectangular or any type of polygon. The circumference is usually about 10% of wavelength, up to a maximum of 40%; above this, problems with self-resonance occur. They are usually used in the range 5-30MHz and are very popular for MF use by many military forces. No earth is needed, they are not affected by close in QRN, they offer a good compromise between high and low angle radiation and can be sited at low height, just the loops diameter above the ground. They are compact and may be used in the loft or by a window – avoid metal window frames, even many PVC windows have a metallic core structure.

Most aerials such as dipoles, yagis etc. respond to the electric part of the electromagnetic wave; magnetic loops respond to the magnetic part as their name suggests. Maximum radiation is off the ends of the loop when arranged vertically, with a deep null of up to 30dB perpendicular to the plane of the loop. However, if the loop is arranged horizontally, they are omnidirectional. At the feed point, the impedance is low, but at the ends where the tuning capacitor is placed, it is very high. This means there is a high RF voltage there, even low power such as 5W can easily produce 1kV across the tuning capacitor. The loop must therefore be carefully insulated and placed where children, animal's etc. cannot access it.



Also, any adjustment must be done with the power disconnected; Dave has the RF burns to prove this! It is important to reduce to a minimum the resistive losses in the loop. Therefore, substantial copper conductors are required. Dave has used flexible copper microbore central heating tube, which may be bought with a plastic coating already applied, or the LDF Andrews heliax range of cables, such as LDF450 or 550. RG213 may be used, but only for low power 10-20W; higher than this and it will melt!

A multi-band loop requires a wide spaced vane tuning capacitor, or even a vacuum capacitor, a splendid example of which Dave showed us. However, co-axial cable also makes a good capacitor and a monoband loop fixed on the PSK31 or JT65 frequency can be easily made by overlapping the ends of the cable which forms the loop. The overlap should not exceed 25% of the circumference.

Dave pointed out that any aerial can have two of the following attributes, but never all three; small size, efficiency or broad bandwidth. If you think you have all three, then it is likely that your feeder cable is radiating. The magnetic loop is a high Q device and sacrifices bandwidth for compact size and efficiency. It acts like an old-fashioned Q Multiplier or preselector in front of the receiver. If a loop has broad bandwidth, then it has low Q and high resistive losses and is therefore less efficient. For a given size of loop, efficiency and bandwidth rises with frequency. Typical bandwidth values for the HF bands are 20-80kHz at the -3dB points.

Dave then demonstrated a 1m diameter loop, formed from LDF550 cable, which is about 25mm in diameter. Using an MFJ aerial analyser, he was able to find and adjust the resonant frequency and obtain a good SWR match of 1.1:1.

He finished his talk by pointing out that much research is still being carried on into these aerials and they are the subject of some controversy. Their method of operation is not fully understood and experts disagree about how effective they are. Dave's own experience suggests that they work well, at least as well as a typical ground plane vertical and almost as well as a dipole a half wavelength above ground.

Much more information and an on-line loop calculator may be found at the following website;

<http://www.aa5tb.com/loop.html#cal>

Also look at Dave's own website;

<https://sites.google.com/site/g3zxxmagneticloops/>

Your Secretary is not a renowned HF operator, but this talk inspired me to put one of these on my "to do" list of experiments!

RALLIES & EVENTS

A selection of radio rallies & events within reasonable travelling distance of Bristol.

10 September	Blackwood ARC Rally Newport
10 September	Wildhern Radio & Computer Boot Sale Andover
10 September	Torbay Rally Newton Abbot Racecourse
17 September	Weston-super-Mare RS Radio & Electronics Rally Worle
29-30 September	National Hamfest Newark
13-15 October	RSGB Convention Milton Keynes
15 October	Holsworthy ARC Rally
5 November	West London Radio & Electronics Show Kempton Park Racecourse
19 November	Plymouth Rally Plympton

ANNUAL GENERAL MEETING

It may seem a long time away, but our Annual General Meeting will take place in January. Before then, your committee will be meeting to plan for the year ahead. At the last AGM, the post of Secretary became vacant and after an element of persuasion and consideration, I took on the job for twelve months. This period is now well into its second half and our Chairman has asked me to remind all members that it will be necessary to find another nomination for the post of Secretary. Ideally, someone can be identified before the AGM, so that a smooth handover can be arranged. All members are asked to consider carefully if you could help your RSGB Group by undertaking this essential role.

Survey to find the extent of VDSL Broadband Interference

The RSGB EMC Committee has for three years been investigating the problems of interference (RFI) from VDSL broadband on the HF amateur bands and lobbying for action to reduce the problem. We have a lot of historic data, but both Ofcom and Openreach contend that 150 reports from 50,000 amateurs is not indicative of a major problem when there are 9.5 million VDSL installations deployed. The RSGB EMCC has set up a RSGB_VDSL_survey to collect current signal levels at the frequencies of VDSL band transitions (these indicate the presence and strength of interference). It is very simple to do you just tune your receiver (set to AM or SSB 3kHz bandwidth) to each frequency requested note the S meter reading on the survey form. Full instructions are included in the survey. Please fill in this "https://www.surveymonkey.co.uk/r/RSGB_VDSL_survey" with your current readings even if you have reported them before. As more and more people subscribe to VDSL so the level of interference continues to increase and we need the current picture. The RSGB has been lobbying Openreach and Ofcom to act to reduce the RFI from overhead lines carrying these broadband signals. We have set up a mechanism with Openreach to investigate lines near amateurs, once we have confirmed problems with VDSL RFI. If a poor line balance is found then Openreach will improve the problem line (normally the neighbours line). This has reduced the problems in some cases but many amateurs still suffer from unacceptable levels of RFI from the overhead telephone wires. A comprehensive report with recommendations for further action has been submitted. However, we need more evidence to get this problem taken seriously. Now is your chance to help by completing the "https://www.surveymonkey.co.uk/r/RSGB_VDSL_survey" during September. We plan to present its findings at the RSGB Convention in October and then use them to persuade Openreach to take further action. Please complete "https://www.surveymonkey.co.uk/r/RSGB_VDSL_survey" and encourage your friends to do so. This is the last chance we have to prove how many people are affected by this RFI. If we cannot provide results from a sufficient number of responses then there is nothing further we can do on your behalf. You could make the difference. https://www.surveymonkey.co.uk/r/RSGB_VDSL_survey" will be available for completion until 30 September 2017.

John Rogers, M0JAV Chairman RSGB EMC Committee.

AROUND THE LOCAL CLUBS

Bath & DARC <http://badarc.webs.com>

Chepstow & DARC www.gw4lwz.co.uk

Chippenham & DARC www.g3vre.org.uk

Mid-Somerset ARC www.midsarc.org.uk

North Bristol ARC www.nbarc.org.uk

Shirehampton ARC www.shirehampton-arc.org.uk

South Bristol ARC www.sbarc.co.uk

Thornbury & South Glos.ARC www.tsgarc.uk

Trowbridge & DARC www.tdarc.uk

Weston-super-Mare RS www.g4wsm.club

If your club has a major event or talk by a “star” speaker, send details to the secretary – g8vpg@aol.com – and I will be pleased to include it here. Also, please send reports & photographs of your recent activities and any news.

That’s all for this time – a bit thinner than recent issues because I have run out of copy and no one has sent me any! Has no one done anything worthy of mention this summer?

73 Shaun G8VPG, Secretary.