

EMC Committee Report 2017

Our aims are to **provide advice and support** to those who suffer from RFI problems and to help **protect the spectrum** from Radio Frequency Interference (RFI). As part of our contribution to RSGB Strategy 2022 we conducted a survey to determine our top priorities, which are:

- **Providing Advice** through the EMC Helpdesk on how to identify and locate the source(s) of RFI.
- **Hosting and moderating the EMC Matters Forum**, which encourages members to share and help each other to solve problems.
- **Protecting the spectrum**, by **tackling regulators, suppliers and service providers** to reduce RFI emissions and by **influencing standards committees** to specify acceptable RFI levels.
- **Updating the website** to provide guidance on resolving RFI problems.
- **Increasing awareness of RFI**. A campaign has started to inform members of the growing RFI issues. This will use the Web and social media, RadCom articles, convention papers and society handbooks to highlight the growing threat of RFI to the radio spectrum.
- **Investigating** emerging RFI pollution problems.

Major Achievements in 2017

Help and Advice

This year we have helped some eighty people through the 'Report Interference' mechanism and about fifty more through the Helpdesk. The Forum has provided advice on thirty different topics. We also gave face to face advice at the National Hamfest at Newark.

Seven articles on EMC/RFI were published in RadCom and Practical Wireless in addition to the bimonthly RadCom column, 'EMC Matters'. A paper on RFI was also presented at the RSGB convention.

Standards

We have worked closely with the IARU EMCC to request changes to EMC standards under development and to promote incremental changes in the day-to-day application of EMC testing. Focus has been improved by filtering documents to reviewers to prioritise most important Standards, Working Groups activities and collaborations with EU Standards Bodies.

RSGB attended all 2017 BSI EMC Standards Committee meetings (GEL210/11). It was commented on, that RSGB has accumulated a large library of relevant RFI data, which could be shared widely across industry, not just for the benefit of the amateur and broadcast services.

A method has been developed, which ranks the real impact of electrical equipment operating in its intended environment, as opposed to the 'clinical' test conditions of EMC laboratories. Here, unwanted RFI can manifest itself as an increased but predictable emission or other artefact, inter-modulation for example. This, combined with actual RFI measurement data, helps to improve the mitigation aspects of EMC Standards.

The RSGB has contributed positively to rejecting the draft of Wireless Power Transfer (WPT), because of unacceptable limits for harmonic energy affecting LF/MF broadcast, amateur and navigation services. We also pointed out Solar PV irregularities, which increase HF spurious from switching regulator wiring.

Increasing awareness

Trying to get Ofcom to respond to cases of harmful interference (HI) to the Amateur Radio Service is becoming more difficult. As a result, it is considered that more will be achieved by joining in measurement campaigns to boost the evidence base on increased HI, investigating future threats to the spectrum from the increasing number of radio based electronics coming on the market and making other users of the radio spectrum aware of the potential threats of such things as WPT (EV). Spurious emissions from this technology, which will be used to charge electric cars in the home environment, are anticipated to be a major concern to users of the radio spectrum.

IARU Conference

2017 saw the IARU General Conference being held in Landshut Germany from 16th to 23rd September. The RSGB EMC Committee was well represented at the Conference by David Lauder G0SNO, Brendan Minish EI6IZ and Hilary Claytonsmith G4JKS (Vice Chair of the IARU EMCC). Issues discussed included background noise measurement, RF emissions from wind farms (presented by G0SNO), High Intensity Discharge (HID) street lighting and EMI threats to the amateur service, interference from photovoltaic installations and Wireless Power Transfer for electric vehicles (WPT EV).

It was decided during the Conference to hold an ad-hoc meeting to discuss the problem of the increasing noise levels on the radio spectrum. Following this it was decided to begin a noise measurement campaign in Region 1, led by EI6IZ.

VDSL Broadband RFI

This has been the main focus of investigation activities this year. A survey of members elicited 1300 responses with about half of these, showing evidence of VDSL RFI. Ofcom published a report stating that there was no evidence that emissions from BT Openreach VDSL drop wires was causing harmful interference to the amateur radio reception. This was refuted by the RSGB and new measurements by Ofcom are promised. We have calibrated our active loop antennas and developed 'drive-by installations' in vehicles, to quickly identify and measure the field strength at RFI hot spots and help to find the cause.

(see Fig xx below)

A standard method has been tested for demonstrating HI by logging contacts received at nearby locations with low levels of RFI and comparing these with those obtained at amateurs' locations where signals are obscured by RFI - we call this 'Here and There Testing'. This method will be used at a number of locations next year. A method for measuring the level of VDSL RFI compared with other signals and other sources of RFI. This uses recordings from SDR's and compares the power of the extracted VDSL signal to the power of the remaining other signals and noise.

Main goals for the coming year

1. Update the EMCC website advice and increase awareness of the help available to members
2. Form an alliance with other radio users to tackle RFI and lobby regulators, suppliers and service providers to take action
3. Complete the VDSL HF noise mitigation project
4. Continue to improve our links with senior and influential industry EMC representatives, through our Standards work
5. Work with other IARU member societies to tackle the threat of WPT(EV)
6. Raise RSGB's media profile taking reactive and proactive opportunities when they present themselves.

The workload in this area is increasing rapidly as more and more RSGB members seek help with interference. If you can help us in any way to fight this spectrum pollution, please contact emc.chairman@rsgb.org.uk

Dr John AV Rogers, MOJAV
EMC Committee Chairman, January 2018

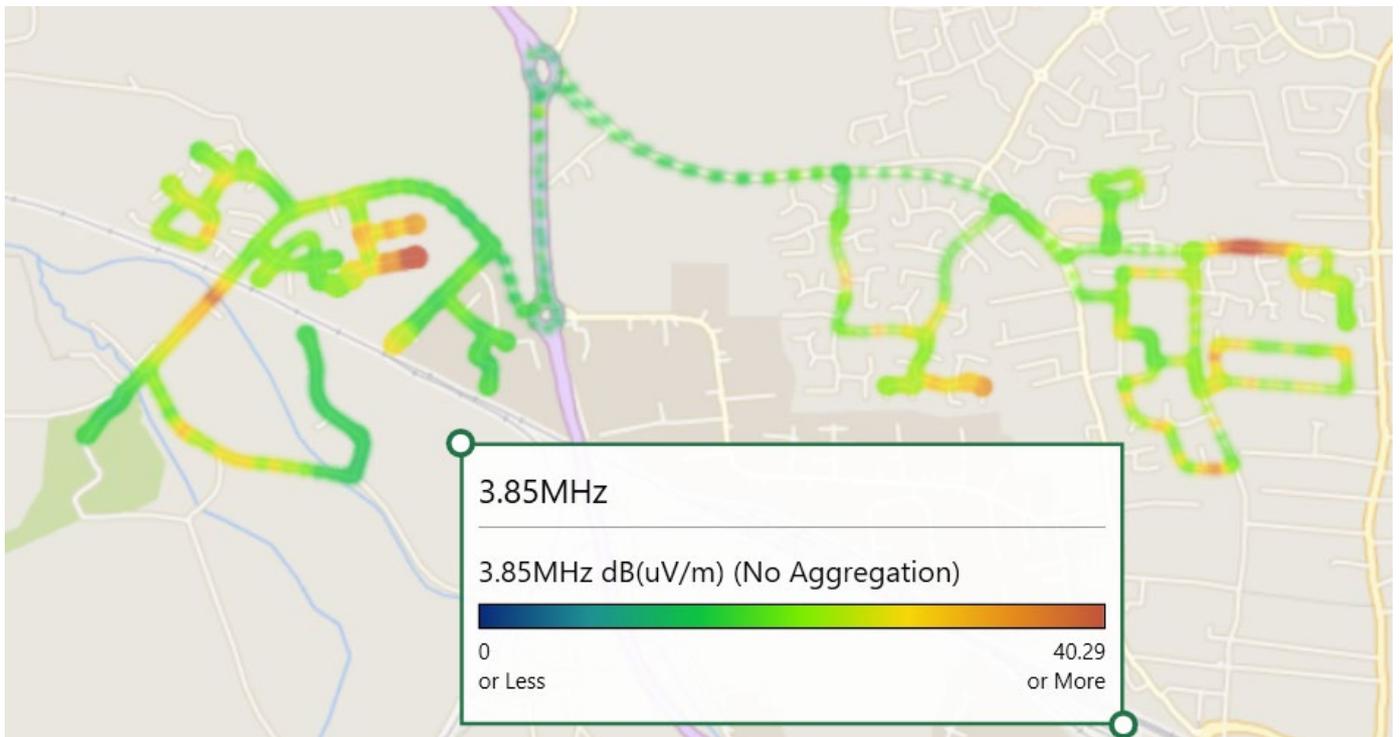


Figure xx Measured field strengths in VDSL Upstream band 1 using drive-by system