

RSGB Spectrum Forum meeting 9th July 2005

5MHz Report

Since my report to the Spectrum Forum in 2004 the practical aspects and scientific studies relating to our experimental access to 5MHz have progressed significantly.

The administration of the NoVs, carried out between RSGB HQ and a volunteer in the 5MHz Working Group (5WG), has continued with the processing of around 7 applications per month. At the beginning of June the total number of NoVs stood at 1196, of which 387 have been logged by reports sent into the 5WG. The 5WG has liaised with MoD and Ofcom on issues concerning the NoV terms and conditions, and individual members of the 5WG have given presentations about the experiments at various amateur radio events. RadCom is currently carrying an article on the design of the beacons.

Evaluation of 5MHz for emergency communications

Over the last year, members of the RAYNET HF team have completed over 100 man-hours of further NVIS propagation and antenna experiments on the frequencies covered under the NoV. Team nets continue on their seven-day schedule selecting the most appropriate band to use at either 14:00 or 20:00 local time dependant upon the day. Whilst the 5MHz allocation has still played a part in over 50% of the nets undertaken, declining solar conditions meant that darkness hour use of the band declined in the winter months in favour of lower frequency bands.

The 5WG has recently submitted a paper to the RSGB recommending clarification of the licencing terms for 5MHz RAYNET 'Talkthrough' operations that link their VHF/UHF nets. Eliminating of what is see as an existing limitation will allow RAYNET operations to make more use of the experimental 5MHz facilities. With access to 5MHz, RAYNET members have a unique opportunity to use military frequencies and the possibility of interoperation with military stations. Recent discussions between RAYNET and Central Government has allowed RAYNET to affirm that Amateur Radio can demonstrate its capability as part of a National emergency communications strategy.

Scientific Studies

Apart from operational experiments on 5MHz, largely being carried out by RAYNET and groups such as SOTA, there is a group of amateurs participating in an experiment to collect and share QSO data. In addition the 5WG has implemented a chain of propagation studies beacons: GB3RAL, located in Oxfordshire, GB3WES, located in Cumbria and GB3ORK, located in the Orkney Isles. The three beacons are time-multiplexed¹ on 5290kHz and thus provid a unique insight to propagation across the UK. Proposals for companion beacons on 3.5 and 7MHz are currently being prepared, the main concerns being that of minimising the impact on normal usage of

¹ See http://www.rsgb-spectrumforum.org.uk/beacon_reporting.htm

3.5 and 7MHz. With beacon reporting on 3.5, 5 and 7MHz a more complete understanding and comparison of inter-UK propagation could be obtained at these frequencies.

Of the the 387 active NoV holders some 73 have submitted logs to the 5WG, with 6 stations logging in excess of 500 contacts (one non-NoV holder has manually reported nearly 8,000 beacon transmissions). 15,978 log entries exist on the database from these reports. A further 107,278 reports of the three 5MHz beacons has been created by automatic monitoring, mostly carried out by 8 amateur stations around the UK. This data is updated monthly and is available to all on the Internet via the RSGB Spectrum Forum website².

With the database tables freely available, amateurs and others interested in radio physics and mathematics are encouraged to undertake analysis of the data. Efforts by the 5MHz Working Group have recently resulted in some academic support for an analysis approach that might lead to a model that could be used for predicting future propagation. My own initial analysis of a part of the data suggests that the quality of the data has improved since the early part of the experiment. It also shows interesting propagation affects around sunrise/sunset. In addition to the RAYNET HF Team and work by 5WG members, a small number of the experimenters are conducting analysing their own data. This is giving significant insight into propagation at the frequency, as well as enabling them to conduct various experiments with aerials. It is hoped that publications in RadCom, etc, will result from these individual efforts.

John Gould, G3WKL
Chairman 5MHz Working Group

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² See <http://www.rsgb-spectrumforum.org.uk/5MHz%20database.htm>