

TV White Spaces: Approach to Coexistence

In the past, a balanced approach enabling access to both licensed and license-exempt spectrum was key to meeting increasing spectrum demands. Licensed spectrum provides the certainty major wireless operators need to make large investments in their wide-area networks, whereas license-exempt spectrum leads to innovation and investment in emerging technologies.¹

Given the rapid increase in demand for spectrum to support wireless services, it is unlikely that Ofcom will be able to meet that demand solely through a policy of clearing and repurposing spectrum.² Spectrum sharing is therefore a more practical option as it not only encourages more efficient use of spectrum but it can also make additional spectrum for wireless services available very quickly. For example, as Ofcom has recognized through its efforts to open up the TV white spaces (TVWS) for license-exempt use, there is potential to allow new devices and services to take advantage of spectrum currently lying fallow. Spectrum sharing therefore allows users to make the most of a finite resource.

The DTG supports and welcomes Ofcom's initiatives to adopt spectrum sharing policies to make additional spectrum available for use and welcomes the opportunity for future collaboration in this area.³ Many of the DTG's members are active participants in trials or other initiatives supporting Ofcom's work to open up access to TVWS.

Introduction

The Digital TV Group (DTG) welcomes the opportunity to respond to the above consultation regarding the coexistence of TV white spaces (TVWS).

The DTG Membership have a wide range of interests and views on spectrum usage, with several members keen to exploit opportunities with TVWS. Whilst we cannot represent all the views, the DTG DTT RF Group (RFG) felt they should raise specific concerns relating to the protection ratios required to protect DTT receivers from interference.

The RFG have concerns covering two areas:

1. the scope of current protection ratios; and,
2. use of recorded signals in the measurement of protection ratios.

1. Scope of Ofcom's Current Protection Ratios

Ofcom propose calculating the maximum allowed White Space Device (WSD) power based on three sets of protection ratios, depending on the nature WSD signal. These sets are described as high, medium and low protection ratios (with low representing the most benign WSD signal). Ofcom have so far only identified and measured protection from one WSD, described as a 'weightless base station'.

Whilst Ofcom acknowledge that this test signal represents the low protection category, the RFG is concerned that the *weightless base station* was transmitting a fixed cycle of data pulses - not a realistic pattern of data. This may make the interfering signal appear more benign than if a realistic data pattern was used; potentially

¹ Paragraph 3.18 *Spectrum Management Strategy* 02 Oct 2013 (noting that license-exempt devices serves as "incubat[ors] of innovation").

² See Consultation at 56 (recognizing that the growth in spectrum demands points towards the growing importance of enabling shared spectrum access).

³ See *The future role of spectrum sharing for mobile and wire data services* 9 Aug 2013, *TV White Spaces* 4 Sep 2013 & Paragraph 1.31 *Spectrum Management Strategy* 2 Oct 2013 for examples

causing the corresponding protection ratio to be set too low with no adequate protection for a real-world WSD deployment.

2. Use of Recorded Signals for Protection Ratio Measurement

Ofcom strongly recommend that measurements of WSD protection ratios should be performed using actual WSDs, as opposed to recorded signals. The RFG understand that there are circumstances when this may be an appropriate approach, for example when a manufacturer is claiming that their technology meets the requirements for a 'low' protection ratio. In this case it is entirely appropriate that the real WSD, operating in its normal mode, should be used to check protection ratios against a number of representative DTT receivers.

When attempting to establish the performance of DTT receivers, either for protection ratios to be used by Ofcom in its WSD power level calculations, or by the DTG (or other bodies) setting targets for DTT receiver performance and subsequently testing DTT receivers against those targets, it is much more appropriate to use recordings of WSD signals. These recordings should clearly be representative recordings of real WSD signals, but when attempting to measure DTT receivers' performance, it is important that the interfering test signal should have consistent characteristics from test to test.

The DTG therefore encourages Ofcom to recognise the importance of using recorded signals to give consistency between measurements.

About the Digital TV Group (DTG)

The Digital TV Group (DTG) is the focal point of the UK's digital TV industry. The Group, a not-for-profit membership organisation, brings the industry together to enable the successful delivery and evolution of digital TV and associated technologies.

The DTG publishes and maintains the technical specification for the UK's Freeview and Freeview HD platforms and Connected TV (the D-Book) and runs the digital television industry's test centre: DTG Testing.

To encourage international harmonisation, the DTG is engaged with DECE (Ultraviolet), ETSI, HbbTV and the Open IPTV Forum. The DTG allows Digital Europe to use areas of its copyright under licence.

DTG Testing tests digital TV products applying for the Freeview, Freeview+ and Freeview HD logos against the D-Book standard.

DTG Testing also manages the Engineering Channel for continuous maintenance of the UK's Freeview and Freesat platforms, and maintains a receiver collection for testing new transmission modes and software downloads.

The DTG and DTG Testing supports the development and deployment of next generation technologies such as LTE (4G), TV white spaces, second screen and home networking.

- www.dtg.org.uk
- www.dtgtesting.com