A consultation on the management of spectrum used by licence-exempt devices

Spectrum Commons Classes for Licence-Exemption

Response by the Radio Society of Great Britain

July-2008

Introduction

This response to the above Ofcom document is from the Radio Society of Great Britain (RSGB, www.rsgb.org.uk) on behalf of its members and the wider UK Amateur Radio community.

RSGB is recognised as one of the leading organisations in the world in the field of amateur radio. It collaborates with its fellow national societies via the International Amateur Radio Union (IARU) through IARU Region-1 (www.iaru-r1.org).

Amateur radio is a science based technical hobby enjoyed by over three million people worldwide. From a statutory point of view it is fully recognised by the International Telecommunication Union (ITU) as a service and is listed in the ITU Radio Regulations as the Amateur Service and the Amateur-Satellite Service.

In 2007 RSGB made an input to the first stage of this exercise, the Licence Exemption Framework Review. Having encountered serious issues with exempt devices in a number of bands where we are licensed, we continue to take a keen interest in this topic.

We would be pleased to provide any additional information on request or participate in any future discussions, both with Ofcom or any other stakeholder who has an interest in this topic.

Permission is granted for a copy of this response to be placed in the public domain.

RSGB, July 2008

Questions & Answers

Q1: *Do you agree that the spectrum commons class of a technology should be based on its interference characteristics?*

This is a good but not entirely complete basis. The proposed interference indicator is purely transmission based. Whilst this eases calculation it overlooks other factors as noted in our answer to Q7.

Q2: *Do you think that the ratio of channel bandwidth to the width of the band is a good representation of the use of the frequency domain resource and the interference potential of a technology in this domain?*

The definition should account for channel hopping/searching modes, which are increasingly prevalent in newer technologies. Bluetooth for example can generate more problems in this mode than in its final narrow steady-state bandwidth.

Q3: *Do you think that the duty cycle is a good representation of the use of the time domain resource and the interference potential of a technology in this domain?*
Do you agree that the duty cycle should be evaluated at the busy hour?

Duty cycle is easily understood but, again, a more careful definition is needed to capture worst-case or 'busy' scenarios – particularly where several devices (or nodes) may need to be combined to support a single application.

Q4: *Do you think that the interference coverage plus the density of transmitters give a good representation of the use of the space resource and the interference potential of a technology in this domain?*

Yes, provided propagation and indoor vs outdoor usage factors are correctly accounted for.

Q5: *Do you agree with our method to calculate the interference coverage area of a transmitter?*
What is your view on a threshold level of -80 dBm/MHz to determine the interference range?
Do you think the threshold level should be expressed as power density (dBm/MHz) or as power (dBm)?

Levels of -80dBm/MHz would represent a serious level of interference for receivers used by our members and other licensed services. We note that even the emission mask for UWB includes -85 or -90dBm/MHz levels to protect key services. Lower levels still would be desirable along with a definition that accounted for exempt device eirp, as opposed to just transmitter powers.

A single flat threshold level versus frequency (regardless of what is agreed) is also inappropriate as it does not account for longer range propagation (inc through-buildings) at lower frequencies, nor the nature of more sensitive bands or licensed services that might be affected.

In lower frequency bands where MHz bandwidths are rarer, either a narrower spectral density measure (dBm/10kHz or 100kHz) or a just a simpler dBm-only measure should be considered.

Q6: *Do you agree with using a busy yet realistic scenario to derive the transmitter density of a technology?*

In principle, Yes, although we are wary of the somewhat subjective assumptions that this may entail.

Q7: *Do you agree with the Interference Indicator being a product of the frequency domain factor, the time domain factor, the interference coverage area and the transmitter density?*

In principle we agree, but it is also important that this indicator is not the sole basis for decisions, as it does not account for additional factors such as applications involved or services affected, nor receiver performance. We note that the latter is the topic of new ECC Report 127, currently in consultation.

Q8: *Do you think that three classes of spectrum commons is the right number?*
What is your view on the proposed boundary values for the three classes?

We suspect that three classes would be too coarse and that dividing the middle class (as the Ofcom condoc also suggests) is preferable. This decision and the boundary values might be better assessed by considering a wider selection of devices from ERC 70-03 (or Ofcom IR-2030) than just the few in the current consultation document, and to develop this further in a harmonised European context.

Q9: *Do you agree with our definition of fairness and that all systems should be required to behave in a fair manner?*

The definition seems reasonable. Measures such as Transmit Power Control/Minimisation should be encouraged. Legacy systems that do not comply with the definition should be the subject of sunset dates to phase-them out in the interests of spectrum efficiency. We would also welcome improved enforcement measures as self-certification increases the likelihood of non-compliance, even with current rules.

Q10: *What is your opinion on the effectiveness of blind detection sensing techniques compared to signal specific techniques?*

As per our input to the previous Ofcom-LEFR consultation, we have little faith in the effectiveness of current LBT/DAA mitigation techniques as generally they will not deal with ‘hidden terminals’. The techniques are also likely to be undermined by poorer antenna/receiver performance than that used by licensed services.

Q11: *Do you agree with the proposed polite rules?*

In principle yes,

However this implies that further development is needed to improve the effectiveness of mitigation techniques (eg LBT and DAA)