



BAA's Response to Ofcom's Consultation on Spectrum  
Commons Classes for Licence-Exemption

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BAA welcomes the opportunity to respond to Ofcom's consultation on Spectrum Commons Classes for Licence-Exemption.

BAA is the world's leading private airport operator, with seven UK airports including the three London airports Heathrow, Gatwick and Stansted. Heathrow is the world's busiest international airport in terms of passenger numbers, and number two for air cargo. BAA also operates the Heathrow Express rail link. Currently over 130 million passengers travel through our UK airports annually, however the UK Government forecasts that passenger numbers will double over the next 20 years.

BAA's airports are some of the most complex radio environments in the UK, with a large number of service types and a heavy demand on spectrum. Radio communications are critical to airport operations, helping to ensure the safety and security of all airport users. Airport expansion and the provision of new wireless-based services will lead to increasing demands on the radio spectrum. The lack of available spectrum, especially at Heathrow, is a significant constraint on airport operations and the provision of services.

License-exempt (LE) spectrum is an extremely valuable resource at BAA's airports, used in some cases for operationally critical applications. The 2.4 GHz band in particular is used extensively for WiFi applications by BAA, passengers and airport stakeholders, and demand for spectrum is likely to increase rapidly over the next few years. Similarly the 865 – 868 MHz band is likely to be used extensively for identification of airline baggage etc. in the near future. These and other LE bands are being carefully managed by BAA where practicable to minimize interference risk. BAA is strongly in favor of increases in the amount of suitable LE spectrum to help alleviate congestion we observe especially within the 2.4GHz ISM allocation. We note that there is a significant lack of available spectrum for use with RFID technology in the UK compared to in the USA.

BAA was generally supportive of Ofcom's proposals in its previous Licence-Exemption Framework Review (LEFR) consultation document. Spectrum use should be licence-exempt if its value is likely to be greater than if its use were licensed. BAA agrees that application-specific spectrum allocations for licence-exempt devices will in general result in inefficient utilisation of spectrum. However we believe that allocations should be application-specific in cases where this is likely to result in a higher spectrum value than a spectrum commons allocation.

BAA is generally in agreement with Ofcom's spectrum commons classes proposals, however we expect that Ofcom will consult fully on any future proposals for specific bands. Consultations should be carried out well in advance of any binding EC decisions so that Ofcom can influence those decisions as appropriate.

Answers to specific questions in the consultation document are given below.

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

Yes, however we believe that in some cases it is appropriate to take account of the victims' characteristics, for example if these can be reliably predicted.

**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?**

Yes. Note however that some future systems may adapt their channel bandwidth according to application requirements, in which case it may be appropriate to use busy period channel bandwidth. Again victims should be considered if they can be reliably predicted.

**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?**

- a) Yes duty cycle is a good representation.
- b) We believe that the busiest hour in a typical day may not be the best representation of the interference potential of a technology in the time domain. Victims should be considered if they can be reliably predicted.

**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, although the density of transmitters may vary with time in some cases.

**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)?**

- a) Yes we believe the coverage method is appropriate.
- b) -80 dBm/MHz is far too high a threshold if the victim technology is 802.11b/g for example. It is difficult to set a universal value so BAA believes victim characteristics should be used where appropriate. See also our response to Q8.
- c) We believe the threshold level should be expressed as power density (dBm/MHz).

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

Yes, where "busy yet realistic" is the stakeholder consensus.

**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?**

Yes BAA believes that this is the correct approach in general, with knowledge of victims used as appropriate. However we believe that protocol politeness should also be used to assess interference potential. For example if an adaptive radio could avoid interfering with other devices through remote sensing of their transmissions, then it could be placed in the Low Interference Class. We assume that a technology with a given interference class should be able to use spectrum in a higher class (but not a lower class) if desired. The inclusion of politeness in the interference assessment would thus incentivise the adoption of polite protocols since a lower class categorisation would give access to more spectrum.

**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?**

- a) Yes three seems like a good compromise initially.
- b) The proposed boundary values seem reasonable based on Table 2, however we would like to see a more extensive table with additional technologies, and as assessment of the sensitivity of the results to the interference threshold value used (see also response to Q5).

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

Yes.

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

BAA agrees that signal specific techniques are far more effective than blind detection.

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

Yes. Resource use should be expressed as  $(1/n) - X\%$ .