OFCOM Consultation on

Digital Dividend : Cognitive Access

RESPONSE FROM DIGITAL UK Ltd

Introduction

Digital UK is the organisation formed by broadcasters at the behest of Government to oversee television Digital Switchover (DSO) in the UK. Its primary responsibilities are to co-ordinate the re-engineering of the terrestrial transmitter network and to communicate with viewers about the DSO process.

Digital UK welcomes the recognition by Ofcom that licence-exempt cognitive devices should only be permitted access to interleaved spectrum providing that they would not cause harmful interference to licensed uses, including DTT.

This response to the Consultation is designed to reflect that requirement and, therefore, only addresses those questions where we believe that there is the potential to impact on DTT coverage and hence the possibility of affecting either the DSO process or consumers' subsequent enjoyment of services delivered via the DTT platform.

Executive Summary

Question 1: The executive summary sets out our proposals for licence-exempting cognitive devices using interleaved spectrum. Do you agree with these proposals?

Digital UK supports the proposals insofar as they are designed to protect licensed users of the spectrum, including DTT. Digital UK is not in a position to comment on whether the technical parameters set out in Tables 1 and 2 are sufficient to meet that objective.

Detection

Question 2: Do you agree that the sensitivity level for DTT should be -72 dBm?

It is not clear from the text whether the signal level assessment includes a location variation allowance, and whether it applies only to households within the official 98.5% core PSB coverage, or to the entire population.

Assuming that the figure does not include a location variation allowance, and applies only to those within official coverage, then the -72dBm sensitivity threshold appears to be too high. From the data given, it exposes up to 250,000 households to the possibility of interference, and in practice we believe that the number of households exposed to the possibility of interference may be much higher for three reasons:

- The commercial multiplexes generally use lower powers than the Public Service (PSB) multiplexes. This means that households located in areas with above -72dBm signal levels for the PSB multiplexes may have signal levels below this threshold for the commercial multiplexes, but are still able to watch the services carried by those multiplexes.
- Households lying outside the official coverage area of any multiplex may still be watching the services carried in areas where the signal levels are below -72dBm
- If the figures have been calculated without allowing for location variation, then a greater proportion of households within official coverage will be using signal levels below -72dBm

Experience to date with the DTT platform shows that viewers do not understand why DTT reception fails. Instead, they generally assume that there are transmission problems and blame the broadcasters, rather than understanding that reception effects, including interference, local to them are the more likely cause.

Knowingly adopting a threshold which has the potential to increase the incidence of interference to DTT reception and thereby disenfranchise a large number of households, hence undermining enjoyment of and confidence in the platform, would appear to be inappropriate.

Based on the shape of Figure 5, a figure of around -80dBm would appear to be more appropriate.

Question 3: Do you agree with an additional margin of 35 dB resulting in a sensitivity requirement for cognitive devices of -114 dBm?

Digital UK disagrees with the assessment in paragraph 5.13 that a -114dBm sensing level would only impact on 0.04% of households (we assume this figure is extrapolated from Figure 5 on the basis that the curve appears to be asymptotic to the 0.4% line). This level of impact would only be correct if there were no need for a hidden node margin. Given that ERA have identified that a 35dB margin **is** required to ensure adequate protection of DTT services, the true exposure must be higher than this.

Although the analysis addresses the use of cognitive devices in the same building, Digital UK notes that a significant proportion of UK households live in terraces, semi-detached houses and flats with minimal screening or distance between the individual dwellings. In such cases a cognitive device being used in one household has the potential to affect DTT reception in the adjacent household, just as if it were in the same household. Clearly households so affected cannot influence the use of the cognitive device in the adjacent household, which conflicts with the conclusion reached in paragraph 5.16.

Digital UK suggests that Ofcom confirms that the US measurements are valid for the full range of housing types in the UK. Providing that they are, then Digital UK has no reason to believe the proposed additional margin is unsuitable. The final sensitivity requirement would be affected by any revision to the minimum DTT protection threshold as addressed by our answer to Question 2 above.

Question 4: Do you agree with a maximum transmit power level of 13 dBm EIRP on adjacent channels and 20 dBm on non-adjacent channels?

The analysis appears reasonable. Digital UK therefore has no reason to disagree with the conclusion on the basis of the parameters used. Clearly, if any other parameters are changed as a result of this consultation, then the power levels would also need to be reviewed.

Question 5: Would it be appropriate to expect DTT equipment manufacturers to improve their receiver specifications over time? If so, what is the best mechanism to influence this?

The UK DTT platform differs from other digital television platforms by presenting an open market to equipment manufacturers. This means there is no mechanism, other than voluntary codes, to enforce minimum standards on equipment.

Equipment legacy is a significant barrier to introducing more stringent technical standards. The DSO programme, and other technical changes relating to DTT, has highlighted the number of non-compliant products still in operation, including first generation OnDigital set-top boxes which are still in use some 12 years after the launch of DTT. The increased popularity of large screen iDTVs (>32”) is encouraging early equipment replacement which results in consumers being more

likely to retain DTT equipment by using it to upgrade other television viewing locations in their home.

While it would be desirable for DTT equipment specifications to improve over time, in practice that is unlikely to happen. Price is extremely important and manufacturers will not of themselves increase that cost unnecessarily.

Ofcom can work with the industry through the auspices of the Digital Television Group and BERR, owners of the "Digital Tick" Certification Mark, to encourage performance improvements, but Digital UK does not consider it wise to base a licensing regime on an expectation that the technical performance of domestic equipment will improve over time.

Question 6: Do you agree that the reference receive level for wireless microphones should be -67 dBm?

Since this does not impact on DSO, Digital UK does not express a view.

Question 7. Do you agree with an additional margin of 59 dB for wireless microphones?

Since this does not impact on DSO, Digital UK does not express a view.

Question 8. Do you agree with a sensitivity requirement for -126 dB (in a 200 kHz channel) for wireless microphones?

Since this does not impact on DSO, Digital UK does not express a view.

Question 9. Do you agree with a maximum transmit power level in line with that for DTT? Are there likely to be any issues associated with front end overload?

Since this does not impact on DSO, Digital UK does not express a view.

Question 10. Do you agree that the sensitivity level for mobile television receivers should be -86.5 dBm?

Since this does not impact on DSO, Digital UK does not express a view.

Question 11. Do you agree with an additional margin of 20 dB for mobile television?

Since this does not impact on DSO, Digital UK does not express a view.

Question 12. Is it likely that mobile television will be deployed in the interleaved spectrum? If so, would it be proportionate to provide full protection from cognitive access?

Since this does not impact on DSO, Digital UK does not express a view.

Question 13. Should we take cooperative detection into account now, or await further developments and consult further as the means for its deployment become clearer?

Since this does not impact on DSO, Digital UK does not express a view.

Geolocation Databases

Question 14. How could the database approach accommodate ENG and other similar applications?

Since this does not impact on DSO, Digital UK does not express a view.

Question 15. What positional accuracy should be specified?

DTT coverage is planned to a 100m tile resolution. A positional accuracy of at least 100m for a cognitive device would therefore seem to be appropriate.

Question 16. How rapidly should the database be updated? What should its minimum availability be? What protocols should be used for database enquiries?

The database needs to reflect the current operational state of the DTT transmitter network. Since changes to the network are planned well in advance and the date of any changes are known, a database update frequency of 24 hours would be adequate.

Digital UK does not express a view about the database availability or access protocols.

Question 17. Is funding likely to be needed to enable the database approach to work? If so, where should this funding come from?

Since this does not impact on DSO, Digital UK does not express a view.

Question 18. Should the capability to use the database for spectrum management purposes be retained? Under what circumstances might its use be appropriate?

Since this does not impact on DSO, Digital UK does not express a view.

Question 19. Should any special measures be taken to facilitate the deployment of cognitive base stations?

Since this does not impact on DSO, Digital UK does not express a view.

Beacon Reception

Question 20. Where might the funding come from to cover the cost of provision of a beacon frequency?

Since this does not impact on DSO, Digital UK does not express a view.

Question 21. Is a reliability of 99.99% in any one location appropriate? Does reliability need to be specified in any further detail?

Since this does not impact on DSO, Digital UK does not express a view.

Comparing the Different Options

Question 22. Do you agree with our proposal to enable both detection and geolocation as alternative approaches to cognitive access?

Digital UK agrees that a geolocation solution represents the lowest risk to the DTT use of the spectrum, subject to the parameters used to identify areas of available spectrum are appropriate and the database being accurate. However, we do not consider that the risks relating to a detection solution are sufficiently great to be ruled out. We therefore agree with the proposal to enable both alternative approaches.

Other Important Parameters

Question 23. Should we restrict cognitive use of the interleaved spectrum at the edge of these bands? If so, what form should these restrictions take?

Since this does not impact on DSO, Digital UK does not express a view.

Question 24. Do you agree that there should be no limits on bandwidth?

Since this does not impact on DSO, Digital UK does not express a view.

Question 25. Do you agree that a maximum time between checks for channel availability should be 1s?

A maximum time between checks of 1s would seem to be appropriate for protecting DTT use of the spectrum.

Question 26. Do you agree that the out-of-band performance should be -44 dBm?

On the basis of the analysis set out in the consultation, the proposed limit appears to be suitable.

Question 27. Is a maximum transmission time of 400ms and a minimum silence time of 100ms appropriate?

Since this does not impact on DSO, Digital UK does not express a view.

Question 28. Is it appropriate to allow "slave" operation where a "master" device has used a geolocation database to verify spectrum availability?

On the basis of the discussion set out in the consultation, this proposal appears to be reasonable.

Impact Assessment

Digital UK believes that the number of households exposed to the risk of interference to their DTT reception is higher than calculated in the Consultation, as discussed in our answer to Question 2.

Digital UK does not disagree with other aspects, or the conclusion, of the impact assessment.

30 April 2009