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Met Office response to Ofcom Consultation:

The future role of spectrum sharing for mobile & wireless data services

The Met Office, as the UK's national meteorological service, is dependent on reliable access to key spectrum for remote sensing and radio-communications in order to deliver its public task and related services in relation to the prediction of weather and climate. Many of the frequency bands allocated to meteorological use are in themselves subject to sharing with other users both on a licensed and license-exempt basis and a key challenge is to ensure coordination and prevent interference to the incumbent user. As such, please find below the Met Office's response to relevant questions raised in this consultation as relate to our experience of these issues.

Question 2: Will an extension of the 5 GHz band be required if Wi-Fi is to play a sustainable role in meeting the growing demand for indoor wireless connectivity? There have been significant variations in estimates of both capacity and user requirements put forward in the run-up to WRC-15 by proponents for an extension to the 5 GHz wifi allocation under Agenda Item 1.1 considering new allocations for wireless broadband. The Met Office appreciates the need for consideration of evolving technologies and their spectrum requirements as part of a wider national and European communications strategy. However, we are not convinced that projections of both usage and related economic benefit are as yet either mature or de facto outweigh the value of existing uses which might be expected to see constraint imposed upon capability as a result of any new allocation (whether or not wifi is only intended to be used for indoor use only). Our experience to date of sharing with license–exempt use (including both indoor-only and unrestricted outdoor use/non-compliance scenarios) is not entirely reassuring in this context and we therefore do not support extensions that would threaten existing UK and European (GMES) investment in Earth Observation/EESS (notably in the band 5350-5460 MHz). A sustainable approach to meeting growing demand for wifi should also account for the impact on other valuable uses of spectrum and thus the Met Office is yet to be convinced that said 5 GHz extension is required.

Question 5: Will the increased deployment of Wi-Fi access points outdoors create a risk of reduced quality of service performance over the longer term and, if so, will approaches to co-ordinate access point performance be able to mitigate this risk? Para 3.37 identifies a scenario where a "tragedy of the commons" may be expected in terms of too many uncoordinated outdoor wifi points being rolled out in license-exempt spectrum and thus affecting other wifi users. This may indeed be a significant risk in terms of quality of service to RLAN/wifi operators, but limited consideration appears to be given to the enhanced interference risk to the quality of service for incumbent coordinated users of spectrum where they share with license-exempt spectrum (such as is already the case in the 5.6-5.65 GHz band allocated to meteorological radar). The risk in this case comes from both direct interference and an increasing noise floor generally if, as projected, there is an explosion in 5 GHz wifi use – estimates given by the RLAN industry are in the order of a thirteen times increase by 2017. Any coordination, therefore, in the existing 5 GHz wifi allocation could represent something of a mitigation against this increasing interference risk, but it is our view that significant consideration needs to be given to the protection requirements of incumbent non-wifi users.

Question 8: Would access to these bands best be realised through licensing or licence exemption? Once license exemption is sanctioned in a given band, it becomes not only extremely difficult to control impacts to incumbent users but also increasingly challenging to clear said use should policy subsequently change. Where sharing of bands is required on a geographical basis, it is our opinion that this should generally be done on a licensed basis.

Question 10: Do you believe DSA could play an important future role in the future in enabling a better quality of service and low barriers to spectrum access alongside conventional licensed and LE spectrum approaches? Clearly the development of any technology that potentially enhances the way in which competing uses for scarce spectrum can be facilitated at the same time should be of interest to all stakeholders. Para 4.28 discusses present and future approaches to geolocation databases, which may show promise, but experience of similar sharing technologies such as Dynamic Frequency Selection (DFS; for RLAN in respect of 5.6 GHz weather radar) shows that (whether in terms of compliant or non-compliant scenarios in a license-exempt environment) the implementation of such potential solutions must be properly thought through and implications for sharing, interference and future clearance fully anticipated. We believe that for DSA type solutions to work in practice, the national regulator must play a strong role in issues of development, certification, market-surveillance and enforcement.

Question 11: What barriers still remain to the realisation of cost-effective sensing appropriate for low-cost consumer devices and what activities are ongoing to try to address them? Cost and effectiveness of the solution would in themselves intuitively appear to be the main barriers to mass implementation of mitigation/management technologies for license-exempt use going forward. As above, the Met Office endorses the development of any technology that enables better sharing and more efficient use of spectrum without degrading service levels for the incumbent user. However, better regulation needs to be put in place at certification, enforcement and ongoing market surveillance level for any such scenario to work in practice, as non-compliance is often a response to unit cost constraints on mass market equipment.

Question 13: What role should Ofcom play, if any, to support the development of DSA and relevant technologies? As per our answer to Q.10 above, we believe that Ofcom should play a strong role in issues of development, certification, market-surveillance and enforcement.