

## Your response

Question	Your response
	<p>Confidential? – N</p> <p>ESA/EUMETSAT embrace innovation and the introduction of innovative applications. However, it is ESA/EUMETSAT understanding that those applications should use the appropriate frequency allocations in the Radio Regulations (RR) (i.e. more than 50 GHz available for mobile service (MS) and fixed service (FS) applications within the range 100-200 GHz).</p> <p>In the absence of a market analysis, other evidence-based rationale, and/or further information with regard to the spectrum needs that could justify the need of additional spectrum (18 GHz) , ESA/EUMETSAT is of the view that the bands allocated to MS and/or FS and/or RLS in the RR should be initially targeted for such innovative applications.</p> <p>ESA/EUMETSAT note the relevant activities in various international fora (ECC/SE19, ITU-R WP 5C, ETSI) regarding the use of the bands allocated to the FS within the range 100-200 GHz. In addition, ESA/EUMETSAT note that WRC-19, under AI 1.15, identified already wide bandwidths for the deployment of the desired applications. Therefore their consideration is an obvious advantage as it promptly facilitates the introduction of desired innovative applications.</p> <p>ESA/EUMETSAT agree that the generic technical and operational characteristics of EESS (passive) to be considered in the spectrum sharing and compatibility analysis are set in Recommendation ITU-R RS.1861-0. However, as ESA/EUMETSAT already informed Ofcom , this Recommendation is in the process of being updated within ITU-R WP7C to account for the most recent EESS (passive) systems. In order to ensure that EESS (passive) could be duly considered, ESA/EUMETSAT provided Ofcom with the required technical and operational details of MWI, MHS, MWS, ICI and AWS</p>

instruments operating the bands under consultation. At this date, their consideration in the compatibility analysis is found missing, but it is of high importance as these sensors will operate in these bands for the next decades.

ESA/EUMETSAT agree that EESS (passive) interference criteria to be considered is set in recommendation ITU-R RS.2017-0. However, considering the need for sharing the spectrum, the interference margin calculated from the interference criteria needs to be apportioned, as appropriate, considering the incumbent services in-band and in adjacent bands. Considerations with regard to this aspect are found missing as the deployment scenario for the terrestrial devices is derived based on the assumption that the entire interference margin is available exclusively for the devices under consideration.

ESA/EUMETSAT acknowledge the alignment of results provided in Table 3.1, namely the negative interference margins as found assuming main-beam coupling and agree on the fact that such alignment shall not be kept as the terrestrial devices shall not track, in principle, the satellite. However, as expressed before, ESA/EUMETSAT have concerns about the rationale for selecting the maximum elevation angle (i.e restriction to 20 degrees). It would be beneficial if Ofcom could consider such worst-case scenario and study the impact of the envisaged devices with main beam elevation angle spanning from 0 to 90 degrees on EESS (passive). This consideration allows for a more realistic assessment of the actual deployment scenario, in contrast exclusively with the desired and foreseen one, especially considering the case of licence-exempted devices, as there are obvious examples where exceeding the maximum elevation angle, as assumed, could be a relevant deployment scenario and therefore envisaged by the user of these systems, despite the elevation angle restriction imposed.

That is why ESA/EUMETSAT consider that the development of technical conditions should be complemented by appropriate spectrum monitoring policies, devices deployment

control mechanisms and effective spectrum enforcement strategies. Information is currently missing on these aspects in order to ensure the conformance of the technical conditions and of the assumptions sustaining the results brought to consultation, for both the case of licence-exempted and licenced devices.

Regarding interference detection and mitigation, ESA/EUMETSAT stress the fact that the noise floor will increase gradually with the deployed number of devices. As the interference level will be initially low (still in the expected range of measurement values) and will therefore be interpreted as valid measurements, RFI is practically not detectable at this stage of deployment. By the time the aggregate interference is strong and wide enough, falling outside of plausible measurement values, it will be too late to introduce any provisions with restrictions to the new desired innovative systems. The consequences are that erroneous and increasingly wrong measurement data were carried along in the forecast systems and climate records until they are flagged as obviously corrupted data and consequently disregarded. Thus, taking corrupted data as valid is injuring the mission performance and all systems relying on these data and missions, as for example the NWP, without noticing it. This is the reason why bands allocated to EESS (passive) and their adequate protection are so important for radiometric applications in general, and why any sharing with active services needs to be carefully assessed.

ESA/EUMETSAT also find that considerations are missing with regard to the envisaged mechanisms to protect the purely EESS (passive) subject to RR No. 5.340, adjacent to the targeted bands.