Consultation title	Fixed wireless spectrum strategy: Consultation on proposed next steps to enable future uses of fixed wireless links
Organisation name	Lattice Semiconductor

Response

Question 1: Do you agree that we have identified the key drivers likely to have a significant impact on the spectrum demand for fixed wireless links? If not, please provide further detail and evidence to support your answer. **Do you have other comments to make/points to raise with us on these issues?**	Yes, we agree that you have identified most of the key drivers. We believe that Fixed Wireless Access (already identified in the consultation) will be a key tool for competitive service providers / ISPs. We would propose to add (a) municipal and transport infrastructure networks (traffic monitoring and control, surveillance, etc) and (b) vehicle to infrastructure networks.
Question 2: Do you agree with our conclusions on spectrum implications and our proposed strategy/next steps for each band? **Are there any other considerations of significance that you feel we should have included or do you have other comments to make/points to raise with us on these issues?** **Please provide as much detail as possible to support your answer.**	Yes
Question 3: Do you agree with the items we have identified for further consideration? Are there any other significant areas that you believe should be included? If so, please include all necessary evidence to support your view.	Yes
Question 4: Do you agree with our proposal to change the authorisation regime in the 64 – 66 GHz band to licence exempt to create a common authorisation approach across the 57 – 66 GHz band for fixed outdoor installation use and that this would be a benefit to UK citizens and consumers?	Yes
Question 5: **a) Do you agree with the proposed new technical conditions in Table 6 to facilitate equipment intended for fixed outdoor installation in the 57 – 66 GHz band? Please provide evidenced views /alternatives if you**	a) We agree with your proposal to relax the existing minimum antenna gain requirement of 30 dBi and to remove the maximum output power limitation for equipment operating at an eirp level of 40 dBm and below.

disagree with our proposal. Do you consider any additional conditions should be mandated as part of a licence exemption to manage the interference environment? **b) Do you agree with our assessment that the proposed changes in technical conditions will have minimal impact on existing use and are appropriate to manage the future outdoor interference environment?** **c) Are there likely to be any fixed outdoor installation use cases that will require operation at eirp levels above 55 dBm? If so, please provide evidence of how the coexistence with the different outdoor users could be ensured?**	Fixed wireless access is a key driver for fixed wireless services. Fixed wireless access to multi-story buildings requires wide horizontal and vertical beam steering. Simultaneous horizontal and vertical steering cannot be realized with a 20dBi minimum antenna gain requirement without using unnecessarily expensive large arrays. We propose a lower minimum antenna gain requirement of 15dBi. This allows the practical realization of an antenna with 90 degrees horizontal steering range and 60 degrees vertical steering range. Fixed outdoor installation use cases for the 60 GHz band range in distance from ~50 meters to ~ 500 meters. The scalability of phased arrays allows eirp and antenna gain to increase with array size to service different use cases. We believe that the eirp can be scaled with antenna gain without a detriment to the interference environment. We propose that the maximum eirp increase above 40dBm by 1dBm for each 1dBi increase in antenna gain above 15dBi. b) Yes c) No, we are not aware of fixed outdoor installation uses cases that will require operation at eirp levels above 55 dBm.
Question 6: **a) What are the use cases and technical parameters envisaged for the 66 - 71 GHz band? Are they likely to be similar to those in the 57 – 66 GHz band? If so, what are your views on extending the same or similar technical conditions as described above for the 57 - 66 GHz band (both existing wideband data transmission (SRD) and new fixed outdoor technical conditions) to the 66 – 71 GHz band to facilitate both fixed and mobile use cases.** **b) Please provide your view on whether the technical parameters of wideband data transmission (SRD) as shown in Figure 4 are suitable to facilitate mobile/portable equipment including use outdoor? If you do**	a) The use cases and technical parameters for the 66-71 GHz band are likely to be similar to the 57 – 66 GHz band. It is practical to implement equipment that operates across the entire 57-71 GHz band. We support extending the same or similar technical conditions as described for the 57 - 66 GHz band (both existing wideband data transmission (SRD) and new fixed outdoor technical conditions) to the 66 – 71 GHz band. b) Our view is that the technical parameters of wideband data transmission (SRD) as shown in Figure 4 are suitable to facilitate mobile/portable equipment including use outdoor.

not consider they are suitable, what alternative technical parameters do you think should be considered? **Please provide as much detail to your answer as possible and your considerations on the co-existence aspects.**	
Question 7: Do you agree that there is a continued need for future low capacity fixed link applications? **If so, please provide information to support your view and what alternatives you would consider appropriate should the upper 1.4 GHz band no longer be available.** **Please provide clear evidence to support the reasons for your views.**	No opinion
Question 8: **Do you consider there is merit in considering making the bands 52 GHz and 55 GHz available under alternative authorisation approach(es) such as block assignment? If so, what would you consider to be the best approach(es)? Please provide detailed views to support your response.**	No opinion
Question 9: **Do you think we should review our authorisation approach to any other band used for fixed wireless links?**	No opinion
Question 10: **a) How do you envisage W band and D band will be used for mobile backhaul provision and the likely timescales? Please provide as much detail as possible on deployment scenarios and whether this would include indoor use. Are there any other types of applications (other than mobile backhaul) that could be suited for these bands?** **b) What are your views on the most appropriate authorisation approach for the W and D bands? Please provide as much detail and technical evidence as possible in your answer.**	No opinion
Question 11: Which capacity enhancing	Not applicable

technique(s) are you using or planning to use? Please provide detail / evidence and clearly explain why and how each technique is planned to be used and if you consider there are any other aspects that should be considered.	