Ofcom

29 September 2022

Call for input: UK preparations for the World Radiocommunication Conference 2023 (WRC-23)

Dear Sir/Madam,

Innovation Lambda is a consulting firm specialising in connectivity founded in 2020 by Dr Pasquale Cataldi and based in London. We provide consulting services in the Information and Communications Technology (ICT) and the Telecommunications, Media and Technology (TMT) sectors to support companies, policymakers and regulators to unleash innovative and sustainable products and services, with a particular focus on radiofrequency spectrum matters.

Innovation Lambda welcomes Ofcom's call for input in preparation for the World Radiocommunication Conference 2023 (WRC-23).

Executive Summary Position

Innovation Lambda PIP respectfully asks Ofcom to consider making the 6425-7125 MHz band available for usage by WAS/RLAN (wireless access systems/radio local access networks) on a licence-exempt basis.

The justification for this request is contained in the responses to the relevant questions below.

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Responses to consultation questions

Question 1: Do you agree with the prioritisation of the agenda items, as shown in Annex 5, and if not why?

Innovation Lambda agrees with Ofcom's classification of agenda item (AI) 1.2 as high priority item. The decision for or against an identification of the 6425-7025 MHz band (Region 1) and the 7025-7125 MHz band (globally) for IMT is of major economic and strategic importance. An IMT identification of one or both bands would most probably make these bands unavailable for licence-exempt use and hence greatly reduce the ability to deliver gigabit services to the end user, whether consumer or enterprise.

Question 3c: What is your view on the use of 6425-7025 & 7025-7125 MHz, and what evidence do you have to support this view? How does that inform your views on an IMT identification in these bands?

Response to RSPG consultation

Innovation Lambda agrees with the six points presented by the UK Administration in document ECC PT1(22)210 and believes that none of those points can change significantly from either a technical or commercial point of view before WRC-23. For this reason, we believe that Ofcom should endorse this position in full and ensure that it is adopted as the final position by the UK Administration.

With respect to the points noted in ECC PT1(22)210, we make for each point the following observations:

1. We agree with this point.
   We note that IMT traffic is and will most likely always be a minimal fraction of the traffic on fixed networks as the data published by Ofcom confirms.
   We also point out that it is unlikely that mobile spectrum demand will continue to increase at the current rate consistently in the future, and we caution against exponential trends or studies assuming that all data traffic will be delivered through IMT networks. Indeed, Innovation Lambda believes that the current rate of increase in mobile data consumption is driven by user behaviour and the increase rate will most likely slow down unless there is another significant evolution in user behaviour – we venture to say that the future will be dominated by personal area networks, with very low power transmissions, hence with minimal impact on IMT but mostly delivered by licence-exempt technologies.
2. We agree. In its discussion paper *Meeting future demand for mobile data*, Ofcom indicated three ways to meet data demand. Innovation Lambda believes that densification and use of mmWave should have a bigger role in meeting the increase in demand and we applaud the UK Administration for stressing this point.
   We also observe that a considerable amount of low-band and mid-band spectrum has already been assigned to IMT. In its consultation response to the Ofcom discussion paper, BT notes that "currently, 927 MHz of mid-band spectrum is assigned on a national basis to public mobile network operators in the UK." Furthermore, in their response, Arqiva cautions that "mobile currently uses only 71% of its sub 1 GHz spectrum. While it is allocated spectrum between 694 – 960 MHz (a total of 266 MHz), it uses only 60 MHz in the 700 MHz band, 60 MHz in the 800 MHz band and 70 MHz in the 900 MHz band. […] Rather than allocate more valuable spectrum resources to mobile, Ofcom's focus should be on ensuring mobile gets the maximum value out of its current allocations."
   Innovation Lambda believes that assuming that the growing mobile demand could only be met by licensing more bands would be a worrying precedent that would undermine Ofcom's aim to enable the use of the spectrum in an efficient and effective way to the benefit of citizens and businesses.
3. We completely agree. After an IMT identification, it will take years to prepare the band for IMT use. We note that the inevitable delay in using this band does not seem to worry UK mobile operators (MNOs), hence bringing to question the opportunity cost of leaving the band not accessible to new users for many years. Indeed, some MNOs regard the upper 6 GHz band as a candidate for 6G (which, by the way, has yet to be defined). In its response to Ofcom's discussion paper *Meeting future demand for mobile data*, MNO Three says: "The [6 GHz] spectrum has also been earmarked as a pioneer 6G band." It further suggests that Ofcom should make the spectrum available to MNOs by 2026. "Once the spectrum has been allocated to mobile use, MNOs typically need around two years to deploy it. For example, 6 GHz will require new massive MIMO units that MNOs would need to source and deploy after the auction." This claim implies that the IMT networks would not use the 6 GHz spectrum until 2028 at the earliest.
   We also observe that if spectrum licences were to be issued in the band, these would most likely constrain the growth of the incumbent services, such as fixed links. If IMT identification were to happen and mobile licenses issued, these will be on a non-exclusive basis (as usual in the UK). In theory, it would still be possible for new fixed-service users to access the band. However, it would be expected that access would be granted on a first-come, first-served basis, so once the

deployment of 5G base stations happens the space for new fixed links would be really reduced if not non-existent.

Response to RSPG consultation

4. We observe that even if the technical studies were to suggest that IMT services could coexist with incumbent services, it would still be necessary to assess whether the technical constraints of coexistence would be enough to support commercial mobile services that bring socio-economic benefit to citizens and businesses. Such constraints would most likely curb the funds governments would hope to raise for the spectrum licences.
   In practice, the latest position of the IMT community is that the band would be used by MNOs only for capacity in urban (we observe that in the recent past they also made other contradictory claims), thus bringing to question whether the use of the band will not bring benefit to the whole population. If we look into the population data provided by the UK government, we see that in England only 36% of the population lives in Urban Major Conurbation. Likely this percentage grows when considering commuting, but it is obvious and clear that if the band were opened to WAS/RLANs, the percentage of the population who would benefit from this spectrum would be much higher.
5. Innovation Lambda agrees with this statement. Countries representing more than 40% of the global gross domestic product (GDP) have already opened, or have proposed opening, the full 6 GHz band for licence-exempt use (an updated status of the band can be found on the website 6ghz.info). What is clear is that the 6 GHz band will not be harmonised for licensed 5G. In fact, we observe that the identification of the upper 6 GHz band for IMT use could disrupt global harmonization efforts for licence-exempt use and potentially cause major economic damage – not to mention put Region 1 on the slow lane for the development of new licence-exempt products and services.
6. The world is full of high-quality technical standards that have never been adopted at scale. Indeed, the availability of standards is nothing more than an important step toward mass production, but nowhere is an indication of whether the products will reach scale. For this reason, it makes more sense to look at the availability of Wi-Fi 6E certified products already in the market and their large deployments (see for example the deployment at the University of Michigan), rather than imagine a massive use of the band by 3GPP equipment. The only thing that the availability of a 3GPP standard for this band has proven, as correctly pointed out by the UK Administration, is that there is no need for IMT identification.

Conclusions

Innovation Lambda respectfully asks Ofcom to open the 6425-7125 MHz band for usage by WAS/RLAN on a licenceexempt basis and to endorse a position of “No Change” for the corresponding Agenda Item (AI 1.2) at WRC-23.

Innovation Lambda also encourages Ofcom to move at speed to enable UK citizens and businesses to enjoy the socio-economic benefits that Wi-Fi delivers.

Kind regards,

Dr Pasquale Cataldi

Managing Director, Innovation Lambda Limited