Virgin Media O2 response to Ofcom's consultation on

Enabling spectrum sharing in the upper 6 GHz band:

Shared licences for local, low power indoor use of the upper 6 GHz band (6425-7070 MHz)

11 April 2022

INTRODUCTION

Virgin Media O2 ("VMO2") welcomes the opportunity to respond to Ofcom's consultation on enabling spectrum sharing in the upper 6 GHz band: shared access for local, low-power indoor use of the upper 6 GHz band (6425-7070 MHz)[1].

As we highlight below, the upper 6 GHz band is important. Any decisions that Ofcom take on its future use could result in significant benefits, or (if such decisions are mis-directed), significant consequences. As a result, we encourage Ofcom to take an holistic approach when assessing and making decisions on any changes in use of the band. This should include carrying out a full and proper analysis of any costs, benefits, and risks, of potential uses, with an analytical perspective applied over a sufficiently long period of time.

VMO2 believe that this approach is key to ensuring that Ofcom secures the optimal use of the spectrum and that it succeeds in delivering the ambition and long-term benefits that the band is capable of, thus resulting in the greatest value for the UK.

[1] https://www.ofcom.org.uk/__data/assets/pdf_file/0022/233194/spectrum-sharing-6ghz.pdf

MAIN RESPONSE

Importance of the upper 6 GHz band

The upper 6 GHz spectrum band comprises the largest single remaining block of mid-band spectrum that could be allocated to either licensed mobile use, or unlicensed services, for the foreseeable future. This mid-band spectrum offers a sweet spot between providing a reasonable level of coverage and good capacity. It is in this band where careful planning and decisions are required by Ofcom, as the amount of this spectrum that is available to Mobile Network Operators ("MNOs") in the future, will directly influence the extent to which they are able to meet demand and deliver the best possible mobile connectivity.

The band is of particular importance to the future of 5G in the UK, as well as in other countries across the world. This is because, over the coming years, existing mobile spectrum will become rapidly exhausted by the continuous growth in demand for mobile data, fuelled by increased adoption of 5G and greater usage of existing services, as well as newly developed ones.

We anticipate annual traffic growth to persist along the lines that we have experienced on our network in the most recent years, and within the bounds of Ofcom's own forecasts. Growth rates of this magnitude mean that total traffic more than doubles every three years. This is something that is not just evident in the UK, but has also been seen across Europe, as customers demand for mobile connectivity and services remains strong.

In response to this demand, MNOs plan to densify their networks as a way of increasing capacity in key areas. However, densification has practical and economic limits. MNOs will not be practically able to, nor could commercially justify, densification on the scale required to meet demand and deliver high-quality services, across all areas. The availability and deployment of additional mid-band spectrum is thus the only viable solution for MNOs to meet demand and provide the highest quality mobile services across a wider area, before 2030. However, this requires more mid-band spectrum to be released for mobile use, at the right time.

The availability of a sufficiently large block of mid-band spectrum, such as the upper 6 GHz band, will be crucial for MNOs to avoid congestion in key areas and deliver the capacity required to support the full suite of 5G use cases in an economically viable way. It will be especially important to enable delivery of services where the deployment of millimetre wave ("mmWave") spectrum will not be technically suitable, or economically viable.

The absence of timely access to sufficient mid-band spectrum for mobile use (such as that offered by the upper 6 GHz band) is likely to have a detrimental impact upon UK consumers and businesses. It would mean that MNOs would be forced to densify their networks to such an extent to provide the capacity to meet demand, that the cost of doing so would be so great that it would impact the use of 5G technology, and/or need to be recouped by being passed on to customers through an increase in prices.

The alternative is that, without the required spectrum, operators would have to accept a level of reduction in capacity of mobile services, resulting in congestion and degradation of service for consumers. This would represent a failure to deliver the level of ambition and services that the UK will expect and leave the UK at a disadvantage relative to competitor countries which prioritise spectrum allocation to International Mobile Telecommunications ("IMT").

We further set out our views in relation to the importance of the allocation of mid-band spectrum for mobile use, in our response to Ofcom's recent discussion paper on mobile networks and spectrum: meeting future demand for mobile spectrum[2]. This includes our assertion that Ofcom should commit to releasing more mid band spectrum for mobile and set out a clear timetable for doing so.

The need for an holistic approach

The demand for mobile data is expected to continue to grow for the foreseeable future and thus it is important that Ofcom takes a sufficiently long-term view with respect to the release of spectrum for mobile use. It should undertake the necessary planning and ensure that the right decisions are taken on the allocation of key blocks of spectrum, such as the upper 6 GHz band. It must exercise diligence and caution to ensure that it does not take steps now, that could in the future, jeopardise the optimal use of spectrum, and the ability of MNOs to meet demand and provide the UK with the high-quality mobile services that will be expected.

Given the importance of the band that we have highlighted above (and the fact that Ofcom itself acknowledges the potential for use of this spectrum by licensed 5G mobile to bring benefits to consumers) any activity in relation to its ongoing use, must be carefully considered. Ofcom should take into account the ongoing work that is underway in relation to the band, including compatibility with different uses and services, before any decisions are made in relation to authorisation, and to ensure the best outcome. There should be a thorough regulatory assessment to include potential impacts and a proper cost/benefit analysis conducted, which is capable of standing up to scrutiny. We are concerned that this consultation does not comprise such analysis and it therefore risks poor outcomes in the future.

The World Radiocommunication Conference 2023 ("WRC-23") and ongoing studies

Ofcom acknowledge that there is ongoing technical compatibility work to establish whether, and how, 5G mobile and licence-exempt Wi-Fi could share the band with each other, or other incumbents, and it states that it is actively participating in the international preparations for the forthcoming WRC-23, and separate work in CEPT, including technical compatibility activities for the upper 6 GHz band.

Given the ongoing nature of this important international work, we are surprised that Ofcom is proposing to proceed with enabling spectrum sharing (which is expected to be used for RLAN and Wi-

[2] https://www.ofcom.org.uk/__data/assets/pdf_file/0017/232082/mobile-spectrum-demand-discussion-paper.pdf

Fi) in the band, i.e. it is effectively undermining this ongoing work. We believe that it is premature and inappropriate for Ofcom to proceed with its proposals in such a hasty fashion, without first waiting for these studies to be concluded.

This is especially so, as it is not currently clear whether shared access local licensing in the upper 6 GHz band today, would or would not, result in interference to 5G mobile services which may be delivered using the spectrum in the future. Ofcom's stated view that it *might* be possible for licensees to coexist with future mobile networks on a geographical basis, and that it considers this to be the most likely scenario, is presumptuous and not sufficiently robust. The facts should instead be established through the conclusion of the work studies that are already underway. Furthermore, this approach appears to contradict Ofcom's statement that consideration of the band for future mobile use, is out of the scope of the consultation.

In its discussion document on mobile networks and spectrum: meeting future demand for mobile spectrum, Ofcom correctly identifies that making additional spectrum available for high-power outdoor mobile use would likely require clearing bands of existing users. Given the significant amount of time it is expected to take to clear and repurpose such spectrum (which Ofcom believe will be around 6-8 years), it is critical that Ofcom commences the required preparatory process now, to start the groundwork and lay the foundations for release in the future. This includes carrying out vital work in relation to preparations for, and having a clear UK Government position on, WRC-23, in relation to the upper 6 GHz band.

In its current consultation, Ofcom identifies that the 6425-7025 MHz band (Region 1) and the 7025-7125 MHz band (globally) are on the Agenda for WRC-23 (Agenda Item 1.2) for possible allocation to IMT in the Radio Regulations. Designation to IMT would be the most effective way to ensure that the band can be used on a large scale for delivery of mobile services. It would ensure that the required ecosystem develops and is at a scale that supports efficiency and innovation.

Given the important ongoing work and the potential for a decision at WRC-23 to be made in relation to designation of the band, we believe that Ofcom's proposal is premature. Ofcom should instead focus its efforts on carrying out vital work to prepare for WRC-23, including applying a particular focus on candidate mid-band spectrum and helping to ensure there is a clear UK Government position on mobile designation for the upper 6 GHz band, before making decisions on the allocation of the spectrum for use on a shared basis.

We are concerned that the proposal, if implemented, risks an outcome that may only provide very limited benefit on a short-term basis, and could potentially restrict and/or delay more strategic and longer-term benefits which could be derived from future use of the band by mobile use. If between now and the time that future use of the band is implemented, shared access licences are issued and this develops significantly, then this could not only create expectations amongst the licence holders, but also represent a challenge and delay to the future authorisation.

Ofcom's proposals are premature and risky

We are surprised by Ofcom's proposal, as it is not something that we are aware has previously been considered by Ofcom publicly, prior to its inclusion in Ofcom's Proposed Plan of work 2022/23[3]. The proposal appears to have come somewhat out of the blue. Furthermore, it is not clear in the current consultation what level of demand has been expressed, and by whom, in relation to using the band on a licenced basis and for the use that Ofcom envisages.

In its consultation, Ofcom states the belief that its proposal to open the band to spectrum sharing, will help to facilitate new and innovative RLAN use cases, and that (although its proposal is to enable use on a technology-neutral basis) it expects RLAN, including Wi-Fi, to be the most likely technology used.

Ofcom also states that potential users of the band could apply for multiple licences to cover a large indoor area and that the licences would be issued for an indefinite term, with Ofcom reserving the right to revoke licences for spectrum management purposes, subject to a one-month minimum notice period. In addition, there will be no limit to the number of devices allowed per licence.

VMO2 is concerned by the timing and approach of Ofcom's proposal. It risks setting expectations in relation to the use of the band i.e. sending out a premature and inappropriate signal of expected future usage. This could cause problems down the line and risks creating momentum in the opportunistic usage of the band, which could lead to barriers to realising greater value in the future.

Furthermore, Ofcom proposal does not offer any security of tenure for prospective licensees (as any shared licences that are issued can be revoked at a month's notice). It is therefore unlikely to be attractive, or successful, in the way Ofcom envisages. If Ofcom decides that it *must* proceed with enabling spectrum sharing in the band now, without first waiting for the outcome of WRC-23 (we are not convinced that it is sensible to do so) then an alternative and less risky approach, would be for Ofcom to instead link the licences to the outcome of WRC-23. This could be implemented through the licences having a fixed term of 3 years (the same as the current local access licences) but with an expectation of renewal only if the spectrum is not allocated to IMT, following WRC-23. This offers a pragmatic solution and would allow Ofcom to proceed with enabling shared access in the band, whilst retaining sufficient control and avoiding the risk of creating problems for potential allocation to mobile, post WRC-23.

Sufficient mid-band spectrum is already available for shared and Wi-Fi use

Ofcom's 2019 statement on enabling wireless innovation through local licensing[4] resulted in a large amount of spectrum being made available for shared use. This included 400 MHz of spectrum in the 3.8-4.2 GHz becoming available, on both an indoor and outdoor basis. Given the existing availability

[3] https://www.ofcom.org.uk/__data/assets/pdf_file/0023/229640/Consultation-Ofcoms-proposed-plan-of-work-2022-23.pdf

[4] https://www.ofcom.org.uk/__data/assets/pdf_file/0033/157884/enabling-wireless-innovation-through-local-licensing.pdf

of such a large amount of spectrum mid-band spectrum for shared use, we are surprised that Ofcom is proposing to take further steps to provide additional spectrum for the same use, especially in a band that is of key strategic importance and is currently subject to ongoing work studies and likely to see a key decision made on its future at WRC-23.

We are concerned that IMT identification could be stalled by a conflicting push for this band to be identified for (unlicensed) Wi-Fi use. In 2020, Ofcom allocated 500 MHz of spectrum in the lower 6 GHz band (5925-6425 MHz), for licence-exempt use by RLAN equipment, including Wi-Fi[5]. This almost doubled the amount of spectrum available for Wi-Fi use. At the time, Ofcom stated that it anticipated that making this spectrum available would enable new technologies and improvements in equipment performance, improve consumer and industrial Wi-Fi experience, and reduce congestion in existing channels.

Given the 500 MHz of existing spectrum in the lower 6 GHz band that Ofcom has already made available for Wi-Fi use, we do not see a clear and immediate need for Ofcom to additionally proceed with enabling the upper 6 GHz band for shared use for RLANs, including Wi-Fi use.

Conclusion

We disagree with Ofcom's proposal to enable the upper 6 GHz band for shared access use at this time. Ofcom should avoid prioritising work to fast-track opportunistic shared access to this important band, which risks enabling its longer-term value. Instead, we encourage Ofcom to take a more holistic approach. This involves conducting a full and proper assessment to determine the optimal use of the spectrum, with a focus on delivering long term benefits and value from the band.

Ofcom's proposal also leads us to consider whether its current spectrum sharing framework is sufficiently multi-directional. Whilst spectrum sharing opportunities into MNOs existing spectrum by third parties have been enabled, and Ofcom is creating further opportunities for other users to access key mid-band spectrum, opportunities for MNOs to share or otherwise gain access to such spectrum, do not appear to have been properly examined, nor progressed.

We disagree with Ofcom's stated view that consideration of the band for future mobile use is out of scope of the consultation. On the contrary, Ofcom should not make decisions about the band in isolation, especially decisions that could see developing increased use of the band (and therefore impact on future clearance activities and result in unnecessary additional work and consultation). It should not include considerations of potential future co-existence in the band, without first undertaking a robust assessment of the potential costs, benefits and impacts of all the different uses. Instead, it should consult more fully and widely on other potential and longer term uses of the band, at the appropriate time. The current proposals, if implemented, would represent premature action by Ofcom, given the important ingoing work in relation to the band, and poses a risk to the efficient future allocation of the band and the development of a suitable ecosystem.

[5] https://www.ofcom.org.uk/consultations-and-statements/category-2/improving-spectrum-access-for-wi-fi

The wider context is that identifying the upper 6 GHz band for Wi-Fi would be a serious mistake. It would, at best, significantly delay the timeline at which it can become available for mobile use in the UK. This could significantly impact the quality of mobile connectivity that operators would be able to deliver over the medium and longer term.

As a result, we urge Ofcom not to proceed with its current proposals, and to instead focus its efforts on supporting designation of the upper 6 GHz band for mobile use and ensure that the UK Government's position is clear on the band as part of its preparations for WRC-23. This will help to develop a mobile ecosystem for this band, which is a requirement for it being used to deploy mobile services widely. This will be a key part of creating the right conditions to encourage greater investment in 5G in the UK, and in helping to deliver the level of ambition that the country will expect in terms of the availability of high-quality mobile services.

However, *if* Ofcom decides that it must proceed with enabling spectrum sharing in the band now (without first waiting for the outcome of WRC-23), it should take an alternative, less risky approach of linking the licences to the outcome of WRC-23. This can be implemented through a licensing regime which comprises a fixed term duration of 3 years, with an expectation of renewal only if the spectrum is not allocated to IMT.