facebook

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VIA EMAIL (SharedSpectrumAccess@ofcom.org.uk)

RE: Enabling opportunities for innovation: Shared access to spectrum supporting mobile technology

Facebook, Inc. ("Facebook") is pleased to submit these comments in response to Ofcom's consultation on enabling innovation through shared access to spectrum.[1] Facebook's mission is to give people the power to build community and bring the world closer together. And connecting people is a critical first step in executing this mission. The world is moving to 5G at a time when nearly half of the world's population is still not connected to the Internet,[2] including many in rural areas. Among those that have connectivity, many are under-connected. Connecting these people is a complicated effort that requires not just bringing network infrastructure to more people, but establishing a regulatory environment that fosters innovation and encourages investment. To do its part, Facebook, working with a range of partners, has launched several initiatives focused on connecting the unconnected and under-connected. Because it will take a mix of technical solutions to connect the unconnected, Facebook has been investing in research and development efforts in a range of technologies, including mobile, satellite, and aerial such as high altitude platform stations ("HAPS").

Improving connectivity in the United Kingdom and around the world will require spectrum policies that maximize the use of this limited resource, enhance network capacity and coverage, and allow the necessary flexibility for spectrum sharing across platforms. Enabling and promoting the sharing of spectrum resources will be critical to meeting spectrum demand today and in the long-term. In particular, mobile spectrum access is critical to connectivity as mobile is a key on-ramp to the Internet both in the United Kingdom and around the world.

Ofcom, as a leader in spectrum management, is in a unique position to develop shared spectrum access policies in mobile spectrum that would enhance connectivity in the UK while also setting an example for the rest of the world. To this end, Facebook supports Ofcom's efforts here to make spectrum available on a shared basis with the aim of furthering Ofcom's ambition "to see comprehensive mobile coverage for people across the UK, and to create

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[1] Ofcom, Enabling opportunities for innovation: Shared access to spectrum supporting mobile technology (18 Dec. 2018) *available at* https://www.ofcom.org.uk/__data/assets/pdf_file/0022/130747/Enabling-opportunities-for-innovation.pdf. ("Shared Spectrum Consultation").

[2] International Telecommunication Union, Measuring the Information Society Report 2018- Volume 1 at 2 (11 Dec. 2018) *at* https://www.itu.int/en/ITU-D/Statistics/Documents/publications/misr2018/MISR-2018-Vol-1-E.pdf.

opportunities for innovation across the UK economy."[3]

Shared spectrum access can ultimately help Ofcom achieve its ambition while at the same time benefit both incumbents and new users. Spectrum sharing could balance the needs of multiple spectrum users while keeping the spectrum open to innovation. Facebook is researching and investing in the development of spectrum sharing techniques. For example, Facebook, alongside other companies across the industry, is working to evaluate and develop the automated frequency coordination mechanism (AFC) that the Federal Communications Commission has proposed to use in the 6 GHz band proposed rulemaking.[4] Through this work and other efforts such as the Citizens Broadband Radio Service in the United States,[5] Facebook believes that a tiered spectrum sharing model ("TSSM") can be a very effective mechanism for enabling important new use cases and increasing spectrum utilization. In TSSM, a regulator can allow new users to access spectrum licensed to incumbent users while incumbent operations are protected from interference. By allowing new users to access spectrum in local areas, such users can fill in network gaps, bring service to areas that are not effectively covered, such as underserved rural areas, and deploy specialized local and private networks. And by allowing these users to access spectrum in specific geographies that would typically be licensed nationally, new users can address local connectivity needs on a smaller scale and in a way that is financially sustainable.

Facebook offers the following feedback in response to several of Ofcom's consultation questions. *First*, Ofcom should prepare to evolve to dynamic spectrum access (DSA), which will be critical to the long term success of shared spectrum access. In the shared spectrum bands, DSA will enable a number of new important use cases, including allowing a neutral operator to provide additional network capacity in dense urban areas. Ofcom should move forward establishing a framework and associated parameters for DSA while allowing industry to begin developing and testing technologies. *Second*, in the case of the Local Access licence, Ofcom should establish buildout obligations on new Local Access licensees to ensure that spectrum is put to use where incumbents have not deployed, such as in rural areas. At the same time, Ofcom should implement a "use or share" policy on incumbent licensees regarding unused spectrum in unserved and underserved areas that would either incentivize buildout by the incumbent or make the spectrum available to another motivated local provider.

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[3] Shared Spectrum Consultation at 1.

[4] *See Unlicensed Use of the 6 GHz Band et al*., Notice of Proposed Rulemaking, ET Docket No. 18-295, FCC 18-147 (rel. Oct. 24, 2018) at https://docs.fcc.gov/public/attachments/FCC-18-147A1.pdf. ("6 GHz NPRM").

[5] *See* Federal Communications Commission, "3.5 GHz Band/Citizens Broadand Radio Service" *at* https://www.fcc.gov/wireless/bureau-divisions/broadband-division/35-ghz-band/35-ghz-band-citizens-broadband-radio.

1. **Ofcom should prepare to evolve from a single authorisation approach to an Ofcom-managed framework that would enable industry-led DSA. (Question 1)**

As Ofcom notes a "DSA solution would take longer to develop and test."[6] Therefore, in order to move forward with shared spectrum access immediately, Facebook agrees with Ofcom's proposal to manage access to the shared spectrum and perform coordination among users (Option 3). Without DSA technology in place, requiring self-coordination for new users would limit adoption. A consistent and well defined process for users to access spectrum, with limited administrative effort, would serve to minimize impediments to deployments in the 1800 MHz and 2300 MHz, and 3.8-4.2 GHz bands.

However, Ofcom should consider the Option 3 approach to be a short-term solution while DSA technology can be developed and tested. As such, Ofcom should simultaneously move forward with planning to allow industry to develop and test DSA technologies. Ofcom should establish the parameters for such technologies and a process by which to certify their effectiveness, but DSA technologies should ultimately be developed and operated by industry. Furthermore, Ofcom's rules for DSA technologies should be flexible and allow for multiple coordination systems to operate to accommodate different use cases in the shared bands.

2. **Facebook supports Ofcom's proposal to allow access to awarded mobile spectrum where it is not in use, but suggests that Ofcom establish: (i) a "use or share" requirement on incumbent licensees regarding unused spectrum in unserved and underserved areas and (ii) buildout obligations on new Local Access licensees. (Questions 18-22)**

Facebook supports Ofcom's efforts to establish access to awarded mobile spectrum in areas where it is not in use through its proposed "Local Access licence." In spectrum bands that have been awarded to Mobile Network Operators (MNOs) on national or regional basis, there are local areas where that spectrum is not in use effectively. As Ofcom notes, there are a number of potential local area use cases for such spectrum, including local mobile connectivity solutions in tunnels or valleys, manufacturing automation, and improving broadband connectivity in hard to reach local communities.[7] As part of its mission to enhance connectivity around the world, Facebook is working with partners on technical solutions to connect and enhance connectivity in unconnected and under-connected areas. But apart from technical solutions, one problem in such areas is access to spectrum. Thus, it is critical that national regulatory authorities such as Ofcom ensure that such spectrum is made available to operators willing to serve communities. For this reason, Facebook generally supports Ofcom's proposal for a Local Access licence. However,

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6 Shared Spectrum Consultation at 6.

7 *Id*. at 73.

Facebook recommends the following two changes to Ofcom's Local Access licence framework.

a. Incumbents should be required to "use or share" unused spectrum in unserved and underserved areas, such as rural areas.

Ofcom should take steps to ensure that incumbent licensees are required to "use or share" unused spectrum in unserved and underserved areas. Rather than deny an application on the basis of an incumbent licensee's "reasonable objection," Ofcom should put a greater burden of proof on the incumbent licensee. For example, Ofcom could deem applications for local access granted unless the incumbent licensee can demonstrate that it is committed to serve that area within a short period of time, such as six months. Or Ofcom could require incumbent licensees to come to agreement with providers willing to build infrastructure in rural areas.

In Peru, for example, in rural areas without infrastructure, the regulatory authority supports rural infrastructure providers by helping to broker agreements between such providers and existing mobile network providers that hold spectrum licenses in such areas.[8] If a rural infrastructure provider deploys a base station, the MNO is obligated to come to agreement to provide service to end users. The rural infrastructure operator would then operate a network and provide service on behalf of the MNO at the agreed upon locations, thus enabling service coverage in previously unserved locations. In addition, if combined with low-cost roaming agreements between MNOs, the service can be made available more broadly to customers of all MNO's. In this example, the regulatory authority has made adjustments to the competitive regulatory framework to promote investment in coverage where the business case has proved challenging.

b. The Local Access licensee's term should be longer and should also include buildout requirements.

Three years may not be a long enough licence term given the time it takes to recoup investment in deploying equipment and operations. Ofcom must balance the positive benefit of creating incentives to invest in rural infrastructure with the needs of the MNOs and their customers. Therefore, Facebook recommends a longer licence term, such as 5 years or more with the requirement that the Local Access licensees deploy service within the first year and should be required to return the licence if service is not operational for six months or longer. In addition, Ofcom should consider how to provide information to potential applicants about areas

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[8] *See* New Approach to Rural Connectivity: The Case of Peru (https://www.telefonica.com/documents/341171/3051513/New+Approach+to+Rural+Connectivity.pdf/ac83ffd3-8686-c4c6-7dd0-74027e566d5c.)

where spectrum is not currently in use. Clear and verifiable metrics on coverage and service quality are important to provide clarity on where spectrum is available.

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Facebook supports Ofcom's efforts to expand mobile coverage across the UK and to enable new opportunities for innovation in the UK economy. By beginning the process of moving toward shared spectrum access with DSA and strengthening its requirements on both incumbent licensees and the proposed Local Access licensees, Ofcom will be well-positioned to achieve its objectives.

Respectfully submitted by:

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