Via Electronic Filing

June 21, 2016

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street SW
Washington, DC 20554

Re: **Ex Parte Presentation**: *In the Matter of Use of Spectrum Bands Above 24 GHz For Mobile Radio Services Notice of Proposed Rulemaking*; GN Docket No. 14-177

Dear Ms. Dortch:

Facebook supports spectrum policies that maximize spectrum utilization and improve connectivity by expanding the capacity and coverage of wireless networks. As an innovator in spectrum management, the Commission is in a unique position to adopt spectrum policies that achieve these objectives in the United States, while also setting an example for the rest of the world.

In its *Spectrum Frontiers* proceeding, the Commission can maximize the utilization of spectrum and expand the capacity and coverage of networks by doing the following. *First*, the Commission should establish rules for the 28 GHz, 37 GHz, and 39 GHz bands that promote sharing across users and platforms. *Second*, the Commission should embrace the possibilities of non-interfering spectrum sharing in the 28 GHz, 37 GHz, and 39 GHz bands by exploring the use of sharing technology either by establishing a tiered structure at the outset or through the use of a license condition. And the Commission should ensure the speedy deployment of networks in licensed spectrum through a meaningful set of buildout requirements, including a use-it-or-share-it license performance requirement. And *third*, the Commission should open up access to more unlicensed spectrum in the millimeter wave bands, particularly the 64-71 GHz band.

1. The Commission's Rules for the 28 GHz, 37 GHz, and 39 GHz Bands Must Promote Sharing Across Users and Platforms

Connecting the unconnected in the United States and around the world will require a wide variety of technical solutions. In addition to the evolution of incumbent mobile and satellite technologies, new technologies, such as remotely piloted high-altitude solar-powered unmanned aircraft (HAPS) and innovative terrestrial wireless systems should be considered as part of a comprehensive optimal solution to bring better connectivity in urban, rural, and remote areas. As the Commission recognizes, "much is unknown about all future uses of the [millimeter wave]

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bands."[1] As such, "it is important to establish a flexible regulatory framework that accommodates as wide a variety of services as possible."[2] For this reason, Facebook strongly supports the Commission's proposals to make the 28 GHz, 37 GHz, and 39 GHz bands available for mobile use while also promoting sharing among a variety of users and platforms—both those that exist today and those that have yet to be invented.[3] Facebook recognizes the important role that satellite services play in improving and expanding connectivity. As such, Facebook supports facilitating sharing between satellite operators and the users of the new Upper Microwave Flexible Use service in the 28 GHz, 37 GHz, and 39 GHz bands that will allow for the coexistence of satellite earth stations without harm to new mobile deployments in the millimeter wave bands. By promoting sharing among satellite, HAPS, and other uses, in some portions of the 28 GHz, 37 GHz, and 39 GHz bands with mobile services, the Commission will enhance connectivity in the United States and set an example for the rest of the world.

2. The Commission Should Maximize Spectral Efficiency and Utilization Through the Use of Sharing Technologies and Meaningful Buildout Requirements.

To date, the Commission has led the world in cutting-edge spectrum management tools and the use of sharing technologies by allowing spectrum sharing in currently, or temporarily, unused frequencies on a non-interfering basis in the TV White Spaces and in its recent 3.5 GHz band rulemaking. In this proceeding, the Commission should not determine today that the 28 GHz, 37 GHz, and 39 GHz bands would be closed to sharing technologies for more than ten years (the license period supported by a majority of operators).[4] Instead, the Commission should explore additional ways to maximize spectral efficiency and sharing through the use of sharing technologies. A number of parties in this proceeding support the use of sharing technologies that allow for dynamic spectrum access in the 28 GHz, 37 GHz, and 39 GHz bands to allow for greater use of the spectrum by unlicensed users.[5] Spectrum access systems and related technologies can manage spectrum access for incumbent users and priority users while allowing general access to the spectrum and allowing for two-way sharing between Federal and commercial users. Furthermore, as the record shows, the propagation characteristics of certain millimeter wave bands are particularly suited to unlicensed systems—such as the 57-64 GHz band (the "V-Band"), and other bands may be well-suited to the kinds of

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1 *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services*, Notice of Proposed Rulemaking, 30 FCC Rcd. 11880, 11888 ¶ 23 (2015) ("Spectrum Frontiers NPRM").

2 *Id.*

3 *Id*. at 11880-81 ¶1.

4 *See, e.g*., Comments of T-Mobile at 18-19; Comments of AT&T, Inc. at 19-20; Comments of Verizon at 10; Comment of CTIA at 22; Comments of Mobile Future at 13; Comments of Intel Corporation at 23; Comments of Qualcomm Incorporated at 11.

5 *See* Comments of Federated Wireless, Inc. at 2, Comments of Google, Inc. at 4, Comments of the Open Technology Institute and Public Knowledge at 2, Comments of Microsoft Corporation at 2; Comments of the National Cable and Telecommunications Association at 12.

lightly licensed systems made possible by sharing technologies.[6] And as the Commission itself noted, the millimeter wave bands can facilitate extensive frequency reuse in the same geographic area.[7] Facebook agrees that sharing technologies could help to balance the needs of mobile network operators seeking to invest in wide-area network infrastructure as well as the needs of other platforms, all while keeping these bands open to the innovation that is yet to come.

Moreover, by establishing a tiered framework that would allow sharing between licensees and general access users, the Commission would avoid the risk of licensed spectrum being left to lie fallow. Around the world, licensed spectrum resources are often significantly underutilized in lower population density areas. Yet this spectrum remains unavailable to others due to delayed buildout and weak license buildout requirements. If unused spectrum were instead open for unlicensed use through sharing technologies, this would no longer be a concern. Furthermore, under a tiered sharing structure buildout obligations could be much more relaxed and flexible without negative consequences.

If, however, the Commission does not adopt a tiered sharing structure at the outset, it should still leave the door open to sharing technologies during the license period by establishing a specific license condition on the Upper Microwave Flexible Use service licenses. This condition would allow the Commission at a later date to adopt a system that would allow for non-interfering sharing access to the spectrum by other users through the use of sharing technologies. By doing so, as sharing technologies are further developed and tested, and as the Commission gains experience in the 3.5 GHz band, these technologies could be immediately applied to the 28 GHz, 37 GHz, and 39 GHz bands.

Lastly, the Commission should ensure that licensed spectrum does not remain underutilized for a decade. To avoid this, the Commission must adopt meaningful and enforceable buildout requirements. Facebook believes that one solution would be to adopt a use-or-share requirement that would require licensees to share any unused spectrum after five years or even sooner.[8] A use-or-share requirement would serve not only to ensure that the spectrum is fully utilized, but it could serve to motivate licensees to build out more quickly.

3. The Commission Should Authorize Unlicensed Spectrum Access in the 64-71 GHz Band under the Commission's Part 15 Rules

The record showed broad support, including from Facebook, for the Commission's proposal to authorize Part 15 operations in the 64-71 GHz band to allow it to be used in conjunction with the adjacent V-band. Huge demand for wireless network

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[6] *See* Comments of Federated Wireless, Inc. at 10; Comments of Google, Inc. at 2; and Comments of Open Technology Institute and Public Knowledge at 4.

[7] *Spectrum Frontiers Notice* at 11888, ¶ 22.

[8] *Id.* at 11941, ¶ 215.

capacity continues to drive investment in V-band unlicensed technologies. Therefore, designating unlicensed spectrum in the millimeter wave bands is critical to driving wireless innovation and expanding connectivity. For example, Facebook is developing a multi-node wireless system focused on bringing high-speed internet connectivity to dense urban areas that operates on unlicensed V-Band spectrum. Expanding unlicensed access to the 64-71 GHz band would increase such opportunities.

Facebook supports the Commission's efforts in this proceeding to make more spectrum available for mobile networks. But to ensure that the Commission's efforts lead to expanded capacity and coverage of networks, the Commission must adopt policies that will allow the 28 GHz, 37 GHz, and 39 GHz bands to be utilized fully and accessed by a variety of users and platforms.

Sincerely,

/s/ Kevin J. Martin
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Facebook, Inc.

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