

**Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554**

In the Matter of)
)
FCC Seeks Comment on Recommendations) IB Docket No. 04-286
Approved By the Advisory Committee for the)
2015 World Radiocommunication Conference)

COMMENTS OF STRAIGHT PATH COMMUNICATIONS, INC.

Straight Path Communications, Inc. (“Straight Path”) submits these comments in response to the Public Notice (“*Public Notice*”) issued on May 21, 2015, by the International Bureau in the above-referenced proceeding.^{1/} The *Public Notice* seeks comment on recommendations made by the FCC’s 2015 World Radiocommunication Conference (“WRC-15”) Advisory Committee (“WAC”) and draft proposals provided by the National Telecommunications and Information Administration (“NTIA”) to assist the FCC with developing U.S. positions for the upcoming WRC-15. Among WAC’s recommendations is a proposal (“WAC/120”) to add a new agenda item for the next World Radiocommunication Conference in 2019 (“WRC-19”) regarding the use of the 37.5-42.5 GHz band by non-geostationary satellite orbit (“NGSO”) operations.^{2/} While Straight Path does not oppose this

^{1/} See *FCC Seeks Comment on Recommendations Approved By the Advisory Committee for the 2015 World Radiocommunication Conference*, Public Notice, IB Docket No. 04-286, DA 15-604 (rel. May 21, 2015) (“*Public Notice*”).

^{2/} See *id.* at Attachment A at 115-118. The next World Radiocommunication Conference was initially scheduled for 2018, but was subsequently re-scheduled to be held in 2019. See Administrative Circular CA/224 from Francois Rancy, Director, ITU Radiocommunication Bureau, to Administrations of Member States of the ITU and Radiocommunication Sector Members, at 1 (May 29, 2015), available at https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=2&ved=0CCUQFjAB&url=https%3A%2F%2Fwww.itu.int%2Fmd%2Fdologin_md.asp%3Flang%3Dfr%26id%3DR00-CA-CIR-0224!!PDF-E&ei=kTd2VZ3yB5GayQSng6SYCg&usq=AFQjCNHRvRm_ppSZOAu_OiHi2FmlSaMhsw&sig2=PUgP1JyuqVV6nDnR4PtzKQ&bvm=bv.95039771,d.aWw. While the proposals in the *Public Notice*

proposal, it requests that any agenda item related to the 37.5-42.5 GHz band explicitly recognize and preserve the potential use of the band for terrestrial services.

I. INTRODUCTION AND BACKGROUND

Straight Path holds a significant number of licenses covering the use of spectrum above 24 GHz, known as the millimeter wave (“mmW”) bands. In particular, it is one of the largest holders of spectrum in the 38.6-40 GHz band (“39 GHz band”), and it holds licenses in the 27.5-28.35 GHz, 29.1-29.25 GHz, and 31-31.3 GHz bands (together the “LMDS bands”). Straight Path currently uses its spectrum to provide backhaul services to wireless Internet service providers and mobile network operators, but it is also evaluating how it can maximize the use of its spectrum holdings for next generation mobile solutions such as 5G. In addition to collaborating with the leading 5G think tank in the U.S. – NYU WIRELESS – and various technology companies to support and encourage the advances and commercialization of 5G mmW technology,^{3/} Straight Path is working with standards setting bodies for 5G in order to address seamless mobility and interoperability among different radio access technologies including 4G, 5G, and Wi-Fi.

On October 17, 2014, the Commission released a Notice of Inquiry examining the future use of the bands above 24 GHz, including the potential deployment of 5G mobile wireless operations in the 39 GHz band.^{4/} Because portions of the 39 GHz band are also allocated domestically for satellite services, the FCC asked, among other things, whether existing satellite

reference the conference as being held in both 2018 and 2019, we reference the conference throughout these comments as occurring in 2019 – *i.e.*, WRC-19.

^{3/} See Straight Path Communications, Inc., Annual Report (Form 10-K), at 5 (filed Oct. 14, 2014).

^{4/} See *Use of Spectrum Bands Above 24 GHz for Mobile Radio Services; Amendment of the Commission’s Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands; Implementation of Section 309(j) of the Communications Act – Competitive Bidding, 37.0-38.6 GHz and 38.6-40.0 GHz Bands; Petition for Rulemaking of the Fixed Wireless Communications Coalition to Create Service Rules for the 42-43.5 GHz Band*, Notice of Inquiry, 29 FCC Rcd. 13020 (2014) (“5G NOI”).

operations would be compatible with mobile operations if they are permitted in those bands.^{5/} In its comments and reply comments in that proceeding, Straight Path expressed strong support for the flexible use of mmW spectrum, particularly the 39 GHz band, for a variety of applications, including mobile and fixed services.^{6/} It also explained that while portions of the 39 GHz band have been allocated for satellite services, there is currently no satellite use of the 39 GHz band.^{7/} Because the WAC proposal for the 37.5-42.5 GHz band similarly involves satellite issues that implicate the 39 GHz band, Straight Path is pleased to have the opportunity to submit the following comments.

II. COMMENTS

WAC/120 proposes the addition of an agenda item for WRC-19 focusing on the development of a regulatory framework that will allow NGSO fixed satellite service systems to operate in the 37.5-42.5 GHz band as well as in other bands.^{8/} WAC/120 also proposes to evaluate and develop sharing conditions between NGSO and geostationary satellite orbit systems operating in those bands.^{9/} Straight Path appreciates that U.S. spectrum policy continues to focus on new and expanded uses of spectrum, including for satellite operations. However, the Commission should ensure that any proposed agenda item for the 37.5-42.5 GHz band also explicitly recognizes and preserves the future use of the 39 GHz band for terrestrial operations, including mobile services.

^{5/} See 5G NOI ¶¶ 55, 61.

^{6/} See Comments of Straight Path Communications, Inc., GN Docket No. 14-177 (filed Jan. 15, 2015) (“Straight Path Comments”); Reply Comments of Straight Path Communications, Inc., GN Docket No. 14-177 (filed Feb. 18, 2015) (“Straight Path Reply Comments”).

^{7/} See Straight Path Comments at 18-22; Straight Path Reply Comments at 14-19.

^{8/} See *Public Notice* at Attachment A at 115-118.

^{9/} See *id.*

Preserving the 39 GHz band for terrestrial services is important for several reasons. *First*, the 39 GHz band represents the best opportunity to globally harmonize spectrum for 5G mobile services. As the *Public Notice* recognizes, WAC has submitted, in addition to WAC/120, a proposal (“WAC/118”) for an agenda item at WRC-19 that would focus on identifying frequency bands above 6 GHz for International Mobile Telecommunications (“IMT”) to help meet the skyrocketing demand for mobile broadband.^{10/} While specific bands above 6 GHz have not yet been targeted, WAC notes that WAC/118 would focus on studying bands that already have an existing allocation to the mobile service.^{11/} The 39 GHz band currently has a primary mobile allocation across all three ITU regions, making it an ideal candidate for an IMT allocation. The easier it is to identify a spectrum band for IMT, the easier it will be to allow 5G mobile services in that band, which, in turn, will speed up mobile broadband deployment to consumers both domestically and internationally.

While WAC also presents an alternative proposal to WAC/118 that would delay the assessment of the bands above 6 GHz for IMT, this proposal is in response to concerns that compatibility studies for the bands above 6 GHz could not be completed in time for WRC-19.^{12/} This alternative proposal does not change the need to identify bands above 6 GHz for IMT – just the timing of that consideration. In any case, several studies have already been completed suggesting that 5G mobile operations could be promptly deployed in the 39 GHz band. As Straight Path explained in the *5G NOI* proceeding, a pioneering study on mmW mobile

^{10/} See *id.* at 82-92.

^{11/} See *id.* at 84.

^{12/} See *id.* at 82, 94-97.

broadband was conducted in 2011,^{13/} and significant progress has been made since then demonstrating that 5G mobile services can operate in mmW frequencies.^{14/} In fact, researchers at NYU WIRELESS recently conducted testing and have reported that mmW frequencies “show great promise for the future of wireless communications.”^{15/} If and when WAC is ready to review bands above 6 GHz for IMT pursuant to WAC/118, WAC/120 should not hinder those efforts.

Second, the Commission has already made significant progress in the *5G NOI* proceeding to permit flexible services in the mmW bands generally and in the 39 GHz band in particular. As the Commission acknowledged in the *5G NOI* proceeding, it has been contemplating mobile services in the 39 GHz band since 1997.^{16/} The FCC specifically noted that it expected the 39 GHz band would be used for mobile services as technologies developed and parties expressed an interest in providing such services.^{17/} Several entities in addition to Straight Path have also

^{13/} See Straight Path Reply Comments at 4 (citing Zhouyue Pi; Khan, F., “An Introduction to Millimeter-Wave Mobile Broadband Systems,” *Communications Magazine*, IEEE, vol.49, no.6, pp.101, 107, June 2011).

^{14/} See Straight Path Comments at 15.

^{15/} See *id.* at 15-16 (quoting Sijia Deng, *et al.*, “Small Wavelengths – Big Potential: Millimeter Wave Propagation Measurements for 5G,” *MICROWAVE JOURNAL*, at 1 (Nov. 13, 2014), available at <http://www.microwavejournal.com/articles/23274-small-wavelengths-big-potential-millimeter-wave-propagation-measurements-for-5g>).

^{16/} See *5G NOI* ¶ 58; *Amendment of the Commission’s Rules Regarding the 37.0-38.6 GHz and 38.6-40.0 GHz Bands; Implementation of Section 309(j) of the Communications Act – Competitive Bidding, 37.0-38.6 GHz and 38.6-40.0 GHz*, Report and Order and Second Notice of Proposed Rulemaking, 12 FCC Rcd. 18600, ¶¶ 1, 18-23 (1997) (“*39 GHz Order*”) (“[W]e have decided to permit implementation of mobile operations in the 39 GHz band.”).

^{17/} See *5G NOI* ¶¶ 53, 58; see also *39 GHz Order* ¶¶ 24-26; *Rulemaking to Amend Parts 1, 2, 21, and 25 of the Commission’s Rules to Redesignate the 27.5 GHz Frequency Band, to Reallocate the 29.5-30.0 GHz Frequency Band, to Establish Rules and Policies For Local Multipoint Distribution Service and For Fixed Satellite Services*, Second Report and Order, Order on Reconsideration and Fifth Notice of Proposed Rulemaking, 12 FCC Rcd. 12545, ¶ 207 (1997).

expended substantial time and effort to participate in that proceeding.^{18/} The FCC should not ignore or lose sight of these efforts.

Third, other nations are also evaluating and, in some cases, support the use of the 39 GHz band for 5G mobile services. Both the Asian-Pacific Telecommunity Conference Preparatory Group for WRC-15 and the European Conference of Postal and Telecommunications Administrations are evaluating bands above 6 GHz for IMT,^{19/} and the Working Group responsible for IMT matters at the ITU – Working Party 5D – is preparing a report on the technical feasibility of IMT in the bands above 6 GHz.^{20/} Ofcom has also published a Call for Input – requesting stakeholder feedback on spectrum bands above 6 GHz, including the 39 GHz band, that might be suitable for future mobile communication services – and recently released a report identifying specific bands for potential study.^{21/} While those efforts remain ongoing, Working Party 5D has already determined to evaluate various spectrum bands, including the 39

^{18/} See, e.g., Comments of Samsung Electronics America, Inc. and Samsung Research America, GN Docket No. 14-177 and RM-11664, at 40-41, 45 (filed Jan. 15, 2015); Comments of XO Communications, LLC, GN Docket No. 14-177 and RM-11664, at 3 (filed Jan. 15, 2015); Comments of FiberTower Spectrum Holdings, LLC, GN Docket No. 14-177, *et al.*, at 15 (filed Jan. 15, 2015).

^{19/} See 5G Forum, Republic of Korea, *5G Spectrum Issues in Korea*, at 17 (Mar. 2015), available at http://www.5gforum.org/5GWhitePaper/5G_Forum_White_Paper_Spectrum.pdf.

^{20/} See *id.*; ITU Towards “IMT for 2020 and Beyond,” <http://www.itu.int/en/ITU-R/study-groups/rsg5/rwp5d/imt-2020/Pages/default.aspx> (last visited Jun. 4, 2015).

^{21/} See Ofcom, *Spectrum Above 6 GHz for Future Mobile Communications* (Jan. 16, 2015), available at http://stakeholders.ofcom.org.uk/binaries/consultations/above-6ghz/summary/spectrum_above_6_GHz_CFI.pdf; Ofcom, *Laying the Foundations for Next Generation Mobile Services* (Apr. 20, 2015), available at http://stakeholders.ofcom.org.uk/binaries/consultations/above-6ghz/5G_CFI_Update_and_Next_Steps.pdf. While Ofcom’s report did not identify the 39 GHz or LMDS bands for potential identification, Straight Path recently submitted a letter to Ofcom suggesting that it should support the study of both the 39 GHz and LMDS bands, in addition to the bands it identified, for flexible mobile use at the upcoming WRC-19. See Letter to Mr. Justin Moore, Ofcom, from Davidi Jonas, CEO and President, Straight Path Spectrum, Inc. (filed May 28, 2015).

GHz band, further demonstrating an international view that this band shows great promise for 5G mobile services.^{22/}

Finally, preserving the 39 GHz band for potential globally harmonized terrestrial mobile services will create several public interest benefits. Not only will globally harmonized spectrum create economies of scale that can significantly lower the cost of key 5G front-end components (e.g., power amplifiers, low-noise amplifiers, switches, duplexers, etc.), but it will also simplify the design of 5G radio frequency transceivers and antenna arrays and open access to a global market for infrastructure and mobile device manufacturers. These technology and business advantages directly translate into lower deployment costs for 5G networks and better 5G mobile devices for consumers. Moreover, globally harmonized spectrum bands facilitate international roaming, reduce interference potential near international borders, and provide greater regulatory certainty.

Straight Path recognizes that, by its terms, the proposed agenda item under WAC/120 neither includes nor forecloses the use of the 39 GHz band for expanded terrestrial operations. However, the *5G NOI* particularly seeks comment on this issue, and it is possible that as a result of rules adopted in this proceeding, some of the 39 GHz band may not be available for satellite operations – whether NGSO or otherwise. If the agenda item explicitly recognizes the potential use of the band for expanded terrestrial use, it will demonstrate to other administrations this possibility, fostering continued evaluation of the band for additional terrestrial use and allowing other nations to take similar positions. In contrast, by neglecting to note the potential use of the band for expanded terrestrial use, the Commission may inadvertently and inaccurately signal that

^{22/} See ITU, Radiocommunications Study Groups, *Working Party 5D: Working Document Towards a Preliminary Draft, New Report ITU-R M. [IMT.Above 6 GHz]*, at 2 (Oct. 22 2014), available at http://www.3gpp.org/ftp/tsg_ran/TSG_RAN/TSGR_66/Docs/RP-141754.zip.

it has already determined the outcome of the 5G NOI proceeding, and other administrations will not pursue their own efforts to realize the potential of the 39 GHz band for terrestrial use, potentially derailing the important efforts that have already been taken in this area.

III. CONCLUSION

Straight Path appreciates the substantial efforts WAC and the FCC have made in preparing for the upcoming WRC-15. Straight Path urges the FCC to ensure that any agenda item proposed for WRC-19 explicitly recognizes and preserves the use of the 39 GHz band for terrestrial operations, particularly 5G mobile services. Doing so will help enable the most efficient use of the 39 GHz spectrum, create a globally harmonized band for 5G, and solidify the Nation's position as a global leader in mobile technologies and services.

Respectfully submitted,

/s/ Russell H. Fox

Russell H. Fox
Angela Y. Kung

MINTZ, LEVIN, COHN, FERRIS, GLOVSKY AND
POPEO, PC
701 Pennsylvania Ave., NW
Suite 900
Washington, DC 20004
(202) 434-7300

June 11, 2015