

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

In the Matter of	)	
	)	
Use of Spectrum Bands Above 24 GHz For	)	GN Docket No. 14-177
Mobile Radio Services	)	
	)	
Amendment of Parts 1, 22, 24, 27, 74, 80, 90,	)	WT Docket No. 10-112
95, and 101 To Establish Uniform License	)	
Renewal, Discontinuance of Operation, and	)	
Geographic Partitioning and Spectrum	)	
Disaggregation Rules and Policies for Certain	)	
Wireless Radio Services	)	

To: The Commission

**REPLY COMMENTS OF  
THE BOEING COMPANY**

The Boeing Company (“Boeing”) provides these replies comments in response to the Commission’s Third Further Notice of Proposed Rulemaking (“*Third Further Notice*”) addressing the use of the 50.4-51.4 GHz (“50 GHz”) band for broadband satellite communications services.

**I. THE BROADBAND SATELLITE INDUSTRY HAS DEMONSTRATED ITS NEED FOR IMMEDIATE AND ROBUST ACCESS TO THE 50.4-51.4 GHZ BAND**

The comments that were filed in response to the Commission’s *Third Further Notice* clearly demonstrate the importance for the Commission to immediately provide the commercial satellite industry with reliable and robust access to the 50 GHz portion of the V-band for the operation of individually-licensed earth stations to support broadband satellite networks.

For example, O3b filed comments highlighting the fact that the Commission has already granted O3b authorization to launch and operate a non-geostationary satellite orbit (“NGSO”)

system that would operate in the V-band.<sup>1</sup> The Commission’s market access grant started the clock on O3b’s milestone deadlines to launch its constellation and to use V-band spectrum to provide services to consumers.<sup>2 3</sup> Nevertheless, the Commission deferred action on O3b’s request for access to the 50 GHz portion of the V-band, placing O3b in the difficult position of having to decide whether to begin construction on its satellites without knowing whether it will have access to all of its required spectrum.

The Commission has also authorized EchoStar to launch and operate a geostationary satellite orbit (“GSO”) system that would operate in the V-band, starting the clock on the Commission’s milestone deadlines for the launch of that satellite.<sup>4</sup> The EchoStar satellite also requires access to the 50 GHz portion of the V-band, but the Commission deferred action on that portion of EchoStar’s application.<sup>5</sup> EchoStar reports that it has already started construction on its V-band satellite, with a planned launch date in early 2021.<sup>6</sup> Therefore, as EchoStar explains in its comments, satellite use of the V-band—including the 50 GHz portion of the V-band—is “imminent.”<sup>7</sup>

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<sup>1</sup> Comments of SES Americom, Inc. and O3b Limited on Third Further Notice of Proposed Rulemaking, GN Docket No. 14-177, WT Docket No. 10-112, at 1-2 (Sept. 10, 2018) (“*SES/O3b Comments*”).

<sup>2</sup> See O3b Limited, Order and Declaratory Ruling, Call Sign S2935, File No. SAT-AMD-20171109-00154, *et al.* (June 6, 2018).

<sup>3</sup> See *id.*, ¶ 43.

<sup>4</sup> See Grant Stamp, IBFS File Nos. SAT-LOA-20170621-00092 and SAT-AMD-20170908-00128 (Mar. 20, 2018).

<sup>5</sup> See *id.*

<sup>6</sup> Comments of Echostar Satellite Operating Corporation and Hughes Network Systems, LLC, GN Docket No. 14-177, WT Docket No. 10-112, at 1-2 (Sept. 10, 2018) (“*EchoStar Comments*”).

<sup>7</sup> *Id.*

SpaceX also filed comments explaining that it “is designing, building, launching and operating a non-geostationary orbit (“NGSO”) satellite system optimized for broadband services to be delivered in the U.S. and around the world, helping to close the digital divide.”<sup>8</sup> The V-band portion of the SpaceX NGSO system application remains pending before the Commission and includes a request for access to the 50 GHz spectrum.<sup>9</sup> Still another satellite operator that has sought Commission authority to operate an NGSO system in the 50 GHz band is Viasat,<sup>10</sup> which filed comments explaining that the satellite industry is looking to spectrum in the V-band, including the 50 GHz segment, “as a critical input for the continued growth trajectory in the satellite industry, as the Ka band is quickly reaching capacity.”<sup>11</sup>

Boeing also continues to have an application pending before the Commission to launch and operate an NGSO satellite system using V-band frequencies, including the 50 GHz band. Boeing, like others within the satellite industry, has identified the V-band as the next critical green field for satellite operators in their efforts to make broadband satellite services available to every region of the world. In fact, as the Commission acknowledged in its *Third Further Notice*, numerous satellite operators have sought authority to operate satellite networks using the 50 GHz band,

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<sup>8</sup> Comments of Space Exploration Technologies Corp., GN Docket No. 14-177, WT Docket No. 10-112, at 2 (Sept. 10, 2018) (“*SpaceX Comments*”).

<sup>9</sup> Application of Space Exploration Holdings, LLC for Approval for Orbital Deployment and Operating Authority for the SpaceX NGSO Satellite System, IBFS File No. SAT-LOA-20170301-00027 (filed Mar. 1, 2017).

<sup>10</sup> See Viasat, Inc., IBFS File No. SAT-PDR-20161115-00120, Call Sign S2985 (filed Nov. 15, 2016).

<sup>11</sup> Comments of Viasat, Inc. to Third Further Notice of Proposed Rulemaking, GN Docket No. 14-177, WT Docket No. 10-112, at 1 (Sept. 10, 2018) (“*Viasat Comments*”).

resulting in the filing of eight satellite system applications or market access requests and twenty earth station applications.<sup>12</sup>

Given these facts, the Commission needs to proceed expeditiously in adopting rules for satellite use of the 50 GHz band and in authorizing satellite system applicants to operate in accordance with those rules. The Commission should simultaneously initiate a proceeding on authorizing satellite access to the adjacent 51.4-52.4 GHz band, as requested by Boeing in its petition for rulemaking.<sup>13</sup>

Apparently recognizing the pressing need for the satellite industry to have near term access to the 50 GHz band, nearly every terrestrial wireless interest that filed comments addressing the 50 GHz band expressed support for the adoption of earth station licensing rules for the 50 GHz band that mirror the rules that were adopted by the Commission for lower millimeter wave (“mmW”) frequencies.<sup>14</sup> Two terrestrial wireless interests, however, asked the Commission to refrain from permitting satellite operators to use the 50 GHz band while it considers the rules that

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<sup>12</sup> *Third Further Notice*, ¶ 92.

<sup>13</sup> See Petition of The Boeing Company for Allocation and Authorization of Additional Spectrum for the Fixed-Satellite Service in the 50.4-51.4 GHz and 51.4-52.4 GHz Bands, RM-11773, at 5-9 (June 22, 2016).

<sup>14</sup> See Comments of the Telecommunications Industry Association, GN Docket No. 14-177, WT Docket No. 10-112, at 7 (Sept. 10, 2018) (describing as a “reasonable compromise” the Commission’s proposal to permit satellite earth stations operations in the 50 GHz band using the same rules as the 24 GHz band); Comments of Ericsson, GN Docket No. 14-177, WT Docket No. 10-112, at 14 (Sept. 10, 2018) (explain that Ericsson does not oppose the licensing of individual FSS earth stations in the 50 GHz band using the criteria identical to those applicable in the 24 GHz band); Comments of AT&T Services, Inc., GN Docket No. 14-177, WT Docket No. 10-112, at 15 (Sept. 10, 2018) (explaining that AT&T concurs with the Commission that satellite service rights in the 50 GHz band should parallel those for the 24 GHz band); Comments of T-Mobile USA, Inc., GN Docket No. 14-177, WT Docket No. 10-112, at 14 (Sept. 10, 2018) (appearing to concur with Commission’s proposal to permit satellite earth stations to operate in the 50 GHz band using the same rules as in operations in the 24, 28 and 47 GHz bands).

should be adopted to permit terrestrial wireless use the 50 GHz band.<sup>15</sup> Such a punitive posture would harm consumers, particularly those in rural and remote areas of the United States and the world that depend on satellite networks for reliable and uninterrupted access to broadband services.

As the Commission is aware, the satellite industry is already making heavy use of mmW frequencies, operating global networks that use spectrum in the Ka-band to provide broadband services direct to consumers and other user groups. In contrast, the terrestrial wireless industry is still exploring how it will use mmW spectrum in the 24, 28 and 37 GHz bands to serve consumers, effectively deferring consideration of even higher mmW frequencies until later. In order to maximize global efforts to bridge the digital divide, the Commission must permit the satellite industry to move forward with the deployment of broadband networks that will use V-band frequencies to serve consumers. Fortunately, broadband satellite networks can use the 50 GHz band on a shared basis with terrestrial wireless services without impairing appreciably (if at all) the deployment and growth plans of such terrestrial services.

## **II. THE COMMISSION SHOULD AUTHORIZE SATELLITE USE OF THE 50 GHZ BAND USING SPECTRUM SHARING RULES THAT ARE MORE BALANCED THAN THOSE EMPLOYED IN LOWER mmW FREQUENCIES**

The Comments that were filed in response to the Commission's *Third Further Notice* support the adoption of siting rules for satellite earth stations that are significantly more flexible

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<sup>15</sup> See Comments of CTIA, GN Docket No. 14-177, WT Docket No. 10-112, at 14 (Sept. 10, 2018) (asserting without any apparent basis that “the Commission should first adopt service rules for UMFUS for this band, which it sought comment on several years ago, before taking final action for licensing individual FSS earth stations”); Comments of Nokia, GN Docket No. 14-177, WT Docket No. 10-112, at 4 (Sept. 10, 2018) (arguing that “[b]ecause the technical rules for UMFUS operations in this spectrum range are yet to be finalized, Nokia believes that it is premature to issue rules for sharing with [satellite] services at this time”).

than those that were adopted for lower mmW frequencies.<sup>16</sup> In particular, the technical analysis that was filed by SES Americom and O3b support the conclusion that a substantially greater number of earth stations can be licensed in the 50 GHz band without impairing the ability of terrestrial wireless licensees to use the spectrum for commercial services.<sup>17</sup>

Therefore, the Commission should adopt only a subset of the restrictions on earth station siting that it employed for lower mmW frequency bands. Specifically, the Commission potentially could retain the restrictions on affected populations that are maintained in Section 25.136(d)(ii) of the rules,<sup>18</sup> but refrain from imposing the arguably redundant and unnecessary restriction of three earth stations per county and 15 earth stations per PEA. The technical analysis that was filed by SES/O3b demonstrate that this less stringent approach would be appropriate given the fact that signal propagation distances are much shorter in the 50 GHz band and therefore sharing between adjacent satellite earth stations and terrestrial wireless licensees will be much easier without exceeding the affected population limits.

Most importantly, the Commission should act expeditiously to adopt rules for the siting of satellite earth stations in the 50 GHz band. Prompt action is needed to avoid further impairment to the construction plans of those V-band satellite operators that have already been authorized to operate their systems, and also to potentially hasten the grant of the V-band satellite applications that remain pending. The Commission should also initiate in its Spectrum Frontiers proceeding

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<sup>16</sup> See generally, *SES/O3b Comments*; see also *SpaceX Comments* at 3-7.

<sup>17</sup> See *Sharing and Compatibility Studies of IMT Systems in the 50.4-52.6 GHz Frequency Range*, Annex 10 to Task Group 5/1 Chairman's Report, and *Sharing and Compatibility of FSS and IMT Operating in the 24.25-27.5 GHz Frequency Range*, Attachment 3 to Annex 3 to Task Group 5/1 Chairman's Report (*included as an annex to SES/O3b Comments*).

<sup>18</sup> This provision limits affected populations to 0.1% in the most populous Partial Economic Areas (PEAs"), 2,250 people in mid-range PEAs, and 3.75% in the most rural PEAs.

a rulemaking on allocating the adjacent 51.4-52.4 GHz band for the fixed-satellite service on a co-primary basis with terrestrial services. Such actions by the Commission would help to ensure that sufficient mmW spectrum resources are available to accommodate all communications technologies, including the operation of global satellite networks designed to provide truly ubiquitous broadband services to all Americans and populations regardless of their location.

Respectfully submitted,

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