

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Expanding Flexible Use of the 12.2-12.7 GHz Band	)	WT Docket No. 20-443
	)	
Expanding Flexible Use in Mid-Band Spectrum Between 3.7-4.2 GHz	)	GN Docket No. 17-183
	)	

**JOINT REPLY COMMENTS OF INCOMPAS AND CCIA**

**INCOMPAS**  
Angie Kronenberg  
Christopher L. Shipley  
INCOMPAS  
1100 G Street NW  
Suite 800  
Washington, D.C. 20005  
(202) 872-5746

**Computer & Communications Industry Association**  
Vann Bentley  
25 Massachusetts Ave NW  
Suite 300C  
Washington, DC 20001  
(202) 479-3771

July 7, 2021

**TABLE OF CONTENTS**

	<u>Page</u>
<b>I. INTRODUCTION AND SUMMARY.....</b>	<b>3</b>
<b>II. THE RECORD CONTAINS CONSIDERABLE SUPPORT FOR EXPANDING THE FLEXIBLE USE OF THE 12 GHZ BAND TO INCLUDE TERRESTRIAL WIRELESS BROADBAND DEPLOYMENT.....</b>	<b>6</b>
<b>a. A New Mobile Allocation Would Meet Statutory Standards for Flexible Use Under Section 303(y).....</b>	<b>8</b>
<b>III. THE ENGINEERING AND TECHNICAL ANALYSIS DEMONSTRATES THAT COEXISTENCE IN THE BAND WITH INCUMBENT USERS IS FEASIBLE AND THAT HARMFUL INTERFERENCE CAN BE MITIGATED.....</b>	<b>10</b>
<b>a. Updated Technical Analysis in the Record Indicates that DBS Incumbents Will Be Protected From Harmful Interference.....</b>	<b>13</b>
<b>b. A Newly Commissioned Assessment of the Feasibility of Coexistence in the 12 GHz Band Substantiates Proponents’ Technical Claims That 5G MVDDS Will Not Interfere With NGSO FSS.....</b>	<b>15</b>
<b>c. Technical Advancements and Lessons Learned in Spectrum Sharing May Also Facilitate Coexistence in the 12 GHz Band.....</b>	<b>16</b>
<b>IV. AUCTIONING MOBILE TERRESTRIAL RIGHTS IN THE 12 GHZ BAND IS UNNECESSARY AND WOULD DELAY BRINGING 5G TO MARKET.....</b>	<b>17</b>
<b>V. CONSUMERS WILL WIN WITH ADDITIONAL MID-BAND SPECTRUM PERMITTED FOR 5G.....</b>	<b>21</b>
<b>VI. CONCLUSION.....</b>	<b>23</b>

**Before the  
FEDERAL COMMUNICATIONS COMMISSION  
Washington, D.C. 20554**

In the Matter of	)	
	)	
Expanding Flexible Use of the 12.2-12.7 GHz Band	)	WT Docket No. 20-443
	)	
Expanding Flexible Use in Mid-Band Spectrum Between 3.7-4.2 GHz	)	GN Docket No. 17-183
	)	

**JOINT REPLY COMMENTS OF INCOMPAS AND CCIA**

INCOMPAS and the Computer & Communications Industry Association (“CCIA”), by their undersigned counsel, hereby submit these reply comments in response to the Federal Communications Commission’s (“Commission” or “FCC”) Notice of Proposed Rulemaking on how best to maximize efficient use of 500 megahertz of mid-band spectrum between 12.2-12.7 GHz (“12 GHz band”).<sup>1</sup>

**I. INTRODUCTION AND SUMMARY**

This proceeding presents the Commission with a unique opportunity to quickly and efficiently put 500 megahertz of the nation’s mid-band spectrum resources to its highest-value and most efficient use. By unlocking the existing Multi-Channel Video and Data Distribution Services (“MVDDS”) licenses in the 12.2-12.7 GHz band for a new or expanded terrestrial Mobile allocation the Commission can accelerate mobile market competition and preserve and strengthen America’s edge in the race to 5G. In response to the Commission’s request for comment in this proceeding, proponents of this change have demonstrated that additional

---

<sup>1</sup> *Expanding Flexible Use of the 12.2-12.7 GHz Band, Expanding Flexible Use in Mid-Band Spectrum Between 3.7-24 GHz*, Notice of Proposed Rulemaking, 36 FCC Rcd 606 (rel. Jan. 15, 2021) (“12 GHz Notice”).

operations can be accommodated in the band while protecting incumbent operations from harmful interference. Additionally, a range of stakeholders, including public interest organizations, current license holders, and service providers have submitted substantial evidence that such modifications to the 12 GHz band would be in the public interest, have significant economic benefits, and promote competition in the mobile and satellite broadband service markets.

To consider making changes to the 12 GHz band, the Commission made it clear that the current licensees must demonstrate that these modifications could result in a win-win scenario for the three services allocated to the band on a co-primary basis—Direct Broadcast Satellite (“DBS”), Fixed Satellite Service limited to non-geostationary orbit systems (“NGSO FSS”) and MVDDS. To that end, the introduction of an engineering study by MVDDS license holder RS Access substantiating that co-existence in the band between 5G and NGSO FSS broadband is “achievable in nearly all deployment scenarios”<sup>2</sup> coupled with an updated technical study from DBS provider DISH finding that a two-way terrestrial service in the 12 GHz band can protect DBS operations<sup>3</sup> should allay fears and rancor raised over harmful interference during the comment round by these incumbent services. These studies take into consideration the dramatic advancements that have been made over the past five years in both satellite and terrestrial network architecture and prove that more flexible use of the band will not “undermine”

---

<sup>2</sup> RKF Engineering Solutions, LLC, *Assessment of Feasibility of Coexistence between NGSO FSS Earth Stations and 5G Operations in the 12.2-12.7 GHz Band* (May 2021) (“RS Access Coexistence Study”), appended to Comments of RS Access, LLC, WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) (“RS Access Comments”).

<sup>3</sup> Declaration of Tom Peters (“Peters Declaration”) at 1, appended to Comments of DISH Network Corporation, WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) (“DISH Comments”).

incumbent services in the 12 GHz band.<sup>4</sup> Furthermore, they provide evidence that current services and commitments that incumbents have made to rural communities and through the Rural Digital Opportunity Fund will be preserved while simultaneously enabling a mobile terrestrial service.<sup>5</sup> The RS Access Coexistence Study and DISH’s updates, which were commissioned following the *12 GHz Notice*’s adoption at the end of 2020, were the only technical analyses submitted in the comment round.

In addition to its examination of the technical feasibility of coexistence between the incumbent services, RS Access’ submission of an economic study conducted by the Brattle Group indicating that the suggested modifications to MVDDS licenses could lead to significant societal benefit further supports the idea that updating the 12 GHz band will be a win-win, not just for new terrestrial 5G services, but for other incumbents in the band as well. In fact, the study posits that the societal benefit of a sharing scenario with limited interference in which DBS and NGSO FSS systems continue to operate—coexisting with 5G terrestrial broadband services—to be all or nearly all of \$270 billion, with the potential to top \$1 *trillion*.<sup>6</sup> American consumers and businesses stand to be significant beneficiaries if the Commission elects to follow the engineering and economics and allow MVDDS providers to put the spectrum to its full use.

---

<sup>4</sup> See Ex Parte Letter of Microsoft, WT Docket No. 20-443, *et al.* (filed June 7, 2021) at 1 (asking the Commission to ensure “that satellite operations in the 12 GHz band are not undermined”).

<sup>5</sup> See, e.g. Letter of The Honorable Harold “Trey” Stewart, Senator, Maine State Senate, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-443 (filed June 21, 2021) (submitted on behalf of SpaceX and describing how the state of Maine will be served by NGSO FSS); Letter of Donald Purdie, President, Appalachian Council for Innovation, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-443 (filed May 28, 2021).

<sup>6</sup> See The Brattle Group, *Valuing the 12 GHz Spectrum Band with Flexible Use Rights*, iii-iv, 35 (May 7, 2021), appended to RS Access Comments (“Brattle Economic Study”).

INCOMPAS and CCIA therefore urge the Commission to update its outdated rules for MVDDS licensees and expand the flexible use of the 12 GHz band for two-way terrestrial service and 5G.

**II. THE RECORD CONTAINS CONSIDERABLE SUPPORT FOR EXPANDING THE FLEXIBLE USE OF THE 12 GHZ BAND TO INCLUDE TERRESTRIAL WIRELESS BROADBAND DEPLOYMENT.**

As the Commission considers whether the spectrum in the 12 GHz band is being put to its highest and best use, a broad cross section of industry and public interest groups has expressed support for updating the band to bring a new terrestrial mobile service to market. Some of these organizations are members of the 5G for 12 GHz Coalition, a recently established coalition of 5G leaders whose mission is to unleash the power of 5G by making the 12 GHz band available for terrestrial wireless services. The Coalition consists of trade associations, public interest groups, communications providers, and MVDDS licensees. Coalition members Public Knowledge and the Open Technology Institute at New America, joined with a group of other public interest organizations (“PIOs”) to highlight the public interest benefits of expanding spectrum rights in the 12 GHz band. Modifying the licenses of incumbent MVDDS providers will “maximize the number of potential 5G broadband providers”<sup>7</sup> and enable these incumbents to quickly build out their networks and reach consumers, increasing competitive broadband offerings and benefitting consumers and businesses “by improving access, affordability, and quality of service.”<sup>8</sup>

In addition to these prominent consumer groups, the majority of the MVDDS licensees have also supported the adoption of flexible use in the band noting that “this proceeding presents

---

<sup>7</sup> Comments of New America’s Open Technology Institute, Public Knowledge, et al., WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 2 (“PIO Comments”).

<sup>8</sup> *Id.*

the FCC with the opportunity to modernize the use of the 12 GHz Band, a prime swath of mid-band spectrum, and to facilitate vital 5G deployment through adoption” of rule changes to the MVDDS licenses. This will help the Commission meet the increasing demand for 5G and high-speed data services and put the spectrum to its highest and best use.<sup>9</sup> And RS Access, which commissioned a coexistence feasibility study and economic report, argues that “reset[ing] the service rules and [ ] craft[ing] a durable set of policies would ensure that all three co-primary services remain viable for years to come.”<sup>10</sup>

Moreover, considerable support for expanding the flexible use of the 12 GHz band to include a two-way mobile service was entered into the record by industry leaders and trade associations that have no affiliation with the Coalition. For example, T-Mobile, one of the nation’s leading wireless providers “supports adding a mobile allocation to the 12 GHz band” and urges the Commission to “carefully examine the characteristics of the 12 GHz band before deciding whether and . . . how to make it available for terrestrial mobile operations.”<sup>11</sup> Similarly, Starry, a fixed wireless internet service provider, has encouraged the Commission to “quickly repurpose any underutilized frequencies and adopt its proposal to facilitate two-way communications in the 12 GHz band” for the purpose of providing “more flexibility for the

---

<sup>9</sup> See Comments of MVDDS Licensees, WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 20 (“MVDDS Licensees Comments”).

<sup>10</sup> RS Access Comments at v (“Abandoning the terrestrial rights at the 12 GHz band to outdated service restrictions would stymie innovation, squander valuable spectrum resources, and in the process, scrap what economists estimate may be a trillion dollars or more worth of consumer benefit.”).

<sup>11</sup> Comments of T-Mobile USA, Inc., WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 4, 3 (“T-Mobile Comments”). See also Ex Parte Letter of T-Mobile, WT Docket No. 20-443, *et al.* (filed June 24, 2021), at 3 (urging the Commission to make “some or all of the 12.2-12.7 GHz band available for terrestrial mobile operations”).

wireless ecosystem.”<sup>12</sup> Additionally, some organizations, like the Competitive Carriers Association<sup>13</sup> and the Dynamic Spectrum Alliance,<sup>14</sup> have supported flexible use of the band pending review of the coexistence studies submitted by RS Access and DISH.

**a. A New Mobile Allocation Would Meet Statutory Standards for Flexible Use Under Section 303(y).**

Importantly, these stakeholders have addressed how a new mobile allocation will meet the statutory standards for increasing flexible use for electromagnetic spectrum under section 303(y) of the Communications Act. In accordance with section 303(y), to allocate spectrum for flexible use, the Commission must find in its analysis of the proceeding that (1) doing so must be in the public interest, (2) it must not deter investment, and (3) it must not cause harmful interference among users.<sup>15</sup>

**Public interest.** The public interest organizations, acting on behalf of consumers across the country, have indicated that license modifications will increase competition for broadband and 5G, leading to lower prices, better access, and more innovation. Additionally, providing for flexible use operations in the band between the three allocated services is in the public interest as

---

<sup>12</sup> Comments of Starry, Inc., WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 2.

<sup>13</sup> Comments of the Competitive Carriers Association, WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 1 (“CCA Comments”).

<sup>14</sup> Comments of the Dynamic Spectrum Alliance, WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 3-4 (“DSA Comments”) (“While the DSA generally supports the Commission considering expanded terrestrial use in the band with sharing, the DSA is specifically not taking a position on whether the Commission could add a new or expanded terrestrial Mobile allocation in the 12 GHz band without causing harmful interference to incumbent licensees. DSA welcomes submission of technical proposals detailing how dynamic spectrum sharing in the 12 GHz Band can protect the three primary services in the band.”).

<sup>15</sup> 47 U.S.C. § 303(y).

it maximizes the benefits of the band as “compared to the regulatory status quo” where MVDDS providers are currently burdened by overly restrictive operational rules and power limits.<sup>16</sup> As INCOMPAS and CCIA indicated in our comments, the three services in the band have natural and complementary service orientations, meaning that each service will most likely drive each operator to deploy in different areas that will make sharing easier over time. Finally, RS Access has submitted an economic study conducted by the Brattle Group showing that the expected societal benefits and consumer welfare increases of allowing terrestrial mobile operations in the 12 GHz band will be anywhere from \$270 billion to \$1.082 *trillion*.<sup>17</sup>

***Investment.*** With 500 megahertz of contiguous mid-band spectrum, the 12 GHz band is unique in that large channels of spectrum for 5G can quickly be brought to market by the incumbent MVDDS license holders. While the value of such a resource may be difficult to quantify, RS Access reports that a recent study determined that 400 megahertz of mid-band spectrum “would lead to more than \$154 billion in infrastructure spending, 1.3 million new jobs, and \$274 billion added to the U.S. GDP.”<sup>18</sup> Rather than deter investment, modifying the MVDDS to allow two-way mobile service will in fact *encourage* investment in the 12 GHz band. Certainly, it will allow MVDDS licensees to finally take advantage of the licenses they hold, and the favorable interference studies submitted by RS Access indicate that a nationwide 5G deployment will not interfere with NGSO FSS, preserving the billions in investment that these providers have spent to bring broadband to rural and underserved markets.

---

<sup>16</sup> RS Access Comments at 23-32.

<sup>17</sup> See Brattle Economic Study at 35.

<sup>18</sup> See Comments of RS Access at 29-30 (citing David Sosa & Greg Rafert, *The Economic Impacts of Reallocating Mid-Band Spectrum to 5G in the United States*, Analysis Group, at 1 (Feb. 2019), <https://bit.ly/37cXPCv>).

**Interference.** As described in further detail in the next section, the coexistence feasibility study commissioned and submitted by RS Access concludes that less than one percent of hypothetical NGSO FSS terminals were likely to experience interference from a terrestrial 5G service.<sup>19</sup> And for those that do experience interference, spectrum sharing technologies and practices can be employed that will adjust these terminals to avoid it altogether.<sup>20</sup> Additionally, DISH has updated a previously submitted technical study and submitted technical criteria explaining how MVDDS and DBS operations can successfully coexist in the band and how 5G technology can be configured to protect those specific locations where DBS receivers exist.<sup>21</sup>

**III. THE ENGINEERING AND TECHNICAL ANALYSIS DEMONSTRATES THAT COEXISTENCE IN THE BAND WITH INCUMBENT USERS IS FEASIBLE AND THAT HARMFUL INTERFERENCE CAN BE MITIGATED.**

Increasing the efficiency of the 12 GHz band for two-way terrestrial service and 5G will require the Commission to make modifications to operational rules and power limits that were adopted nearly 20 years ago in the pre-smartphone era. The record indicates that, despite their best efforts, MVDDS licensees have found the current rules “restrictive” and that the limitations placed on the service have impacted buildout requirements and the ability to manufacture and purchase suitable equipment.<sup>22</sup> At the time these rules were adopted, the Commission was

---

<sup>19</sup> See RS Access Coexistence Feasibility Study at 55 (finding the potential for Starlink terminals to receive emissions in excess of a nominal I/N value of -8.5 dB will occur in only 0.888% of Starlink terminals deployed over CONUS).

<sup>20</sup> *Id.* (noting that “[f]ew, if any, of the . . . nominally affected Starlink terminals will experience service interruption or even service degradation, in actual practice for several reasons” including “the model does not implement any of the case-by-case mitigation measures that operators routinely employ to mitigate the potential for interference in the ordinary course of business”).

<sup>21</sup> See Peters Declaration at 2-3.

<sup>22</sup> See DISH Comments at 34.

rightly focused on preventing harmful interference between these nascent services and elected to err on the side of caution when setting technical rules and power limits.<sup>23</sup> However, over the last 20 years, the licensees in this band have made significant technical advancements and service refinements that have mitigated interference concerns and warrant further examination by the Commission.

INCOMPAS and CCIA detailed these technological advances that make coexistence in the band between terrestrial and satellite operation practicable in its comments,<sup>24</sup> and other stakeholders have similarly highlighted how these developments will enable spectrum sharing in the 12 GHz band. For example, DISH reports that “targeted small-cell deployments, and advanced antenna techniques such as massive multiple input multiple output (“Massive MIMO”) antennas, advanced beamforming and beamsteering, all allow better control of transmitter energy and therefore can protect DBS and NGSO systems from interference.”<sup>25</sup> In addition to the steps that providers have taken to refine and manage their services, “automated shared spectrum technology and services . . . enable true sharing of a spectrum band amongst several disparate services without the administrative difficulties associated with traditional coordination methods.”<sup>26</sup> Terrestrial providers are not alone in having made significant changes to their

---

<sup>23</sup> See *12 GHz Notice* at para. 7 (detailing the MVDDS technical rules and “extensive coordination requirements,” including detailed frequency coordination procedures, interference protection criteria, and limitations on signal emissions, transmitter power level, and transmitter locations).

<sup>24</sup> See Comments of INCOMPAS and the Computer & Communications Industry Association, WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 8-11 (“INCOMPAS-CCIA Comments”).

<sup>25</sup> DISH Comments at 43.

<sup>26</sup> See Comments of Federated Wireless Inc., WT Docket No. 20-443, GN Docket No. 17-183 (filed May 7, 2021) at 1 (“Federated Wireless Comments”).

networks as NGSO satellite architecture has evolved such that service is being delivered by mega-constellations of hundreds to thousands of satellites. These changes ensure that NGSO FSS user terminals are communicating with satellites at angles that are “far off-axis from terrestrial links, which tend to be pointed approximately tangent to the surface of the Earth.”<sup>27</sup> Essentially, all NGSO FSS constellations “provide some measure of antenna separation to terrestrial services and permit robust 5G deployment in the same band without the harmful risk of interference.”<sup>28</sup>

In order to determine whether to provide for flexible use operations in the 12 GHz band, the Commission must find that “such use would not result in harmful interference among users.”<sup>29</sup> In response to the Commission’s request for studies related to the feasibility of sharing among the incumbent services, both RS Access and DISH have submitted new technical analyses that demonstrate that it is possible to deploy two-way terrestrial services in the 12 GHz band with only minimal interference concerns. These two studies, which promote shared use amongst DBS, NGSO FSS, and MVDDS users, were the only technical studies and recommendations entered into the record. The studies specifically address concerns made by DBS and NGSO FSS incumbents in the band and other stakeholders<sup>30</sup> that a new two-way mobile service cannot be designed in a manner that protects these incumbents from harmful interference.

---

<sup>27</sup> See Application of Space Exploration Holdings, LLC, IBFS File No. SAT-LOA-2017030100027, Waiver Requests, at 2 (filed Mar. 1, 2017).\

<sup>28</sup> RS Access Comments at 41.

<sup>29</sup> 47 U.S.C. § 303(y)(2)(C).

<sup>30</sup> See, e.g., Letter of Julie Kitka, President, Alaska Federation of Natives, to Marlene H. Dortch, Secretary, FCC, WT Docket No. 20-443 (filed May 28, 2021) at 2 (raising concerns that Commission’s adjustments to the band will impact services and Rural Digital Opportunity Fund commitments).

**a. Updated Technical Analysis in the Record Indicates that DBS Incumbents Will Be Protected From Harmful Interference.**

The 12 GHz band is allocated on a co-primary basis to DBS, NGSO FSS, and MVDDS, with the latter two services allocated on a non-harmful interference basis with DBS, which has been a fixture of the band since the 1980s.<sup>31</sup> DISH and DirecTV are the only current U.S.-licensed DBS providers and together the two companies have over 22 million subscribers receiving service via small dish antennas. Although DirecTV “has moved most of its direct-to-home service to Ka-band satellites,”<sup>32</sup> both companies maintain that any new terrestrial 5G service must protect the incumbents and include safeguards that will ensure a new mobile service does not interfere with the provision of DBS. However, the similarities between the two companies appears to end there as DISH has fully embraced the feasibility of sharing between DBS and 5G in the 12 GHz band.

As the most prominent user of the band, DISH’s support for rule revisions should allay DirecTV’s concerns that two-way terrestrial service will interfere with DBS. Despite its support for the introduction of 5G into the 12 GHz band, the company has urged the Commission to “first, do no harm”<sup>33</sup> with respect to DBS and has suggested technical criteria that will allow two-way terrestrial service while protecting its customers’ reception of DBS. To that end, DISH has presented an updated technical study in its comments in the form of a declaration from Tom Peters, a former Chief Wireless Engineer of the Commission, who authored the coexistence study submitted by the MVDDS Coalition in its 2016 petition for rulemaking. DISH asserts that

---

<sup>31</sup> *See 12 GHz Notice* at paras. 3-6.

<sup>32</sup> DISH Comments at 3.

<sup>33</sup> *Id.*

spectrum bands can be used to provide broadband capacity using targeted, small cell deployments that present a lower interference potential than traditional wide-area macrocell deployments in lower frequency bands. In addition, advanced antenna techniques like beamforming and beamsteering allow better control of transmitter energy, enabling transmissions to be more narrowly focused to desired locations.<sup>34</sup> In his updated technical study, Mr. Peters indicates that with a database of spectrum availability, 5G technology can be configured to protect those specific locations where DBS receivers exist.<sup>35</sup>

Additionally, both DISH and RS Access share the results of a series of tests and deployments in which it studied the impact of increased power limits on DBS receivers. In DISH's case, their study showed that "5G transmissions would not exceed EPFD limits in the vast majority of locations" even when these transmissions were conducted at "28dB higher than the power currently allowed under the Commission's rules."<sup>36</sup> RS Access, which received a Commission waiver of the MVDDS power limits to deploy a "wide-area" commercial MVDDS deployment in Albuquerque, New Mexico, did not receive a single complaint of harmful interference with DBS receivers.<sup>37</sup> RS Access suggests coupling a reasonable interference limit with a modern coordination process to prevent harmful interference. These suggestions regarding safeguards in the band should be incorporated by the Commission as it updates operational and power limit rules that will allow MVDDS to develop a two-way terrestrial service in the band.

---

<sup>34</sup> *Id.* at 70.

<sup>35</sup> *See* Peters Declaration at 3.

<sup>36</sup> DISH Comments at 44.

<sup>37</sup> *See* RS Access Comments at 46.

**b. A Newly Commissioned Assessment of the Feasibility of Coexistence in the 12 GHz Band Substantiates Proponents’ Technical Claims That 5G MVDDS Will Not Interfere With NGSO FSS.**

In response to Commission inquiries on the feasibility, costs, and benefits of sharing in the band between 5G MVDDS and NGSO FSS, RS Access submitted a newly commissioned technical study conducted by RFK Engineering Solutions that assesses the feasibility of coexistence between these two services. The study was conducted to assess the probability of interference between 2.5 million Starlink earth terminals downlinking in the 12 GHz band and a nationwide 5G deployment of 12 GHz spectrum. The study was conducted based on the conditions that were set for SpaceX’s Starlink service in its more recent license modification.<sup>38</sup> Through exhaustive testing, RS Access was able to determine that “coexistence between robust deployments of the 12 GHz spectrum, both for 5G and for NGSO FSS broadband, is achievable in nearly all deployment scenarios—even without coordination.”<sup>39</sup> RS Access reports that less than one percent of hypothetical terminals, even at the newly established levels, were likely to experience interference in any way.<sup>40</sup> In fact, the results “suggest there are ample opportunities for sharing between NGSO FSS and terrestrial 12 GHz infrastructure.”<sup>41</sup>

Importantly, the study was conducted “us[ing] a variety of conservative assumptions” that indicate that the threat of harmful interference is less than indicated.<sup>42</sup> Additionally, the

---

<sup>38</sup> See RS Access Coexistence Feasibility Study at 24.

<sup>39</sup> *Id.* at i.

<sup>40</sup> *Id.* at 55-56 (RKF Engineering reports that only 0.888% of Starlink terminals would be “nominally” impacted).

<sup>41</sup> *Id.* at 49.

<sup>42</sup> *Id.* at ii.

study did not implement “case-by-case mitigation measures that operators routinely employ to mitigate the potential for interference.”<sup>43</sup> Essentially, were 5G MVDDS and NGSO FSS providers to employ these mitigation measures, it would decrease the risk of interference even further. The MVDDS Licensees endorse this approach in their comments, arguing that “with proper coordination and cooperation, MVDDS and NGSO licensees can coexist without causing harmful interference to one another.”<sup>44</sup>

**c. Technical Advancements and Lessons Learned in Spectrum Sharing May Also Facilitate Coexistence in the 12 GHz Band.**

In addition to the technical studies shared by proponents of two-way mobile service in the band, several stakeholders highlight the increased evidence that dynamic spectrum sharing will allow co-existence in the band. Though it took no position on the 12 GHz band in the comment round pending its review of technical proposals like those submitted by RS Access and DISH, the Dynamic Spectrum Alliance (“DSA”) calls the experience of spectrum sharing between terrestrial and FSS earth stations in the Citizen Broadband Radio Service (“CBRS”) in the 3.5 GHz band instructive and potentially applicable to this proceeding. DSA argues that “[w]ith knowledge of the location and operating parameters of the satellite receivers in need of protection, an automated sharing system can be designed and implemented to facilitate additional access to these frequencies.”<sup>45</sup> Even without location information, automated sharing systems are “capable of accounting for location uncertainty in their calculations.”<sup>46</sup> According to

---

<sup>43</sup> *Id.* at 55.

<sup>44</sup> MVDDS Licensees Comments at 12.

<sup>45</sup> *See* DSA Comments at 4.

<sup>46</sup> *Id.* at 4-5.

Federated Wireless, automated sharing systems like the Spectrum Access System that manages the CBRS band “are capable of both complex and high-volume computations, which will be important to protect large numbers of incumbent receivers, such as those in the 12 GHz band.”<sup>47</sup> RS Access includes a summary of differences between terrestrial mobile technologies in 2016, at the time that the MVDDS Coalition submitted its Petition for Rulemaking, and in 2021 when Massive MIMO, adaptive beamforming, carrier aggregation, and architecture changes have made spectrum sharing “far more feasible.”<sup>48</sup> Coupled with the technical studies in the record, the Commission should have considerable confidence that MVDDS providers have the capacity and technological ability to enable spectrum sharing in the 12 GHz band.

#### **IV. AUCTIONING MOBILE TERRESTRIAL RIGHTS IN THE 12 GHZ BAND IS UNNECESSARY AND WOULD DELAY BRINGING 5G TO MARKET**

Given the continued commitments of incumbent MVDDS licensees to bring terrestrial service to market, it is clear that the optimal approach to assigning new mobile terrestrial rights in the 12 GHz band is for the Commission to modify the current licenses using its authority under section 316 of the Communications Act. The record shows that despite a number of challenges encountered by the licensees, MVDDS providers have “timely completed construction and are providing substantial MVDDS services in all of their licensed markets.”<sup>49</sup> Providers have worked within the “restrictive” operational and technical rules<sup>50</sup> to deliver MVDDS, even when the constraints, including stringent power limitations, deterred the

---

<sup>47</sup> Federated Wireless Comments at 2.

<sup>48</sup> RS Access Comments at 50-51 (*see* Figure 10: Summary of Differences between Terrestrial Mobile Technologies in 2016 and 2021).

<sup>49</sup> MVDDS Licensees Comments at 6.

<sup>50</sup> *Id.* at 5-6.

development and manufacture of “reliable and affordable 12 GHz equipment that operated in accordance” with these rules.<sup>51</sup> Current service offerings include extended Wi-Fi, live video monitoring services, and the provision of live weather information.

Despite this progress, there is a clear consensus amongst the MVDDS licensees that the 12 GHz band has the potential to be a game changer for mobile broadband and for 5G in particular.<sup>52</sup> The providers in this band recognize that mid-band spectrum is important for additional 5G capacity and that the U.S. needs more spectrum in order to innovate and compete with other nations that have already allocated significantly greater amounts of this spectrum for 5G. The MVDDS Coalition’s Petition for Rulemaking represented a first step in trying to get the Commission to review the rules and limitations that had kept MVDDS providers from fully realizing the potential of the band and “to clear the way for sorely-needed terrestrial 5G services in the 12 GHz band.”<sup>53</sup> Since that time, MVDDS providers have continued to seek Commission review of the current authorizations and to encourage the agency to modify these licenses to accelerate 5G deployment in the band. The submission of RS Access and DISH’s technical studies demonstrating that coexistence is feasible in the 12 GHz band between a mobile allocation and the DBS and NGSO FSS incumbents, coupled with the public interest benefits and investment that 5G will bring, should give the Commission confidence that flexible use of the band is warranted. INCOMPAS and CCIA therefore urge the Commission to assign new mobile

---

<sup>51</sup> DISH Comments at 34.

<sup>52</sup> See RS Access Comments at 2 (calling on the Commission to “unleash the 12 GHz band’s untapped potential by modernizing the MVDDS rules”), DISH Comments at 36 (indicating that the “full potential of the 12 GHz band remains untapped by terrestrial services because of restrictions that are no longer necessary”).

<sup>53</sup> MVDDS Licensees Comments at 3.

terrestrial rights in the 12 GHz band by modifying the incumbent MVDDS providers' licenses using its section 316 authority.

Furthermore, the Commission should reject other approaches for assigning new terrestrial rights being proposed by some stakeholders in the proceeding, including T-Mobile which has suggested that the Commission relocate active MVDDS operations to other microwave bands in order to auction mobile terrestrial rights in the 12 GHz band.<sup>54</sup> Additionally, AT&T, which owns DirecTV has argued that the Commission should clear the band of incumbents and proceed with an auction to allocate any new flexible use rights.<sup>55</sup> Auctioning new terrestrial rights in the band is unsupported by the facts, the law, and policy, and would lead to extensive delays in bringing 5G to market.

As noted in the record, the 12 GHz band represents one of the few, if not the only opportunity to quickly release large amounts of 5G-ready mid-band spectrum.<sup>56</sup> The size of the band, its ability to accommodate 100 MHz channels, and the significant technological advancements with respect to 5G carrier aggregation will make the 12 GHz band a prime solution for 5G for the foreseeable future. Once the Commission elects to assign new terrestrial rights by modifying the existing licenses in the band, the MVDDS providers can quickly bring 5G to the market. However, if the Commission were to decide to either remove or move incumbents and re-auction the spectrum, it could take an additional delay of at least 9-24 months *after* the resolution of the proceeding before the Commission could conduct an auction. In

---

<sup>54</sup> See T-Mobile Comments at 9-14.

<sup>55</sup> See Letter of Michael P. Goggin, Assistant Vice President – Senior Legal Counsel, AT&T, to Marlene H. Dortch, Secretary, FCC, RM-11768 (filed Aug. 6, 2020), at 6.

<sup>56</sup> See RS Access Comments at 13-22.

March, the Commission announced that 100 megahertz of mid-band spectrum in the 3450-3550 MHz band will be auctioned off in December for 5G service. This sets the baseline for auctions at nine months, with the potential that the wait could be longer if more auctions are added to the agency's calendar. In fact, it could be a number of years before 5G could be made available via the 12 GHz band if the Commission elects to re-auction this spectrum. Consumers and businesses would bear the brunt of such delay as competitive 5G options would be limited. Given the interest and ability of the incumbents in initiating two-way terrestrial 5G service now, it is in the public interest and makes good economic sense to bring 5G to market as soon as possible.

Additionally, an auction would contrast with the Commission's approach to NGSO FSS providers that have been permitted over the last few years to introduce satellite broadband after abandoning service delivery in the band for over eleven years.<sup>57</sup> In 2016, new developments in satellite architecture and NGSO FSS deployment enabled companies like OneWeb and others to finally invest in the band and bring new broadband service to rural and underserved areas. MVDDS license holders "have as much equity in their favor, if not more, as any prior group of licensees who benefitted from FCC decisions to allow licensed spectrum to be put to higher and better uses"<sup>58</sup> and therefore should be provided the same opportunity to deploy service based on recent technical advances as other incumbents in the band. It is clear from the technical and economic studies that MVDDS providers are primed to make more efficient use of the 12 GHz band. Like NGSO FSS providers, who have received license modifications to bring satellite

---

<sup>57</sup> See INCOMPAS-CCIA Comments at 16 (describing the events that led NGSO FSS providers to delay deployment in the band for eleven years, from 2005 to 2016).

<sup>58</sup> MVDDS Licensees Comments at 19.

service to market, the Commission should give these providers the same opportunity, especially since Section 309(j) of the Act does not compel the Commission to re-auction the licenses.<sup>59</sup>

Finally, any arguments that modification of the existing licenses would represent a windfall for their holders are misplaced. As indicated by DISH, any modifications to the license come with “limitations and significant costs” related to deployment and network management. Additionally, MVDDS incumbents have for years borne the costs of spectrum “that could not be put to [its full] productive use due to restrictive rules and the unavailability of equipment, circumstances clearly beyond their control.”<sup>60</sup>

## **V. CONSUMERS WILL WIN WITH ADDITIONAL MID-BAND SPECTRUM PERMITTED FOR 5G**

In this proceeding, the Commission should not miss an opportunity to make the 500 megahertz of contiguous mid-band spectrum available for 5G. In recent years, the Commission has made tremendous progress in freeing up and making additional spectrum available for revolutionary next generation service. As recognized by the Commission, mid-band spectrum, in particular, is “well-suited for next generation wireless broadband services” given its “favorable propagation characteristics . . . and opportunity for additional channel re-use.”<sup>61</sup> The participants in this proceeding have highlighted the explosive growth in mobile data usage and how the addition of the 12 GHz band to the Commission’s 5G spectrum framework would enable them to

---

<sup>59</sup> See RS Access at 60, DISH Comments at 80 (contending that an auction is unnecessary under section 309(j) of the Communications Act).

<sup>60</sup> MVDDS Licensees at 19 (“When equipment did become available, it was on a sole source basis that added both costs and delays when service was initiated. Furthermore, MVDDS incumbents led the way in directing FCC attention to the fact that the 12 GHz Band could be put to a higher and better use.”).

<sup>61</sup> *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, Order and Notice of Proposed Rulemaking, 33 FCC Rcd. 6915, 6917 para. 5 (2018).

handle this growth through the expansion of their network capacity. That the 12 GHz band is unencumbered by federal users and can be brought quickly to market is another reason why the Commission should move swiftly to allocate a two-way 5G mobile service in the band and modify MVDDS incumbent licenses for 5G operations.

As noted above, the public interest benefits of such a decision are substantial. Consumers and businesses stand to reap significant benefits from increased competition in the band. By increasing the number of providers offering 5G service, the Commission can ensure that prices for this service remain affordable, that quality of service remains high, and that consumers across the country and on the wrong side of the digital divide gain increased access to next-generation broadband service. On pricing, competition is a critical factor in keeping broadband service affordable. A recent Open Technology Institute study on the affordability of broadband prices found that the U.S. market suffers from a lack of competition, and that “this lack of choice directly affects the cost and quality of internet service.”<sup>62</sup> Also, as the country recovers from the global pandemic and the effects of an economic slowdown, consumers and businesses can benefit from new competition for and access to next generation telecommunications services.

Finally, ensuring that the country has enough mid-band spectrum will better position the U.S. to compete in the global arena. In our comments, INCOMPAS and CCIA cited a study ranking the U.S. 13<sup>th</sup> in terms of available 5G spectrum. Without timely action by the FCC to create policies that accelerate deployment of 5G through mid-band spectrum, America will lose its edge over China in the race to 5G. The country that wins the 5G race will have an outsized role in determining the standards and security of the 5G infrastructure that will be deployed

---

<sup>62</sup> OPEN TECHNOLOGY INSTITUTE AT NEW AMERICA, THE COST OF CONNECTIVITY 2020 (2021), available at <https://www.newamerica.org/oti/reports/cost-connectivity-2020/> (last visited June 1, 2021).

throughout the globe. The expansion of 5G is crucial not just for the national defense; it will also enable the United States economy to lead in new technologies and services. Taking immediate steps to make the 500 megahertz of the 12 GHz band available for 5G service is a critical first step to maintaining the country's leadership in 5G.

## **VI. CONCLUSION**

For the reasons stated herein, INCOMPAS and CCIA urge the Commission to consider the recommendations in its reply comments as it examines the issues raised in the *Notice of Proposed Rulemaking*.

Respectfully submitted,

INCOMPAS

CCIA

*/s/ Angie Kronenberg*

*/s/ Vann Bentley*

Angie Kronenberg  
Christopher L. Shipley  
INCOMPAS  
1100 G Street NW  
Suite 800  
Washington, D.C. 20005  
(202) 872-5746

Vann Bentley  
Computer & Communications Industry Association  
25 Massachusetts Ave NW  
Suite 300C  
Washington, DC 20001  
(202) 479-3771

July 7, 2021