

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

In the Matter of)
)
MVDDS 5G Coalition) File No. RM-_____
)
Petition for Rulemaking to Permit MVDDS Use)
of the 12.2-12.7 GHz Band for Two-Way Mobile)
Broadband Service)

PETITION OF MVDDS 5G COALITION FOR RULEMAKING

Braunston Spectrum LLC
P.O. Box 783066
Wichita, KS 67278
(316) 239-8346

MVD Number 53 Partners
6139 Franklin Park Road
McLean, VA 22101
(703) 761-5013

Cass Cable TV, Inc.
100 Redbud Road
Virginia, IL 62691
(217) 452-4105

Satellite Receivers, Ltd.
1740 Cofrin Drive
Green Bay, WI 54302
(920) 432-5777

DISH Network L.L.C.
9601 S. Meridian Boulevard
Englewood, CO 80112
(202) 463-3709

SOUTH.COM LLC
9601 S. Meridian Boulevard
Englewood, CO 80112
(202) 463-3709

GO LONG WIRELESS, LTD.
4832 Givens Court
Sarasota, FL 34242
(941) 349-3500

Story Communications, LLC
P.O. Box 130
Durant, OK 74702
(580) 924-2211

MDS Operations, Inc.
729 South Federal Highway, Suite 212
Stuart, FL 34994
(877) 677-6372

Vision Broadband, LLC
145 East 49th Street
Hialeah, FL 33013
(202) 255-9011

WCS Communications, Inc.
3562 Knickerbocker Road
San Angelo, TX 76904
(512) 794-1198

April 26, 2016

TABLE OF CONTENTS

INTRODUCTION AND SUMMARY 2

DISCUSSION 8

I. UPDATING THE MVDDS RULES WILL BENEFIT CONSUMERS AND PUT UNDERUTILIZED MVDDS SPECTRUM TO MORE EFFICIENT USE..... 8

 A. Allowing MVDDS Licensees to Provide Two-Way Mobile Broadband Service Will Benefit Consumers By Enabling the Deployment of 5G..... 8

 B. Additional Licensee Flexibility Will Pave the Way for MVDDS Spectrum to Be Put to More Efficient and Productive Use. 12

II. THE COMMISSION SHOULD DEVELOP RULES TO MAKE TWO-WAY MOBILE BROADBAND MVDDS A REALITY, WHILE PROTECTING DBS. 16

 A. The Commission Should Add a Mobile Allocation in the 12 GHz Band..... 16

 B. The Commission Should Update the MVDDS Operational Rules to Permit MVDDS Licensees to Provide Two-Way Mobile Broadband Service. 17

 C. The Commission Should Update the MVDDS Technical Rules to Enable a Viable 5G Service While Safeguarding DBS Operations. 19

 D. The Commission Should Eliminate or Render Secondary the Long-Unused NGSO FSS Allocation and Make Corresponding Rule Changes. 22

 E. The Commission Should Consider Additional Rule Changes to Facilitate the Most Efficient and Beneficial Uses of MVDDS Spectrum. 24

CONCLUSION..... 27

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

In the Matter of)
)
MVDDS 5G Coalition) File No. RM-_____
)
Petition for Rulemaking to Permit MVDDS Use)
of the 12.2-12.7 GHz Band for Two-Way)
Mobile Broadband Service)

PETITION FOR RULEMAKING

In furtherance of the Commission’s goal of identifying additional spectrum to support the development of Fifth Generation (“5G”) mobile broadband technologies, the MVDDS 5G Coalition (“Coalition”)¹ hereby petitions to initiate a rulemaking proceeding designed to permit MVDDS licensees to use their 12.2-12.7 GHz spectrum to provide two-way mobile broadband service.² This 500 MHz of contiguous spectrum is ideally suited for 5G deployments, yet MVDDS licensees are hamstrung in their ability to provide 5G services by outdated Commission rules that impose unnecessarily restrictive technical and operational limitations. The Commission should act now to modernize these rules to enable sharing in the 12.2-12.7 GHz band between incumbent direct-to-home satellite services and mobile broadband services. By taking these steps, the Commission will allow 500 MHz of underutilized MVDDS spectrum to

¹ The Coalition includes a cross-section of multichannel video distribution and data service (“MVDDS”) and direct broadcast satellite (“DBS”) licensees holding authorizations in the 12.2-12.7 GHz band, including: Braunston Spectrum LLC, Cass Cable TV, Inc., DISH Network L.L.C., GO LONG WIRELESS, LTD., MDS Operations, Inc., MVD Number 53 Partners, Satellite Receivers, Ltd., SOUTH.COM LLC, Story Communications, LLC, Vision Broadband, LLC, and WCS Communications, Inc. Members of the Coalition hold 212 of the 213 MVDDS licenses.

² See 47 C.F.R. § 1.401.

be used as efficiently as possible to benefit U.S. consumers, who will enjoy even faster speeds, enhanced connection ubiquity, and truly real-time services and applications.

INTRODUCTION AND SUMMARY

In 2000, the FCC issued an order creating the MVDDS service in the 12.2-12.7 GHz band, followed two years later by the adoption of technical rules for the new service.³ The rules allow use of the spectrum for any one-way digital fixed non-broadcast service,⁴ and were designed to enable more efficient and intensive spectrum use through increased spectrum sharing.⁵ When adopted, the Commission expressed the hope that the MVDDS rules would facilitate the delivery of new communications services, including broadband.⁶ To protect existing DBS services from harmful interference, the Commission authorized MVDDS on a co-

³ See Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band Frequency Range, *First Report and Order and Further Notice of Proposed Rule Making*, 16 FCC Rcd 4096 (2000) ("MVDDS First R&O"); Amendment of Parts 2 and 25 of the Commission's Rules to Permit Operation of NGSO FSS Systems Co-Frequency with GSO and Terrestrial Systems in the Ku-Band with Frequency Range, *Memorandum Opinion and Order and Second Report and Order*, 17 FCC Rcd 9614 (2002) ("MVDDS Second R&O").

⁴ See 47 C.F.R. § 101.1407. Currently, two-way services can be provided only using spectrum in other bands for the return link. See *id.*

⁵ *MVDDS Second R&O*, 17 FCC Rcd at 9617 ¶ 2 ("We believe that the Commission's allocation for MVDDS in the 12 GHz band is in the public interest and reflects a carefully crafted balance of technical and policy concerns. This balance will result in an efficient reuse of spectrum and the provision of a new service to the public while affording protection to the existing Direct Broadcast Satellite (DBS) and new non-geostationary satellite orbit (NGSO) fixed-satellite services (FSS).").

⁶ See *id.* at 9802, Joint Statement of Chairman Michael Powell and Commissioner Kathleen Q. Abernathy ("[I]t is ... quite possible that MVDDS will be used to provide a one-way data path for broadband services.... MVDDS offers the possibility of another broadband alternative."); *id.* at 9810, Statement of Commissioner Michael J. Copps ("MVDDS has the potential to speed the deployment of broadband telecommunications services throughout the country, and especially to rural America.").

primary, non-harmful interference basis, and established what are, in the Commission’s own words, “very conservative” technical requirements to protect DBS.⁷

Since the adoption of the MVDDS rules nearly 15 years ago, the need for additional mobile broadband spectrum has skyrocketed, while the opportunities for more flexible and efficient shared use of spectrum have increased. According to Cisco, mobile data traffic has grown 4,000-fold over the past 10 years and almost 400-million-fold since 2000.⁸ This growth in mobile data usage has tracked consumer demand for ever-more data intensive mobile services at faster speeds. As the Commission recently explained, “[n]etwork connection speed and data consumption have exploded,” coinciding with “the deployment of faster network technologies” like 3G and 4G LTE.⁹ And projections indicate a further 1,000-fold increase in traffic demand over the next decade as carriers begin the evolution to 5G.¹⁰ To meet this demand, policymakers from across government and from both sides of the aisle agree that more spectrum is needed. Notably, the Chairman and all four Commissioners have stressed the need for additional spectrum to facilitate 5G mobile services as part of the *Spectrum Frontiers* proceeding.¹¹ And

⁷ *Id.* at 9631 ¶ 43; *see also id.* at 9617-19 ¶¶ 3-4, 9641-42 ¶ 68, 9652-55 ¶¶ 87-94; 47 C.F.R. § 2.106.

⁸ CISCO, CISCO VISUAL NETWORKING INDEX: GLOBAL MOBILE DATA TRAFFIC FORECAST UPDATE, 2015–2020, at 1 (Feb. 3, 2016), <http://www.cisco.com/c/en/us/solutions/collateral/service-provider/visual-networking-index-vni/mobile-white-paper-c11-520862.pdf>.

⁹ Protecting and Promoting the Open Internet, *Report and Order, Declaratory Ruling, and Order*, 30 FCC Rcd 5601, 5636 ¶ 89 (2015).

¹⁰ Use of Spectrum Bands Above 24 GHz for Mobile Radio Services, *Notice of Proposed Rulemaking*, 30 FCC Rcd 11878, 11883 ¶ 8 (rel. Oct. 23, 2015) (“*Spectrum Frontiers NPRM*”); *see also* Naga Bhushan et al., *Network Densification: The Dominant Theme for Wireless Evolution into 5G*, IEEE Communications Magazine, Feb. 2014, at 82, 88 (noting the need to support a “1,000-fold increase in traffic demand over the next decade”).

¹¹ *See Spectrum Frontiers NPRM*, 30 FCC Rcd at 12007, Statement of Chairman Tom Wheeler (to “capitalize on the 5G opportunity,” the Commission must “leverage [its] flexible use spectrum policies” and “make low-band, mid-band, [and] high-band . . . spectrum available for

earlier this year, Senator John Thune (R-S.D.) introduced the bipartisan Mobile Now Act, which would make hundreds of MHz of spectrum available for commercial use by 2020 and would direct government agencies to examine high-frequency bands to determine which are most suitable for 5G purposes.¹²

The 12.2-12.7 GHz band is ideally suited to be made available for increased sharing with existing DBS services to allow use for new 5G services. 5G systems are expected to be used in areas of localized demand, where high system capacity in dense deployments will be needed to support very high data rates.¹³ Spectrum bands above 6 GHz meet these needs because they offer spectrum blocks of sufficient size – several hundred MHz or more – to provide high peak data rates.¹⁴ MVDDS spectrum squarely fits the bill: It offers 500 MHz of contiguous, high-band spectrum above 6 GHz. MVDDS spectrum also meets each of the four criteria recently

wireless broadband”); *id.* at 12008, Statement of Commissioner Mignon L. Clyburn (to facilitate 5G service and meet “explosive levels of consumer demand,” we must “start looking for more spectrum higher up the chart”); *id.* at 12009, Statement of Commissioner Jessica Rosenworcel (the 5G future requires the United States “to bust through our old 3 GHz ceiling and create new possibilities for millimeter wave spectrum”); *id.* at 12012, Statement of Commissioner Ajit Pai (to ensure the United States leads the transition to 5G, we must “[g]et[] more spectrum into the hands of consumers and enabl[e] more flexible use of these bands”); *id.* at 12014, Statement of Commissioner Michael O’Rielly (the Commission “must ensure that sufficient spectral resources are available” to reach the 5G potential).

¹² See John Eggerton, *Mobile Now Act Introduced in Senate*, MULTICHANNEL NEWS, Feb. 11, 2016, <http://www.multichannel.com/news/congress/mobile-now-act-introduced/402543>. The Mobile Now Act was recently approved by the Senate Commerce Committee. See Diana Goovaerts, *CTIA, Verizon Renew Calls for Swift Gov’t Action on 5G Spectrum*, WIRELESS WEEK, Mar. 18, 2016, <http://www.wirelessweek.com/news/2016/03/ctia-verizon-renew-calls-swift-govt-action-5g-spectrum>.

¹³ See 4G AMERICAS, *The Voice for 5G in the Americas 5G Spectrum Recommendations*, at 8 (Aug. 2015), http://www.4gamericas.org/files/6514/3930/9262/4G_Americas_5G_Spectrum_-_Recommendations_White_Paper.pdf.

¹⁴ See *id.*; see also *Spectrum Frontiers NPRM*, 30 FCC Rcd at 12014, Statement of Commissioner Michael O’Rielly (to reach the 5G potential, the Commission must “target additional bandwidth between 6 and 24 GHz”).

established by the Commission for evaluating the suitability of spectrum bands for 5G: (i) it offers “at least 500 megahertz of contiguous spectrum,” (ii) it allows for a “flexible regulatory framework” that maximizes service options, (iii) it promotes “international harmonization,” and (iv) it enables 5G sharing with “existing incumbent license assignments and uses.”¹⁵

Yet today, the broadband potential of this spectrum resource remains unfulfilled. At the time of MVDDS adoption, for example, today’s 5G technologies that can facilitate sharing (*e.g.*, smaller cells and advanced antenna techniques) were undeveloped. Accordingly, the Commission adopted what can be seen today as unnecessarily restrictive technical and operational rules – including prohibitions on using MVDDS spectrum for two-way communications and offering mobile service, stringent power limitations, and extensive and exhaustive coordination procedures.¹⁶ These existing rules have undermined the band’s broadband potential, despite significant investment in the band.

Beginning in 2004, licensees invested over \$118 million to purchase MVDDS licenses at two auctions.¹⁷ Since that time, MVDDS licensees have worked hard to put that spectrum to use. Licensees have explored a range of options, including point-to-multi-point fixed services using the MVDDS spectrum as downlink, and other spectrum as uplink, and are continuing to explore options like wireless backhaul.¹⁸ But technical and operational limitations have so

¹⁵ See *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11887-89 ¶¶ 20-24. The applicability of these criteria to MVDDS is discussed further in Sections I and II below.

¹⁶ See *infra* Section II.

¹⁷ See Requests of Ten Licensees of 191 Licenses in the Multichannel Video and Data Distribution Service for Waiver of the Five-Year Deadline for Providing Substantial Service, *Order*, 25 FCC Rcd 10097, 10103 ¶ 11 (WTB 2010) (“*MVDDS Extension Order*”).

¹⁸ See South.com L.L.C. and DISH Network L.L.C., Request for Extension of Time, ULS File No. 0006310688, at 2-7, 11-14, 16 (granted Jan. 26, 2015) (“*DISH Extension Request*”) (discussing efforts to determine the feasibility of a point-to-point wireless backhaul service in the

constrained these uses of the spectrum that manufacturers have been deterred from developing equipment for the band, and as a consequence the Commission has twice extended the buildout milestone for MVDDS licensees.¹⁹

As a result, MVDDS spectrum today remains underutilized despite significant mobile broadband demand and substantial investments by MVDDS licensees, and its future is hamstrung by outdated technical and operational rules. The rulemaking requested herein answers Chairman Wheeler’s call to find “[i]ndustry-driven win-win solutions that protect [] existing and contemplated satellite services, while also enabling new terrestrial offerings.”²⁰ Modifying the rules to permit sharing between DBS and a viable two-way mobile broadband service would be consistent with current international frequency allocations and will bring vast public interest benefits, including: (i) making an additional 500 MHz of contiguous spectrum available to help meet mobile broadband demand and foster 5G, and (ii) making more efficient use of the spectrum by adapting the current regulatory approach to reflect today’s technologies and the trend toward more flexible uses.²¹ Indeed, flexibility is a hallmark of the Commission’s

MVDDS spectrum); South.com, LLC, Request for Part 5 Experimental STA, OET File No. 0864-EX-ST-2012 (STA to evaluate whether wireless backhaul is a viable MVDDS service offering). Several members of the Coalition have filed waiver requests to permit the use of 12.2-12.7 GHz spectrum for two-way, point-to-point operation at an Effective Isotropic Radiated Power (“EIRP”) level of up to 55 dBm. *See* Wireless Telecommunications Bureau Seeks Comment on Petitions of Seven Licensees for Waiver of Multichannel Video Distribution and Data Service Technical Rules, *Public Notice*, 30 FCC Rcd 9953 (WTB 2015) (“*MVDDS Waiver Notice*”). Those pending requests should continue to be processed independently of this petition on their own merits.

¹⁹ *See, e.g., MVDDS Extension Order*, 25 FCC Rcd at 10099-100 ¶ 5, 10102-04 ¶¶ 10-13; DISH Extension Request at 1-2, 5-7, 11, 16 (granted Jan. 26, 2015).

²⁰ Remarks of Tom Wheeler, Chairman, FCC, 19th Annual Satellite Leadership Dinner, Washington, D.C., at 4 (Mar. 7, 2016), https://apps.fcc.gov/edocs_public/attachmatch/DOC-338135A1.pdf.

²¹ *See* 47 U.S.C. § 151.

spectrum policy, and the Commission has recognized that “[a]s innovation and development focuses on using higher bands to help support mobile broadband, we aim to help foster a regulatory environment that is responsive to these technological changes.”²² The Commission should create that flexible regulatory environment here by issuing a notice of proposed rulemaking proposing to:

- Add a domestic mobile allocation to the 12.2-12.7 GHz band spectrum, consistent with the International Table of Frequency Allocations;
- Update the MVDDS operational rules to permit MVDDS licensees to provide two-way mobile broadband service;
- Update the MVDDS technical rules to enable a viable 5G service while protecting DBS operations from harmful interference;
- Delete or designate as secondary the existing unused non-geostationary satellite orbit (“NGSO”) fixed satellite service (“FSS”) allocation at 12.2-12.7 GHz (while preserving the adjacent co-primary allocation for NGSO FSS at 11.7-12.2 GHz²³), and eliminate or modify MVDDS rules designed to protect NGSO FSS – a “service” that, after nearly 15 years, is neither licensed nor deployed in the 12.2-12.7 GHz band; and
- Consider additional rule changes that can facilitate the most efficient and beneficial uses of MVDDS spectrum.

By leveraging the Commission’s flexible use policies to modernize the MVDDS rules and make MVDDS spectrum available for mobile broadband, U.S. consumers win. And by conducting a rulemaking to determine appropriate technical thresholds, the Commission can ensure these changes are accomplished without harm to competitively important DBS and its

²² Use of Spectrum Bands Above 24 GHz for Mobile Radio Services, *Notice of Inquiry*, 29 FCC Rcd 13020, 13021 ¶ 2 (2014); *see also Spectrum Frontiers NPRM*, 30 FCC Rcd at 11881 ¶ 3, 11888 ¶ 23.

²³ NGSO FSS is authorized to use 500 MHz of spectrum in the 11.7-12.2 GHz band, which is subject to sharing with only geostationary satellite orbit (“GSO”) FSS systems on a co-primary basis. *See* 47 C.F.R. § 2.106.

consumers. Given these benefits, the FCC should promptly commence a rulemaking seeking comment on the proposed rule changes.

DISCUSSION

As discussed in Section I, MVDDS spectrum meets the first two criteria established by the Commission for evaluating the suitability of spectrum bands for 5G: It offers 500 MHz of contiguous spectrum able to support beneficial 5G services, and it will advance Commission efforts to provide licensees with regulatory flexibility to offer a wide variety of services.²⁴ As discussed in Section II, MVDDS spectrum also satisfies the second two criteria: The 12.2-12.7 GHz band is already allocated internationally for mobile services, and a rulemaking will allow the Commission to develop rules able to ensure compatibility between two-way mobile broadband use of the band and DBS.²⁵ While the NGSO FSS co-primary allocation and protection rules will need to be eliminated to facilitate such a viable 5G service, consumers will not be impacted by losing a service that does not exist and that still would be able to use the 11.7-12.2 GHz band (and perhaps the 12.2.12-7 GHz band on a secondary basis) should it ever develop.

I. UPDATING THE MVDDS RULES WILL BENEFIT CONSUMERS AND PUT UNDERUTILIZED MVDDS SPECTRUM TO MORE EFFICIENT USE.

A. Allowing MVDDS Licensees to Provide Two-Way Mobile Broadband Service Will Benefit Consumers By Enabling the Deployment of 5G.

Amending the Commission's rules to allow MVDDS licensees to provide two-way mobile broadband service in a manner that protects DBS will unleash an additional 500 MHz of contiguous spectrum to support the 5G evolution in wireless broadband technology. While the

²⁴ See *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11887-89 ¶¶ 20-24.

²⁵ See *id.*

Commission is currently examining rules to free up spectrum in bands above 24 GHz to support 5G, more spectrum is needed if consumers are to realize its full benefits. As Chairman Wheeler has explained:

“[N]one of us knows exactly what 5G will be, *but we can be certain that the spectrum requirements will be dynamic and ever-changing.* Accordingly, our spectrum policy must be equally dynamic to address a wireless reality that is still evolving. We must continue to employ flexible use policies that encourage private-sector innovation and investment, *while increasing our commitment to spectrum sharing [and] opening new bands for broadband*”²⁶

Maximizing the spectrum available to support 5G is therefore critical. By adding MVDDS spectrum to the 5G pipeline, consumers will be one step closer to enjoying even faster speeds, a more connected world (Internet of Things), and new real-time services and applications. And coupled with spectrum the Commission is targeting above 24 GHz, this additional contiguous block of 500 MHz of spectrum in the 12 GHz band will help ensure that the United States maintains its competitive advantage internationally in mobile communications.

Extremely fast speeds. 5G will enable very high speed mobile broadband, with targeted data speeds exceeding 10 gigabytes/second²⁷ – ten times what the fastest fixed networks using fiber optic cables currently provide.²⁸ For individuals, this high speed connectivity will make

²⁶ Statement of Tom Wheeler, Chairman, FCC, *Hearing on Oversight of the Federal Communications Commission*, Before the Subcomm. on Comms. and Tech., U.S. House of Representatives, at 2 (Mar. 22, 2016) (emphasis added), http://transition.fcc.gov/Daily_Releases/Daily_Business/2016/db0322/DOC-338488A1.pdf.

²⁷ See *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11883 ¶ 8; *id.* at 12014, Statement of Commissioner Michael O’Rielly; Larry Downes, *What is 5G and why should lawmakers care?*, WASH. POST, Oct. 26, 2015 (“*What is 5G*”), <https://www.washingtonpost.com/news/innovations/wp/2015/10/26/what-is-5g-and-why-should-lawmakers-care/>.

²⁸ *What is 5G*, *supra* note 27.

possible extremely fast downloading of high definition videos, music, or other large files.²⁹ For example, 5G will allow a consumer to download a film to her smartphone in under a second.³⁰ For businesses, these speeds will improve communications with employees who work and travel remotely, enabling video conferencing on the go from any location.³¹

Ubiquitous connectivity. 5G will accommodate massive machine-to-machine communications by facilitating ubiquitous connectivity to large numbers of densely-deployed devices.³² Examples include smart cities (remote monitoring of roads and public venues, real-time transportation information, and improved emergency services); smart homes (remote security systems and smart appliances, such as refrigerators that provide alerts when food items are low); smart grid (wireless monitoring of the energy grid and remote meters to save energy and reduce costs); automotive enhancements (broadband-enabled maintenance notifications, collision avoidance systems, and self-driving cars); eHealth/telemedicine applications (remote patient monitoring and diagnosis and medical training); and wearables (devices that can connect directly to the Internet and monitor health and safety, as well as tag devices that can help locate missing valuables).³³

²⁹ Thomas K. Sawanobori, CTIA, THE NEXT GENERATION OF WIRELESS: 5G LEADERSHIP IN THE U.S., at 4 (Feb. 9, 2016) (“CTIA 5G WHITE PAPER”); see *Spectrum Frontiers NPRM*, 30 FCC Rcd at 12009, Statement of Commissioner Jessica Rosenworcel.

³⁰ Nirave Gondhia, *5G – What is it? What are the benefits? When will it launch?*, FONEARENA, Feb. 24, 2015 (“What are the benefits of 5G”), <http://www.fonearena.com/blog/131042/5g-what-is-it-what-are-the-benefits-when-will-it-launch.html>.

³¹ CTIA 5G WHITE PAPER at 4; *What are the benefits of 5G*, *supra* note 30.

³² *Spectrum Frontiers NPRM*, 30 FCC Rcd at 12014, Statement of Commissioner Michael O’Rielly; CTIA 5G WHITE PAPER at 5.

³³ CTIA 5G WHITE PAPER at 5-7; *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11882 ¶ 6; *id.* at 12009, Statement of Commissioner Jessica Rosenworcel; *id.* at 12011, Statement of Commissioner Ajit Pai.

High reliability/low latency. Another benefit of 5G is reduced latency, *e.g.*, the buffering period to stream a video or the loading period to open a web page. With 5G, latency may be reduced to less than one-thousandth of a second,³⁴ meaning video will start to run as soon as the user hits play.³⁵ Low latency will enable ultra-reliable and real-time communications,³⁶ such as that required for augmented and virtual reality training for medical, aeronautical, and other jobs.³⁷ Reduced latency in 5G will also deliver immersive entertainment and video gaming options that provide life-like experiences without the current technology's inevitable delays.³⁸

International leadership. Additional spectrum for 5G is also critical to permit the United States to maintain its global leadership role in wireless. America today is a leader in 4G LTE, but other countries have seen that success and “want to seize the mantle of 5G leadership.”³⁹ The Chairman and Commissioners have publicly agreed that additional spectrum is needed to ensure the United States becomes the leader in 5G.⁴⁰ As CTIA has explained, “America’s global

³⁴ *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11883 ¶ 8; *id.* at 12014, Statement of Commissioner Michael O’Rielly.

³⁵ *What are the benefits of 5G*, *supra* note 30.

³⁶ CTIA 5G WHITE PAPER at 9-10.

³⁷ *Id.* at 9-10.

³⁸ *Id.* at 10; *What are the benefits of 5G*, *supra* note 30.

³⁹ CTIA 5G WHITE PAPER at 1.

⁴⁰ *Spectrum Frontiers NPRM*, 30 FCC Rcd at 12006-07, Statement of Chairman Tom Wheeler (“In the competitive mobile marketplace, standing still means falling behind.... The U.S. led the way in 4G deployment, partly because the FCC identified spectrum for next-generation wireless We want to build on this great success story and capitalize on the 5G opportunity. This will require an approach that continues to leverage the Commission’s ... efforts to ... spectrum available for wireless broadband.”); *id.* at 12009-10, Statement of Commissioner Jessica Rosenworcel (“[E]fforts to develop the next generation of wireless technology are already underway around the world.... In short, the race to 5G is on.... if we get our 5G spectrum policies right, we will take our success in 4G and propel ourselves forward to lead the world in the next generation of wireless technology.”); *id.* at 12012, Statement of Commissioner Ajit Pai (“The U.S. has led the world in 4G, and there is certainly a lot of running room left with LTE

leadership in mobile depends on spectrum.... The cornerstone for wireless growth and innovation will be clearing additional spectrum for 5G. Very large swaths of high band spectrum are required”⁴¹ MVDDS spectrum for mobile use helps to meet this critical spectrum need and is already globally harmonized for mobile service.⁴² By acting now to make MVDDS spectrum available for 5G deployments, the Commission will position the United States, as a first adopter, to drive standards and equipment development and assume the mantle of 5G leadership for the band.

B. Additional Licensee Flexibility Will Pave the Way for MVDDS Spectrum to Be Put to More Efficient and Productive Use.

Modernizing the MVDDS rules to enable a 5G service also will advance Commission efforts to provide all licensees with the enhanced flexibility needed to meet demand and diversify services. The Commission has long advocated flexible use rules that allow spectrum to be put to its highest and best use.⁴³ The National Broadband Plan made this a particular focus, setting a

and LTE-Advanced. But we must continue to lead as mobile technologies transition to 5G.... Getting more spectrum into the hands of consumers and enabling more flexible use of these bands is a critical step towards ensuring that the U.S. maintains its leadership in the wireless space”).

⁴¹ CTIA 5G WHITE PAPER at 11.

⁴² *See infra* Section II.A.

⁴³ *See* FCC, WIRELESS BROADBAND ACCESS TASK FORCE, CONNECTED & ON THE GO: BROADBAND GOES WIRELESS, REPORT, at 50 (Feb. 2005) (“Providing greater flexibility in the service rules and in the manner in which entities can gain access to existing spectrum enhances the ability of service providers ... to bring wireless broadband to the American people. To that end, the Commission ... has made substantial efforts to allow licensees and parties seeking access to spectrum the flexibility to use spectrum for its highest and best purposes, as determined by the market.”); FCC, SPECTRUM POLICY TASK FORCE, REPORT, ET Docket No. 02-135, at 3 (Nov. 2002) (“To increase opportunities for technologically innovative and economically efficient spectrum use, spectrum policy must evolve towards more flexible and market-oriented regulatory models.”).

goal of making “more spectrum available on a flexible basis.”⁴⁴ As the Plan explained, “the failure to revisit historical allocations can leave spectrum handcuffed to particular use cases and outmoded services,” while “[m]ore flexible spectrum rights will help ensure that spectrum moves to more productive uses, including mobile broadband.”⁴⁵ By updating the MVDDS rules as proposed herein, the Commission will free up the spectrum to be used for productive mobile broadband services – and thus more rapidly provide for deployment of service in the MVDDS band.

Modifying the MVDDS rules to enable a 5G service is consistent with a wide range of Commission decisions over the past decade that have afforded licensees increased flexibility to provide two-way mobile broadband services to U.S. consumers:

- ***Broadband radio service (“BRS”) and educational broadband service (“EBS”)***. In 2004, the Commission fundamentally transformed the licensing and technical rules for BRS/EBS (then known as the multipoint distribution service and instructional television fixed service, or MDS/ITFS) to allow existing licensees in the 2.5 GHz band to offer two-way services, including mobile broadband services, with substantially greater flexibility.⁴⁶ Recognizing that its technical and operational rules had become obsolete as use of the band evolved, the Commission adopted rules better suited to the then-current use cases and technologies. The Commission took these steps to “provide both existing EBS and BRS licensees and potential new entrants greater flexibility in order to encourage the highest and best use of spectrum.”⁴⁷ In 2014, the Commission further modified its 2.5 GHz band technical rules to facilitate the use of wider channels, which enabled incumbents to provide higher data rates to consumers, made equipment more

⁴⁴ FCC, CONNECTING AMERICA: THE NATIONAL BROADBAND PLAN, at 75 (2010) (“NBP”).

⁴⁵ *Id.* at 78-79.

⁴⁶ Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, *Report and Order and Further Notice of Proposed Rulemaking*, 19 FCC Rcd 14165 (2004).

⁴⁷ Performance Learning Coop. d/b/a Performance Learning Acad., *Memorandum Opinion and Order*, 28 FCC Rcd 15540, 15541 ¶ 3 (WTB/BD 2013).

affordable, and facilitated the proliferation of mobile broadband devices that operate in the 2.5 GHz band.⁴⁸

- **Wireless communications service (“WCS”).** When the Commission first established the 2.3 GHz WCS band in 1997, it adopted strict operating parameters to protect operations in the adjacent satellite digital audio radio (“SDARS”) band. Those rules effectively precluded the provision of two-way mobile broadband services in the spectrum.⁴⁹ In 2010, and again in 2012, the FCC revised its technical rules to enable robust mobile broadband use of the 2.3 GHz WCS spectrum, while protecting federal and satellite radio operations in the neighboring SDARS band.⁵⁰ The Commission explained that the action “furthers our larger goal of making more spectrum available for broadband services in the highest value frequency ranges,”⁵¹ opening up 20 MHz of previously underutilized spectrum for mobile broadband.⁵² As Chairman Genachowski noted at the time, “free[ing] up spectrum by removing regulatory barriers to flexible use of spectrum for broadband ... can be as valuable as clearing and reallocating new bands of spectrum.”⁵³
- **Mobile satellite service ancillary terrestrial component (“MSS ATC”)/AWS-4.** In 2003, the Commission adopted rules allowing MSS providers in three frequency bands the flexibility to use their satellite spectrum more efficiently to provide certain terrestrial services.⁵⁴ To ensure that the terrestrial component remained ancillary to the satellite offering, the Commission required MSS ATC licensees to provide substantial satellite service and an integrated MSS/ATC offering. By 2010, the FCC expressed concern that these “gating” criteria were impeding productive use of the spectrum,⁵⁵ and in 2012, the FCC added a primary terrestrial mobile allocation to the MSS S-Band, consistent with the

⁴⁸ Amendment of Parts 1, 21, 73, 74 and 101 of the Commission’s Rules to Facilitate the Provision of Fixed and Mobile Broadband Access, Educational and Other Advanced Services in the 2150-2162 and 2500-2690 MHz Bands, *Fifth Report and Order*, 29 FCC Rcd 6331 (2014).

⁴⁹ NBP at 85.

⁵⁰ See Amendment of Part 27 of the Commission’s Rules to Govern the Operation of Wireless Communications Services in the 2.3 GHz Band, *Report and Order and Second Report and Order*, 25 FCC Rcd 11710 (2010), *recon.*, *Order on Reconsideration*, 27 FCC Rcd 13651 (2012) (“WCS Order”).

⁵¹ *WCS Order*, 27 FCC Rcd at 13652 ¶ 1.

⁵² See FCC Removes Regulatory Barriers to Free Up 30 MHz of Broadband Spectrum, *FCC News Release* (Oct. 17, 2012). An additional 10 MHz was made available for fixed broadband services, with possible future use as downlink spectrum to serve mobile broadband devices. *Id.*

⁵³ *WCS Order*, 27 FCC Rcd at 13746, Statement of Chairman Julius Genachowski.

⁵⁴ Flexibility for Delivery of Communications by Mobile Satellite Service Providers in the 2 GHz Band, the L-band, and the 1.6/2.4 GHz Band, *Report and Order and Notice of Proposed Rulemaking*, 18 FCC Rcd 1962 (2003).

⁵⁵ NBP at 87-88.

international table of allocations. The FCC also removed regulatory barriers to mobile broadband use of this spectrum by providing the S-Band MSS licensees with full terrestrial use authority and adopting AWS-4 terrestrial service rules, which permit flexible and efficient spectrum use as well as sharing between MSS and terrestrial services.⁵⁶

- ***Above 24 GHz Bands***. Most recently, the Commission proposed rules in its *Spectrum Frontiers* proceeding targeting changes that would allow 5G use of certain spectrum bands above 24 GHz under a flexible use framework that facilitates enhanced spectrum sharing. Among other things, the Commission is proposing to directly assign flexible use rights, including mobile operating rights, to existing local multipoint distribution service (“LMDS”) and 39 GHz licensees,⁵⁷ explaining that doing so would expedite “the great benefits” 5G technologies are expected to bring to consumers.⁵⁸ The Commission noted that the proposed flexible use framework “is built off of two decades of successful policies” that stimulate innovation and investment in wireless while promoting sharing between different uses and technologies,⁵⁹ and that affording LMDS and 39 GHz licensees the flexibility to engage in mobile operations “would be consistent with the Commission’s decision to grant existing MDS and ITFS licensees blanket authority to engage in mobile operations.”⁶⁰

Here, the proposed rule changes will provide MVDDS licensees with the flexibility needed to bring the benefits of 5G mobile broadband to consumers and increase spectrum efficiency, while ensuring coexistence with existing services. These changes represent the next logical iteration of the Commission’s highly successful flexible use policy and will ensure that the spectrum resource is used efficiently.

⁵⁶ Service Rules for Advanced Wireless Services in the 2000-2020 MHz and 2180-2200 MHz Bands, *Report and Order and Order of Proposed Modification*, 27 FCC Rcd 16102 (2012) (“AWS-4 Order”).

⁵⁷ *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11881 ¶ 4, 11892 ¶ 30, 11895 ¶ 43, 11908-09 ¶¶95-97.

⁵⁸ *Id.* at 11908 ¶ 95.

⁵⁹ *Id.* at 11881 ¶ 2; *see also id.* (“We recognize that several of the bands we are examining are shared with satellite services, the Federal government, and fixed users. We believe it is possible to adopt a flexible and modern set of rules that can facilitate sharing among a wide variety of users and platforms.”).

⁶⁰ *Id.* at 11908 ¶ 96.

II. THE COMMISSION SHOULD DEVELOP RULES TO MAKE TWO-WAY MOBILE BROADBAND MVDDS A REALITY, WHILE PROTECTING DBS.

The Coalition urges the Commission to issue a notice of proposed rulemaking soliciting comment on rule changes that would allow MVDDS licensees the flexibility to utilize 12.2-12.7 GHz spectrum for two-way mobile broadband services, including 5G. However, it should ensure that it guards against harmful interference to incumbent DBS services and mitigates interference among MVDDS operators.⁶¹ These two policy considerations can both be accommodated. The Commission recently emphasized that it is committed to “working with both domestic and international partners in examining additional spectrum” for 5G mobile broadband, and to “conducting the necessary technical sharing and compatibility studies” to identify spectrum bands for 5G.⁶² Consistent with that commitment, the Commission should initiate a rulemaking to update the MVDDS allocation, technical, and service rules to enable a 5G service, as proposed below.

A. The Commission Should Add a Mobile Allocation in the 12 GHz Band.

The Commission should revise the U.S. allocations table under Section 2.106 of its rules to add a mobile (except aeronautical mobile) allocation to the 12.2-12.7 GHz band, consistent with the mobile allocation of the band globally.⁶³ As demonstrated above, the proposed mobile

⁶¹ See 47 U.S.C. § 303(y) (authorizing the Commission to allocate spectrum to provide “flexibility of use,” if consistent with international agreements and the Commission finds, after notice and opportunity for comment, that the allocation would serve the public interest and not deter investment or result in harmful interference). Sections 101.1409 and 101.1421(c) of the Commission’s rules also impose an absolute obligation on the part of MVDDS licensees to protect certain incumbent public safety microwave licensed operations. See 47 C.F.R. §§ 101.409, 101.1421(c). The Coalition is not proposing any change to that obligation.

⁶² *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11885 ¶ 14.

⁶³ Under the International Table of Frequency Allocations, the 12.2-12.7 GHz band is allocated on a co-primary basis to mobile (except aeronautical) services in Regions 2 and 3. Additionally, in Region 1, there is a similar co-primary mobile allocation at 12.2-12.5 GHz (throughout the

allocation will offer substantial public interest benefits. Moreover, the spectrum is already allocated internationally for mobile services.⁶⁴ Thus, by adopting a U.S. mobile allocation consistent with existing international allocations, the Commission will provide globally harmonized spectrum, which Chairman Wheeler has recognized is “critical to getting the greatest benefit out of the available spectrum.”⁶⁵

B. The Commission Should Update the MVDDS Operational Rules to Permit MVDDS Licensees to Provide Two-Way Mobile Broadband Service.

The Commission should revise the MVDDS rules to provide licensees with the same regulatory flexibility that it has already provided to flexible-use licensees in other bands, and that it has proposed to provide in the *Spectrum Frontiers* proceeding.⁶⁶ Today, the rules allow MVDDS spectrum to be used for any digital, fixed, non-broadcast service. However, mobile services are specifically banned and two-way service is permitted only “by using other spectrum or media for the return or upstream path.”⁶⁷ In adopting these restrictions nearly 15 years ago, the Commission concluded that both mobile and two-way operations would unnecessarily complicate the sharing environment among MVDDS, incumbent DBS, and future NGSO FSS. As technology has evolved, however, it is now possible for two-way mobile broadband services

entire region) and at 12.5-12.7 GHz (in numerous countries within the region). *See* 47 C.F.R. § 2.106, International Footnote 5.494.

⁶⁴ *See* 47 C.F.R. § 2.106.

⁶⁵ *See* Remarks of Tom Wheeler, Chairman, FCC, International Institute of Communications Annual Conference, Washington, D.C., at 5 (Oct. 7, 2015). In addition, as discussed in Section II.D below, the co-primary NGSO FSS allocation at 12.2-12.7 GHz should either be deleted or changed to a secondary allocation, but the co-primary NGSO FSS allocation at 11.7-12.2 GHz should not be altered.

⁶⁶ *See, e.g., AWS-4 Order*, 27 FCC Rcd at 16188 ¶¶ 228-229, 16190-91 ¶¶ 231-234; *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11931-32 ¶¶ 182-184.

⁶⁷ 47 C.F.R. § 101.1407.

to be offered over MVDDS while still protecting DBS from harmful interference.⁶⁸ For example, with the emergence of 5G, higher spectrum bands can be used to provide much needed broadband capacity relief using targeted, small cell deployments (such as in buildings and at urban street level locations) that present a lower interference potential than traditional wide-area macrocell deployments in lower frequency bands. Additionally, advanced antenna techniques like “beamforming” and “beamsteering” allow better control of transmitter energy, enabling transmissions to be more narrowly focused to desired locations (and away from receivers with which they might interfere) dynamically.⁶⁹

Accordingly, Section 101.1407 of the Commission’s rules should be revised to allow licensees “to provide any terrestrial fixed or mobile services for which its frequency bands are allocated.” Additionally, Section 101.1411 should be revised to allow licensees the flexibility to provide any common carrier or non-common carrier service (or a combination thereof). These revisions will permit the full array of fixed and mobile service offerings without undue regulatory restraint, and will allow consumer demands and the business judgments of licensees to shape the nature of their services. In providing for such an open and flexible regulatory framework, the Commission will enable full and efficient spectrum use, promote deployment of innovative broadband services, and spur investment in those services.

⁶⁸ The lack of any NGSO FSS deployment in the band since the Commission created MVDDS in 2000, and adopted service and technical rules to protect DBS and permit MVDDS/NGSO FSS sharing in 2002, raises substantial doubt as to whether NGSO FSS will be successfully deployed in the foreseeable future. As discussed in Section II.D below, the Commission should eliminate or render secondary the unused NGSO FSS allocation at 12.2-12.7 GHz, which will further simplify the sharing environment.

⁶⁹ See Claes Tidestav, *Massive beamforming in 5G radio access*, Ericsson Research Blog (Mar. 19, 2015), <http://www.ericsson.com/research-blog/5g/massive-beamforming-in-5g-radio-access/>.

C. The Commission Should Update the MVDDS Technical Rules to Enable a Viable 5G Service While Safeguarding DBS Operations.

The Commission should consider appropriate changes to the MVDDS technical rules (e.g., Sections 101.113(a), 101.147(p), 101.105(a)(4)(ii), and 101.1440) in order to promote a viable 5G two-way mobile broadband service while protecting DBS from harmful interference. For example, those rules unnecessarily apply two separate MVDDS restrictions designed to protect DBS.⁷⁰ The first restricts MVDDS transmit power, and subjects MVDDS licensees to an EIRP limitation of 14 dBm per 24 MHz.⁷¹ The second requires MVDDS licensees to meet specified Equivalent Power Flux Density (“EPFD”) levels, which vary by region of the United States at each DBS subscriber location.⁷²

While the EPFD limits measured at DBS receivers provide protection to DBS reception, the EIRP limit measuring power at the output of the transmitter is an unnecessary “belt and suspenders” approach to MVDDS/DBS interference mitigation. With appropriate EPFD limits, DBS receivers will be fully protected, and thus an additional MVDDS transmitter power restriction is not required. Requiring a power limit, in addition to EPFD limits, to protect DBS receivers merely limits full and efficient use of the band by precluding facilities that can be implemented without threat of interference to DBS. The Commission should therefore solicit comment on eliminating the 14 dBm per 24 MHz EIRP limit as a mechanism for mitigating interference from MVDDS to DBS.

⁷⁰ See *MVDDS Second R&O*, 17 FCC Rcd at 9641-42 ¶¶ 68, 9653 ¶¶ 88-89.

⁷¹ 47 C.F.R. §§ 101.113(a), 101.147(p).

⁷² *Id.* § 101.105(a)(4)(ii)(B). The regions and corresponding EPFD limits are: East: -168.4 dBW/m²/4kHz, Midwest: -169.8 dBW/m²/4kHz, Southwest: -171.0 dBW/m²/4kHz, and Northwest: -172.1 dBW/m²/4kHz. *Id.*

In addition, a notice of proposed rulemaking provides the Commission with an opportunity to revisit the assumptions used to establish the EPFD limits specified in Section 101.105(a)(4)(ii)(B) and adjust the maximum EPFD limit accordingly. When the Commission adopted those thresholds nearly 15 years ago, it recognized that they were “overly conservative.”⁷³ Since then, MVDDS licensees have struggled to overcome the technical and operational hurdles imposed as a result of the Commission’s overly cautious approach. With the advent of 5G and the compelling need for additional mobile broadband spectrum, now is the time for the Commission to examine whether those overly conservative limits can be modified, while still affording sufficient protection to DBS.

The Commission explained, for example, that “we use[d] a conservative performance threshold value of DBS signal performance to calculate the EPFD.”⁷⁴ Moreover, the Commission’s underlying analysis assumed the worst case operating condition – a rain faded DBS signal in the presence of a full strength MVDDS signal. Yet, the Commission has recognized that “[i]n practice rain will generally affect both the MVDDS and the DBS signals in an area” and that because “a faded MVDDS signal would be received by the DBS system, the total increase in DBS unavailability due to MVDDS will be less than the amount calculated in our analysis.”⁷⁵

Notably, the MVDDS EPFD thresholds were adopted with the expectation that DBS would also suffer interference from co-channel NGSO FSS (and, indeed, the Commission itself

⁷³ *MVDDS Second R&O*, 17 FCC Rcd at 9643 ¶ 72; *see also id.* at 9642 ¶ 71 (explaining that “we applied . . . very conservative technical parameters and assumptions . . . to derive EPFD values”); *id.* at 9646 ¶ 79 (discussing the “very conservative parameters and assumptions” the Commission used in its EPFD modeling).

⁷⁴ *Id.* at 9646 ¶ 79.

⁷⁵ *Id.*

acknowledged that its method for incorporating NGSO FSS into the calculation exaggerated its impact).⁷⁶ With the proposed elimination of the NGSO FSS allocation in the 12.2-12.7 GHz band, or modification of the allocation to secondary status, interference to DBS from NGSO FSS no longer needs to be considered in establishing appropriate EPFD limits for MVDDS.

Finally, the Commission should seek comment on how the process for determining EPFD compliance can be streamlined. Currently, an MVDDS provider cannot begin operation unless it can ensure that the EPFD from its transmitting antenna at all DBS customer of record locations is below the appropriate regional limit.⁷⁷ To do so, it must identify all DBS customers of record that may potentially be affected by the introduction of its MVDDS service, and must then assess whether the signal levels from its system would exceed the appropriate EPFD limit at any DBS customer of record location.⁷⁸ This process requires the mapping of all DBS customers in the MVDDS license area (and mapping changes every month based on normal, but unpredictable, movement within the subscriber base) and accommodation of varying topologies. The Commission should use the notice to seek comment on ways to improve this process to better facilitate 5G deployments while still protecting DBS.

⁷⁶ *See id.* (“We base this finding on our analysis, which (for computational simplicity) evaluated the effects of NGSO FSS and MVDDS independently. However, in some cases, the interference events caused by MVDDS and NGSO FSS signals will coincide. Thus, our assumption of independence overstates the actual outage to DBS, *i.e.*, our analysis calculated outage time due to MVDDS and NGSO FSS separately, but did not compute the amount of time the outages would occur simultaneously.”)

⁷⁷ 47 C.F.R. § 101.1440(a).

⁷⁸ *Id.* § 101.1440(a)-(b).

D. The Commission Should Eliminate or Render Secondary the Long-Unused NGSO FSS Allocation and Make Corresponding Rule Changes.

The Commission should eliminate or render secondary the unused NGSO FSS allocation at 12.2-12.7 GHz and make corresponding changes to Parts 25 and 101 of its rules, while continuing to allow NGSO deployment (if it ever develops) in the adjacent 11.7-12.2 GHz band. Those rules establish conservative spacing limits that effectively create exclusion zones around first-in NGSO receivers,⁷⁹ as well as other restrictive power limits and coordination requirements.⁸⁰ These rules have deterred use of MVDDS: Because it is unknowable when and where NGSO receivers will be installed and MVDDS operations will be precluded, substantial uncertainty is created that contributes to the inability of MVDDS licensees to deploy viable offerings.

In contrast to the documented need for more spectrum to support 5G two-way mobile broadband – and despite the passage of nearly 15 years since the Commission adopted technical rules permitting MVDDS and NGSO FSS to share the 12.2-12.7 GHz band on a co-primary basis⁸¹ – no entity is currently authorized to provide NGSO FSS to the United States in the 12.2-

⁷⁹ That is, an MVDDS transmitting antenna may not be installed within 10 km of any pre-existing NGSO FSS receiver unless the NGSO FSS licensee agrees to a closer separation. *MVDDS Second R&O*, 17 FCC Rcd at 9663 ¶ 123; see 47 C.F.R. §101.129(b).

⁸⁰ MVDDS signals cannot exceed a power flux density (“PFD”) of -135 dBW/m²/4kHz measured and/or calculated at the surface of the earth at distances greater than 3 km from the MVDDS transmitting site. *MVDDS Second R&O*, 17 FCC Rcd at 9614 ¶ 4. Furthermore, an MVDDS licensee must notify all NGSO FSS operators within the general service area of each new MVDDS transmitting antenna, and each NGSO FSS licensee must respond within ten days identifying any NGSO FSS receiver within 10 km of that antenna. If an NGSO receiver is present within 10 km, the MVDDS licensee must seek an alternative location barring an agreement. *Id.* at 9663 ¶ 124; see 47 C.F.R. §101.103(f).

⁸¹ In 2000, the Commission concluded that MVDDS could operate in the 12 GHz band on a co-primary non-harmful interference basis with incumbent DBS and on a co-primary basis with future NGSO FSS, and sought comment on proposed MVDDS technical rules. See *MVDDS First R&O*. In 2002, the Commission adopted rules specifying the technical sharing criteria

12.7 GHz band. Indeed, there is not a single broadband NGSO FSS system operating in the 12.2-12.7 GHz band or other Ku-band spectrum anywhere in the world, and it is yet to be determined whether NGSO FSS could offer services of comparable value to 5G. Nor does it appear that concurrent sharing of spectrum between co-primary 5G and NGSO FSS operations is even viable in the band.⁸² Quite simply, as long as the rules designed to protect non-existent NGSO FSS operations remain in place, MVDDS will remain a spectrum backwater unavailable for two-way mobile broadband. Accordingly, the Commission should eliminate or render secondary the NGSO FSS allocation at 12.2-12.7 GHz.⁸³

Even with this change, prospective NGSO FSS licensees will still have access to an additional 500 MHz of primary-use spectrum at 11.7-12.2 GHz.⁸⁴ Indeed, given that additional 11.7-12.2 GHz allocation, NGSO FSS applicants have long been on notice that they would have to protect any first-in-time MVDDS operations at 12.2-12.7 GHz.⁸⁵ For that reason, the Commission recommended that NGSO FSS operators design their receivers with frequency diversity capability that enables dynamic switching to primary-use NGSO FSS spectrum at 11.7-

among MVDDS and DBS and NGSO FSS, as well as MVDDS service, technical, and licensing rules. *See MVDDS Second R&O.*

⁸² *See MVDDS Second R&O*, 17 FCC Rcd at 9668 ¶ 137 (indicating that allowing two-way MVDDS in addition to DBS and NGSO FSS would “unnecessarily complicate the sharing scenario”); *see also Spectrum Frontiers NPRM*, 30 FCC Rcd at 11918 ¶ 130 (indicating that primary status for NGSO FSS “could be inconsistent with the development of terrestrial Mobile Service,” and any mechanism for accommodating FSS “should also be consistent with terrestrial use of the band”).

⁸³ Specifically, the Commission should consider eliminating or modifying the co-primary status afforded to NGSO GSS under (i) Note 5.487A to Section 2.106 of the Commission’s rules, (ii) Note 31 to Section 101.147(a) of the rules, and (iii) Section 101.147(p) of the rules.

⁸⁴ *See* 47 C.F.R. § 2.106.

⁸⁵ *See MVDDS Second R&O*, 17 FCC Rcd at 9658-59 ¶¶ 107-109.

12.2 GHz.⁸⁶ Thus, any change in the NGSO FSS allocation at 12.2-12.7 GHz would not preclude future NGSO FSS operations at 11.7-12.2 GHz, which will remain available for their use on a primary basis.⁸⁷

The Commission should also consider adopting corresponding service rule changes to allow MVDDS operations without requiring coordination with or interference protection of NGSO FSS at 12.2-12.7 GHz. Specifically, the Commission should propose to eliminate Section 101.103(f), which requires NGSO FSS/MVDDS information sharing and coordination that will no longer be required once the co-primary NGSO FSS allocation at 12.2-12.7 GHz is eliminated or rendered secondary. In a similar vein, the Commission also should propose to eliminate Section 101.105(a)(4), as the MVDDS signal strength level set forth therein is intended solely to protect NGSO FSS. Such protection will no longer be necessary or appropriate once the NGSO FSS allocation at 12.2-12.7 GHz is modified as proposed. For similar reasons, the Commission should propose to eliminate Section 101.129(b), which limits the location of MVDDS transmitters relative to NGSO FSS. Finally, in the event the Commission renders the NGSO FSS allocation at 12.2-12.7 GHz secondary, it should propose to revise Section 25.139 to require NGSO FSS licensees to coordinate with and protect MVDDS systems, regardless of the timing of MVDDS deployment.

E. The Commission Should Consider Additional Rule Changes to Facilitate the Most Efficient and Beneficial Uses of MVDDS Spectrum.

The Commission should also seek comment on the following additional rule changes needed to enable MVDDS licensees to offer consumers a viable 5G two-way mobile broadband service:

⁸⁶ *See id.*

⁸⁷ *See id.* at 9658-59 ¶¶ 107-108.

Emission Limits. The Commission should revise the out-of-band emission mask set forth in Section 101.111(a)(2), so as to specify a limit of $43 + 10 \log_{10}(P)$ dB. For mobile systems operating above 1 GHz, the Commission has found that this limit is sufficient to protect adjacent-band operations and is consistent with ITU recommendations.⁸⁸ Accordingly, the Commission should apply the same out-of-band emission limit to ensure interference protection of adjacent-band operations at the 12.2-12.7 GHz band edges.

Coordination Among MVDDS Operators. The Commission could consider adopting a maximum predicted or measured median field strength limit of 47 dB μ V/m at service area boundaries to mitigate interference among multiple MVDDS operators, unless the affected licensees agree otherwise. This limit is consistent with that employed in other mobile services and proposed in the *Spectrum Frontiers* proceeding, and may be required to ensure interference protection of other MVDDS operators.⁸⁹ To further mitigate interference among multiple MVDDS operators, the Commission could consider whether any modification to Section 101.1421, which governs the mitigation of interference among MVDDS operators, is necessary or appropriate to facilitate future 5G use of the spectrum.

Annual Reporting. The Commission should eliminate as obsolete Section 101.1417 of its rules, which requires MVDDS licensees to file an annual report with subscriber numbers, total annual hours of service, and periods when no service is offered. The rule was adopted at a time when the Commission thought MVDDS licensees would offer services similar to multichannel video programming distribution (“MVPD”), and sought to impose similar requirements to assess

⁸⁸ See *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11959 ¶ 281 n.477 (“For bands over 1 GHz, for example PCS and AWS-1, the Commission has typically set the OOB limit at 43 dBW/MHz (13 dBm/MHz).”).

⁸⁹ See 47 C.F.R. §§ 27.55(a)(1), (3), (4); *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11962 ¶ 290.

trends and competition in the MVPD marketplace.⁹⁰ In view of the proposed flexible use of MVDDS spectrum, the rule should be eliminated to facilitate 5G services.

Performance Requirements. The Commission should consider whether to retain existing “substantial service” requirements for MVDDS licensees or adopt new buildout requirements similar to those proposed in the *Spectrum Frontiers* proceeding.⁹¹ Those buildout requirements, tailored for new flexible-use licensees, may be more appropriate for MVDDS licensees operating under the similar flexible-use rules proposed here.

Disaggregation and Partitioning. The Commission should revise Section 101.1415 of its rules to not only permit MVDDS licensees to partition their spectrum, but also to disaggregate it. Although the Commission previously found that disaggregation would increase the potential for interference from MVDDS to DBS,⁹² allowing MVDDS licensees to disaggregate their spectrum is consistent with the flexibility afforded to other flexible-use licensees and proposed for new flexible-use licensees in the *Spectrum Frontiers* proceeding.⁹³ The Commission consistently has found that partitioning and disaggregation “promote the efficient use of spectrum and increase competition” and “expedite the provision of service to rural and other underserved areas of America as well as to niche markets.”⁹⁴ To mitigate any risk of

⁹⁰ See *MVDDS Second R&O*, 17 FCC Rcd at 9687-88 ¶ 186.

⁹¹ See *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11985, App. A (Proposed Rules) (proposing buildout requirements under new Section 30.105).

⁹² See *MVDDS Second R&O*, 17 FCC Rcd at 9687 ¶ 184.

⁹³ See, e.g., *AWS-4 Order*, 27 FCC Rcd at 16195-96 ¶¶ 248-50; *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11944-45 ¶¶ 232-34.

⁹⁴ See *AWS-4 Order*, 27 FCC Rcd at 16195 ¶ 248; see also *Spectrum Frontiers NPRM*, 30 FCC Rcd at 11944 ¶ 232.

interference to DBS resulting from MVDDS spectrum disaggregation, the Commission should develop corresponding technical rules, as discussed above.

Canadian and Mexican Borders. Finally, the Commission should consider whether any modification to Section 101.1423, which governs Canadian and Mexican border issues, may be required to facilitate to future 5G use of MVDDS spectrum.

CONCLUSION

The Commission has a unique opportunity to provide U.S. consumers with access to an additional 500 MHz of terrestrial mobile broadband spectrum. Accordingly, the Commission should immediately commence a rulemaking to permit two-way mobile broadband operations in the 12.2.-12.7 GHz band, while protecting DBS. Lifting the domestic restriction on two-way mobile use of this band, while modifying the NGSO FSS allocation as proposed, will increase significantly the chance that that currently underutilized MVDDS spectrum will be used to support the development of 5G technologies benefitting the public interest.

Respectfully submitted,

MVDDS 5G Coalition

Braunston Spectrum LLC

By: /s/ Tim Davies
P.O. Box 783066
Wichita, KS 67278
(316) 239-8346

Cass Cable TV, Inc.

By: /s/ Chad Winters
100 Redbud Road
Virginia, IL 62691
(217) 452-4105

DISH Network L.L.C.

By: /s/ Alison Minea
9601 S. Meridian Boulevard
Englewood, CO 80112
(202) 463-3709

GO LONG WIRELESS, LTD.

By: /s/ Bruce Fox
4832 Givens Court
Sarasota, FL 34242
(941) 349-3500

MDS Operations, Inc.

By: /s/ Kirk Kirkpatrick
729 South Federal Highway, Suite 212
Stuart, FL 34994
(877) 677-6372

MVD Number 53 Partners

By: /s/ A. Wray Fitch III
6139 Franklin Park Road
McLean, VA 22101
(703) 761-5013

Satellite Receivers, Ltd.

By: /s/ David R. Charles
1740 Cofrin Drive
Green Bay, WI 54302
(920) 432-5777

SOUTH.COM LLC

By: /s/ Alison Minea
9601 S. Meridian Boulevard
Englewood, CO 80112
(202) 463-3709

Story Communications, LLC

By: /s/ Bobby Story
P.O. Box 130
Durant, OK 74702
(580) 924-2211

Vision Broadband, LLC

By: /s/ Patrick McGuinn
145 East 49th Street
Hialeah, FL 33013
(202) 255-9011

WCS Communications, Inc.

By: /s/ Larry Saunders
3562 Knickerbocker Road
San Angelo, TX 76904
(512) 794-1198

April 26, 2016