

Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, DC 20554

In the Matter of)	
)	
Allocation and Service Rules for the)	IB Docket No. 19-116
1675-1680 MHz band)	

To: Federal Communications Commission

COMMENTS OF IRIDIUM COMMUNICATIONS INC.

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I. INTRODUCTION

Iridium Communications Inc. (“Iridium”) hereby responds to the Federal Communications Commission’s (“Commission’s” or “FCC’s”) notice of proposed rulemaking (“NPRM”) on allocation and service rules for the 1675-1680 MHz band.¹ Iridium generally supports the Commission’s efforts to make the United States a leader in wireless, but such efforts cannot come at the expense of critical L-band satellite services. Furthermore, any action by the Commission in this proceeding must serve the Commission’s larger public interest obligations and must not simply be a giveaway to a speculator like Ligado Networks LLC (“Ligado”). Bluntly put, following Ligado’s advocacy here will result in Ligado doing in 1675-1680 MHz exactly what it has done with 1670-1675 MHz: nothing.

II. BACKGROUND

A. Iridium Communications – A Story of Success and Growth

Iridium is engaged primarily in providing mobile voice and data communications services and is the only commercial provider offering “true global coverage, connecting people,

¹ *Allocation and Service Rules for the 1675–1680 MHz Band*, Notice of Proposed Rulemaking, FCC 19-43 (rel. May. 13, 2019) (“NPRM”).

organizations and assets to and from anywhere, in real time.”² Iridium’s unique L-band satellite network provides reliable communications services to regions of the world where terrestrial wireless or wireline networks do not exist or are limited, including remote land areas, open ocean, airways, the polar regions and regions where the telecommunications infrastructure has been affected by political conflicts or natural disasters.

Iridium provides voice and data communications services to businesses, the U.S. and foreign governments, non-governmental organizations, and consumers via its satellite network, which has an architecture of 66 operational satellites with nine in-orbit spares and related ground infrastructure. Iridium utilizes an interlinked mesh architecture to route traffic across its satellite constellation using radio frequency crosslinks between satellites. This unique architecture minimizes the need for local ground facilities to support the constellation, which facilitates the global reach of Iridium’s services and allows it to offer services in countries and regions where it has no physical presence. In February 2019, Iridium completed the upgrade of its satellite constellation with Iridium® NEXT satellites, which support higher data speeds for new products, including the recently introduced Iridium CertusSM broadband service.³

As of March 31, 2019, Iridium had approximately 1,151,000 billable subscribers worldwide, representing an increase of 16% from approximately 996,000 on March 31, 2018.⁴ Iridium has a diverse customer base, with end users in the following lines of business: land mobile, maritime, aviation, Internet of Things, hosted payloads and other data services, and U.S. government.

² Iridium Communications Inc., Quarterly Report (Form 10-Q), at 19 (Apr. 23, 2019), <https://www.sec.gov/ix?doc=/Archives/edgar/data/1418819/000141881919000010/irdm10-q033119.htm> (“Iridium Form 10-Q”).

³ Iridium Communications Inc., Annual Report (Form 10-K), at 2 (Feb. 28, 2019), https://www.sec.gov/Archives/edgar/data/1418819/000141881919000005/irdm_1231-2018x10k.htm.

⁴ Iridium Form 10-Q at 19.

B. History of L-band Satellite Services

Over the course of many decades, the U.S. Government has built the foundation for the success of satellite operations in the L-band by providing stable spectrum allocations, protecting allocated spectrum from harmful interference, and defending L-band interests around the globe.⁵ The L-band has evolved over the years to include three key satellite services: Global Positioning System (“GPS”), the NOAA Geostationary Operational Environmental Satellites (“GOES”), and satellite communications services provided by companies like Iridium. As the Commission recognizes in the NPRM, GOES satellites transmit a variety of environmental data, including weather data, natural and environmental disaster warnings, global water resource forecasts, river gauge data regarding water levels and flow rates, meteorological and oceanographic data, and navigation safety services across the U.S.⁶ All of these L-band satellite services have operated in their current frequency bands for decades with considerable amounts of capital being invested into each satellite system, and this investment has resulted in corresponding benefits to consumers, the United States, and the global economy.⁷ Such economic benefits would not have occurred had satellite operators been unable to rely on stable spectrum allocations and operational rules that limit the potential for harmful interference to their operations.

While the present proceeding does not directly impact the portion of L-band where Iridium operates, Iridium has a broader interest in preserving increasingly scarce L-band satellite allocations and the delicate balance among existing services in the band. Ligado’s hollow

⁵ See generally Lon C. Levin & Dennis C. Nash, American Mobile Satellite Corp., *U.S. Domestic and International Regulatory Issues* (Jan. 1, 1993), <https://ntrs.nasa.gov/archive/nasa/casi.ntrs.nasa.gov/19940018275.pdf>.

⁶ See NPRM ¶ 9. See also NASA, *GOES Satellite Network: GOES Overview and History*, <https://www.nasa.gov/content/goes-overview/index.html> (last visited June 19, 2019).

⁷ See, e.g., Economics and Statistics Administration, Department of Commerce, *Fostering Innovation, Creating Jobs, Driving Better Decisions: The Value of Government Data* (July 2014); Inside GNSS, *Study: GPS Contributed More Than \$68 Billion to the U.S. Economy* (June 16, 2015).

contention that this is about competition is laughable on its face.⁸ Iridium is an American success story—growing and deploying an innovative satellite communications network. Ligado, on the other hand, is squatting on spectrum and barely providing satellite service.⁹ Moreover, it has been crystal clear from the beginning that Ligado’s end-goal has been to operate a terrestrial network which would likely be flipped to compete with other terrestrial operators, not Iridium. Iridium’s opposition to Ligado and its plans has been, and continues to be, based solely on well-founded concerns about harmful interference from Ligado’s proposed terrestrial network to Iridium.

Finally, the Commission should recognize that Ligado is not part of the 5G future. Ligado often mentions making 40 megahertz of spectrum available for 5G, but this proposition is laughable. The FCC itself has not included Ligado’s spectrum as part of its 5G FAST plan.¹⁰ Ligado’s spectrum is not part of the 3GPP standards for 5G, or any other recognized standard, and the spectrum Ligado proposes for its network is largely not harmonized internationally for terrestrial use. Ligado’s spectrum holdings are discontinuous and allow only for narrow channel widths that are not ideal for 5G service.¹¹ Moreover, most of the spectrum that Ligado would use for its “5G” network is spectrum allocated to satellite services, and for years Ligado has failed to demonstrate that its proposed terrestrial operations in those bands will not cause

⁸ See, e.g., *Ex Parte* Letter from Gerard J. Waldron & Ani Gevorkian, Counsel to Ligado Networks LLC, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 19-116 (filed May 22, 2019).

⁹ See Reply Comments of Iridium Communications Inc., IB Docket No. 18-377 at 3-5 (filed Feb. 19, 2019).

¹⁰ *The FCC’s 5G FAST Plan*, FCC, <https://docs.fcc.gov/public/attachments/DOC-354326A1.pdf> (last visited June 19, 2019).

¹¹ See, e.g., *5G Spectrum*, GSMA Public Policy Position at 4 (Nov. 2018), <https://www.gsma.com/spectrum/wp-content/uploads/2018/11/5G-Spectrum-Positions.pdf> (noting that regulators should “aim to make available 80-100 MHz of contiguous spectrum per operator” available for 5G).

interference to incumbent satellite services. Supporting Ligado’s rhetorical plans now will do nothing to advance America to a position of leadership in 5G.

III. DISCUSSION

A. Sharing between Space and Terrestrial Services is Complex, and the Commission Must Carefully Evaluate the Impact of the NPRM on L-Band Satellite Services

As the Commission is well aware, adjacent channel sharing between space and terrestrial services is complex at the best of times and becomes more complex when terrestrial services are introduced to satellite frequency bands. Satellite networks take many years and substantial sums of money to develop and launch, and once launched the relative weakness of satellite transmissions compared to terrestrial systems necessitates ongoing protection from harmful interference. In light of the long lead times, high costs, and susceptibility to interference, satellite operators require certainty, both before and after launch, that once operations begin they will be able to continue to operate free of harmful interference. Moreover, given the inherently international nature of satellite operations, it is not only necessary to protect satellite allocations domestically, but these allocations must also be supported internationally to ensure the long-term viability of satellite services.

The L-band neighborhood in particular has evolved to balance the interests of a variety of stakeholders. The current balance in the L-band has allowed satellite services, including GPS, weather forecasting, and satellite communications, to thrive. However, the *post hoc* addition of new terrestrial services contemplated by this and other proceedings threatens to destabilize this balance in the L-band, and risks disruption to satellite operators and those who rely on satellite services. As a National Space Council representative recently stated, “[i]nterference prevention and management is a crucial challenge for long term sustainability of space based systems. Powerful terrestrial systems in close proximity to bands used by incumbent satellite systems and

their ground facilities are problematic.”¹² Concerns about harmful interference from terrestrial networks to satellite systems are particularly acute when the interfering terrestrial operations were not contemplated when the satellite network was developed and when operations are on a co-frequency basis – as is the case in 1675-1680 MHz. Unless carefully controlled, such operations in the L-band pose a threat to the future of satellite operations, and may stifle necessary investment in future generations of satellite constellations. As the Commission looks to make more spectrum commercially available, it must not forget about the important contributions of L-band satellite services to the United States, and must make efforts to ensure that these services remain available into the future.

B. Allocation and Service Rules Adopted for the 1675-1680 MHz Band Must Promote the Public Interest; No Preferential Treatment Should be Given to Ligado

While the Commission must adopt rules that adequately protect the incumbent satellite operations, the Commission also has broader obligations to ensure that the spectrum is used in the public interest, and it is not clear that some of the proposed rules would result in anything more than a spectrum handout to Ligado. The Commission’s auction authority states that, among other objectives, spectrum auctions should be designed to disseminate licenses among a wide variety of applicants, including small businesses, rural telephone companies, and businesses owned by members of minority groups and women, and to recover a portion of the value of the spectrum made available for commercial use.¹³ Indeed, in its FY2020 budget request, the

¹² Michael Beavin, Senior Policy Advisor, National Space Council, Remarks at the Federalist Society: Modernizing American Space Policy (July 26, 2018) (“July Beavin Speech”), <https://fedsoc.org/events/modernizing-american-space-policy>.

¹³ 47 U.S.C. § 309(j)(3)(B)-(C).

Commission stated that it expects an auction of the 1675-1680 MHz band to yield \$600 million in receipts over a 10 year period.¹⁴

While the Commission states that it is not acting on Ligado's petition for rulemaking for this band,¹⁵ the NPRM makes many references to the adjacent 1670-1675 MHz band, which is leased by Ligado.¹⁶ If the Commission is crafting an auction that effectively targets a particular operator and discourages participation from the only other entities who could make the auction competitive, it would not be fulfilling its auction mandate. Moreover, given the Commission's experience with other auctions, it should be wary of designing an auction to accommodate one company's business plan, especially a speculator like Ligado.¹⁷

The Commission should reject Ligado's proposed modifications to the NPRM, which appear to be designed to enable it to secure a nationwide license without paying for it.¹⁸ First, the Commission should reject Ligado's proposal to auction the 1675-1680 MHz band on a nationwide basis.¹⁹ Such a proposal would undoubtedly reduce the number of potential bidders for the spectrum, and create the risk that there would be no competing bidders to Ligado. Second, the Commission should reject Ligado's proposal to assign the 1675-1680 MHz band by means other than a competitive auction. While assignment of spectrum in this way would

¹⁴ FCC, *Fiscal Year 2020 Budget Estimates to Congress* at 13 (Mar. 2019).

¹⁵ See NPRM at n.19; see *LightSquared Subsidiary LLC Petition for Rulemaking to Allocate the 1675-1680 MHz Band for Terrestrial Mobile Use*, Petition for Rulemaking, RM-11681 (filed Nov. 2, 2012)

¹⁶ See, e.g., NPRM at n.37, ¶¶ 28, 44, 45, 47.

¹⁷ For example, the Commission need only look to its experience with the multichannel video distribution and data service ("MVDDS") in the 12 GHz band. The Commission created the MVDDS largely to accommodate the technology and business plans of a single company: Northpoint Technology, Ltd ("Northpoint"). Although the FCC adopted allocation and service rules for the band and conducted an auction for MVDDS spectrum, Northpoint declined to participate in the auction and fifteen years later there was virtually no MVDDS service being provided.

¹⁸ Ex Parte from Gerard J. Waldron, Counsel to Ligado Networks LLC, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 19-116 (filed May 3, 2019).

¹⁹ *Id.* at 1.

certainly be a boon to Ligado, Ligado’s proposal does not satisfy any of the FCC’s auction exemptions, would deprive the public of auction revenues, and would undermine the purpose of spectrum auctions, which are intended to award licenses to those who will use the spectrum most effectively. Rather than focusing on rules that will drive combined use of the 1675-1680 MHz and 1670-1675 MHz bands, the Commission should adopt competitively neutral rules that will allow the market to decide how the bands achieve their highest valued uses.

While crafting appropriate auction and service rules is important to effectively utilize this band, the Commission should be particularly wary of Ligado as a prospective licensee for this band given its experience with the 1670-1675 MHz band. Despite Ligado’s frequent rhetoric about being “ready” to provide service, it has a long history of doing virtually nothing with its spectrum.²⁰ Ligado has held a lease for the 5 megahertz nationwide block of terrestrial spectrum from 1670-1675 MHz for over a decade, and yet still has only a rudimentary network and nothing to show in the way of “service.” Concerning Ligado’s “network,” in 2015, the last time that Ligado was required to publicly detail any coverage in this band, it reported covering 249,000 square miles, which accounts for less than 8% of the contiguous United States—a lackluster deployment for a nationwide license.²¹ Worse than its network coverage is Ligado’s service offering. The only evidence of any service ever being provided by Ligado in this band is a digital broadcast video service to handsets (“DVB-H”) branded as “Modeo,”²² yet there is little

²⁰ These comments will not address Ligado’s long crusade to flip its satellite licenses to terrestrial licenses, which Iridium has critiqued extensively in prior filings. *See, e.g.*, Comments of Iridium, CB Docket No. BO 18-31, IB Docket No. 16-131 (filed Oct. 29, 2018).

²¹ Even this minimal level of coverage was only achieved after Ligado’s previous level of coverage was deemed to be insufficient by the Commission’s Wireless Telecommunications Bureau. Letter from Roger C. Noel, Chief, Mobility Division, to Samuel L. Feder and Monica Gambino, Crown Castle International Corp., 29 FCC Rcd 5771 (WTB 2014).

²² *See* <http://www.modeovideo.com>. Note that when Iridium attempted to visit the Modeo website in preparation for these comments it found that the website no longer existed.

evidence that Ligado ever provided such service at all, or that it is still providing service today. The website for Ligado's Modeo service provides no name, address, or other information that would reasonably be present for a real service. The website lists no Modeo devices as available for purchase, nor can any devices be found on the broader internet. Worse than this alarming absence from the marketplace, the last time the Modeo website was apparently updated was in July 2015—four years ago—and now the website appears to have been shut down altogether. While it is questionable what service Ligado ever provided in this band, it is clear now that no service is being provided, and that Ligado is simply squatting on its spectrum.

Fast-growing demand for spectrum makes it particularly important that the Commission ensure that this scarce resource is used intensively.²³ As the recent Presidential Memorandum on a National Spectrum Strategy declared, “[i]t is the policy of the United States to use radiofrequency spectrum (spectrum) as efficiently and effectively as possible to help meet our economic, national security, science, safety, and other Federal mission goals now and in the future.”²⁴ For years Ligado has allowed 5 megahertz of spectrum in the 1670-1675 MHz band to lie fallow. The Commission must avoid allowing the same fate for the 1675-1680 MHz band.

²³ As Chairman Pai noted in supporting a rulemaking proposing additional spectrum use obligations: “We want this public resource, once licensed, to benefit as many Americans as possible – including those in hard-to-reach places.” *Amendment of Parts, 1, 22, 24, 27, 74, 80, 90, 95 and 101 To Establish Uniform License Renewal, Discontinuance of Operation, and Geographic Partitioning and Spectrum Disaggregation Rules and Policies for Certain Wireless Radio Services*, Second Report and Order and Further Notice of Proposed Rulemaking, 32 FCC Rcd 8874, 8964 (2017) (Statement of Chairman Ajit Pai).

²⁴ Presidential Memorandum on Developing a Sustainable Spectrum Strategy for America's Future, 83 Fed. Reg. 54513, 54513 (Oct. 30, 2018), <https://www.whitehouse.gov/presidential-actions/presidential-memorandum-developing-sustainable-spectrum-strategy-americas-future/>

IV. CONCLUSION

The Commission must pursue increasingly creative opportunities to enhance spectrum utilization. Nevertheless, any rules adopted by the Commission for the 1675-1680 MHz band must fully protect incumbent satellite operations and must encourage competition and participation in an auction of this valuable mid-band spectrum rather than enabling one operator to secure the entire band.

Respectfully submitted,

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