

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

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*In the Matter of* )  
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Use of Spectrum Bands above 24 GHz for ) GN Docket No. 14-177  
Mobile Radio Services )  
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**REPLY COMMENTS OF IRIDIUM SATELLITE LLC**

In response to the Commission’s Notice of Inquiry (“NOI”), a diverse set of commenters floated an equally diverse set of policy responses to next generation mobile broadband. Understandably, those proposals have been just as fluid and undefined as the not yet existing technology that prompted them. To avoid negatively affecting services that are critical to our national security and public safety,<sup>1</sup> and to ensure that developers of emerging wireless technology do not waste time and resources, the Commission should make clear that existing military and public safety uses in the 29.1-29.3 GHz band will remain protected as exciting consumer technologies continue to develop.

**I. Critical National Security and Public Safety Communications Services Operate in the 29.1-29.3 GHz Band**

As explained in its comments, Iridium’s unique, globe-spanning, and fully meshed network of 66 non-geostationary, cross-linked satellites provides ubiquitous and low latency global communications covering areas that terrestrial mobile networks, and satellite systems depending upon regional terrestrial infrastructure, simply cannot serve. Its network also provides

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<sup>1</sup> See Comments of Iridium Satellite LLC, GN Docket No. 14-177, 7-8 (submitted Jan. 15, 2015) (“Iridium Comments”).

superior security and reliability because it relies on space-based backhaul and continues to work during natural disasters and man-made disruptions that often can overload, damage, or destroy terrestrial network infrastructure. Because of these unique aspects of Iridium's network, the U.S. Military uses Iridium for mission-critical tactical communications and enhanced mobile services; other government agencies and departments use Iridium to keep our country safe and secure; first responders, relief workers, and hospitals use Iridium to save lives and rebuild areas devastated by disasters and attacks; and airlines, pilots, and aviation authorities use Iridium to improve passenger safety.

Iridium's network – and the national security and public safety services it enables – rely on critical feeder uplinks that transmit communications from Iridium's multiple earth stations to its satellites in the 29.1-29.3 GHz band. These feeder links operate on a co-primary basis with fixed-satellite and local multipoint distribution services ("LMDS").<sup>2</sup> But as Iridium previously warned, the challenges facing coexistence with mobile broadband are likely insurmountable, as "each communication disrupted by interference to [Iridium's] feeder links will be more valuable than an average Internet search or wireless call, and will, in more cases, genuinely hold human lives in the balance."<sup>3</sup> Moreover, these feeder links sweep over large geographic areas, as they constantly pick up and track in-view satellites as they spin around the earth. Indeed, depending on where Iridium's NGSO satellites are located in their orbits, the satellite receive beam contour footprints from Iridium's earth stations could be as large as 200,000 km<sup>2</sup> in size (roughly the size of a small state). An area this large could encompass millions of people, and thousands, if not millions, of terrestrial wireless users.

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<sup>2</sup> Iridium's feeder links operate on a co-primary basis with LMDS in the 29.1-29.25 GHz band, and with fixed-satellite services from 29.25 to 29.3 GHz.

<sup>3</sup> Iridium Comments at 8.

## II. The Record Demonstrates the Need For Clarity Regarding Critical Incumbent Uses in the 29.1-29.3 GHz Band

Despite the importance of operations in the bands, and the extremely low probability of successful sharing with ubiquitously deployed wireless services, some commenters have urged the Commission to focus on the 29.1-29.25 GHz and 29.25-29.5 GHz bands.<sup>4</sup>

The record they have developed underscores the need for immediate clarity regarding the critical national security and public safety uses in the 29.1-29.3 GHz band. Though quick to shine a light on the LMDS bands, these commenters almost uniformly fail to address or even acknowledge the existence of MSS feeder operations, let alone describe in detail how to avoid interference with them. Indeed, one commenter claims to have studied sharing with incumbent users in the LMDS bands, but was apparently unaware that Iridium's feeder links operate in them.<sup>5</sup> Another commenter could only debate the theoretical benefits that high frequencies one day may bring to advanced sharing mechanisms,<sup>6</sup> while yet another invoked these techniques

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<sup>4</sup> See, e.g., Comments of Samsung Electronics America, Inc., GN Docket No. 14-177, 41 (submitted Jan. 15, 2015) (proposing that the Commission make investigation of 29.1-29.25 GHz and other LMDS bands a "top priority"); Comments of Qualcomm, GN Docket No. 14-177, 8, 17 (submitted Jan. 15, 2015) (suggesting that the Commission focus on LMDS bands and that LMDS incumbents relocate to other bands); Comments of Straight Path Communications, Inc. (GN Docket No. 14-177), 1, 13-14 (submitted Jan. 15, 2015) (noting that it holds 29.1-29.5 GHz LMDS licenses and encouraging the Commission to allow mobile licensees in LMDS bands); Comments of Ericsson, GN Docket No. 14-177, 37 (submitted Jan. 15, 2015); Comments of Nokia, GN Docket No. 14-177, 31 (submitted Jan. 15, 2015); Comments of XO Communications, GN Docket No. 14-177, 3-4 (submitted Jan. 15, 2015); Comments of Google, GN Docket No. 14-177, 7-8 (submitted Jan. 15, 2015); Comments of NCTA, GN Docket No. 14-177, 5-6 (submitted Jan. 15, 2015); Comments of Straight Path Communications, Inc., GN Docket No. 14-177, 21-22 (submitted Jan. 15, 2015); Comments of EchoStar et al., GN Docket No. 14-177, 7, 22-24 (Commission should approve additional FSS gateways in the 29.1-29.25 GHz band and allow existing LMDS licensees to provide terrestrial mobile broadband in the band); Comments of ViaSat, Inc., GN Docket No. 14-177, 8-10 (encouraging more intense "opportunistic" use of LMDS bands).

<sup>5</sup> Comments of Samsung Electronics America, Inc., GN Docket No. 14-177, 41 (submitted Jan. 15, 2015).

<sup>6</sup> Comments of Google, GN Docket No. 14-177, 7-8 (submitted Jan. 15, 2015).

without even that limited, theoretical, support.<sup>7</sup> Others simply identified the bands as promising, with sharing details to be left to “further analysis.”<sup>8</sup>

### **III. The Commission Should Make Clear That Critical National Security and Public Safety Issues Will Be Protected From Harmful Interference**

While it is certainly useful for industry to demonstrate on the public record both what it knows and what it does not know, technology developers, manufacturers, service providers, and investors – not to mention the many participants in our country’s national security and emergency response apparatus – cannot make commitments or innovate in the dark. Thus, the Commission, at the appropriate time, must stand ready to adopt guiding principles for its approach to millimeter wave spectrum. With respect to the 29.1-29.3 GHz band, that time is now. The Commission should make clear, as soon as possible, that critical public safety and national security uses must be protected from harmful interference. That limited constraint, from a public interest perspective, is completely uncontroversial. And with it firmly in place, participants in the development of these new technologies will be better equipped to make decisions about prospective bands, sharing technologies, spectrum aggregation, and the many other intriguing issues preliminarily discussed in these comments.

Respectfully submitted,

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<sup>7</sup> Comments of ViaSat, Inc., GN Docket No. 14-177, 8 (submitted Jan. 15, 2015).

<sup>8</sup> Comments of Straight Path Communications, Inc., GN Docket No. 14-177, 21-22 (submitted Jan. 15, 2015); *see also* Comments of Nokia, GN Docket No. 14-177, 31 (submitted Jan. 15, 2015).

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