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December 15, 2015

*Via Electronic Filing*

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 Twelfth Street, SW  
Washington, DC 20554

Re: *Ex Parte* Notice: *Terrestrial Use of the 2473-2495 MHz Band for Low-Power Mobile Broadband Networks* – IB Docket No. 13-213

Dear Ms. Dortch:

On December 11, 2015, L. Barbee Ponder IV, General Counsel & Vice President, Regulatory Affairs, for Globalstar, Inc. (“Globalstar”), Steve Berman of Lawler, Metzger, Keeney & Logan, LLC, and I met separately with Edward “Smitty” Smith, Legal Advisor to Chairman Tom Wheeler, and Johanna Thomas, Legal Advisor to Commissioner Jessica Rosenworcel, regarding the Commission’s proposed rules in the above-captioned proceeding.<sup>1</sup>

In these meetings, we highlighted the public interest benefits of the rules the Commission proposed in 2013 and urged the Commission to adopt the rules without further delay. The Commission’s proposal to permit Globalstar’s Terrestrial Low Power Service (“TLPS”) will relieve significant wireless congestion and increase broadband capacity quickly while protecting and enhancing existing Wi-Fi services in the 2.4 GHz band. TLPS will improve wireless broadband access in the 2.4 GHz band for consumers by spreading the traffic in the band over four, rather than three, non-overlapping IEEE 802.11 channels.

The benefits of TLPS will be particularly important in America’s schools and libraries because they are high-density environments with substantial and growing wireless broadband usage. Globalstar has committed to provide up to 20,000 free TLPS access points to public and non-profit schools, libraries, community colleges, and hospitals. This commitment along with the Commission’s proposed rules can help ensure that these often underfunded organizations have

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<sup>1</sup> *Terrestrial Use of the 2473-2495 MHz Band for Low-Power Mobile Broadband Networks; Amendments to Rules for the Ancillary Terrestrial Component of Mobile Satellite Service Systems*, Notice of Proposed Rulemaking, 28 FCC Rcd 15351 (2013).

affordable, high-capacity broadband that meets the needs of their communities.<sup>2</sup> The potential public interest benefits of TLPS have been recognized in recent weeks in separate filings by Public Knowledge and the Schools, Health & Libraries Broadband Coalition.<sup>3</sup>

As discussed in these meetings, Globalstar has repeatedly demonstrated the substantial consumer benefits of TLPS as well as the compatibility of TLPS with other wireless operations.

- **Demonstration at FCC Technology Experience Center.** At the request of the Commission’s Office of Engineering & Technology (“OET”), Globalstar and other parties evaluated the compatibility of TLPS with unlicensed services at the Commission’s Technology Experience Center (“TEC”).
  - Activating TLPS on non-overlapping Channel 14 yielded an increase of approximately 40% in aggregate measured data throughput across the 2.4 GHz 802.11-capable spectrum when client devices were spread evenly over the four non-overlapping channels (three client devices per channel).
  - TLPS transmissions had no negative impact on the data throughput on Wi-Fi Channel 11 or any other 802.11 Wi-Fi channels.
  - TLPS transmissions had no negative effect on the operation of Bluetooth devices. A video recording of Globalstar’s TLPS-Bluetooth demonstration is available at <http://www.globalstar.com/en/index.php?cid=6202&from=sidenav>.
  - The Bluetooth Special Interest Group (“Bluetooth SIG”) captured two three-minute recordings of audio streamed to Bluetooth-equipped hearing aids, one with TLPS operating and the other without TLPS. These recordings contained no discernible difference in audio quality and, tellingly, the Bluetooth SIG has failed to provide these audio files despite Globalstar’s repeated requests.<sup>4</sup>

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<sup>2</sup> The TLPS access points provided by Globalstar would operate throughout the 2.4 GHz band (including Wi-Fi Channels 1, 6, and 11) as well as on Wi-Fi spectrum in the 5 GHz band.

<sup>3</sup> Letter from Harold Feld, Senior Vice President, Public Knowledge, to Marlene Dortch, FCC Secretary, IB Docket No. 13-213 (Nov. 19, 2015), attached to Letter from Harold Feld, Senior Vice President, Public Knowledge, to Marlene Dortch, FCC Secretary, IB Docket No. 13-213 (Nov. 20, 2015); Letter from John Windhausen, Executive Director, SHLB Coalition, to Marlene Dortch, FCC Secretary, IB Docket No. 13-213 (Dec. 8, 2015).

<sup>4</sup> See Letter from Regina M. Keeney, Counsel to Globalstar, Inc., to Marlene H. Dortch, FCC Secretary, IB Docket No. 13-213 (Mar. 13, 2015) (“Globalstar has requested copies of these audio files along with the other data obtained. While Globalstar has been promised access to the data by the Bluetooth SIG, no such data has thus far been provided.”). See also Letter from L. Barbee Ponder IV, General Counsel & Vice President Regulatory Affairs, Globalstar, Inc., to Marlene H. Dortch, FCC Secretary, IB Docket No. 13-213, at 2 (Mar. 18, 2015); Letter from L. Barbee Ponder IV, General

- Globalstar’s demonstration was complete, transparent, and open, and the Company immediately provided all of its raw data files to CableLabs.<sup>5</sup> In contrast, CableLabs provided only selected data from its demonstration over a month later, and the Bluetooth SIG has steadfastly refused to make any of its data files available.<sup>6</sup>
- **Testing at FCC Lab in Columbia, MD.** In late March 2015, OET staff conducted detailed emissions characterization testing at the Commission’s Lab in Columbia, Maryland.
  - OET staff invited all of the participants in the FCC TEC demonstration to observe this testing.
  - Only Globalstar accepted OET’s invitation and sent representatives to the FCC’s Lab.
  - In May 2015, OET released a 115 page report showing that Channel 14’s emissions characteristics are consistent with the other 2.4 GHz 802.11 channels.<sup>7</sup>
- **Deployment at Chicago, IL university campus.** Globalstar and its technical consultant Roberson and Associates, LLC, implemented a real-world TLPS deployment at a Chicago university in May-August 2015.<sup>8</sup>
  - Integrating TLPS Channel 14 into the university’s existing 2.4 GHz Wi-Fi network relieved congestion immediately and improved the experience of all the network’s users, without disruption.
  - When client devices were set to maximize the use of Channel 14, the throughput on the devices operating on all four non-overlapping 802.11 channels increased by over 90%. This near-doubling of network throughput improved the experience for all users – even those who remained on Channels 1, 6, and 11.

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Counsel & Vice President Regulatory Affairs, Globalstar, Inc., to Marlene H. Dortch, FCC Secretary, IB Docket No. 13-213, at 3 (Oct. 28, 2015).

<sup>5</sup> See Letter from Regina M. Keeney, Counsel to Globalstar, Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket No. 13-213, at 3 (Apr. 23, 2015).

<sup>6</sup> *Id.* at 2.

<sup>7</sup> See Letter from Regina M. Keeney, Counsel to Globalstar, Inc., to Marlene H. Dortch, FCC Secretary, IB Docket No. 13-213 (Mar. 27, 2015); Office of Engineering and Technology, Report: TR 15-1002, *Electromagnetic Emissions Characterization of Samples Used at TLPS Demonstration*, IB Docket No. 13-213 (May 7, 2015), <http://apps.fcc.gov/ecfs/document/view?id=60001046632>.

<sup>8</sup> See Letter from L. Barbee Ponder IV, General Counsel & Vice President Regulatory Affairs, Globalstar, Inc., to Marlene H. Dortch, FCC Secretary, IB Docket No. 13-213 (Sept. 10, 2015) (“Globalstar September 10 *Ex Parte*”).

- The Chicago deployment also confirmed that there are no interference or compatibility issues between TLPS and Wi-Fi, nor with TLPS and Bluetooth operations in the 2.4 GHz ISM band.
- **Deployment at the Washington School for Girls.** In October 2015, Globalstar completed another real-world deployment of TLPS at the Washington School for Girls (“WSG”).<sup>9</sup>
  - This ongoing deployment has been extremely successful, relieving congestion and significantly boosting throughput for students using TLPS and the other IEEE channels simultaneously.
  - Initial measurements to ensure proper operations and assess the performance of WSG’s enhanced network showed that downlink throughput increased 45% and uplink throughput increased 34% when the school’s access points were tuned to a fourth channel, Channel 14, in addition to Channels 1, 6, and 11.<sup>10</sup>

We also reiterated Globalstar’s commitment to employ interference detection and mitigation techniques as part of any commercial TLPS offering. TLPS will be a managed service with networked access points controlled through a carrier-grade network operating system (“NOS”) analogous to the systems used to manage pico- and femto-cellular infrastructure.<sup>11</sup> Globalstar’s NOS will be used not only to authenticate users on the TLPS network and ensure the security of TLPS operations, it will also provide a rapid-response platform for operators of licensed and unlicensed services to provide notice of any claimed interference to their services, and mitigation of harmful interference in the highly unlikely event that it occurs. The NOS will also provide Globalstar with a rapid means of eliminating interference to its own MSS offerings if necessary in a particular location. Globalstar’s control of the TLPS network through its NOS would be particularly critical during and after disasters when terrestrial facilities can be rendered unavailable and citizens and public safety personnel must rely on satellite services.

During these meetings, we addressed Globalstar’s potential deployment of wireless broadband services based on an LTE-U wireless protocol. Globalstar’s planned TLPS offering is and has always been based on the IEEE 802.11 protocol, not LTE, given the immediate consumer benefits available from the 802.11 ecosystem. As it has previously indicated, Globalstar has no objection to the FCC prohibiting it from deploying any LTE-U or LAA service

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<sup>9</sup> See Letter from L. Barbee Ponder IV, General Counsel & Vice President Regulatory Affairs, Globalstar, Inc., to Marlene Dortch, FCC Secretary, IB Docket No. 13-213 (Nov. 18, 2015). Globalstar’s technical consultant, AT4 wireless (“AT4”), seamlessly integrated TLPS into WSG’s existing wireless network. AT4 installed TLPS during two lunch hours on consecutive school days, ensuring minimal disruption to the school’s daily activities while boosting the school’s network from three to four channels in the 2.4 GHz band.

<sup>10</sup> *Id.* at 3.

<sup>11</sup> See Globalstar September 10 *Ex Parte* at 4.

which might raise concerns in the 2.4 GHz band until the Commission has otherwise allowed the deployment of these services to proceed in unlicensed spectrum.<sup>12</sup>

Finally, we described the efforts Globalstar has made to work with other parties in the three years since Globalstar filed its petition for rulemaking and the two years since the Commission unanimously adopted the proposed rules. Globalstar has made it a priority to meet with interested parties in an effort to find common ground on key issues. In particular, Globalstar has enjoyed a productive dialogue with the public interest community, as reflected in the recent filings from Public Knowledge and the SHLB Coalition. Unfortunately, Globalstar's discussions with corporate entities and special interest groups have been far less productive. Organizations such as the Wi-Fi Alliance, the National Cable & Telecommunications Association, and the Bluetooth SIG are composed of, and controlled by, corporations with the incentive to maintain the status quo and stifle innovative uses of the ISM band – regardless of the demonstrated benefits to consumers. The Commission should reject the anti-competitive stance of these parties and adopt its proposed rules expeditiously.

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Further delay in this proceeding postpones the enormous consumer benefits of TLPS. While American consumers will certainly benefit from TLPS more quickly than they will from other spectrum initiatives – some of which are unlikely to yield results for a decade or more – it will take some time for Globalstar to deploy TLPS access points and for consumer devices to be able to receive TLPS on a widespread basis. The sooner the Commission adopts rules permitting TLPS, the sooner the students and other consumers across the country will enjoy the substantial public interest benefits of this service.

Pursuant to section 1.1206(b)(2) of the Commission's rules, 47 C.F.R. § 1.1206(b)(2), this *ex parte* notification is being filed electronically for inclusion in the public record of the above-referenced proceeding.

Respectfully submitted,

/s/ Regina M. Keeney  
Regina M. Keeney

cc: Edward "Smitty" Smith  
Johanna Thomas

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<sup>12</sup> *Id.*