



April 20, 2015

*Ex Parte*

Marlene H. Dortch, Secretary  
Federal Communications Commission  
445 12th Street SW  
Washington, DC 20554

*Re: 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, IB Docket No. 13-213, RM-11685*

Dear Ms. Dortch,

The Entertainment Software Association (“ESA”) is the trade association that represents publishers of video games and manufacturers of video game consoles. Our members rely heavily on the 2.4 GHz band. Because of the potential for Globalstar’s proposed terrestrial low-power service (“TLPS”) service to degrade service to millions of video game consumers and investment in Bluetooth and Wi-Fi technologies by our members, ESA urges the Commission to proceed with caution. The technical record, including Globalstar’s demonstration results, does not provide the Commission with an adequate basis for adopting the rule changes sought by Globalstar.

Video games entertain tens of millions of consumers in the United States. More than half of all American households have game consoles. In the United States alone, the industry generates over \$22 billion in revenue (nearly double the revenue earned from all U.S./Canada movie box office receipts). Game consoles help drive broadband demand and therefore broadband deployment. Consumers use them both to play video games and for other in-home entertainment, such as streaming video through services like Netflix and Hulu and streaming music through services like Pandora and Spotify. As such, game consoles play a critical role in the Commission’s “virtuous cycle” of Internet application development encouraging broadband deployment.

Every mainstream console sold in the United States during the past ten years uses the 2.4 GHz unlicensed band extensively. Consoles use Wi-Fi network connectivity to access the Internet but also use Bluetooth (or a similar protocol) to transmit gamers’ button presses and other inputs from wireless game controllers to the console itself. Data loss and transmission latency represent significant challenges for both of these technologies. Even a small amount of additional latency or “lag” on either the Wi-Fi or Bluetooth link will diminish the consumer’s gaming experience and will lead to significant frustration. GlobalStar’s proposed TLPS service threatens to interfere with these links and thus increase latency.

Frequency hopping protocols like Bluetooth intelligently identify the clearest channel available within the 2.4 GHz band, and use that channel for transmissions. When a device detects interference in a channel, it quickly identifies and switches to another clear channel. In much of the United States, however, the 10 MHz at the top of the 2.4 GHz unlicensed band—the frequencies that Globalstar has petitioned to occupy—is the only portion of that band that is reliably free from interference for the tens of millions of game consoles owned by consumers across the country.<sup>1</sup>

Because of the importance of this spectrum, ESA and its members have closely followed the Globalstar docket. ESA’s analysis of the reports following the recent TLPS demonstration strongly suggests that Globalstar’s proposal presents a substantial and unacceptable risk of interference to Wi-Fi and Bluetooth. The Bluetooth hearing aid demonstration conducted by the Bluetooth Special Interest Group (“SIG”) causes particular concern.<sup>2</sup> Consistent with the anticipated theoretical impact on Bluetooth, the Bluetooth SIG’s results demonstrate a doubling of the packet error rate on a Bluetooth link with fully 20 percent of Bluetooth packets lost to interference.<sup>3</sup> This degree of interference significantly impacts the performance of video game controllers currently on the market—it would noticeably increase input latency, and significantly degrade consumers’ gaming experiences.

Even worse, these alarming results were the result of testing in the presence of a lightly loaded TLPS system operating at significantly reduced power. During the Bluetooth SIG’s tests, the Globalstar TLPS base station operated at only 200 mW, and was loaded with only a single 3.75 Mbps video stream.<sup>4</sup> Globalstar has petitioned, however, for authorization to operate at twenty times this power level,<sup>5</sup> and Globalstar’s own demonstration results indicate that its TLPS access point could have handled an approximately fourteen-times greater load.<sup>6</sup> While the results of even this low-power, low-traffic demonstration were alarming, the impact of a fully

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<sup>1</sup> See *2015 Essential Facts About the Computer and Video Game Industry*, ENTERTAINMENT SOFTWARE ASS’N (Apr. 2015), available at <http://www.theesa.com/wp-content/uploads/2015/04/ESA-Essential-Facts-2015.pdf>.

<sup>2</sup> See Letter from Mark Powell, Executive Director, Bluetooth SIG, Inc., to Marlene H. Dortch, Secretary, FCC, at Attachment, IB Docket No. 13-213 (filed Mar. 20, 2015).

<sup>3</sup> *Id.*, Attachment at 4-5. Note that this is not the packet error rate only for packets transmitted within Wi-Fi channel 14. This is the error rate for *all* Bluetooth packets transmitted over the course of ten minutes, using the channel selection algorithms currently built into off-the-shelf Bluetooth devices.

<sup>4</sup> *Staff Report on Demonstrations of Globalstar, Inc.’s Proposed Terrestrial Low-Power Service March 6, 9-10, 2015*, FCC Office of Eng’g and Tech., at 5, IB Docket No. 13-213 (filed Apr. 1, 2015).

<sup>5</sup> See Petition for Rulemaking of Globalstar, Inc., at 40-41 (filed Nov. 13, 2012).

<sup>6</sup> See Letter from Regina M. Keeney, Counsel, Globalstar, Inc., to Marlene H. Dortch, Secretary, FCC, at Attachment at 6, IB Docket No. 13-213 (filed Mar. 10, 2015).

loaded commercial TLPS system, operating at full power, could be catastrophic. There is a real possibility that interference from TLPS could force console manufacturers to redesign their wireless controllers to operate in different bands, using different wireless protocols.

In addition to the risk to video game controllers, the technical analysis recently presented by CableLabs demonstrates that TLPS operations will likely harm Wi-Fi performance—and many video game consoles depend heavily on 2.4 GHz Wi-Fi. Data and analysis from the National Cable and Telecommunications Association (“NCTA”) indicate that TLPS would diminish throughput on Wi-Fi channel 11.<sup>7</sup> Because recent-generation video game consoles use Wi-Fi as a means to connect to the Internet, this interference would harm the fast-paced online gaming experience that is central to many modern video games, and impair the quality of streaming video and audio on video game consoles for those who rely upon a Wi-Fi connection.

The technical record fails to provide the Commission with an adequate basis for adopting the rule changes Globalstar seeks. To the contrary, the evidence presently in the record suggests that the proposed TLPS service, if built, would cause significant public harm to the Wi-Fi and Bluetooth technologies that virtually every American consumer relies upon—whether for work, or for play.

Sincerely,

/s/ Michael Warnecke

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<sup>7</sup> See Letter from Rob Alderfer, Principal Strategist, CableLabs, to Marlene H. Dortch, Secretary, FCC, Attachment, IB Docket No. 13-213 (filed Apr. 14, 2015).