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March 1, 2016

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Via Electronic Filing

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

Re: IB Docket No. 13-213 and RM-11685
***Ex Parte* Filing of the Hearing Industries Association**

Dear Ms. Dortch:

The Hearing Industries Association ("HIA") writes with regard to its ongoing concerns about the potential impact of Globalstar's proposed TLPS system on Bluetooth Low Energy ("Bluetooth LE") devices, and in particular on the current and future use of hearing technologies and assistive technologies in the 2.4 GHz band.

HIA has previously explained that hearing aids and hearing aid accessories are vital to many Americans who suffer from hearing loss, allowing them to stay connected to and involved in the world.[1] The use of hearing aids improves brain function,[2] while untreated hearing loss is linked to higher rates of depression and falls, and is correlated with increased rates of dementia.[3]

[1] One-third of Americans over the age of 65 and two-thirds over the age of 75 currently suffer from hearing loss. *See* Blackwell DL, Lucas JW, Clarke TC., *Summary Health Statistics for U.S. Adults: National Health Interview Survey 2012*, National Center for Health Statistics, Vital Health Stat. 10 (260) (2014).

Given the limited capacity of hearing aid batteries, Bluetooth LE is the one mainstream technology available to connect hearing instruments with other wireless devices and receive information from devices developed by other industries. A forthcoming Bluetooth LE standard will open the door to the development of hearing aids that will be available at all price points and will connect directly to wireless handsets via Bluetooth.

HIA is gravely concerned about technical demonstrations that show that Globalstar's proposed use of the 2473-2483.5 MHz portion of the 2.4 GHz band will degrade the performance of hearing instruments by causing unacceptable packet loss.[4] And, testing has yet to be performed to show whether the Globalstar system would interfere with access to the three Bluetooth LE advertising channels, which are needed to establish Bluetooth LE connections and without which a Bluetooth LE hearing aid could become inoperable.

Further, the record raises many questions as to the validity of the demonstrations made by Globalstar to date. In particular, the demonstrations occurred in uncrowded spectral environments with unrealistically low traffic and occupancy levels on the Wi-Fi channels. This, in turn, artificially minimizes the potential impact on Bluetooth operations. Should the Commission rely upon test results to support grant of Globalstar's requested rule changes, it must ensure that this testing is valid and reasonable and based on sound engineering practices.[5] Testing must reflect a true understanding of spectrum utilization.

HIA is attaching a PDF capturing a short snippet of use of the 2.4 GHz band in a public location. The spectral environment shown is consistent with other submissions in the record indicating the high level of traffic congestion that can occur in 2.4 GHz.[6] Places that are loud and where many of people gather, such as airports, convention centers and trade shows, hospitals and hotels, are places where people who use hearing aids are most in need of their assistance. But these places are also increasingly also spectrally congested. These kinds of locations should be included in any testing and analysis of the Globalstar system.

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[2] Doherty, K. A., & Desjardins, J. L., "The benefit of amplification on auditory working memory function in middle-aged and young-older hearing impaired adults," 6 *Frontiers in Psychology* 721 (2015); Desjardins, J. L., & Doherty, K. A., "The effect of hearing aid noise reduction on listening effort in hearing-impaired adults," 35(6) *Ear and Hearing* 600-610 (2014).

[3] Metter J, O'Brien RJ, Resnick SM, Zonderman AB, Ferrucci L., *Hearing Loss and Incident Dementia*, 3 Lin FR, Arch Neurol, 68(2):12-28 (2011).

[4] *See* Letter from Mark Powell, Executive Director, Bluetooth SIG, Inc., to Marlene H. Dortch, Secretary, Federal Communications Commission, IB Docket No. 13-213 (filed March 20, 2015).

[5] The Commission specifically sought comment on the costs and benefits of Globalstar's proposed rule changes, including the impact on Bluetooth devices. *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, IB Docket No. 13-231, at ¶ ¶ 1 and 16 (rel. Nov. 1, 2013).

[6] *See* Letter from Greg Gerst, Gerst Capital, LLC, to Marlene H. Dortch, Secretary, Federal Communications Commission, IB Docket No. 13-213, RM-11685 (filed Jan. 6, 2016).

Parties have raised concerns about other flaws in Globalstar's demonstrations: "(1) testing transmitters at far lower power levels (200 mW) than would be allowed under the rules Globalstar seeks; (2) using unrepresentative equipment (only enterprise-grade access points with prices over $1,000); (3) testing only an 802.11 Terrestrial Low Power Service (TLPS) implementation despite the fact that Globalstar has not committed to use an 802.11 standard; and (4) failing to test the impact of TLPS on latency or jitter."[7] HIA agrees that these are concerns that must be considered and resolved before any action is taken in the proceeding.

HIA also notes that Globalstar's offer to provide an interference mitigation service is completely inadequate when considering consumer devices such as hearing aids. Consumers will not realize that problems with their hearing aids arise from RF interference, and they certainly will not be in a position to discern the source of interference to their hearing aids and report it to Globalstar for remedy.

Finally, Globalstar rests its public interest showing on the fact that it will provide 20,000 TLPS access points to schools and other institutions. This number pales in comparison to the millions of hearing aids that are sold each year with wireless features. Should Bluetooth LE or similar wireless technology become standard in hearing aids to provide connectivity to people with hearing loss, as many anticipate, annual sales of these hearing aids with wireless connectivity likely will exceed three million devices a year. The commission must carefully weigh Globalstar's public interest justification against the likely impact of its TLSP system on other vital uses of the 2.4 GHz band.

[7] Letter from Paul Margie to Marlene H. Dortch, Secretary, Federal Communications Commission, IB Docket No. 13-213 at 1-2 (filed Jan. 19, 2016).

Please direct any questions to the undersigned.

Respectfully submitted,

Laura A. Stefani
Counsel for The Hearing Industries Association

Attachment

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