



May 29, 2015

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

Re: Written Ex Parte Submission - IB Docket No. 13-213, RM-11685

Dear Ms. Dortch:

Our analysis of the technical record leads Microsoft to the conclusion that use of Wi-Fi Channel 14 for Terrestrial Low Power Service (TLPS), as proposed by the Commission, is likely to significantly and negatively impact the mobile experience of our consumer and enterprise customers with our cloud-based services, devices, and other products that utilize 2.4 GHz unlicensed spectrum, particularly in densely populated areas—in both indoor and outdoor settings. The recent uncontrolled and limited demonstration of TLPS at the FCC’s Technology Experience Center (TEC) did not produce data that the FCC can rely upon to approve the new service, and, if anything, raised more red flags. Moreover, Microsoft is concerned that the use of TLPS would allow a single licensee to effectively gain exclusive access to shared unlicensed spectrum, potentially precluding existing users and degrading the services of users on adjacent spectrum bands. Therefore, after considerable reflection, Microsoft has come to the conclusion that the Commission should terminate the proceeding, IB Docket No. 13-213, and not approve TLPS.

Microsoft has pursued the issues in the Globalstar proceeding<sup>1</sup> through its participation in several trade associations, including the Wi-Fi Alliance (WFA), Entertainment Software Association (ESA), Bluetooth Special Interest Group (Bluetooth SIG), Consumer Electronics Association (CEA), and CTIA-The Wireless Association. Microsoft’s view was aligned with CEA’s sentiment:

*Given how integral 2.4 GHz band unlicensed technologies have become to a wide range of consumer electronics products, CEA urges the Commission to defer any further action in this proceeding until all interested parties can jointly develop and implement a comprehensive, open*

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<sup>1</sup> See, e.g., Letter from Edgar Figueroa, President and CEO, Wi-Fi Alliance, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 13-213 (filed May 26, 2015); Letter from Michael Warnecke, Chief Counsel, Technology Policy, ESA, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 13-213 (filed Apr. 20, 2015) (“ESA Letter”).

*and transparent program for testing potential interference from TLPS to Bluetooth, Wi-Fi and other devices that utilize spectrum adjacent to Globalstar's Mobile Satellite Service allocation.*<sup>2</sup>

For this reason, Microsoft did not itself comment in this proceeding up until this point because it had hoped that Globalstar would have conducted rigorous system-level testing of indoor and outdoor real-world TLPS use cases at the Commission's proposed operating parameters. Such rigorous system-level testing could have allayed concerns regarding the potential impacts of TLPS operations on Wi-Fi Channel 14 to licensed and unlicensed operations in adjacent spectrum, and could have demonstrated Globalstar's capacity and willingness to address any technical issue that might arise from such a service.

Disappointingly, the record has shown that Globalstar has chosen not to take such actions. A case in point is the recent TLPS demonstration conducted in the Commission's TEC. Globalstar acknowledges that the purpose of the TEC demonstration was to assess compatibility of "a representative TLPS deployment," which is for an indoor enterprise environment.<sup>3</sup> But the Commission's proposed rules would cover a much broader range of potential TLPS deployment scenarios than the modified low-power, enterprise-grade system Globalstar demonstrated. Such deployments will impact untold millions of consumers. Contrary to Globalstar's assertion,<sup>4</sup> actual controlled testing of the potential impacts of TLPS deployment at the Commission's proposed power levels and permitted out-of-band-emissions for some key deployment scenarios is required if the FCC is to make sound policy.

But this did not occur for several reasons. First, Globalstar chose to focus on one-way downlink.<sup>5</sup> As one of many companies that offer real-time, two-way video communications products (i.e., Skype and Skype for Business), it is important to understand how TLPS under different load factors in high-density deployments might impact the real-time, two-way video quality of service. For these products, packet throughput is not the only relevant parameter. Packet latency, jitter, and error rate very much affect the mobile consumer's experience. The TEC demonstration offers little insight in this regard.

Second, more than half of all American households have game consoles, and the vast majority of consoles use the 2.4 GHz band. As ESA points out,

*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*

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<sup>2</sup> See Letter from Julie M. Kearney, CEA, to Marlene H. Dortch, Secretary, FCC, at 1, IB Docket No. 13-213 (filed Apr. 16, 2015).

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

<sup>4</sup> *Id.*

<sup>5</sup> See *id.* at Attach. Decl. of Kenneth J. Zdunek, Ph.D ¶ 31.

*will lead to significant frustration. GlobalStar's proposed TLPS service threatens to interfere with these links and thus increase latency.*<sup>6</sup>

Again, some rigorous system-level testing with game consoles could provide useful data.

Third, Globalstar's client devices and modified access point use the 802.11 standard. But there is nothing that prevents Globalstar from using an LTE standard rather than an 802.11 standard. In that instance, there would be no value in the TEC demonstration with respect to potential impacts on operations on Wi-Fi Channel 11 or on the upper Bluetooth channels. LTE-U as we understand it today, and unlike Wi-Fi, is not a polite protocol,<sup>7</sup> and would cause significantly more interference concerns than the demonstrated system.

Based on these and other concerns, Microsoft has concluded that the Globalstar demonstration was just that—a limited and controlled demonstration of TLPS that produced some interesting tidbits of data—but nothing that the Commission should consider as a substitute for rigorous testing.<sup>8,9,10</sup>

Finally, Microsoft supports spectrum sharing between and among users with different rights along the lines of the 2012 PCAST report as the way forward for making additional spectrum available to our nation's spectrum inventory. At face value, allowing a single private company to gain exclusive control over public spectrum—as is being proposed for TLPS—seems contrary to the spirit of the PCAST report and the Commission's recent 3.5 GHz Report and Order. Granting Globalstar what amounts to exclusive control of an otherwise shared spectrum resource is unfair to hundreds of millions of other users of the band, and would unjustly enrich one company, Globalstar, which has no expectation of leveraging its licensed frequencies in the manner proposed. So, even if Globalstar were able to address technical concerns about the impact of TLPS on other users of the 2.4 and 2.5 GHz bands, the Commission nonetheless should reject the Globalstar petition on public interest grounds.

The Commission adopted its Notice of Proposed Rulemaking for IB Docket No. 13-213 in November 2013 with publication in the Federal Register in February 2014 with the hope that Globalstar could find a way to put to rest the fears of consumers and businesses that have grown to rely on unlicensed spectrum in the 2.4 GHz band. If this outcome was possible, one would expect that, at this point in the proceeding, there would be some consensus forming among stakeholders based on data such that the disagreements would be limited to a handful of issues. But here, due to the limited data collected and the significant risks involved, many of the open questions are fundamental. Given the depth of reliance on the 2.4 GHz band by unlicensed users, the increasing need for wireless broadband connectivity, the unfolding evolution to the cloud of existing services, and the emergence of the Internet

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<sup>6</sup> See ESA Letter at 1.

<sup>7</sup> See Letter from Paul Margie, Counsel to the National Cable & Telecommunications Association, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 13-213, RM-11685 (filed Apr. 27, 2015).

<sup>8</sup> See Letter from Rob Alderfer, Principal Strategist, CableLabs, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 13-213, RM-11685 (filed Apr. 14, 2015).

<sup>9</sup> See Letter from Mark Powell, Executive Director, Bluetooth SIG, Inc., to Marlene H. Dortch, Secretary, FCC, IB Docket No. 13-213, RM-11685 (filed Mar. 20, 2015).

<sup>10</sup> See Letter from Greg Gerst, Gerst Capital, LLC, to Marlene H. Dortch, Secretary, FCC, IB Docket No. 13-213, RM-11685 (filed May 19, 2015).

of Things, Microsoft therefore suggests that no action should be taken that would jeopardize use of this band for unlicensed activities. For these reasons, the Commission should terminate this proceeding.

Sincerely

/s/ Paula Boyd

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Microsoft Corporation

/s/ Michael Daum

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