



Committee on Transportation and Infrastructure
U.S. House of Representatives
Washington, DC 20515

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Chairman

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December 7, 2020

The Honorable Ajit Pai
Chairman
Federal Communications Commission
445 12th Street S.W.
Washington, D.C. 20554

Dear Chairman Pai:

I write to you again to express my continued concern about the Federal Communications Commission's (FCC) plan to reallocate a portion of the 3.7-4.2 GHz spectrum band, or C-band,¹ to support the interests of corporate broadband at the expense of U.S. aviation safety. I urge you to postpone the FCC's public auction scheduled to begin tomorrow² and to work with the Federal Aviation Administration (FAA) and aviation industry experts to ensure that the safety of the hundreds of millions of Americans who fly each year is not endangered by the FCC's rushed plan. Your hortatory and summary assurances that the impending auction will not adversely affect aviation safety have not satisfied the aviation community or me that the FCC fully grasps the grave consequences of this proposed action.

This is my second letter to you expressing my strong reservations regarding the FCC's planned action to open the C-band for wireless use given the neighboring aviation band (from 4.2 to 4.4 GHz) allocated exclusively for vital aeronautical radionavigation equipment.³ I join a chorus of aviation industry and labor stakeholders⁴ who are worried about the FCC's impending auction and the almost-certain risks that will result from 5G telecommunications systems' harmful radio frequency (RF) interference with radio altimeters—"critical aeronautical safety-of-life systems . . .

¹ See FCC Report and Order and Order of Proposed Modification, *Expanding Flexible Use of the 3.7 to 4.2 GHz Band*, GN Docket No. 18-122 (Feb. 28, 2020), at 3, available at <https://docs.fcc.gov/public/attachments/FCC-20-22A1.pdf>.

² See FCC Public Notice, *Auction of Flexible-Use Service Licenses in the 3.7-3.98 GHz Band for Next-Generation Wireless Services*, AU Docket No. 20-25 (Aug. 7, 2020), available at <https://docs.fcc.gov/public/attachments/FCC-20-110A1.pdf>.

³ Letter from Peter A. DeFazio, Chairman, Committee on Transportation and Infrastructure, to Ajit Pai, Chairman, FCC (Nov. 22, 2019), at 1-2, available at <https://docs.fcc.gov/public/attachments/DOC-362069A2.pdf>. See FCC Report and Order, *supra* note 1, at 7.

⁴ See, e.g., *Petition for Partial Reconsideration of the 3.7-4.2 GHz Band Report and Order*, GN Docket No. 18-122 (May 26, 2020), available at <https://ecfsapi.fcc.gov/file/10527379225572/C-BAND%20Petition%20for%20Recon.pdf> (including nearly a dozen aviation and aerospace organizations requesting the FCC reconsider this reallocation action "to take into account critical record of evidence of harmful interference to radio altimeters certified by the FAA as safety-critical systems operating in the [neighboring aviation band]").

[that] must operate without harmful interference,” as described in your own order in this matter.⁵ Radio altimeters are essential and safety-critical aviation equipment deployed on tens of thousands of civil aircraft, including commercial and general aviation aircraft and helicopters, in the United States and worldwide.⁶

In my 2019 letter, I urged you to delay making a final decision in this proceeding until the FCC consulted sufficiently with the FAA and aviation industry experts to understand the aviation safety ramifications of the reallocation and to implement sufficient fixes.⁷ In your January 14, 2020, response to me, you said one of your “guiding principles” was “to ensure incumbent services are protected” and that the FCC’s C-band action would be “carefully designed so that aircraft are able to use altimeters in a continuous and uninterrupted manner.”⁸ Accordingly, the FCC designated 280 megahertz of C-band spectrum (from 3.7 to 3.98 GHz) to be cleared for auction, leaving a 220 megahertz guard band between the auctioned C-band spectrum and the aviation band.⁹

However, recent research confirms that even this spectrum gap is insufficient to ensure radio altimeters are protected from harmful RF interference by 5G networks. In October, the Radio Technical Commission for Aeronautics (RTCA) completed its six-month review and assessment of interference from 5G network emissions with radio altimeter performance.¹⁰ RTCA results revealed a “major risk that 5G telecommunications systems in the 3.7-3.9 GHz band will cause harmful interference to [radio] altimeters on all types of civil aircraft—including commercial transport airplanes; business, regional, and general aviation airplanes; and both transport and general aviation helicopters.”¹¹ Further, the RTCA study states that, without appropriate mitigations, deployment of 5G wireless services in the band at issue could cause “catastrophic failures leading to multiple fatalities.”¹² The RTCA concluded that the aviation industry cannot mitigate such a risk alone and suggests the FCC, the FAA, and aviation and mobile wireless industries “work together to ensure radio altimeters are safeguarded in the interest of public safety.”¹³

⁵ FCC Report and Order, *supra* note 1, at 7.

⁶ Radio altimeters “are critical sensors used to enable and enhance several different safety and navigation functions throughout all phases of flight on all commercial aircraft and a wide range of other civil aircraft. . . [They] are also used on military aircraft. . . . Further, as the [radio] altimeter is the only sensor onboard the aircraft capable of providing a direct measurement of the clearance height above the terrain and any obstacles which may protrude above the terrain, it plays a crucial role in providing situational awareness to the flight crew.” RTCA Paper No. 274-20/PMC-2073, *Assessment of C-Band Mobile Telecommunications Interference Impact on Low Range Radar Altimeter Operations* (Oct. 7, 2020), at 1, available at https://www.rtca.org/wp-content/uploads/2020/10/SC-239-5G-Interference-Assessment-Report_274-20-PMC-2073_accepted_changes.pdf. See also Flight Safety Found., *RTCA Sees ‘Widespread’ Risks to Aviation in Plan for Shared Radio Frequency Spectrum* (Oct. 29, 2020), <https://flightsafety.org/asw-article/rtca-sees-widespread-risks-to-aviation-in-plan-for-shared-radio-frequency-spectrum/>.

⁷ See DeFazio Letter, *supra* note 3, at 1-2. My letter cited preliminary findings concluding that RF interference by 5G systems with radio altimeters in fact begins at 3.75 GHz for helicopters and 3.95 GHz for commercial aircraft. *Id.* at 2.

⁸ Letter from Ajit Pai, Chairman, FCC, to Peter A. DeFazio, Chairman, Committee on Transportation and Infrastructure (Jan. 14, 2020), at 1, available at <https://docs.fcc.gov/public/attachments/DOC-362069A1.pdf>.

⁹ See FCC Report and Order, *supra* note 1, at 3, 15-16.

¹⁰ See RTCA Paper, *supra* note 6.

¹¹ *Id.* at i.

¹² *Id.*

¹³ *Id.*

These RTCA findings are alarming; they not only align with earlier research identifying harmful effects of 5G networks to radio altimeters,¹⁴ but they reflect a clear need for the FCC to return to the drawing board with this premature plan. There is no question that additional study is needed to understand the full extent and severity of 5G interference with radio altimeters and whether any mitigations are feasible—or even possible—to ensure flight safety. Whether mechanical or due to harmful RF interference, a broken radio altimeter or erroneous reading can be unforgiving: a single radio altimeter failure has previously resulted in a fatal crash of a commercial airliner.¹⁵ We must never take a chance with aviation safety—and at no point should commercial interests be placed above it.

I therefore urge you to delay tomorrow's auction and immediately engage with the FAA and aviation industry experts to guarantee that the auctioned C-band spectrum will not adversely affect aviation safety. Thank you for your prompt attention to this important matter.

Sincerely,

PETER A. DeFAZIO
Chairman

cc: The Honorable Elaine L. Chao
Secretary, U.S. Department of Transportation

The Honorable Stephen M. Dickson
Administrator, Federal Aviation Administration

¹⁴ See Aerospace Vehicle Sys. Inst., *Preliminary Report: Behavior of Radio Altimeters Subject to Out-of-Band Interference* (Oct. 22, 2019), <https://ecfsapi.fcc.gov/file/102214765103/AVSI%20RA%20Interim%20OOB%20Interference%20Report.pdf>.

¹⁵ In 2009, due to an incorrect left radio altimeter reading triggering a mode of the airplane's autothrottle, Turkish Airlines flight 1951 crashed on approach to Amsterdam Schiphol Airport, killing 9 individuals and injuring 120 others on board. See Dutch Safety Bd., *Crashed During Approach, Boeing 737-800 Near Amsterdam Schiphol Airport, 25 February 2009* (May 2010).