



October 29, 2019

Rep. Frank Pallone, Chair
House Committee on Energy & Commerce
2321 Rayburn House Office Building
Washington, D.C. 20515

Rep. Greg Walden, Ranking Member
House Committee on Energy & Commerce
H2-394 Ford House Office Building
Washington, DC 20515

Rep. Michael Doyle, Chair
Subcommittee Communication & Technology
House Committee on Energy & Commerce
2322 Rayburn House Office Building
Washington, D.C. 20515

Rep. Robert Latta, Ranking Member
Subcommittee on Communication & Technology
House Committee on Energy & Commerce
2322 Rayburn House Office Building
Washington, DC 20515

Dear Chairman Pallone, Ranking Member Walden, Chairman Doyle and Ranking Member Latta:

The Aerospace Industries Association (AIA) is pleased to file this letter for the record in response to the House Committee on Energy and Commerce's Subcommittee on Communication & Technology (Committee) hearing entitled, "Repurposing the C-Band to Benefit All Americans." We thank the Committee for holding this important hearing and leadership on spectrum issues.

AIA is the voice of the American aerospace and defense industry, representing nearly 340 leading aerospace and defense manufacturers and suppliers that support over 2.5 million U.S. jobs and over \$151 billion in annual exports. As stated in our regulatory comments and ex-parte filings to the Federal Communications Commission (FCC), the aerospace and defense industry has a keen interest in today's hearing due to satellite interests and the potential interference issues with the adjacent 4.2-4.4 GHz spectrum band¹, which is globally allocated exclusively for aeronautical radionavigation.²

Radio altimeters and wireless avionics intra-communication (WAIC) systems, critical pieces of aviation safety equipment, operate exclusively in the 4.2-4.4 GHz spectrum band, directly adjacent to the C-Band under discussion today. As Congress and the FCC look into purposing the C-Band, it is critical to ensure that there is no interference that impacts the safe operations of commercial and military aircraft.

A preliminary report released on October 23, 2019 by the Aerospace Vehicle Systems Institute titled "Behavior of Radio Altimeters Subject to Out-Of-Band Interference" shows that interference issues begin effecting the 4.2-4.4 GHz band starting at 3.95 GHz for commercial aircraft and 3.75 GHz for helicopters, highlighting the extreme safety issues stemming from out of band emissions into the 4.2-4.4 GHz spectrum band.

¹ See, AIA and GAMA Comments to FCC:

<https://ecfsapi.fcc.gov/file/1029597421299/FINAL%20AIA%20GAMA%20Comments--GN%20Docket%20No%2018-122.pdf>

² See, <https://www.ntia.doc.gov/files/ntia/publications/2003-allochrt.pdf>

Radio altimeters support precision approach, landing, ground proximity, and collision avoidance systems. Every commercial aircraft and helicopter in use today, as well as a large percentage of general aviation aircraft, are equipped with radio altimeters that operate continually during flight, and larger aircraft utilize multiple radio altimeters³. The FAA requires that commercial aircraft are certified at Safety Criticality Rating of Level A which means that a radio altimeter failure "...could contribute to a catastrophic failure of the aircraft flight control systems."⁴

Though other pieces of navigational equipment, like the Global Positioning System (GPS), may be able to provide a certain level of assistance to a pilot in understanding the aircraft's altitude and surroundings, the radio altimeter is the only piece of equipment that can provide the necessary accuracy and reliability for altitude readings and terrain avoidance to the pilot for operations at low altitudes above terrain, including landings. In order to perform their critical safety function, radio altimeters require the entire 4.2-4.4 GHz band, as the accuracy of the resulting altitude data is directly linked to the total available bandwidth of the radio altimeter's signal.⁵

Furthermore, the 2015 World Radiocommunications Conference (WRC-15) allocated the 4.2-4.4 GHz band on a global co-primary basis to the aeronautical mobile (route) service exclusively for WAIC systems.⁶ WAIC equipment is being deployed on newer aircrafts to increase the safety and efficiency of their operations by replacing portions of aircraft wiring by using onboard short-range wireless systems.⁷ One notable advantage identified in support of allocating the 4.2-4.4 GHz band for WAIC systems was that this spectrum is already allocated for aeronautical safety services and the spectrum has no adjacency issues.⁸

AIA and our members recognize that there are many factors and actors involved in today's hearing. We thank the Committee for recognizing our concerns and highlighting the importance of the 3.7-4.2 GHz spectrum band. We look forward to continued discussions and hearings as you look to balance the finite nature of spectrum with the depth and breadth of federal and non-federal spectrum users.

Sincerely,



Tim McClees
Vice President, Legislative Affairs
Aerospace Industries Association

³ *ibid*

⁴ See <https://ecfsapi.fcc.gov/file/7021340930.pdf>

⁵ See Operational and technical characteristics and protection criteria of radio altimeters utilizing the band 4 200-4 400 MHz, Recommendation ITU-R M.2059-0, at 1, 3 & 5 (2014).

⁶ See ITU Radio Regulations No. 5.436 (indicating that use of the frequency band 4 200-4 400 MHz by stations in the aeronautical mobile (R) service is reserved exclusively for wireless avionics intra-communication systems that operate in accordance with recognized international aeronautical standards).

⁷ See, e.g., Presentation of the Aerospace Vehicle Systems Institute for Working Parties 5A, 5B, 5C, "Agenda Item 17 Wireless Avionics Intra-Communication" (May 23, 2012) (available at <https://www.itu.int/ITU-R/studygroups/docs/workshop-wp5abc-wrc15/WP5ABC-WRC15-P2-5.pdf>).

⁸ WAIC systems will not interfere with radio telemetry operations in the same spectrum because the significant attenuation of aircraft "skin" protects radio altimeters from the relatively low power WAIC transmissions inside the aircraft.