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Dear Sir/Madam,

Replanning of the 3700-4200 MHz band: Options paper

Thank you for the opportunity to provide comments on the Consultation paper, "*Replanning of the 3700-4200 MHz band: Options paper*", released in July 2020. Our comments specifically relate to the compatibility between proposed wireless broadband (WBB) systems in the 3700-4200 MHz band and radio altimeter systems operating in the adjacent band 4200-4400 MHz. Radio altimeters are critical sensors on commercial aircraft and many civil aircraft used to enable safety and navigation functions throughout all phases of flight. It is paramount that the introduction of WBB in the 3700-4200 MHz band does not cause harmful RF interference to radio altimeter systems operating in the adjacent band 4200-4400 MHz.

Airservices Australia (Airservices) is a government-owned organisation providing safe, secure, efficient and environmentally responsible services to the aviation industry. We safely manage 11 per cent of the world's airspace where there are typically more than four million aircraft movements carrying more than 160 million passengers annually. Airservices provides the aviation industry with telecommunications, aeronautical data, navigation services and aviation rescue firefighting services. We also manage the use and allocation of the aeronautical frequency bands in Australia on behalf of the aviation industry.

In September 2019, Airservices responding to the Discussion paper, "*Planning of the 3700-4200 MHz band*" advised that the aviation industry is concerned that the introduction of WBB into the 3700-4200 MHz band could have potential impact on the safety critical aeronautical services operating in the adjacent band 4200-4400 MHz. Aeronautical services operating in the band 4200-4400 MHz are radio altimeters systems, operating under the aeronautical radionavigation service (ARNS) allocation, and the wireless avionics intra-communication (WAIC) system operating under the aeronautical mobile (route) service (AM(R)S). As indicated in our response to the Discussion paper, Airservices is willing to work with the ACMA in undertaking adjacent band compatibility analysis between radio altimeter and WBB.

Significant work is currently happening in Europe and the United States (US) on the development of radio altimeter technical characteristics and operational scenarios for the purposes of defining and completing compatibility studies with WBB near the 4200-4400 MHz band. RTCA's Special Committee 239 (SC-239) is assessing the effect of 5G operations in the 3700-3980 MHz band to radio altimeter in the US, and a 5G interference assessment report is expected to be approved late September 2020. The International Civil Aviation Organization (ICAO) recently provided Europe's CEPT Electronics Communications Committee (ECC) Project Team 1 (IMT Matters) with revised information to assist them in their work. The ECC PT1 will consider this paper at its' September 2020 meeting and will

report outcomes back to the ECC. ICAO reiterated that most technical characteristics for radio altimeters operating within the 4200-4400 MHz band can be found in Recommendation ITU-R M.2059. Additional information was provided on antenna patterns for radio altimeter and relevant scenarios to consider such as, the base station scenario for general aircraft, commercial aircraft landing and medical helicopter landing; and the user equipment scenario for general aircraft and operations inside the cabin of an aircraft. ICAO also recommended using an aeronautical safety margin when assessing the impact of 5G unwanted emissions into radio altimeter. These international studies will provide the ACMA with guidance for undertaking studies for introducing WBB in the 3700-4200 MHz band in Australia.

For detailed comments on international activities and other issues raised in the Consultation paper please refer to Attachment A.

It was mentioned in the consultation that the ICAO Frequency Spectrum Management Panel (FSMP) has a job card for the development of radio altimeter selectivity masks and Standards and Recommended Practices (SARPs). Unfortunately, this work will not assist ACMA in the current replanning of the 3700-4200 MHz band, as the radio altimeter SARPs will be high-level and likely only apply to future radio altimeter and not to currently fielded equipment. SARPs are based on recognised industry standards, and the radio altimeter minimum operational performance standards (MOPS) are currently being revised through standards development organisations. RTCA SC-239 and EUROCAE Working Group 119 (WG-119) were recently established to address concerns about interference to radio altimeter caused by the introduction of WAIC systems, as well as potential interference arising from proposed changes to allocations in adjacent frequency bands. The revised MOPS will be incorporated into the SARPs. It is anticipated that the radio altimeter selectivity mask and draft SARPs will be developed by Q1 2021.

Airservices understands the ACMA needs to provide additional allocations in the 3700-4200 MHz band for projected increase in demand for WBB. However, this work should be done in a way that does not impact critical aeronautical services in the adjacent band 4200-4400 MHz. Airservices preferred planning option is Option 3 with the frequency segment breakpoint at 3900 MHz. Airservices supports this option as it provides the greatest guard band between wide area WBB deployments and radio altimeter systems in metropolitan and regional areas, where major airports are located. This frequency segment breakpoint can be reviewed once ACMA and international compatibility studies between WBB and radio altimeter are agreed. This may require mitigation such as low power base stations and devices and quarantining geographic areas around airports and heliports.

Please do not hesitate to contact Eddy D'Amico – Airservices Frequency Spectrum Manager (eddy.damico@airservicesaustralia.com) should you require any further information.

Yours sincerely,

Craig Oakley
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Airservices Australia

11 September 2020