International Civil Aviation Organization

Twenty Fifth Meeting of the Communications/ Navigation and Surveillance Sub-group (CNS SG/25) of APANPIRG

Video Tele-Conference, 18 – 22 October 2021

Agenda Item 4: Aeronautical Mobile Communications Service and Aeronautical electromagnetic spectrum utilization

4.3 Other issues related to aeronautical communications service and aeronautical radio spectrum management, especially on 5G implementation and potential impacts to aircraft radio altimeters

STATUS OF 5G IMPLEMENTATION IN AUSTRALIA

(Presented by Australia)

SUMMARY

Australia through the Australian Communications & Media Authority (ACMA) is consulting with stakeholders on the replanning the use of Spectrum in the 3700MHz to 4000MHz bands for principally the deployment of wireless broadband (WBB) services including 5G. Australian aviation stakeholders with representation of Civil Aviation Safety Authority, Airservices Australia, Department of Defence, NSW Police, Qantas Airways, Virgin Australia and Boeing Australia have made ACMA aware of potential impacts to the safe of operation of radio altimeter (RADALT) and associated aircraft systems with reference to international studies and mitigations.

1. INTRODUCTION

1.1 In Australia, Spectrum is planned and managed by an independent Commonwealth statutory authority (ACMA)

1.2 When spectrum is to be allocated or re-allocated, ACMA consults with affected stakeholders through a technical framework and establishes a Technical Liaison Group (TLG).

1.3 Spectrum in the 3700–4200 MHz band is the subject of considerable interest globally as suitable mid-band spectrum for a range of applications, including fixed satellite services and wireless broadband (WBB) such as 5G.

1.4 Current Australian regulatory arrangements in the 3700–4200 MHz band are optimised to support the following mixture of uses:

- apparatus licensed point-to-point fixed service links (PTP);

- coordinated fixed satellite service (FSS) receive earth stations;
- various low power class licensed devices.

1.5 As the current framework in the 3700–4200 MHz band does not support wireless broadband (WBB) uses, the view of the (ACMA) expressed in the *Replanning of the 3700–4200 MHz band options paper* (options paper) of July 2020, was that a clear case existed for reviewing and potentially changing the spectrum management framework in the band.

1.6 Following consideration of stakeholder views, in January 2021, ACMA published an Outcomes paper with the conclusion that there would be an overall public benefit derived from making parts of the band available for:

- wide area WBB (such as those typically provided by mobile network operators) and;
- local area WBB services (such as those provided by wireless internet service providers and for private network uses).

At the same time, it permits continued use by FSS and PTP services in most of the band nationwide and maintains coexistence with radio altimeters (RADALT) operating above 4200 MHz, with a guard band of 200MHz

2. DISCUSSION

International Studies

2.1 Leading up to and in parallel with the replanning work by ACMA, the international aviation community, coordinated through the ICAO, have conducted several studies to determine the interference potential to radio altimeters. These studies generally conclude that some radio altimeters will be impacted if high power cellular systems are implemented near the frequency band used by radio altimeters.

2.2 Since release of the ACMA outcomes paper, ICAO Frequency Spectrum Management Panel shared further detailed studies highlighting the safety concerns of ICAO States and proposed mitigation plans. Given the nature of the issue and potential for serious impact on aviation safety globally, the ICAO issued State Letter 2021/22 – "Potential safety concerns regarding interference to radio altimeters". The ICAO State letter specifically calls on States "to consider as a priority, public and aviation safety when deciding how to enable cellular broadband/5G services in radio frequency bands near the bands used by radio altimeters."

Australian Aviation Position

2.3 Aviation stakeholders have formed an informal radio altimeter coordination group (RA-CG) to provide the considered and coordinated views of Australian aviation stakeholders to highlight the potential for impact of WBB services on RADALT and the safe operation of civil, police, emergency services and military aircraft.

2.4 The RA-CG has met a number of times and is actively participating in the ACMA TLG which is expected to conclude its work by end October 2021. ACMA will then issue the proposed rules and practices for the band for final consultation.

2.5 Aviation stakeholder's position has been presented to the TLG for review by all stakeholders and includes:

- the need to implement appropriate technical restrictions, at least on an interim basis until RADALT standards are revised and implemented.

- that it is impractical to consider a retro-fit program for thousands of aircraft (including international aircraft and so any proposed mitigations need to be effective for many years.

- the need to align with international practice and to consider the reasonable measures that are being applied for managing the environment around airports and helipads including the French example which we believe is more applicable to the spectrum licensing proposed for 3.7-3.8GHz and the UK example which is more applicable to the Individual Licensing proposed for 3.8-4.0Ghz.

- the need to consider the unique nature of emergency services operation that may be more susceptible due to the operations occurring almost anywhere, often at low level, could be at night and in poor weather and using rotary wing aircraft, operating reasonably stationary.

2.6 ACMA has undertaken its own additional studies and modelling to inform the mitigations that may need to be put in place. To validate the models, ACMA has requested aviation stakeholders to provide radio altimeter performance parameters that would be representative of the Australian fleet.

2.7 CASA has advised ACMA that as the MOPS for radio altimeters required by EUROCAE/ED-30 in both TSO-C87 and ETSO-2C87 represents the minimum requirements, if ACMA chooses to proceed with modelling of less conservative values, it is something that TSO holders are not obliged to meet as it is considered outside of the MOPS.

Radio Altimeter Issue Reporting

CASA has issued an Airworthiness Bulletin to raise awareness of the issue and its potential to impact Aviation operations and to request operators/pilots to report any issues including transient issues that affect operations. AWB 34-020 Issue 2 - Potential Interference of Radio Altimeter Systems | Civil Aviation Safety Authority (casa.gov.au)

3. ACTION BY THE MEETING

3.1 The meeting is invited to note the status of activity in Australia to address the potential impact of deployment of wireless broadband services in the 3.4 to 4.0GHz band on Aviation safety.

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