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ICAO NACC Regional Office, Mexico City, 30 August - 1 September 2022

Agenda Item 3: Follow-up of the Activities of the NACC/WG Task Forces

- 3.1 Progress of the NACC/WG on Aeronautical Information Management (AIM), Air Traffic Management (ATM) and Communications, Navigation and Surveillance (CNS)

INTERFERENCES DUE TO 5-G IMPLEMENTATION IN CENTRAL AMERICA

(Presented by Belize, Costa Rica, El Salvador, Guatemala, Honduras and Nicaragua, members of the Central American Corporation for Air Navigation Services – COCESNA)

EXECUTIVE SUMMARY

This working paper presents information on the actions to be taken by the Central American states and COCESNA to mitigate the possibility of interference in aeronautical operations due to the implementation of 5G technology in the Central American region.

Action:	Suggested actions are presented in Section 6.
<i>Strategic Objectives:</i>	<ul style="list-style-type: none">• Safety
<i>References:</i>	<ul style="list-style-type: none">• eCRPP/04/01• Working Paper 6 (NACC/DCA/10-WP/06)

1. Introduction

1.1 The radio altimeter is a critical aircraft instrument for determining the height of the aircraft above the terrain immediately below the aircraft. Additionally, the radio altimeter signal is essential for the operation of several aircraft systems and subsystems such as the collision avoidance systems (ground proximity warning system - GPWS), wind shear detection, flight controls and the automatic landing functions of the Airplane Engine System Indication, the Engine Indicator and Crew Alerting System (EICAS) for Boeing, and the Electronic Centralized Aircraft Monitor (ECAM) for Airbus.

1.2 There is a high risk that 5G telecommunications systems in the 3.4-4.2 GHz and 4.4-4.9 GHz frequency band could cause harmful interference to the operation of radio altimeters on some aircraft. This is due to the fact that the 5G technology used for cell phone services operates in bands adjacent to the frequency in which aircraft radio altimeters operate (4.2-4.4 GHz).

1.3 Without adequate mitigation, harmful interference to radio altimeter function during any phase of flight may pose a safety risk to passengers, crew and those on the ground.

2. Discussion

2.1 Reference is made to the draft conclusion eCRPP/04/01 of the GREPECAS Programmes and Projects Committee (PPRC) Fourth Virtual Meeting (ePPRC/04), and the Working Paper 6 (NACC/DCA/10-WP/06) through which expose the negative implications that the implementation of 5G mobile phone technology could have on aircraft radio altimeter systems.

2.2 It is important to take into consideration that if the necessary mitigations are not implemented, the States of the Central American sub region may face problems in their operations, namely:

- Limitation/suspension of precision approach and landing capabilities.
- Limitation/suspension of night operations, particularly for airports with challenging terrain.
- Failure to issue state regulations requiring modifications and recertification of aircraft radio altimeters and other related functions.
- Decrease in operational safety at its airports due to interference in the radio altimeter frequency.
- Incidents.

2.3 The problems affecting aeronautical operations may vary due to the technology and platform to be used, and mainly due to the avionics of the fleet, but ultimately this requires that this risk be taken very seriously by the States given its implication in the aeronautical security and that it will have an impact on the way in which it is decided how to enable cellular/5G broadband services in radio frequency bands close to the bands used by radio altimeters.

2.4 COCESNA has noted the information published by ICAO on this serious problem and has initiated mitigation actions informing the Civil Aviation Authorities of each member State, through an official note, of the need to take specific mitigation actions as soon as possible to minimize possible interference due to the implementation of 5G technology within the Central American sub-region.

2.5 Given the aforementioned, the following actions are being coordinated with the Central American States in order for their aeronautical operations to maintain safety levels:

- Carry out an analysis that includes the national aircraft fleet, telecommunications companies and the entities in charge of spectrum management to assess the impact of this technology on aviation operations.
- Based on the results of said impact analysis, develop and implement the necessary mitigation mechanisms to avoid interference in the operations of the radio altimeters.

- Monitor and evaluate the mitigating measures implemented.
- Inform the ICAO NACC and SAM Regional Office at the GREPECAS/20 meeting to be held between November 15 and 18 of the current year.

3. Conclusion

3.1 There is a high risk that 5G telecommunications systems in the 3.4-4.2 GHz and 4.4-4.9 GHz frequency band could cause harmful interference to the operation of radio altimeters on some aircraft. Without adequate mitigation, this interference could seriously affect operations and safety in the Central American sub region.

4. Suggested actions

4.1 The Meeting is invited to:

- a) take note of the actions that the Central American States and COCESNA have taken to minimize the possibility of interference in the radio altimeters of susceptible aircraft operating in the Central American region due to the implementation of 5G technology in this sub region.