



ICAO

*International Civil Aviation Organization*

**Twenty Sixth Meeting of the Communications/  
Navigation and Surveillance Sub-group (CNS SG/26) of  
APANPIRG**

Video Tele-Conference, 5 – 9 September 2022

**Agenda Item 5:** Aeronautical Mobile Communications Service and Aeronautical electromagnetic spectrum utilization

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

**5G NETWORK WITHIN AIRPORT BOUNDARY**

(Presented by Malaysia)

**SUMMARY**

This paper presents on safety concerns and safety recommendations for 5G network within airport boundary in response to ICAO State Letter on Potential safety concerns regarding interference to radio altimeters.

**1. INTRODUCTION**

1.1 Malaysia Airports Holding Berhad (MAHB) manages and operates 22 airports and 17 Stolport across Malaysia through its subsidiaries known as Malaysia Airports Sendirian Berhad (MASB) and Malaysia Airport Sepang Sendirian Berhad (MASSB). All of these airports required to implement Safety Management System as stipulated in Regulation 15 of Civil Aviation Regulation of Malaysia (2016)<sup>1</sup>.

1.2 Malaysia Communication and Multimedia Commission (MCMC) which regulates the communications and multimedia industry has announced the availability of 5G technology for Malaysia in 2021 one year earlier from expected date. Hence, the appointed company as a single wholesaler network (SWN) by Digital Nasional Berhad (DNB) has submitted 5G network proposal to MAHB through its appointed vendor.

1.3 This proposal is categorized as new equipment or technology to be introduced within the airport boundary. This has triggered the change factor and therefore, a SMS tools used (Management of Change and Safety Assessment) shall be established to identify safety concern of 5G network have onto safety of aircraft operations. The decision transpire from the report covers all airport under the management of MAHB.

<sup>1</sup> Regulation 15 of CAR 2016; An aerodrome operator who maintains or operates a Category 1 or 3 aerodrome shall establish a safety management system and shall ensure that the safety management system is maintained, implemented and complied with.

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**2. DISCUSSION***5G Network Safety Concern*

2.1 ICAO has issued a circular SP 74/1-21/22 dated 21 March 2021 on potential safety concerns regarding interference to radio altimeters in deploying new cellular broadband technologies (such as 5G) at the airport. ICAO has received studies from several States and organizations regarding the interference potential to radio altimeters which 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 In a problem statement by IATA/IFALPA of 5G has detailed out a list of interference effect on radar altimeter (RA) of an aircraft and a report by Radio Technical Commission of Aeronautic (RTCA)<sup>4</sup> confirms of interference to RA of an aircraft with recommendations but no recommendations that can be taken proactively by airport operator.

*Management of Change*

2.3 Under the latest regulatory requirement in Malaysia, introduction of new technology in the aerodrome shall undergo a management of change process and safety assessment shall be made available when there is a change. In this connection, MAHB has revise the management of change framework and added in safety assessment feature. The proposal of implementation 5G network within airport boundary (Change) become the case study for the revise framework.

2.4 The proposed Change triggered change factor of new technology and there is safety concern to be determined when the network Radio Frequency Electromagnetic Field (RF EMF) antenna and equipment is to be installed within airport boundary. There were multiple reports on effect of 5G network being referred to determine the safety concerns affecting the safety of aircraft operations.

*Safety Assessment Outcome*

2.5 Based on the safety assessment conducted, MAHB has determine safety recommendations to be taken up by the installer prior 5G network can be made available within airport boundary. The safety recommendations are to furnish MAHB with a report from MCMC confirming the 5G signal allowed in Malaysia have no interference to the aircraft operations and surveyed drawing of the 5G network coverage encroach onto aircraft approach path and radio altimeter protected area. As for aerodrome operator, a safety circular issued to all airports alerting 5G network shall not be allowed to be installed within airport boundary and to refer to Safety Office, MAHB.

**3. ACTION BY THE MEETING**

3.1 The meeting is invited to:

- a) encourage communication commission of state members to study and report impact of 5G network onto aircraft operations;
- b) note the use of SMS tools in determining safety concerns and decision for new technology; and
- c) discuss any relevant matters appropriate.

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