

SAFETY CIRCULAR 2021-05

Issue 01

Date of Issue: July 8, 2021

Subject: Potential Safety Concerns regarding interference to radio altimeters

The purpose of this Civil Aviation Safety Alert is to raise awareness of the potential risk of 5G interference and to recommend precautionary operational measures before confirmation of impact of 5G radio waves on radio altimeters.

Reference: ICAO state letter SP 74/1-21/22 dated 25 March 2021.

Applicability:

- Airport Operators
- All airlines operators (Oman and foreign) operating within Oman Airspace.
- Air Traffic Service Units. (ATSU).
- Aircraft Training Organization.

Background:

The frequency bandwidth allocated to 5G is close to one used by aircraft radio altimeters (4.2-4.4 GHz). In some countries in Europe and Asia, 5G is already deployed. The most undesirable outcome of interference is the indication of an undetected wrong height information given by the radio altimeter. Depending on operations, equipment model and aircraft type, this kind of error could have significant adverse impacts on flight safety. It may impact Terrain Awareness Warning Systems (TAWS), Traffic Alert and Collision Avoidance Systems (TCAS) and Airborne Collision Avoidance Systems (ACAS), Wind Shear detection systems, flight control systems, and auto land systems (including auto-throttle and automated landing flare and rollout) and loss of situational awareness due to erroneous or unexpected behavior.

Potential Safety and Operational impact (Anywhere close to terrain):

- Could inhibit some functionalities of the TAWS (Terrain Alerting Warning System) reactive modes which would remove a safety net in case against CFIT (Controlled Flight in to Terrain).

Impact if 5G base stations are located too close to Airports:

- Could jeopardize flare manoeuvre (manual or auto).
- Risk of Go Around as landing laws may be affected.
- Diversion as there is no possibility to land in low visibility conditions.
- Spurious fault messages or Audio in the cockpit.

Recommended action

Operators shall remind passengers and flight crew that all electronic devices are either carried in the cabin, (on person) or in the luggage. If these are placed in checked baggage, they shall be turned off and protected from accidental activation.

All 5G PED's carried in the aircraft shall be set to non-transmitting mode so they do not transmit on the cellular networks (e.g. flight mode) or switched off.

For essential communications, e.g. for Emergency Medical Service operations (EMS), crew should only use 3G or 4G communication devices.

In the event of an actual disturbance of radio altimeter, it is imperative that flight crew report the event to the Air Traffic Unit (ATU) as soon as possible.

All Oman operators shall report to Flight Safety Department and Air Traffic Services Unit (ATSU) on any 5G interference with Radio Altimeter readouts.

International operators need to be aware of the potential risk of interference to radio altimeters when operating in countries with different 5G networks and their respective mitigations measures, if there is any 5G interferences with radio altimeter observed in Oman report to Air Traffic Services Unit (ATSU).

The Use of Transmitting and Non Transmitting Portable Electronic Devices are still applicable, where no air operator shall permit use of a Portable Electronic Devices (PEDs) on board an aircraft except with the permission of the aircraft operator and permit the use of non-transmitting PEDs on board aircraft during any critical phase of flight.

This Safety Circular is effective from the date of the issuance.

Contact:

CAA Flight Safety Department for further instructions or guidance.

Foreign operators contact: Director of Flight Safety email: shadiya@caa.gov.om.

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