AIRWORTHINESS DIRECTIVE

This Airworthiness Directive (AD) is issued pursuant to Canadian Aviation Regulation (CAR) 521.427. No person shall conduct a take-off or permit a take-off to be conducted in an aircraft that is in their legal custody and control, unless the requirements of CAR 605.84 pertaining to ADs are met. Standard 625 - Aircraft Equipment and Maintenance Standards Appendix H provides information concerning alternative means of compliance (AMOC) with ADs.

Number:

CF-2023-49

Effective Date:

10 July 2023

ATA:

34

Type Certificate:

See Applicability

Subject:

Navigation – Rotorcraft – Prohibition of Operations Requiring Radio Altimeter When Operating in the Contiguous United States due to 5G C-Band Wireless Broadband Interference

Replacement:

Supersedes AD CF-2021-53, issued 24 December 2021.

Applicability:

This AD applies to all helicopters, certificated in any category, equipped with a radio (also known as radar) altimeter. These radio altimeters are installed on various helicopter models including, but not limited to, the helicopters for which the design approval holder is identified below:

1) Airbus Helicopters
2) Airbus Helicopters Deutschland GmbH
3) Bell Textron Canada Limited
4) Hélicoptères Guimbal
5) Leonardo S.p.a.

Compliance:

As of the effective date of this AD, unless already accomplished.

Background:

On 9 December 2021, the FAA published and made effective AD 2021-23-13, which indicated that 5G C-Band would become active in certain regions of the United States of America (U.S.) on 5 January 2022. The FAA determined that, at that time, no information has been presented that showed radio altimeters are not susceptible to interference caused by C-Band emissions permitted in the U.S., and that as a result an unsafe condition was likely to exist once C-Band emissions became active.

Transport Canada agreed with the FAA's conclusions and issued AD CF-2021-53 to require the same actions as FAA AD 2021-23-13 for Canadian-registered rotorcraft that are not of U.S. state of design, when operating in U.S. airspace. FAA AD 2021-23-13 was applicable to Canadian-registered U.S. state of design products pursuant to CAR 605.84(1)(c)(i).

Since Transport Canada issued AD CF-2021-53, the FAA has issued AD 2023-11-07 which was prompted by a determination that radio altimeters cannot be relied upon to perform their intended function if they experience interference from wireless broadband operations in the 3.7-3.98 GHz frequency band (5G C-Band). The FAA issued AD 2023-11-07 because radio altimeter anomalies that are undetected by the automation or pilot, particularly close to the ground, could lead to loss of continued safe flight and landing.

TCCA agrees with the FAA's conclusions. This AD requires the same actions as FAA AD 2023-11-07 for Canadian registered rotorcraft, that are not of U.S. state of design, when operating in contiguous U.S. airspace. This AD has a change with respect to FAA AD 2023-11-07: a typographical error in the frequency range for fundamental emissions has been corrected. FAA AD 2023-11-07 is applicable to Canadian-registered U.S. state of design products pursuant to CAR 605.84(1)(c)(i)

Corrective Actions:

Part I – Definitions

For the purposes of this AD, the following definitions apply:

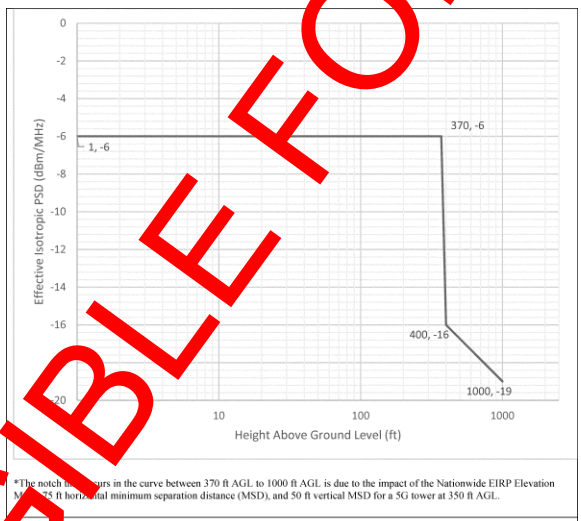
A. A **radio altimeter tolerant rotorcraft** is one for which the radio altimeter, as installed, demonstrates the tolerances specified in Part I paragraphs A.1. and A.2. of this AD, using a method approved by Transport Canada or the FAA. No actions are required by this AD for radio altimeter tolerant rotorcraft.

1. Tolerance to radio altimeter interference, for the fundamental emissions (3.7-3.98 GHz), at or above the power spectral density (PSD) curve threshold specified in Figure 1 of this AD.

2. Tolerance to radio altimeter interference, for the spurious emissions (4.2-4.4 GHz), at or above the PSD curve threshold specified in Figure 2 of this AD.

B. A **non-radio altimeter tolerant rotorcraft** is one for which the radio altimeter, as installed, does not demonstrate the tolerances specified in Part I paragraphs A.1. and A.2. of this AD.

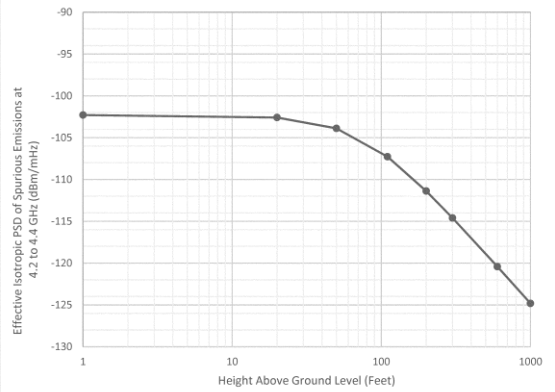
Figure 1 – Fundamental Effective Isotropic PSD at Outside Interface of Rotorcraft Antenna



*The notch in the curve between 370 ft AGL to 1000 ft AGL is due to the impact of the Nationwide EIRP Elevation Mask, 75 ft horizontal minimum separation distance (MSD), and 50 ft vertical MSD for a 5G tower at 350 ft AGL.

Height above ground (ft)	Effective Isotropic PSD (dBm/MHz)
1	-6
370	-6
400	-16
1000	-19

Figure 2 – Spurious Effective Isotropic PSD at Outside Interface of Rotorcraft Antenna



Height above ground (ft)	Effective Isotropic PSD (dBm/MHz)
1	-102.3
20	-102.6
50	-103.9
110	-107.3
200	-111.4
300	-114.6
600	-120.4
1000	-124.8

Part II – Retained Rotorcraft Flight Manual (RFM) Revision for Non-Radio Altimeter Tolerant Rotorcraft until 30 June 2023

For non-radio altimeter tolerant rotorcraft:

A. On or before 4 January 2022, the effective date of AD CF-2021-53, revise the Limitations Section of the existing RFM for your helicopter by incorporating the limitations specified in Figure 3 of this AD. This may be done by inserting a copy of this AD into the existing RFM for your helicopter.

B. Inform all flight crews of these new limitations and thereafter operate the rotorcraft according to the limitations outlined in Figure 3 of this AD.

C. AMOCs approved for AD CF-2021-53 and FAA AD 2021-23-13 are approved as AMOCs for the requirements specified in Part II of this AD until 30 June 2023.

Figure 3 – RFM Revision for Non-Radio Altimeter Tolerant Rotorcraft, Until 30 June 2023

Radio Altimeter Flight Restrictions

When operating in U.S. airspace the following operations requiring radio altimeter are prohibited in the presence of 5G C-Band wireless broadband interference as identified by NOTAM (NOTAMs will be issued to state the specific areas where the radio altimeter is unreliable due to the presence of 5G C-Band wireless broadband interference):

- Performing approaches that require radio altimeter minimums for rotorcraft offshore operations. Barometric minimums must be used for these operations instead.
- Engaging hover autopilot modes that require radio altimeter data.
- Engaging Search and Rescue (SAR) autopilot modes that require radio altimeter data.
- Performing takeoffs and landings in accordance with any procedure (Category A, Category B, or by Performance Class in the Rotorcraft Flight Manual or Operations Specification) that requires the use of radio altimeter data.

Part III – RFM Revision After 30 June 2023

For non-radio altimeter tolerant rotorcraft:

A. On or before 30 June 2023, revise the Limitations Section of the existing RFM for your helicopter by including the information specified in Figure 4 of this AD. This may be done by inserting a copy of this AD into the existing RFM for your helicopter. Incorporating the RFM revision required by this paragraph terminates the RFM revision required by Part II of this AD.

B. Before further flight after incorporating the limitations specified in Figure 4 of this AD, remove the RFM revision required by Part II of this AD.

C. Inform all flight crews of these new limitations and thereafter operate the rotorcraft according to the limitations outlined in Figure 4 of this AD.

Figure 4 – RFM Revision for Non-Radio Altimeter Tolerant Rotorcraft, After 30 June 2023

Radio Altimeter Flight Restrictions

Due to the presence of 5G C-Band wireless broadband interference, when operating in the contiguous U.S. airspace, the following operations requiring radio altimeter are prohibited:

- Performing approaches that require radio altimeter minimums for rotorcraft offshore operations. Barometric minimums must be used for these operations instead.
- Engaging hover autopilot modes that require radio altimeter data.
- Engaging Search and Rescue (SAR) autopilot modes that require radio altimeter data.
- Performing takeoffs and landings in accordance with any procedure (Category A, Category B, or by Performance Class in the Rotorcraft Flight Manual or Operations Specification) that requires the use of radio altimeter data.

Part IV – Terminating Action for RFM Limitations

A. Modifying the rotorcraft from a non-radio altimeter tolerant rotorcraft to a radio altimeter tolerant rotorcraft terminates the limitations in Part III of this AD for that rotorcraft.

B. After modifying the rotorcraft to a radio altimeter tolerant rotorcraft, the limitations specified by Part III of this AD may be removed from the RFM.

Authorization:

For the Minister of Transport,

ORIGINAL SIGNED BY

Jenny Young
Chief, Continuing Airworthiness
Issued on 5 July 2023

Contact:

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