Australian Government
Civil Aviation Safety Authority

SUMMARY OF PROPOSED CHANGE

Proposed amendments to Parts 91, 121, 133 and 135 Manuals of Standards – Requirements for radio altimeters due to 5G transmissions

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Acknowledgement of Country

The Civil Aviation Safety Authority (CASA) respectfully acknowledges the Traditional Custodians of the lands on which our offices are located and their continuing connection to land, water and community, and pays respect to Elders past, present and emerging.

Artwork: James Baban.

Introduction

Radio altimeters perform a critical function during instrument approach operations and need to operate reliably. They are the only instrument on board an aircraft that accurately measures its height above the underlying terrain and obstacles, providing data required for the aircraft's safety to the flight crew and other aircraft systems. Radio altimeters operate in the 4.2 – 4.4 GHz radio frequency band.

The most recent of the 5th generation wireless broadband systems (5G) in Australia are licensed to operate in a nearby band (i.e. 3.7 – 4.0 GHz). Studies have shown that 5G transmissions in this band can interfere with the operation of radio altimeters. The interference can result in intermittent operation, false data and indications, or system failure.

The situation is most critical for aircraft conducting three-dimensional (3D) instrument approaches under low visibility conditions. The resultant risks of radio altimeters being impaired during these operations include nuisance alerts and/or a failure to alert, increased flight crew workload, aborted landings (go-arounds) and, in the worst case, accidents.

The instrument approach operations determined to be reliant on radio altimeters are:

- Instrument Landing System Category II and III (ILS Cat II and III)
- Special Authorisation Category I and II (SA Cat I and II)
- Required Navigation Performance – Authorisation Required (RNP-AR) operations.

When the Australian Communications and Media Authority (ACMA) granted new licences in the 3.7-4.0 GHz band to 5G operators, it imposed conditions to mitigate the effects of 5G transmissions on radio altimeters; however, these measures are scheduled to end on 31 March 2026.

The protective measures imposed by ACMA consist of:

- exclusion zones surrounding runways where mobile communication stations are not allowed to be installed
- restricted zones, covering the final approach path from a height of 2000 ft, where the signals from mobile communication transmitters need to be below power levels shown to affect the operation of radio altimeters
- restrictions on the energy from the signals directed upwards towards aircraft.

Details of the conditions imposed by ACMA may be found in the Radiocommunications Assignment and Licensing Instruction RALI MS47: Licensing and coordination procedures for area-wide licences (AWL) in the 3400–4000 MHz band.

Radio altimeters need to operate reliably in the presence of 5G transmissions, both before and after the protective measures are removed. To this end, CASA issued media statements in October 2024 advising aircraft operators of the need to ensure radio altimeters comply with FAA airworthiness directives prior to the protective measures being withdrawn. In support of these media statements, CASA is proposing amendments to the civil aviation legislation.

CASA is proposing amendments to the Part 91, 121,133, and 135 Manuals of Standards (MOS) for radio altimeters to comply with FAA airworthiness directives.

CASA is also proposing to issue a direction under regulation 11.245 of CASR to foreign air transport Air Operator's Certificate (AOC) holders, and AOC holders with Australia New Zealand Aviation (ANZA) privileges, to the same effect.

Contents

Reference material

Acronyms

The acronyms and abbreviations used in this SPC are listed in the table below.

Table 1: Acronyms

Acronym	Description
AC	advisory circular
AOC	Air Operator's Certificate
CAR	*Civil Aviation Regulations 1988*
CASA	Civil Aviation Safety Authority
CASR	*Civil Aviation Safety Regulations 1998*

Definitions

Terms that have specific meaning within this SPC are defined in the table below. Where definitions from the civil aviation legislation have been reproduced for ease of reference, these are identified by 'grey shading'. Should there be a discrepancy between a definition given in this SPC and the civil aviation legislation, the definition in the legislation prevails.

Table 2: Definitions

Term	Definition
ACMA	Australian Communications and Media Authority
FAA	Federal Aviation Administration of the United States of America

References

Legislation

Legislation is available on the Federal Register of Legislation website https://www.legislation.gov.au/

Table 3: Legislation references

Document	Title
Subpart 11.G of CASR	Directions
Part 91 MOS	Part 91 (General Operating and Flight Rules) Manual of Standards 2020
Part 121 MOS	Part 121 (Australian Air Transport Operations—Larger Aeroplanes) Manual of Standards 2020
Part 133 MOS	Part 133 (Australian Air Transport Operations—Rotorcraft) Manual of Standards 2020

Document	Title
Part 135 MOS	Part 135 (Australian Air Transport Operations—Smaller Aeroplanes) Manual of Standards 2020

Purpose and scope of the proposed amendments

CASA wants to ensure radio altimeters will continue to operate reliably once the measures put in place by ACMA to protect them from 5G transmissions are removed.

CASA is proposing to do this by amending the civil aviation legislation to require radio altimeters fitted to aircraft which are used to conduct low-visibility approaches (i.e. those reliant on radio altimeters) to be tolerant of specified levels of radio frequency interference.

Key change proposals

Part 91, Part 121, and Part 135 Manuals of Standards

It is proposed to amend the following Manuals of Standards (MOS):

- Part 91 (General Operating and Flight Rules) Manual of Standards 2020
- Part 121 (Australian Air Transport Operations—Larger Aeroplanes) Manual of Standards 2020
- Part 135 (Australian Air Transport Operations—Smaller Aeroplanes) Manual of Standards 2020

Key change 1

It is proposed to add a requirement for each radio altimeter fitted to an aeroplane used for the conduct of any of the instrument approach operations listed below to be compliant with the tolerance to radio frequency interference specified in FAA Airworthiness Directive AD 2023-10-02.

The affected instrument approach operations are low-visibility approaches and Required Navigation Performance Authorization Required (RNP AR) instrument approach operations.

The requirement will apply from 1 April 2026.

Transitional arrangements

Aircraft operators will have until 31 March 2026 to comply with the new requirement.

All air transport aircraft which operate in the US are subject to the FAA AD and should be compliant with the proposed amendments.

Part 133 Manual of Standards (Australian air transport operations—rotorcraft)

Key change 2

It is proposed to add a requirement for each radio altimeter fitted to a rotorcraft used for the conduct of any of the instrument approach operations listed below to be compliant with the tolerance to radio frequency interference specified in FAA Airworthiness Directive AD 2023-11-07.

The affected instrument approach operations are low-visibility approaches and Required Navigation Performance Authorization Required (RNP AR) instrument approach operations.

The requirement will apply from 1 April 2026.

Transitional arrangements

The same transitional arrangements described above for Key change 1 will apply.

Subpart 11.G of CASR Directions

Key change 3

It is proposed to issue a direction under regulation 11.245 of CASR, which will apply to foreign air operating certificate (AOC) holders and AOC holders with Australia New Zealand Aviation (ANZA) privileges.

The proposed direction will require AOC holders to ensure that each radio altimeter fitted to an aeroplane or rotorcraft used for the conduct of any of the instrument approach operations listed below is compliant with the tolerance to radio frequency interference specified in FAA Airworthiness Directive AD 2023-10-02 or AD 2023-11-07 .

The affected instrument approach operations are low-visibility approaches and Required Navigation Performance Authorization Required (RNP AR) instrument approach operations.

The requirement will apply from 1 April 2026.

Transitional arrangements

The same transitional arrangements described above for Key change 1 will apply.

Previous consultations

Fourth and 5th generation wireless broadband services (4G and 5G) In Australia have been operating in the 3.4 - 3.7 GHz band since 2016 and 2019 respectively. Concerns were raised by the aviation industry in 2019 when ACMA released a discussion paper on spectrum management arrangements for the 3.7-4.2 GHz band.

In 2021, ACMA stated its intention to release the 3.7-4.0 GHz band for wireless broadband services. Since then, ACMA has consulted publicly on proposed licensing conditions, with the aviation industry calling for greater protection for radio altimeters and the telecommunication industry advocating for fewer restrictions on 5G stations.

In May 2023, ACMA formally announced the measures it would adopt to protect radio altimeters. The protective measures were to be imposed until 31 March 2026 (. New 5G stations began operating in the 3.7 – 3.95 GHz band in the first quarter of 2024.

In October 2024 CASA issued media statements advising aircraft operators of the need to ensure radio altimeters meet the performance requirements specified by the FAA from 31 March 2026.

CASA also maintains a page on its website with information on radio altimeters and 5G for air operator's certificate (AOC) holders.

In addition to this, Airworthiness Bulletin AWB 34-020 provides further information on the matter and asks pilots to report any suspected cases of radio altimeters being affected by radio frequency interference.

In response to the media statements and other information provided, CASA has received a few enquiries, mainly from foreign AOC holders, about to whom the new requirements will apply. The proposed amendments will apply to all aircraft in Australia used for the conduct of any of the prescribed instrument approach operations, regardless of whether the aircraft is an Australian or foreign registered aircraft. The intention is to ensure that all aircraft used for these operations have radio altimeters which will operate reliably in the presence of the 5G transmissions expected to be experienced in Australia.

Impact on industry

CASA's concern is the continued safe operation of aircraft. The amendments are being introduced to help ensure radio altimeters operate reliably once the measures designed to protect them from 5G transmissions end.

All air transport aircraft that fly to the US need to be compliant with the FAA airworthiness directives for radio altimeters and will therefore not require modification to comply with the proposed amendments outlined in this SPC.

Safety risk analysis

In 2020, the RTCA released the report of a study it commissioned on the effects of 5G transmissions on radio altimeters in the US. The report concluded there was a major risk that 5G telecommunications systems operating in the 3.7 – 3.98 GHz frequency band (the new 5G band in the US) would cause harmful interference to radar altimeters on all types of civil aircraft. The report detailed the interference tolerance thresholds of nine radio altimeter models at different 5G operating frequencies and aircraft altitudes. This study formed the basis of protection measures adopted by some countries.

Countries have approached the issue in different ways, with some imposing measures to protect radio altimeters, while others have taken no action. This is partly due to differences in spectrum allocation and in the maximum power levels 5G transmitters are allowed to operate at. For example, in the European Union (EU) States, the 3.4 – 3.8 GHz band is allocated to 5G services provided by the major telecommunication companies. This is further away from the radio altimeter band than in Australia, the US, and Canada, and therefore poses a lower risk. Also, 5G stations in EU States generally operate at lower power levels than in Australia, the US, and Canada. Notwithstanding this, it is notable that France was among the first to take action to protect radio altimeters. More recently, EU States are looking to release spectrum closer to the radio altimeter band, but only for low to medium power proprietary 5G networks.

In May 2023, ACMA formally announced the measures it would adopt to protect radio altimeters, based on the models used by France and Canada, but adapted to Australian conditions.

Impact analysis

The cost of updating radio altimeters on aircraft to comply with the proposed rule change will be dependent on factors such as the aircraft make and model, the number of installed independent altimetry systems characteristic of the aircraft type, and whether the radio altimeters can be upgraded or need to be replaced.

CASA has received estimates which range from approximately A$40,000 to A$100,000 for regional aircraft and business jets, and between A$40,000 and A$140,000 for larger air transport aircraft.

Submitting your view and what next

We would like to hear your views on the amendments we have proposed. Please review the proposal and provide your feedback on the questions posed and any additional matters not covered in this SPC.

Your feedback will make a valuable contribution to CASA's policy decision-making process and help to fully inform CASA of the impacts on the aviation community of the proposal.

CASA will consider all comments received as part of this consultation process. Comments on this consultation should be submitted through the online response form (CASA Consultation Hub) by close of business 3 August 2025.