

# Maintaining Safe Operations with Radar Altimeter Interference from 5G

## NOTE

*This paper is based upon an ALPA, International Safety Alert. It is an update to, and supersedes, 21SAB16 – Aircraft Operations and Radar Altimeter Interference from 5G.*

## INTRODUCTION

The Federal Aviation Administration has issued Airworthiness Directives (ADs) for aircraft equipped with certain Radar (Radio) Altimeters prone to interference by 5G Wireless signals. In addition, the FAA has issued Notices to Air Missions (NOTAMS) for specific locations where the presence of 5G wireless signals will interfere with aircraft radar (radio) altimeters beginning January 19, 2022. The power levels and proximities of the 5G signals are at higher power levels than any other deployment currently in use elsewhere in the world.

The interference from 5G signals can result in the loss of radar altitude information or, worse, incorrect radar altitude information unknowingly being used by other aircraft systems and flight crews.

## ATTACHMENTS

Two (2) page ALPA Safety Alert

**Maintaining Safe Operations with Radar Altimeter Interference from 5G**

2022-01, [ALPA, International](#)



# ALPA SAFETY ALERT

2022-01

## Maintaining Safe Operations with Radar Altimeter Interference From 5G

The Federal Aviation Administration has issued Airworthiness Directives (ADs) for aircraft equipped with certain Radar (Radio) Altimeters prone to interference by 5G Wireless signals. In addition, the FAA has issued Notices to Air Missions (NOTAMS) for specific locations where the presence of 5G wireless signals will interfere with aircraft radar (radio) altimeters beginning January 19, 2022. The power levels and proximities of the 5G signals are at higher power levels than any other deployment currently in use elsewhere in the world.

The interference from 5G signals can result in the loss of radar altitude information or, worse, incorrect radar altitude information unknowingly being used by other aircraft systems and flight crews.

### AIRWORTHINESS DIRECTIVE

The FAA published an [Airworthiness Directive \(AD\) intended to cover all transport category aircraft](#). The AD requires the following Airplane Flight Manual (AFM) revision:

**(Required by AD 2021-23-12)**

#### **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 airports where the radio altimeter is unreliable due to the presence of 5G C-Band wireless broadband interference):

- Instrument Landing System (ILS) Instrument Approach Procedures (IAP) SA CAT I, SA CAT II, CAT II, and CAT III
- Required Navigation Performance (RNP) Procedures with Authorization Required (AR), RNP AR IAP
- Automatic Landing operations
- Manual Flight Control Guidance System operations to landing/head-up display (HUD) to touchdown operation
- Use of Enhanced Flight Vision System (EFVS) to touchdown under 14 CFR 91.176(a)

### OTHER SYSTEMS AFFECTED

Altitude information derived from radar altimeters has been deeply integrated into aircraft systems and automation, with the latest aircraft using it to change aircraft handling qualities and prepare systems such as ground spoilers and thrust reversers for deployment prior to touchdown. This is in addition to the prohibitions listed above.

Embraer has issued [Flight Operations Letter FOL-170-001-22](#) and [Operational Bulletin OB170-001-22](#), which describe the possible effects of 5G interference on their aircraft and revise pilot procedures for takeoff and approach on E170/E175/E190/E195 aircraft.

It is possible that FAA or aircraft manufacturers may further restrict the use of systems on other aircraft with additional ADs or Airplane Flight Manual revisions. [ALPA has a website with up-to-date information](#) on any additional FAA or manufacturer guidance.

## NOTAMS

Since radar altimeter interference is location-specific, the AD restrictions have been “activated” by NOTAMs issued on January 13, 2022, for a large number of airports and the affected Instrument Approach Procedures. Additional NOTAMs will be issued when 5G deployment conditions change. FAA has also published a [Safety Alert for Operators \(SAFO\) 21007](#) with sample NOTAM language.

## ALTERNATE METHOD OF COMPLIANCE

FAA has developed a process that will allow aircraft equipped with a radar altimeter able to reject 5G interference, to obtain an Alternate Method of Compliance (AMOC) for the AD. Aircraft with those radar altimeters will be able to operate without the restrictions listed in the AD/NOTAM. Pilots should ensure they have specific documentation of the AMOC for their aircraft.

## RECOMMENDED ACTIONS

It is critical for pilots to be aware of and comply with any restrictions imposed via AD, AFM, and NOTAMs by the FAA and airline. The flight manual restrictions from the airworthiness directive coupled with NOTAMs that inform of the presence of 5G (C-band) or restrictions of specific instrument procedures are important triggers that pilots must carefully evaluate their aircraft’s ability to be safely operated and determine what additional contingencies must be considered.

Pilots should also ensure that flight planning and advanced preparation considers, should an alternate airport be required, the weather forecast allows for the use of the available instrument approach procedures. Alternate airports may need to be selected that are further away from the intended destination and may impact fuel loading plans significantly.

Pilots are advised to follow company guidance for operating in the 5G interference areas and actively pursue information from your air carrier when you have questions. Pilots are also advised to:

- Always err on the side of caution
- Reinforce to passengers that all phones must be in airplane mode
- Know the equipage of the specific aircraft you will be flying, and any limitations
  - Remember that air traffic control (ATC) doesn’t know the capabilities or limitations of the aircraft you are operating
  - Inform ATC of your limitations as needed and be prepared to utilize “unable”
- Read the AD and NOTAMs very carefully for your airports and alternates
  - The AD and NOTAMs will discuss very specific combinations of approaches and aircraft functions that are not authorized
  - In addition, the NOTAMs may change rapidly on a daily or weekly basis as further data is analyzed. It is imperative a thorough review of the NOTAMs is conducted before each flight
- Have documentation of any AMOC that allows the AD / NOTAM to be disregarded
- Utilize dispatch to carefully screen what limits are in place for the airports and alternates
  - Weather and forecasts
  - Fuel load and contingency plans for diversion and ATC flow control actions
- Be especially aware of any anomalies during operations below 5000 feet AGL
  - Report issues immediately to ATC
  - Report any issues or experiences via ASAP/SMS after flight
  - Also, after a flight, submit a radar altimeter anomaly report to the FAA at: [https://www.faa.gov/air\\_traffic/nas/RADALT\\_reports/](https://www.faa.gov/air_traffic/nas/RADALT_reports/)

CONTACT: If you have any questions, please contact ALPA’s Engineering & Air Safety Department at 800-424-2470 or via email [EAS@alpa.org](mailto:EAS@alpa.org).