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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2023–0921; Project Identifier AD–2022–01430–T; Amendment 39–22471; AD 2023–12–13]

RIN 2120–AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY:

Federal Aviation Administration (FAA), DOT.

ACTION:

Final rule.

SUMMARY:

The FAA is superseding Airworthiness Directive (AD) 2022–05–04, which applied to all The Boeing Company Model 737–100, –200, –200C, –300, –400, –500, –600, –700, –700C, –800, –900, and –900ER series airplanes, except for Model 737–200 and –200C series airplanes equipped with a certain flight control system. AD 2022–05–04 required revising the limitations and operating procedures sections of the existing airplane flight manual (AFM) to incorporate specific operating procedures for instrument landing system (ILS) approaches, speedbrake deployment, go-arounds, and missed approaches, when in the presence of interference from wireless broadband operations in the 3.7–3.98 GHz frequency band (5G C-Band) as identified by Notices to Air Missions (NOTAMs). Since the FAA issued AD 2022–05–04, the FAA determined that additional limitations are needed due to the continued deployment of new 5G C-Band base stations whose signals are expected to cover most of the contiguous United States at transmission frequencies between 3.7–3.98 GHz. This AD requires revising the limitations and operating procedures sections of the existing AFM to incorporate specific operating procedures for ILS approaches, speedbrake deployment, go-arounds, and missed approaches, due to the presence of 5G C-Band interference. The FAA is issuing this AD to address the unsafe condition on these products.

DATES:

This AD is effective June 21, 2023.

ADDRESSES:

AD Docket: You may examine the AD docket at *regulations.gov* under Docket No. FAA–2023–0921; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.

FOR FURTHER INFORMATION CONTACT:

Brett Portwood, Continued Operational Safety Technical Advisor, COS Program Management Section, Operational Safety Branch, FAA, 3960 Paramount Boulevard, Lakewood, CA 90712–4137; phone: 817–222–5390; email: *operationalsafety@faa.gov*.

SUPPLEMENTARY INFORMATION:

Background

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 to supersede AD 2022–05–04, Amendment 39–21955 (87 FR 10299, February 24, 2022) (AD 2022–05–04). AD 2022–05–04 applied to all The Boeing Company (Boeing) Model 737–100, –200, –200C, –300, –400, –500, –600, –700, –700C, –800, –900, and –900ER series airplanes, except for Model 737–200 and –200C series airplanes equipped with a certain flight control system. The NPRM published in the **Federal Register** on May 3, 2023 (88 FR 27725). The NPRM was prompted by a determination that radio altimeters cannot be relied upon to perform their intended function if they experience 5G C-Band interference, and a determination that, during approach, landings, and go-arounds, as a result of this interference, certain airplane systems may not properly function, resulting in increased flightcrew workload while on approach with the flight director, autothrottle, or autopilot engaged.

In the NPRM, the FAA proposed to retain the AFM revisions required by AD 2022–05–04 until June 30, 2023. On or before June 30, 2023, the FAA proposed to require replacing those AFM revisions with limitations requiring the same procedures for dispatch or release to airports, and approach, landing, and go-around on runways, at all airports for non-radio altimeter tolerant airplanes. For radio altimeter tolerant airplanes, the FAA proposed to allow the procedures at 5G CMAs as identified in an FAA Domestic Notice. The FAA proposed this AD to address 5G C-Band interference that could result in increased flightcrew workload and could lead to reduced ability of the flightcrew to maintain safe flight and landing of the airplane.

Discussion of Final Airworthiness Directive

Comments

The FAA provided the public with an opportunity to comment on the proposed AD and received comments from seven commenters. The following presents the

comments received on the NPRM and the FAA's response to each comment.

Support for NPRM

Boeing, the Air Line Pilots Association, International (ALPA), and an individual supported the NPRM without change.

The supportive comments from ALPA included additional viewpoints without a suggestion specific to the AD or a request the FAA can act on. These comments are outside the scope of this AD.

Request To Clarify AD Issue Dates

Comment summary: FlyPersia Airlines commented that the issue dates referenced for AD 2022–23–12 and AD 2022–05–04 in the background section of the proposed AD are incorrect. The commenter stated that where "The FAA issued AD 2022–23–12 (86 FR 69984, December 9, 2021)" is stated, the correct date should be December 7, 2021; in same section where the proposed AD specifies "AD 2022–05–04 (87 FR 10299, February 24, 2022)," the commenter stated the correct date should be February 16, 2022.

FAA response: The dates quoted by the commenter are within the parenthetical citations for referencing documents published in the **Federal Register** by volume, page, and publication date. These dates represent the dates each AD published in the **Federal Register** . The December 7, 2021, and February 24, 2022, dates the commenter referenced are the issuance dates specified in the signature block at the end of each AD (*i.e.,* the dates on which the ADs were issued by the FAA). No change to this AD is necessary because the citation dates are the correct publication dates.

Request To Extend Compliance Time

Comment summary: Southwest Airlines and American Airlines expressed concern regarding the compliance time for the proposed actions and requested the FAA revise the AD to provide a minimum of 30 days from the effective date of the AD.

FAA response: The FAA understands the commenters' concerns and made every effort to publish this AD as soon as possible. After refraining from operating at their FCC-authorized levels for a year and a half, wireless companies are now able to operate at higher levels, yet still not at the levels authorized. Specifically, wireless companies expect to operate their networks in urban areas with minimal restrictions due to the completion of retrofits. Additionally, the FAA anticipates 19 additional telecommunication companies will begin transmitting in the C-Band after June 30, 2023. Although the FAA continues to work with the companies that intend to transmit in the 3.7–3.98–GHz band near 5G CMAs, the FAA has no agreement with those companies to provide the FAA with tower locations and other information necessary to support the current NOTAM/AMOC process. Therefore, the FAA will not be able to extend the June 30, 2023, date.

Effect of Winglets on Accomplishment of the Proposed Actions

Comment summary: Aviation Partners Boeing stated that installing winglets under supplemental type certificate (STC) STC01219SE and STC ST00830SE on applicable Boeing models does not affect accomplishment of the actions specified in the proposed AD.

FAA response: The FAA agrees. The FAA has not changed this AD in this regard.

Conclusion

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. This AD is adopted as proposed in the NPRM.

Interim Action

The FAA considers this AD to be an interim action. Once the Technical Standard Order (TSO) standard for radio altimeters is established, which will follow the existing international technical consensus on the establishment of the minimum operational performance standards (MOPS), the FAA anticipates that the MOPS will be incorporated into the TSO. Once a new radio altimeter TSO is developed, approved, and available, the FAA might consider additional rulemaking.

Effective Date

Section 553(d) of the Administrative Procedure Act (APA) (5 U.S.C. 551 *et seq.*) requires publication of a rule not less than 30 days before its effective date. However, section 553(d) authorizes agencies to make rules effective in less than 30 days when the agency finds "good cause." Radio altimeters cannot be relied upon to perform their intended function if they experience interference from wireless broadband operations in the 5G C-Band. This interference can cause other airplane systems to not properly function, resulting in increased flightcrew workload while on approach with the flight director, autothrottle, or autopilot engaged. To address this unsafe condition, the actions required by this AD must be accomplished before the compliance date of June 30, 2023. The FAA based this date on the changes to the 5G C-Band environment beginning on July 1, 2023. These changes include increased wireless broadband deployment and transmissions closer to the parameters authorized by the FCC. The earlier operators learn of the requirements in this AD, the earlier they can take action to ensure compliance. An effective date less than 30 days would ensure the AD is codified earlier, thereby increasing awareness of its requirements. Therefore, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment immediately effective.

Costs of Compliance

The cost information below describes the costs to change the AFM. Although this AD largely maintains the AFM limitations currently required by AD 2022–05–04, the FAA acknowledges that this AD may also impose costs on some aircraft operators from having to change their conduct to comply with the amended AFM. However, the FAA lacks the data necessary to quantify the costs associated with aircraft operators changing their conduct.

The FAA estimates that this AD affects 2,328 airplanes of U.S. registry. The FAA estimates the following costs to comply with this AD:

Estimated Costs

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators

Action	Labor cost	Parts cost	Cost per product	Cost on U.S. operators
AFM revision (retained actions from AD 2022–05–04)	1 work-hour × $85 per hour 1 = $85	$0	$85	$197,880
New AFM revisions (new action)	1 work-hour × $85 per hour = $85	0	85	2 197,880

1 The labor rate of $85 per hour is the average wage rate for an aviation mechanic.

2 The estimated cost for this revision would not constitute a significant economic impact (even for small entities) because $85 is a minimal cost compared to the regular costs of maintaining and operating a Model 737–100, –200, –200C, –300, –400, –500, –600, –700, –700C, –800, –900, or –900ER transport category airplane.

Authority for This Rulemaking

Title 49 of the United States Code specifies the FAA's authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency's authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

Regulatory Findings

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

(1) Is not a "significant regulatory action" under Executive Order 12866,

(2) Will not affect intrastate aviation in Alaska, and

(3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

List of Subjects in 14 CFR Part 39

- Air transportation
- Aircraft
- Aviation safety
- Incorporation by reference
- Safety

The Amendment

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

PART 39—AIRWORTHINESS DIRECTIVES

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

§ 39.13 [Amended]

2. The FAA amends § 39.13 by:

a. Removing Airworthiness Directive (AD) 2022–05–04, Amendment 39–21955 (87 FR 10299, February 24, 2022), and

b. Adding the following new AD:

2023–12–13 The Boeing Company: Amendment 39–22471; Docket No. FAA–2023–0921; Project Identifier AD–2022–01430–T.

(a) Effective Date

This airworthiness directive (AD) is effective June 21, 2023.

(b) Affected ADs

This AD replaces AD 2022–05–04, Amendment 39–21955 (87 FR 10299, February 24, 2022) (AD 2022–05–04).

(c) Applicability

This AD applies to all The Boeing Company 737–100, –200, –200C, –300, –400, –500, –600, –700, –700C, –800, –900, and –900ER series airplanes, certificated in any category, except for Model 737–200 and –200C series airplanes equipped with an SP–77 flight control system.

(d) Subject

Air Transport Association (ATA) of America Code 34, Navigation.

(e) Unsafe Condition

This AD 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), and a determination that, during approach, landings, and go-arounds, as a result of this interference, certain airplane systems may not properly function, resulting in increased flightcrew workload while on approach with the flight director, autothrottle, or autopilot engaged. The FAA is issuing this AD to address 5G C-Band interference that could result in increased flightcrew workload and could lead to reduced ability of the flightcrew to maintain safe flight and landing of the airplane.

(f) Compliance

Comply with this AD within the compliance times specified, unless already done.

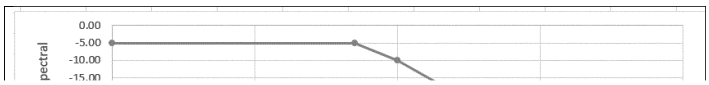
(g) Definitions

(1) For purposes of this AD, a "5G C-Band mitigated airport" (5G CMA) is an airport at which the telecommunications companies have agreed to voluntarily limit their 5G deployment at the request of the FAA, as identified by an FAA Domestic Notice.

(2) For purposes of this AD, a "radio altimeter tolerant airplane" is one for which the radio altimeter, as installed, demonstrates the tolerances specified in paragraphs (g)(2)(i) and (ii) of this AD, using a method approved by the FAA.

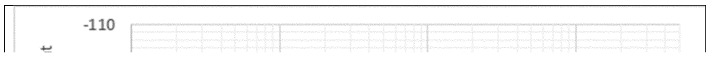
(i) Tolerance to radio altimeter interference, for the fundamental emissions (3.7–3.98 GHz), at or above the power spectral density (PSD) curve threshold specified in figure 1 to paragraph (g)(2)(i) of this AD.

Figure 1 to paragraph (g)(2)(i)— *Fundamental Effective Isotropic PSD at Outside Interface of Aircraft Antenna*



(ii) Tolerance to radio altimeter interference, for the spurious emissions (3.7–3.98 GHz), at or above the PSD curve threshold specified in figure 2 to paragraph (g)(2)(ii) of this AD.

Figure 2 to paragraph (g)(2)(ii)— *Spurious Effective Isotropic PSD at Outside Interface of Aircraft Antenna*



(3) For purposes of this AD, a "non-radio altimeter tolerant airplane" is one for which the radio altimeter, as installed, does not demonstrate the tolerances specified in paragraphs (g)(2)(i) and (ii) of this AD.

(h) Retained Airplane Flight Manual (AFM) Revision

This paragraph restates the requirements of paragraph (g) of AD 2022–05–04.

(1) Within 2 days after February 24, 2022 (the effective date of AD 2022–05–04): Revise the Limitations Section of the existing AFM to include the information specified in figure 3 to paragraph (h)(1) of this AD. This may be done by inserting a copy of figure 3 to paragraph (h)(1) of this AD into the existing AFM.

Figure 3 to paragraph (h)(1)— *AFM Limitations Revisions*

(Required by AD 2022-05-04)

Radio Altimeter 5G C-Band Interference, Approach, Landing, and Go-Around
The following limitations are required for dispatch or release to airports, and approach,

(2) Within 2 days after February 24, 2022 (the effective date of AD 2022–05–04): Revise the Operating Procedures Section of the existing AFM to include the information specified in figure 4 to paragraph (h)(2) of this AD or figure 5 to paragraph (h)(2) of this AD, as applicable. This may be done by inserting a copy of figure 4 to paragraph (h)(2) or figure 5 to paragraph (h)(2) of this AD, as applicable, into the Operating Procedures Section of the existing AFM.

Figure 4 to paragraph (h)(2)— *AFM Operating Procedures Revision for Model 737–100, –200, –200C, –300, –400, and –500 series airplanes*

Figure 5 to paragraph (h)(2)—AFM *Operating Procedures Revision for Model 737–600, –700, –700C, –800, –900, and –900ER series airplanes*

(i) New Requirement: AFM Limitations Revision for Non-Radio Altimeter Tolerant Airplanes

For non-radio altimeter tolerant airplanes, do the actions specified in paragraphs (i)(1) and (2) of this AD.

(1) On or before June 30, 2023, revise the Limitations Section of the existing AFM to include the information specified in figure 6 to paragraph (i) of this AD. This may be done by inserting a copy of figure 6 to paragraph (i) of this AD into the existing AFM. Incorporating the AFM revision required by this paragraph terminates the AFM revision required by paragraph (h)(1) of this AD.

(2) Before further flight after incorporating the limitations specified in figure 6 to paragraph (i) of this AD, remove the AFM revision required by paragraph (h)(1) of this AD.

Figure 6 to paragraph (i)— *AFM Limitations Revision for Non-Radio Altimeter Tolerant Airplanes*

(Required by AD 2023-12-13)

Radio Altimeter 5G C-Band Interference, Approach, Landing, and Go-Around
Due to the presence of 5G C-Band wireless broadband interference, the following limitations are required for dispatch or release to airports, and approach, landing, and go-around on runways, in the contiguous U.S. airspace.

Approach, Landing, and Go-Around
Operators must use the Radio Altimeter 5G C-Band Interference, Approach, Landing, and Go-Around procedure contained in the Operating Procedures Section of this AFM.

(j) New Requirement: AFM Limitations Revision for Radio Altimeter Tolerant Airplanes

For radio altimeter tolerant airplanes, do the actions specified in paragraphs (j)(1) and (2) of this AD.

(1) On or before June 30, 2023, revise the Limitations Section of the existing AFM to include the information specified in figure 7 to paragraph (j) of this AD. This may be done by inserting a copy of figure 7 to paragraph (j) of this AD into the existing AFM. Incorporating the AFM revision required by this paragraph terminates the AFM revision required by paragraph (h)(1) of this AD.

(2) Before further flight after incorporating the limitations specified in figure 7 to paragraph (j) of this AD, remove the AFM revision required by paragraph (h)(1) of this AD.

Figure 7 to paragraph (j)— *AFM Limitations Revision for Radio Altimeter Tolerant Airplanes*

(k) New Requirement: AFM Operating Procedures Revision

For all airplanes, do the actions specified in paragraphs (k)(1) and (2) of this AD.

(1) On or before June 30, 2023, revise the Operating Procedures Section of the existing AFM to include the information specified in figure 8 to paragraph (k) of this AD or figure 9 to paragraph (k) of this AD, as applicable. This may be done by inserting a copy of figure 8 to paragraph (k) of this AD or figure 9 to paragraph (k) of this AD, as applicable, into the Operating Procedures Section of the existing AFM. Incorporating the AFM revision required by this paragraph terminates the AFM revision required by paragraph (h)(2) of this AD.

(2) Before further flight after incorporating the operating procedures specified in figure 8 to paragraph (k) of this AD or figure 9 to paragraph (k) of this AD, remove the AFM revision required by paragraph (h)(2) of this AD.

Figure 8 to paragraph (k)— *AFM Operating Procedures Revision for Model 737–100, –200, –200C, –300, –400, and –500 series airplanes*

Figure 9 to paragraph (k)— *AFM Operating Procedures Revision for Model 737–600, –700, –700C, –800, –900, and –900ER series airplanes*

(l) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Operational Safety Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or responsible Flight Standards Office, as appropriate. If sending information directly to the manager of the Operational Safety Branch, send it to the attention of the person identified in paragraph (m) of this AD. Information may be emailed to: *AMOC@faa.gov*.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the responsible Flight Standards Office.

(3) AMOCs approved for AD 2021–23–12, Amendment 39–21810 (86 FR 69984, December 9, 2021) providing relief for specific radio altimeter installations are approved as AMOCs for the requirements specified in paragraph (h) of this AD until June 30, 2023.

(m) Related Information

For more information about this AD, contact Brett Portwood, Continued Operational Safety Technical Advisor, COS Program Management Section, Operational Safety Branch, FAA, 3960 Paramount Boulevard, Lakewood, CA 90712–4137; phone: 817–222–5390; email: *operationalsafety@faa.gov*.

(n) Material Incorporated by Reference

None.

Issued on June 9, 2023.

Michael Linegang,

Acting Director, Compliance & Airworthiness Division, Aircraft Certification Service.

BILLING CODE 4910–13–P

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BILLING CODE 4910–13–C