List of Subjects in 14 CFR Part 29

Aircraft, Aviation safety, Reporting, and recordkeeping requirements.

Authority Citation

The authority citation for these special conditions is as follows:

Authority: 49 U.S.C. 106(f), 106(g), 40113, 44701–44702, 44704.

The Special Conditions

Accordingly, pursuant to the authority delegated to me by the Administrator, the following special conditions are issued as part of the type certification basis for the Bell Textron Inc. Model 525 helicopter. Unless otherwise stated, the following special conditions will be used in lieu of § 29.671(c).

The rotorcraft must be shown by analysis and tests, to be capable of continued safe flight and landing after any of the following failures or jamming in the flight control system for any speed or altitude within the approved operating limitations, without requiring exceptional piloting skill or strength. Reasonably probable failures must have only minor effects.

(1) Any failure, excluding a jam as listed in paragraph (3).

(2) Any combination of failures not shown to be extremely improbable, excluding a jam as listed in paragraph (3).

(3) Any jam in a control position encountered during any flight condition, including transitions, within the approved operating limitations, unless the jam is shown to be extremely improbable, or can be alleviated.

Issued in Kansas City, Missouri, on January 12, 2022.

Patrick Mullen,

Manager, Technical Innovation Policy Branch, Policy and Innovation Division, Aircraft Certification Service.

[FR Doc. 2022–00862 Filed 1–18–22; 8:45 am]

BILLING CODE 4910–13–P

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2022–0004; Project Identifier AD–2022–00036–T; Amendment 39–21913; AD 2022–02–16]

RIN 2120–AA64

Airworthiness Directives; The Boeing Company Airplanes

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule; request for comments.

SUMMARY: The FAA is adopting a new airworthiness directive (AD) for all The Boeing Company Model 787–8, 787–9, and 787–10 airplanes. 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 recent determination that, during landings, as a result of this interference, certain airplane systems may not properly transition from AIR to GROUND mode when landing on certain runways, resulting in degraded deceleration performance and longer landing distance than normal due to the effect on thrust reverser deployment, speedbrake deployment, and increased idle thrust. This AD requires revising the limitations and operating procedures sections of the existing airplane flight manual (AFM) to incorporate limitations prohibiting certain landings and the use of certain minimum equipment list (MEL) items, and to incorporate operating procedures for calculating landing distances, when in the presence of 5G C-Band interference as identified by Notices to Air Missions (NOTAMs). The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective January 19, 2022.

The FAA must receive comments on this AD by March 7, 2022.

ADDRESSES: You may send comments, using the procedures found in 14 CFR 11.43 and 11.45, by any of the following methods:

- *Federal eRulemaking Portal:* Go to *https://www.regulations.gov.* Follow the instructions for submitting comments.
- *Fax:* 202–493–2251.
- *Mail:* U.S. Department of Transportation, Docket Operations, M–30, West Building Ground Floor, Room W12–140, 1200 New Jersey Avenue SE, Washington, DC 20590.
- *Hand Delivery:* Deliver to Mail address above between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays.

Examining the AD Docket

You may examine the AD docket at *https://www.regulations.gov* by searching for and locating Docket No. FAA–2022–0004; 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 street address for the Docket Operations is listed above.

FOR FURTHER INFORMATION CONTACT: Dean Thompson, Senior Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206–231–3165; email: *dean.r.thompson@faa.gov.*

SUPPLEMENTARY INFORMATION:

Background

In March 2020, the United States Federal Communications Commission (FCC) adopted final rules authorizing flexible use of the 3.7–3.98 GHz band for next generation services, including 5G and other advanced spectrum-based services.[1] Pursuant to these rules, C-Band wireless broadband deployment is permitted to occur in phases with the opportunity for operations in the lower 0.1 GHz of the band (3.7–3.8 GHz) in certain markets as early as January 19, 2022. This AD refers to ''5G C-Band'' interference, but wireless broadband technologies, other than 5G, may use the same frequency band.[2] These other uses of the same frequency band are within the scope of this AD since they would introduce the same risk of radio altimeter interference as 5G C-Band.

The radio altimeter is an important aircraft instrument, and its intended function is to provide direct height-above-terrain/water information to a variety of aircraft systems. Commercial aviation radio altimeters operate in the 4.2–4.4 GHz band, which is separated by 0.22 GHz from the C-Band telecommunication systems in the 3.7–3.98 GHz band. The radio altimeter is more precise than a barometric altimeter and for that reason is used where aircraft height over the ground needs to be precisely measured, such as autoland, manual landings, or other low altitude operations. The receiver on the radio altimeter is typically highly accurate, however it may deliver erroneous results in the presence of out-of-band radio frequency emissions from other frequency bands. The radio altimeter must detect faint signals reflected off the ground to measure altitude, in a manner similar to radar. Out-of-band signals could significantly degrade radio altimeter functions during critical phases of flight, if the altimeter is unable to sufficiently reject those signals.

[1] The FCC's rules did not make C-Band wireless broadband available in Alaska, Hawaii, and the U.S. Territories.

[2] The regulatory text of the AD uses the term ''5G C-Band'' which, for purposes of this AD, has the same meaning as ''5G'', ''C-Band'' and ''3.7–3.98 GHz.''

The FAA issued AD 2021–23–12, Amendment 39–21810 (86 FR 69984, December 9, 2021) (AD 2021–23–12) to address the effect of 5G C-Band interference on all transport and commuter category airplanes equipped with a radio (also known as radar) altimeter. AD 2021–23–12 requires revising the limitations section of the existing AFM to incorporate limitations prohibiting certain operations, which require radio altimeter data to land in low visibility conditions, when in the presence of 5G C-Band interference as identified by NOTAM. The FAA issued AD 2021–23–12 because radio altimeter anomalies that are undetected by the automation or pilot, particularly close to the ground (*e.g.,* landing flare), could lead to loss of continued safe flight and landing.

Since the FAA issued AD 2021–23–12, Boeing issued Boeing Multi Operator Message MOM–MOM–22–0001–01B, dated January 3, 2022, and Boeing Flight Crew Operations Manual Bulletin TBC–119, ''Radio Altimeter Anomalies due to 5G C-Band Wireless Broadband Interference in the United States,'' dated January 5, 2022.

Based on Boeing's data, the FAA identified an additional hazard presented by 5G C-Band interference on The Boeing Company Model 787–8, 787–9, and 787–10 airplanes. The FAA determined anomalies due to 5G C-Band interference may affect multiple other airplane systems using radio altimeter data, regardless of the approach type or weather. These anomalies may not be evident until very low altitudes. Impacted systems include, but are not limited to: Autopilot flight director system; autothrottle system; engines; thrust reversers; flight controls; flight instruments; traffic alert and collision avoidance system (TCAS); ground proximity warning system (GPWS); and configuration warnings.

Many of an airplane's systems and functions are divided into two modes: Those that operate when an airplane is flying (AIR), and those that operate when an airplane is on the ground (GROUND). During landing, this interference could prevent an airplane's systems and functions from properly transitioning from AIR to GROUND mode, which may have multiple effects, including:

- Autothrottle may remain in speed (SPD) mode and may increase thrust to maintain speed during flare instead of reducing the thrust to IDLE at 25 feet radio altitude (RA) or may reduce thrust to IDLE prematurely.
- Thrust reversers may not deploy above 65 knots during the landing roll.
- Engines may remain at approach idle after touchdown until 65 knots during the landing roll.
- Auto Speedbrake may be inoperative during the landing roll.
- SPEEDBRAKE EXTENDED Caution message may not be available during the landing roll.
- SPEEDBRAKE time critical visual and aural warnings may not be available during the landing roll.
- Spoilers may be limited to their maximum in-flight position during manual deployment after touchdown until 65 knots during the landing roll.
- Other simultaneous flight deck effects associated with the 5G C-Band interference could increase pilot workload.

As a result of these effects, lack of thrust reverser and speedbrake deployment and increased idle thrust may occur; and brakes may be the only means to slow the airplane. Therefore, the presence of 5G C-Band interference can result in degraded deceleration performance, increased landing distance, and runway excursion. This is an unsafe condition.

The severity of the hazard created by a lack of thrust reverser and speedbrakes, and by increased idle thrust, increases when the runway is contaminated with frozen or liquid precipitation. The FAA categorizes runway surface conditions with codes from 6 through 0, with 6 being a dry runway and therefore no detrimental effect on braking, and a code of 0 denoting surface conditions, such as wet ice, in which braking may not be effective.

This AD mandates procedures for operators to account for this longer landing distance, for all runway conditions, in the presence of 5G C-Band interference as identified by NOTAM. It prohibits operators from dispatching or releasing airplanes to affected airports when certain braking and anti-skid functions on the airplane are inoperable. It also prohibits operators from dispatching or releasing airplanes to, or landing on, runways with condition codes 1 and 0.

The FAA is issuing this AD to address the unsafe condition on these products.

FAA's Determination

The FAA is issuing this AD because the agency has determined the unsafe condition described previously is likely to exist or develop in other products of the same type design.

AD Requirements

This AD requires revising the limitations and operating procedures sections of the existing AFM to incorporate limitations prohibiting certain landings and the use of certain MEL items, and to incorporate operating procedures for calculating required landing field lengths, when in the presence of 5G C-Band interference as identified by NOTAMs.

Compliance With AFM Revisions

Section 91.9 prohibits any person from operating a civil aircraft without complying with the operating limitations specified in the AFM. FAA regulations also require operators to furnish pilots with any changes to the AFM (14 CFR 121.137) and pilots in command to be familiar with the AFM (14 CFR 91.505).

Interim Action

The FAA considers this AD to be an interim action. If final action is later identified, the FAA might consider further rulemaking.

Justification for Immediate Adoption and Determination of the Effective Date

Section 553(b)(3)(B) of the Administrative Procedure Act (APA) (5 U.S.C. 551 *et seq.*) authorizes agencies to dispense with notice and comment procedures for rules when the agency, for ''good cause,'' finds that those procedures are ''impracticable, unnecessary, or contrary to the public interest.'' Under this section, an agency, upon finding good cause, may issue a final rule without providing notice and seeking comment prior to issuance. Further, section 553(d) of the APA authorizes agencies to make rules effective in less than thirty days, upon a finding of good cause.

An unsafe condition exists that requires the immediate adoption of this AD without providing an opportunity for public comments prior to adoption. The FAA has found that the risk to the flying public justifies forgoing notice and comment prior to adoption of this rule because, during landings, as a result of 5G C-Band interference, certain airplane systems may not properly transition from AIR to GROUND mode when landing on certain runways, resulting in degraded deceleration performance and a longer landing distance than normal due to the effect on thrust reverser deployment, speedbrake deployment, and increased idle thrust. This could lead to a runway excursion. The urgency is based on C-Band wireless broadband deployment, which is expected to occur in phases with operations beginning as soon as January 19, 2022. Accordingly, notice and opportunity for prior public comment are impracticable and contrary

to the public interest pursuant to 5 U.S.C. 553(b)(3)(B).

In addition, the FAA finds that good cause exists pursuant to 5 U.S.C. 553(d) for making this amendment effective in less than 30 days, for the same reasons the FAA found good cause to forgo notice and comment.

Comments Invited

The FAA invites you to send any written data, views, or arguments about this final rule. Send your comments to an address listed under **ADDRESSES**. Include Docket No. FAA–2022–0004 and Project Identifier AD–2022–00036–T at the beginning of your comments. The most helpful comments reference a specific portion of the final rule, explain the reason for any recommended change, and include supporting data. The FAA will consider all comments received by the closing date and may amend this final rule because of those comments.

Except for Confidential Business Information (CBI) as described in the following paragraph, and other information as described in 14 CFR 11.35, the FAA will post all comments received, without change, to *https://www.regulations.gov,* including any personal information you provide. The agency will also post a report summarizing each substantive verbal contact received about this final rule.

Confidential Business Information

CBI is commercial or financial information that is both customarily and actually treated as private by its owner. Under the Freedom of Information Act (FOIA) (5 U.S.C. 552), CBI is exempt from public disclosure. If your comments responsive to this AD contain commercial or financial information that is customarily treated as private, that you actually treat as private, and that is relevant or responsive to this AD, it is important that you clearly designate the submitted comments as CBI. Please mark each page of your submission containing CBI as ''PROPIN.'' The FAA will treat such marked submissions as confidential under the FOIA, and they will not be placed in the public docket of this AD. Submissions containing CBI should be sent to Dean Thompson, Senior Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206–231–3165; email: *dean.r.thompson@faa.gov.* Any commentary that the FAA receives that is not specifically designated as CBI will be placed in the public docket for this rulemaking.

Regulatory Flexibility Act

The requirements of the Regulatory Flexibility Act (RFA) do not apply when an agency finds good cause pursuant to 5 U.S.C. 553 to adopt a rule without prior notice and comment. Because the FAA has determined that it has good cause to adopt this rule without notice and comment, RFA analysis is not required.

Costs of Compliance

The FAA estimates that this AD affects 137 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
AFM revision	1 work-hour × $85 per hour = $85	$0	$85	$11,645

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, and

(2) Will not affect intrastate aviation in Alaska.

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 adding the following new airworthiness directive:

2022–02–16 The Boeing Company: Amendment 39–21913; Docket No. FAA–2022–0004; Project Identifier AD–2022–00036–T.

(a) Effective Date

This airworthiness directive (AD) is effective January 19, 2022.

(b) Affected ADs

None.

(c) Applicability

This AD applies to The Boeing Company Model 787–8, 787–9, and 787–10 airplanes, certificated in any category.

(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 landings, as a result of this interference, certain airplane systems may not properly transition from

AIR to GROUND mode when landing on certain runways, resulting in a longer landing distance than normal due to the effect on thrust reverser deployment, speedbrake deployment, and increased idle thrust. The FAA is issuing this AD to address degraded deceleration performance and longer landing distance, which could lead to a runway excursion.

(f) Compliance

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

(g) Definitions

Runway condition codes are defined in figure 1 to paragraph (g) of this AD.

Figure 1 to paragraph (g) – *Runway Condition Codes*

Runway Condition Code	Runway Condition Description	Reported Braking Action
6	Dry	Dry
5	Wet (smooth, grooved, or porous friction course (PFC)) or frost 3 mm (0.12 inches) or less of: water, slush, dry snow, or wet snow	Good
4	Compacted snow at or below -15°C (5°F) outside air temperature (OAT)	Good to medium
3	Wet (slippery), dry snow, or wet snow (any depth) over compacted snow Greater than 3 mm (0.12 inches) of: dry snow or wet snow Compacted snow at OAT warmer than -15°C (5°F)	Medium
2	Greater than 3 mm (0.12 inches) of: water or slush	Medium to poor
1	Ice	Poor
0	Wet ice, water on top of compacted snow, dry snow, or wet snow over ice	Nil

(h) Airplane Flight Manual (AFM) Revision

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

Figure 2 to paragraph (h)(1) – *AFM Limitations Revisions*

(Required by AD 2022-02-16)

Radio Altimeter 5G C-Band Interference, Landing Distance

The following limitations are required if dispatching or releasing to or landing on runways in U.S. airspace in the presence of 5G C-Band wireless broadband interference as identified by NOTAM (NOTAMs will be issued to state the specific airports or approaches where the radio altimeter is unreliable due to the presence of 5G C-Band wireless broadband interference).

Minimum Equipment List (MEL)

Dispatch or release with any of the following MEL items is prohibited:

- 32-42-02 – Antiskid Control Systems
- 32-45-01 – Wheel Brake Systems
- 32-45-01-01 – Wheel Brake Systems, Electric Brake Actuator Systems

Landing Operations on Runways with Condition Code 1 or 0

Dispatch or releasing to or landing on runways with a runway condition code of 1 or 0 is prohibited.

Landing Distance Calculations for Runway Condition Codes 6 through 2

Operators must follow the 5G C-Band Interference Landing Distance Procedure contained in the Operating Procedures Section of this AFM.

(2) Within 2 days after the effective date of this AD: Revise the Operating Procedures Section of the existing AFM to include the information specified in figure 3 to paragraph (h)(2) of this AD. This may be done by inserting a copy of figure 3 to paragraph (h)(2) of this AD into the existing AFM.

Figure 3 to paragraph (h)(2) – *AFM Operating Procedures Revision*

(Required by AD 2022-02-16)

5G C-Band Interference Landing Distance

When dispatching or releasing to or landing on runways with a runway condition code of 6 through 2:

- Dispatch or Release:
  - No additional landing distance calculations are required for runway condition codes 6 and 5.
  - For runway condition codes 4 through 2, use Table 1 through 6, as applicable, to determine the unfactored landing distance, applying all adjustments. Multiply the resulting unfactored landing distance by 1.15 to obtain the minimum required landing distance.

Table 1:

787-10 / TRENT 1000

	Landing Distances and Adjustments (Feet)								
	Reference Distance	Weight Adjustment	Altitude Adjustment	Wind Adjustment per 10 Knots	Slope Adjustment per 1%	Temperature Adjustment per 10°C	Approach Speed Adjustment	Reverse Thrust Adjustment	
Runway Condition Code	440,000 LB Landing Weight	Per 10,000 LB Above / Below 440,000 LB	Per 1,000 ft	Head / Tail Wind	Down / Up Hill	Above / Below ISA	per 5 KTS above VREF	One Reverser	No Reverser
6	5640	110 / -90	160	-240 / 790	90 / -80	150 / -150	230	0	0
5	7680	170 / -150	330	-430 / 1570	250 / -210	280 / -270	390	0	0
4	8450	170 / -150	340	-450 / 1610	330 / -270	280 / -280	390	0	0
3	9180	170 / -150	340	-470 / 1680	440 / -340	290 / -280	390	0	0
2	12180	280 / -250	560	-770 / 2850	970 / -690	480 / -460	540	0	0

Table 2:

787-10 / GEnx

	Landing Distances and Adjustments (Feet)								
	Reference Distance	Weight Adjustment	Altitude Adjustment	Wind Adjustment per 10 Knots	Slope Adjustment per 1%	Temperature Adjustment per 10°C	Approach Speed Adjustment	Reverse Thrust Adjustment	
Runway Condition Code	440,000 LB Landing Weight	Per 10,000 LB Above / Below 440,000 LB	Per 1,000 ft	Head / Tail Wind	Down / Up Hill	Above / Below ISA	per 5 KTS above VREF	One Reverser	No Reverser
6	5670	110 / -90	170	-240 / 800	90 / -80	150 / -150	230	0	0
5	7760	160 / -150	350	-440 / 1590	260 / -220	280 / -280	400	0	0
4	8550	160 / -150	350	-450 / 1640	340 / -280	290 / -280	400	0	0
3	9300	170 / -150	360	-480 / 1710	450 / -350	290 / -290	400	0	0
2	12400	280 / -250	610	-790 / 2930	1010 / -710	480 / -470	540	0	0

Table 3:

787-9 / TRENT 1000

	Landing Distances and Adjustments (Feet)								
	Reference Distance	Weight Adjustment	Altitude Adjustment	Wind Adjustment per 10 Knots	Slope Adjustment per 1%	Temperature Adjustment per 10°C	Approach Speed Adjustment	Reverse Thrust Adjustment	
Runway Condition Code	420,000 LB Landing Weight	Per 10,000 LB Above / Below 420,000 LB	Per 1,000 ft	Head / Tail Wind	Down / Up Hill	Above / Below ISA	per 5 KTS above VREF	One Reverser	No Reverser
6	5470	100 / -90	160	-240 / 780	80 / -80	150 / -150	230	0	0
5	7500	160 / -150	330	-430 / 1550	250 / -210	280 / -270	390	0	0
4	8280	160 / -150	330	-440 / 1600	330 / -270	280 / -270	390	0	0
3	9010	170 / -160	340	-470 / 1670	430 / -340	290 / -280	390	0	0
2	11740	270 / -260	540	-750 / 2780	910 / -650	460 / -440	530	0	0

Table 4:

787-9 / GEnx

	Landing Distances and Adjustments (Feet)								
	Reference Distance	Weight Adjustment	Altitude Adjustment	Wind Adjustment per 10 Knots	Slope Adjustment per 1%	Temperature Adjustment per 10°C	Approach Speed Adjustment	Reverse Thrust Adjustment	
Runway Condition Code	420,000 LB Landing Weight	Per 10,000 LB Above / Below 420,000 LB	Per 1,000 ft	Head / Tail Wind	Down / Up Hill	Above / Below ISA	per 5 KTS above VREF	One Reverser	No Reverser
6	5500	100 / -90	170	-240 / 790	90 / -80	150 / -150	230	0	0
5	7580	160 / -150	340	-430 / 1580	250 / -210	280 / -280	390	0	0
4	8380	160 / -150	350	-450 / 1630	340 / -280	280 / -280	390	0	0
3	9130	170 / -150	360	-480 / 1700	450 / -350	290 / -280	390	0	0
2	11960	270 / -260	590	-770 / 2860	940 / -670	460 / -460	530	0	0

Table 5:

787-8 / TRENT 1000

	Landing Distances and Adjustments (Feet)								
	Reference Distance	Weight Adjustment	Altitude Adjustment	Wind Adjustment per 10 Knots	Slope Adjustment per 1%	Temperature Adjustment per 10°C	Approach Speed Adjustment	Reverse Thrust Adjustment	
Runway Condition Code	380,000 LB Landing Weight	Per 10,000 LB Above / Below 380,000 LB	Per 1,000 ft	Head / Tail Wind	Down / Up Hill	Above / Below ISA	per 5 KTS above VREF	One Reverser	No Reverser
6	5050	110 / -80	150	-230 / 750	80 / -70	130 / -130	220	0	0
5	6990	180 / -140	310	-410 / 1510	230 / -190	260 / -250	370	0	0
4	7410	140 / -130	250	-370 / 1270	280 / -230	210 / -210	310	0	0
3	8370	170 / -150	290	-440 / 1500	410 / -320	250 / -250	340	0	0
2	10800	290 / -240	520	-720 / 2680	820 / -590	430 / -420	510	0	0

Table 6:

787-8 / GEnx

	Landing Distances and Adjustments (Feet)								
	Reference Distance	Weight Adjustment	Altitude Adjustment	Wind Adjustment per 10 Knots	Slope Adjustment per 1%	Temperature Adjustment per 10°C	Approach Speed Adjustment	Reverse Thrust Adjustment	
Runway Condition Code	380,000 LB Landing Weight	Per 10,000 LB Above / Below 380,000 LB	Per 1,000 ft	Head / Tail Wind	Down / Up Hill	Above / Below ISA	per 5 KTS above VREF	One Reverser	No Reverser
6	5100	110 / -80	160	-230 / 760	80 / -70	130 / -140	220	0	0
5	7100	180 / -140	330	-420 / 1550	240 / -200	260 / -250	380	0	0
4	7530	140 / -120	260	-380 / 1290	290 / -240	210 / -220	310	0	0
3	8530	160 / -140	300	-450 / 1530	430 / -330	250 / -250	340	0	0
2	11090	290 / -240	560	-740 / 2790	880 / -620	430 / -430	510	0	0

Reference distance is based on Max Manual Braking, sea level, standard day, no wind or slope, and no reverse thrust.
Reference distance includes a distance from threshold to touchdown associated with flare time of 7 seconds.
Distances are based on HYD PRESS L+R failure distances which conservatively approximate the effects of 5G interference.
Actual (unfactored) distances are shown.
Note: per procedure, Max Manual Braking is not required for normal operations and is to be used only in the event that significant 5G interference effects occur.

- En route:
  - Plan to use Flaps 30 and V_{REF30} (with appropriate wind additives) for landing.
  - For runway condition codes 6 to 2, compute time of arrival (en route) landing distance using Table 1 through 6, as applicable, applying all adjustments. Multiply the resulting unfactored landing distance by 1.15 to obtain the minimum required landing distance at the destination. This approximates a minimum required landing distance resulting from 5G C-Band interference.
  - Determine desired AUTOBRAKE setting by using the normal configuration landing distance information from an approved source. Maximum manual braking may not be required.

- During approach and landing:
  - Monitor radio altimeter for anomalies.
  - Normal use of autothrottles is allowed. Monitor performance of autopilot and autothrottle. If the autopilot or autothrottle is not performing as expected, disconnect both the autopilot and autothrottle and apply manual inputs to ensure proper control of flight path.
  - If the autothrottle does not reduce the thrust to IDLE at 25 feet, manually reduce the thrust to idle, hold the thrust levers in the idle position and disconnect the autothrottle to prevent autothrottle from advancing the thrust levers after touchdown.
    Caution: If the autothrottle advances the thrust levers after landing, the speedbrakes will stow and the autobrake will disarm. It will not be possible to raise the reverse thrust levers to deploy the thrust reversers until the thrust levers are at idle.
  - Manual deployment of the speedbrakes may be required.
  - If the thrust reversers do not deploy, immediately ensure the speedbrakes are extended, apply manual braking and modulate as required for the existing runway conditions.
    Note: In some conditions, maximum manual braking may be required throughout the entire landing roll.

Note 1 to paragraph (h): Guidance for accomplishing the actions required by this AD can be found in Boeing Multi Operator Message MOM–MOM–22–0001–01B, dated January 3, 2022, and Boeing Flight Crew Operations Manual Bulletin TBC–119, ''Radio Altimeter Anomalies due to 5G C-Band Wireless Broadband Interference in the United States,'' dated January 5, 2022.

(i) Alternative Methods of Compliance (AMOCs)

(1) The Manager, Seattle ACO 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 certification office, send it to the attention of the person identified in paragraph (j)(1) of this AD. Information may be emailed to: *9-ANM-Seattle-ACO-AMOC-Requests@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 provisions of this AD.

(j) Related Information

(1) For more information about this AD, contact Dean Thompson, Senior Aerospace Engineer, Systems and Equipment Section, FAA, Seattle ACO Branch, 2200 South 216th St., Des Moines, WA 98198; phone and fax: 206–231–3165; email: *dean.r.thompson@faa.gov*.

(2) For service information identified in this AD that is not incorporated by reference, contact Boeing Commercial Airplanes, Attention: Contractual & Data Services (C&DS), 2600 Westminster Blvd., MC 110–SK57, Seal Beach, CA 90740–5600; telephone 562–797–1717; internet *https://www.myboeingfleet.com*.

(k) Material Incorporated by Reference

None.

Issued on January 13, 2022.

Lance T. Gant,

Director, Compliance & Airworthiness Division, Aircraft Certification Service.

[FR Doc. 2022–01030 Filed 1–14–22; 2:00 pm]

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DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration

14 CFR Part 39

[Docket No. FAA–2021–0793; Project Identifier MCAI–2021–00372–E; Amendment 39–21885; AD 2021–26–26]

RIN 2120–AA64

Airworthiness Directives; Safran Helicopter Engines, S.A. (Type Certificate Previously Held by Turbomeca S.A.) Turboshaft Engines

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Final rule.

SUMMARY: The FAA is superseding Airworthiness Directive (AD) 2005–12–08 for certain Safran Helicopter Engines, S.A. (Safran Helicopter Engines) Arrius 2B1, 2B1A, 2B1A–1, and 2B2 model turboshaft engines. AD 2005–12–08 required replacing the software in the engine electronic control unit (EECU). This AD was prompted by a report of simultaneous loss of automatic control on both engines installed on an Airbus Helicopters Deutschland (formerly Eurocopter Deutschland) EC135 helicopter during flight. This AD requires replacement of the EECU or upgrade of the EECU software for engines with a certain EECU part number (P/N) installed. This AD also prohibits installation of an affected EECU onto any engine. The FAA is issuing this AD to address the unsafe condition on these products.

DATES: This AD is effective February 23, 2022.

The Director of the Federal Register approved the incorporation by reference of certain publications listed in this AD as of February 23, 2022.

The Director of the Federal Register approved the incorporation by reference of certain other publications listed in this AD as of June 29, 2005 (70 FR 34334, June 14, 2005).

ADDRESSES: For service information identified in this final rule, contact Safran Helicopter Engines, S.A., Avenue du 1er Mai, 40220 Tarnos, France; phone: +33 (0) 5 59 74 45 00. You may view this service information at the Airworthiness Products Section,