



Notification of a Proposal to issue an Airworthiness Directive

PAD No.: 25-041

Issued: 04 March 2025

Note: This Proposed Airworthiness Directive (PAD) is issued by EASA, acting in accordance with Regulation (EU) 2018/1139 on behalf of the European Union, its Member States and of the European third countries that participate in the activities of EASA under Article 129 of that Regulation.

In accordance with the EASA Continuing Airworthiness Procedures, the Executive Director is proposing the issuance of an EASA Airworthiness Directive (AD), applicable to the aeronautical product(s) identified below.

All interested persons may send their comments, referencing the PAD Number above, to the e-mail address specified in the 'Remarks' section, prior to the consultation date indicated.

Design Approval Holder's Name:

ROCKWELL COLLINS

Type/Model designation(s):

GPS-4000S, GLU-2100, GLUS-2100 and GLUS-2100A SBAS receivers

Effective Date: [TBD - standard: 14 days after AD issue date]

ETSO Authorization: EASA.IM.210.736 (GPS-4000S)

Foreign AD: Not applicable

Supersedure: None

ATA 34 – Navigation - Satellite Based Augmentation Systems / Global Positioning System Receiver – Replacement

Manufacturer(s):

Rockwell Collins

Applicability:

Rockwell Collins GPS-4000S, GLU-2100, GLUS-2100 and GLUS-2100A receivers, having a part number (P/N) as listed in Appendix 1 of this AD, all serial numbers.

These receivers may be installed on, but not limited to, aeroplanes listed in Appendix 2 of this AD.

Definitions:

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

Affected part: Any Rockwell Collins (Collins) Satellite Based Augmentation Systems (SBAS) receiver GPS-4000S, GLU-2100, GLUS-2100 and GLUS-2100A, having hardware and Operational Program Software (OPS) P/N as identified in Appendix 1 of this AD.

Affected aeroplane: An aeroplane having an affected part installed.



Applicable aeroplane modification: Any aeroplane modification instruction, approved under the EASA system, to replace an affected part with a serviceable part, as applicable to aeroplane type/model; these instructions may be issued by the aeroplane Type Certificate Holder, or by other design organizations as Supplemental Type Certificates or other modification instructions.

EGNOS SoL service area: European Geostationary Navigation Overlay Service (EGNOS) Safety of Life (SoL) service area, as documented in EGNOS [SoL Service Definition Document \(SDD\)](#) (See Note 1 of this AD).

Note 1: The 'Safety of Life' Service is the EGNOS service intended to support civil aviation operations over European airspace. More information on EGNOS services can be found on this [page](#).

Serviceable part: Any SBAS receiver, which is not an affected part; Collins SBAS receivers GPS-4000S, GLU-2100, GLUS-2100 and GLUS-2100A with hardware and OPS software P/N as identified in Appendix 1 of this AD, are known to be Serviceable parts.

SIL/SB: The Service Information Letter (SIL) or Service Bulletin (SB) identified in Appendix 1 of this AD.

Reason:

Rockwell Collins (doing business as Collins Aerospace) identified a non-compliance in the affected parts with respect to Radio Technical Commission for Aeronautics (RTCA) DO-229 standard. DO-229 is the minimum operational performance standard that is used to obtain the relevant Technical Standard Order (TSO) approval. This non-compliance leads to a concern of incorrect processing of the integrity information message (Message Type 6 (MT6)) sent by the SBAS system for a particular value of the fast correction issue of data (IODF) parameter, i.e. IODF=3. In such conditions, the Global Navigation Satellite System (GNSS) receivers may be unable to notify the flight crew when the integrity of the SBAS qualified GNSS position may be compromised.

An EGNOS ground system update (v242B – see Note 2 of this AD) that was performed in November 2023 exposed this issue in the affected Collins SBAS receivers. The issue is relevant to the use of EGNOS and potentially of other SBAS systems, where a more extensive use of this parameter value (i.e. IODF = 3) in the MT6 message is applied to improve the integrity of the service.

Note 2: Ref. EGNOS Service Notice Number 30 Version 2.0 ([EGNOS Service Notice 30](#)).

EASA issued Safety Information Bulletin (SIB) 2024-03, later revised, to recommend approval holders of designs having an affected receiver installed to assess the impact on the safety operations of the aeroplane.

In parallel, EASA conducted its own assessment with Collins, the European Union Agency for the Space Programme (EUSPA, which is in charge of EGNOS exploitation and service provision), the European Satellite Services Provider SAS (ESSP SAS, the EGNOS Air Navigation Service Provider) and the European Space Agency (ESA, which supports EGNOS V2 System evolution as Design Authority).

The investigations have shown that the affected SBAS receivers are not meeting the applicable minimum operational performance standards. This invalidates the conditions under which the



satellite-based augmentation systems, and particularly EGNOS, have been approved for Safety of Life operations (see Note 1 of this AD).

Simulations based on a limited set of GPS and EGNOS data from November 2023 to December 2024 have been performed, but, due to the limited amount of data, are insufficient to show that the applicable requirements, i.e. ICAO Annex 10 Volume 1 section 3.7 and Attachment D, are met.

This means that the GPS and EGNOS signals in space may, in certain occasion, have characteristics that are not present in the simulation set and that may have adverse impact on the affected SBAS receiver performance, especially for LPV-200 operations. The probability of such an event remains low enough, so that an immediate prohibition of such operations is not deemed necessary. However, the continued operation in the long term of the affected SBAS receivers on many aeroplanes for LPV-200 approaches and in the context of upcoming updates of EGNOS ground system, has been determined to be a potential unsafe condition.

To address this potential unsafe condition, this airworthiness directive requires the replacement of the affected parts by serviceable parts on aeroplanes having airworthiness approval for LPV-200 operations.

Required Action(s) and Compliance Time(s):

Required as indicated by this AD, unless the action(s) required by this AD have been already accomplished:

Replacement:

- (1) For affected aeroplanes having airworthiness approval for LPV-200 operations: Within 2 years after the effective date of this AD, or before next flight after having obtained the airworthiness approval for LPV-200 operations, whichever occurs later, replace each affected part with a serviceable part in accordance with the instructions of the applicable aeroplane modification.

Part(s) installation:

- (2) Do not install an affected part on any aeroplane having airworthiness approval for LPV-200 operations, as required by paragraph (2.1) or (2.2) of this AD, as applicable:
 - (2.1) For affected aeroplanes: After modification of the aeroplane as required by paragraph (1) of this AD.
 - (2.2) For non-affected aeroplanes: From the effective date of this AD.

Ref. Publications:

Collins Service Bulletin (SB) and Service Information Letters (SIL), as listed in Appendix 1 of this AD.

The use of later approved revisions of the above-mentioned document is acceptable for compliance with the requirements of this AD.



Remarks:

1. This Proposed AD will be closed for consultation on 01 April 2025.
2. Enquiries regarding this PAD should be referred to the EASA Safety Information Section, Certification Directorate. E-mail: ADs@easa.europa.eu.
3. Information about any failures, malfunctions, defects or other occurrences, which may be similar to the unsafe condition addressed by this PAD, and which may occur, or have occurred on a product, part or appliance not affected by this PAD, can be reported to the [EU aviation safety reporting system](#). This may include reporting on the same or similar components, other than those covered by the design to which this PAD applies, if the same unsafe condition can exist or may develop on an aircraft with those components installed. Such components may be installed under an FAA Parts Manufacturer Approval (PMA), Supplemental Type Certificate (STC) or other modification.
4. For any question concerning the technical content of the requirements in this PAD, please contact: local Collins Aerospace Customer Support Engineer, or Avionics Support Center. Email: AvionicsSupport@Collins.com.



Appendix 1: P/N of affected and serviceable parts

Equipment Type	Affected parts		Serviceable parts		
	Hardware (HW) P/N	With OPS Software (SW) P/N (see Note 3 of this AD)	HW P/N	With OPS SW P/N	SIL/SB
GPS-4000S	822-2189-100	Not applicable	822-2189-102	Not applicable	[1]
	822-2189-101		822-2189-102		Not applicable
	822-2189-190		Not available		
GLU-2100 (HW) GLUS-2100 (SW)	822-2532-100	COL4E-0087-0010 COL4F-0087-0011	822-2532-100	COL4B-0087-0712 (see note 4 of this AD)	[2]
GLU-2100 (HW) GLUS-2100A (SW)	822-2532-300	RCU4F0009000002 RCU4B0009000600	822-2532-300	RCU490009000004 RCU4A0009000601	[3]

[1] Collins Aerospace SB GPS-4X00()-34-515 (523-0836242) Revision 2 or later

[2] Collins Aerospace SIL GLU-2100-24-2 (523-0836243) Revision 1 or later

[3] Collins Aerospace SIL GLU-2100-24-3 (523-0836244) Initial Release or later

Note 3: For units with loadable software whose P/N can evolve independently of the HW P/N. In that case, the unit is affected only when the listed SW P/N is loaded in the HW P/N.

Note 4: Only the OPS SW is listed here as it corrects the issue described in this AD. The OPS SW may however technically require the concurrent update of Field Programmable Array (FPGA) and Option Selection Software (OSS) as described in the applicable SIL.



Appendix 2: Potentially affected aircraft

The affected parts listed in Appendix 1 of this AD may be installed on, but not limited to, the following aeroplanes:

Aircraft type	SBAS receiver model
Airbus Canada LP	
BD-500 (A220 series)	GPS-4000S
Airbus Defence and Space S.A.	
CN-235/C-295 (C-295)	GPS-4000S
Airbus S.A.S.	
A318/A319/A320/A321	GLU-2100
A330	GLU-2100
A350	GLU-2100
A380	GLU-2100
Bombardier Inc	
BD-100-1A10	GPS-4000S
CL-600 (All models)	GPS-4000S
BD-700 (All models)	GPS-4000S
DASSAULT AVIATION	
Fan Jet Falcon/MF 20/MF 200 (All models)	GPS-4000S
MF 50/MF 900/Falcon 900EX (Mystère Falcon 50 (MF50))	GPS-4000S
Falcon 2000 (All models)	GPS-4000S
EMBRAER S.A.	
EMB-550 (EMB-545/EMB-550)	GPS-4000S
GULFSTREAM AEROSPACE LP	
Gulfstream G150	GPS-4000S
Gulfstream G280	GPS-4000S
GALAXY G200	GPS-4000S
MHI RJ AVIATION ULC.	
CL-600 (Regional Jets RJ) (All models)	GPS-4000S
Piaggio Aviation S.p.A	
P.180	GPS-4000S
TEXTRON AVIATION INC.	
Beechcraft 65, 70, 90 (C90)	GPS-4000S
Beechcraft A100, 200, 300,1900 (B200)	GPS-4000S
Cessna 500/550/S550/560/560XL	GPS-4000S
Cessna 525 Series (Citation) (525B/525C)	GPS-4000S

