



U.S. Department
of Transportation
Federal Aviation
Administration

Advisory Circular

Subject: Use of Electronic Flight Bags

Date: 2/23/24

AC No: 91-78A

Initiated by: AFS-800

Change:

- 1 PURPOSE OF THIS ADVISORY CIRCULAR (AC).** This AC provides operational guidance to aircraft owners, operators, and pilots operating aircraft under Title 14 of the Code of Federal Regulations (14 CFR) part [91](#) who want to replace required paper information and/or utilize hosted database and software applications as part of Electronic Flight Bag (EFB) functionality. This AC is not mandatory and does not constitute a regulation. This AC describes an acceptable means, but not the only means, to replace required paper information and/or utilize hosted database and software applications as part of EFB functionality. However, if you use the means described in the AC, you must follow it in all important respects. The contents of this document do not have the force and effect of law and are not meant to bind the public in any way, and the document is intended only to provide information to the public regarding existing requirements under the law or agency policies.
- 2 AUDIENCE.** The primary audience for this AC is all owners, operators, and pilots of aircraft conducting instrument flight rules (IFR) or visual flight rules (VFR) preflight, flight, and postflight operations conducted under part 91, unless prohibited by a specific section of 14 CFR Chapter [I](#), Subchapter [F](#).
- 3 WHERE YOU CAN FIND THIS AC.** You can find this AC on the Federal Aviation Administration's (FAA) website at https://www.faa.gov/regulations_policies/advisory_circulars and the Dynamic Regulatory System (DRS) at <https://drs.faa.gov>.
- 4 WHAT THIS AC CANCELS.** AC 91-78, Use of Class 1 or Class 2 Electronic Flight Bag (EFB), dated July 20, 2007, is canceled.
- 5 RELATED REGULATIONS.** Part 91:
 1. Section [91.21](#), Portable Electronic Devices.
 2. Section [91.103](#), Preflight Action.
 3. Section [91.503](#), Flying Equipment and Operating Information.
 4. Section [91.1033](#), Operating Information Required.
- 6 RELATED READING MATERIALS (current editions):**
 1. AC [91.21-1](#), Use of Portable Electronic Devices Aboard Aircraft.

2. AC [120-76](#), Authorization for Use of Electronic Flight Bags, Appendix C (as applicable).
3. International Civil Aviation Organization (ICAO) Annex [4](#), Aeronautical Charts, Chapter 20, Electronic Aeronautical Chart Display.
4. ICAO Annex [6](#), Operation of Aircraft, Part II, International General Aviation—Aeroplanes.
5. ICAO Circular [340](#), Guidelines for the Expanded Use of Portable Electronic Devices.
6. ICAO Document [10020](#), Manual on Electronic Flight Bags (EFBs).
7. RTCA [DO-200B](#), Standards for Processing Aeronautical Data.

Note: European Organization for Civil Aviation Equipment (EUROCAE), [ED-76A](#), Standards for Processing Aeronautical Data, is equivalent to RTCA DO-200B.

- 7 DEFINITIONS.** The following definitions are specific to this AC and may differ with those definitions contained in other published references.

7.1 Electronic Flight Bag (EFB). An electronic display system intended primarily for flight deck or cabin use. A portable or installed EFB can display a variety of traditional paper information (e.g., checklists, aeronautical charts, and pilot's operating handbooks (POH)) and/or complete algorithmic functions (e.g., deice holdover times, Weight and Balance (W&B), performance, and fuel calculations). The scope of the EFB system functionality may also include various other hosted databases and applications. Physical EFB displays may be portable, attached to a mounting device, or built into the aircraft.

7.2 Portable Electronic Device (PED). These devices are typically consumer commercial off-the-shelf (COTS) electronic devices functionally capable of communications, data processing, and/or utility (refer to the PED Aviation Rulemaking Committee (ARC) Report, September 2013). Compliance with PED regulations is further explained in AC 91.21-1. The use of any PED in an aircraft is subject to compliance with PED regulations (§ 91.21) and must be evaluated by the user or operator prior to use to ensure the PED will not interfere in any way with the operation of aircraft. The definition of a PED includes Transmitting Portable Electronic Devices (T-PED).

- 8 BACKGROUND.** Operators have long recognized the benefits of using COTS PEDs (e.g., tablets and laptops) to perform a variety of functions traditionally accomplished using paper references. EFB systems may be used in conjunction with, or to replace, the paper reference material that pilots typically carry in the flight deck. EFBs can electronically store and retrieve information required for flight operations, such as the POH and supplements, minimum equipment lists (MEL), W&B calculations, aeronautical charts, and terminal procedures. EFB systems are being developed to support functions during all phases of flight operations.

9 REMOVAL OF PAPER FROM THE FLIGHT DECK FOR OPERATIONS UNDER PART 91.

9.1 Criteria. EFBs can be used during all phases of flight operations in lieu of paper reference material when the information displayed meets the following criteria:

1. The EFB system does not replace any system or equipment (e.g., navigation, communication, or surveillance system) that is required by part 91.
2. The EFB system on board the aircraft displays only information which is functionally equivalent to the paper reference material which the information is replacing or is substituted for.
3. The interactive or precomposed information being used for navigation or performance planning is current, up to date, and valid, as verified by the pilot.
4. The operator complies with requirements of § 91.21 to ensure that the use of the EFB does not interfere with equipment or systems required for flight.

9.2 In-Flight Use of EFBs. The in-flight use of EFB systems to depict images in lieu of paper reference material is the decision of the aircraft operator and the pilot in command (PIC). Any Type A or Type B EFB application, as defined in AC 120-76, may be substituted for the paper equivalent. It requires no formal operational approval as long as the guidelines of this AC are followed.

10 SPECIFIC CONSIDERATIONS. The operator ensures the following for carriage and acceptable use of specific EFBs:

10.1 Portable EFBs. These are:

1. Not dependent upon a dedicated aircraft power source or input from navigation equipment to provide display functionality, although they may connect to aircraft power through a certificated power source;
2. Not attached to an aircraft mounting device; and
3. Not connected with or receiving data from any aircraft system.

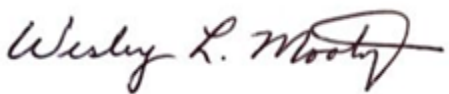
10.2 Installed EFBs. These may:

1. Receive power from the aircraft that is derived from an electrical bus source protected against short circuits with an appropriately rated circuit breaker or fuse;
2. Receive position reference from an onboard navigation system, provided such input is designed and integrated in such a manner as to not adversely affect the output of the navigation source to which they are connected; and
3. Be attached to a mounting device provided that such device is approved for installation into the aircraft (e.g., if intended for installation into a type-certificated aircraft, then such mounting device must meet the requirements of 14 CFR part [21](#), § [21.303](#)).

4. Refer to AC [20-173](#), Installation of Electronic Flight Bag Components, for complete details for installation of EFB components.

11 RECOMMENDATIONS FOR IMPLEMENTATION.

- 11.1 **Assessments.** The operator should carry out an assessment of the human-machine interface and aspects governing Crew Resource Management (CRM) when using the EFB. General considerations for the assessment include workload, integration of the EFB into the flight deck, display and lighting issues, system shutdown, and system failures. Attention must be given to the physical EFB. Some items to consider are placement issues such as stowage during takeoff or landing, and the operation of an unsecured EFB. Use of the controls and input devices may become more demanding in flight.
- 11.2 **Training.** Training should include preflight checks of the system, the use of each operational function on the EFB, the conditions (including phases of flight) under which the EFB should not be used (if applicable), and procedures for cross-checking data entry and computed information.
- 11.3 **Security Procedures.** Refer to AC 120-76, paragraph 12.5, for information on EFB security.
- 12 **REQUEST FOR INFORMATION.** For additional information please contact the General Aviation and Commercial Division at 202-267-1100.
- 13 **AC FEEDBACK FORM.** For your convenience, the AC Feedback Form is the last page of this AC. Note any deficiencies found, clarifications needed, or suggested improvements regarding the contents of this AC on the Feedback Form.



Wesley L. Mooty
Deputy Executive Director, Flight Standards Service

Advisory Circular Feedback Form

If you find an error in this AC, have recommendations for improving it, or have suggestions for new items/subjects to be added, you may let us know by contacting the General Aviation and Commercial Division at 9-AFS-800-Correspondence@faa.gov or the Flight Standards Directives Management Officer at 9-AWA-AFB-120-Directives@faa.gov.

Subject: AC 91-78A, Use of Electronic Flight Bags

Date: _____

Please check all appropriate line items:

An error (procedural or typographical) has been noted in paragraph _____
on page _____.

Recommend paragraph _____ on page _____ be changed as follows:

In a future change to this AC, please cover the following subject:
(Briefly describe what you want added.)

Other comments:

I would like to discuss the above. Please contact me.

Submitted by: _____

Date: _____