



ICAO

Doc 10111

Manual on the Implementation and Use of Cabin Electronic Flight Bags

First Edition, 2019



Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION **Documents**
Document Sharing Hub

.....



| ICAO

Doc 10111

Manual on the Implementation and Use of Cabin Electronic Flight Bags

First Edition, 2019

...

Approved by and published under the authority of the Secretary General

INTERNATIONAL CIVIL AVIATION ORGANIZATION



Documents
Document Sharing Hub

Published in separate English, Arabic, Chinese, French, Russian
and Spanish editions by the
INTERNATIONAL CIVIL AVIATION ORGANIZATION
999 Robert-Bourassa Boulevard, Montréal, Quebec, Canada H3C 5H7

For ordering information and for a complete listing of sales agents
and booksellers, please go to the ICAO website at www.icao.int

First Edition, 2019

Doc 10111, *Manual on the Implementation and Use of Cabin Electronic Flight Bags*

Order Number: 10111

ISBN 978-92-9258-737-6

© ICAO 2019

All rights reserved. No part of this publication may be reproduced, stored in a
retrieval system or transmitted in any form or by any means, without prior
permission in writing from the International Civil Aviation Organization.

AMENDMENTS

Amendments are announced in the supplements to the *Products and Services Catalogue*; the Catalogue and its supplements are available on the ICAO website at www.icao.int. The space below is provided to keep a record of such amendments.

RECORD OF AMENDMENTS AND CORRIGENDA

[illegible][illegible]

(iii)

11/23/2020 08:57:20 MST

FOREWORD

The use of electronic flight bags (EFBs) was initially intended to provide an alternative method of storing, retrieving, and using the manuals and information required to be on board by the applicable operational requirements. Subsequent technical developments have led to the hosting of software applications on EFBs, such as databases or real-time data received from operations (e.g. meteorological data, passenger information lists). Though EFBs were originally developed for flight crew members to perform flight management tasks, they are also useful for cabin operations.

An EFB developed for cabin operations is referred to as a cabin electronic flight bag (C-EFB). Functions of a C-EFB include but are not limited to: cabin crew operations manuals; checklists; forms; passenger information; and real-time reporting.

ICAO developed the *Manual on the Implementation and Use of Cabin Electronic Flight Bags* (Doc 10111) based on the EFB provisions contained in Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport*. ICAO EFB provisions address the responsibilities of States and operators regarding EFB hardware and EFB functions for flight crew members. The purpose of this document is to provide guidelines on the implementation and use of C-EFBs by cabin crew members. This includes an evaluation process by the State for the transition to a C-EFB device.

The content of this manual was developed with input from experts from civil aviation authorities, operators, aircraft manufacturers, training organizations and international organizations, and thereafter submitted for extensive peer review to take into account comments from the expert community.

ICAO gratefully acknowledges the contributions of the ICAO Cabin Safety Group and individual experts who provided support, advice and input for this manual.



TABLE OF CONTENTS

	<i>Page</i>
Glossary	(ix)
Chapter 1. Introduction	1-1
1.1 Background	1-1
1.2 Purpose	1-1
1.3 Scope	1-2
Chapter 2. C-EFB types and functions	2-1
2.1 Types of C-EFBs	2-1
2.2 C-EFB functions	2-1
Chapter 3. Hardware.....	3-1
3.1 Hardware considerations for installed C-EFBs	3-1
3.2 Hardware considerations for portable C-EFBs	3-1
3.3 Mounting devices	3-3
Chapter 4. Software.....	4-1
4.1 Considerations for all C-EFB software applications.....	4-1
4.2 Electronic signatures	4-4
4.3 C-EFB security	4-4
4.4 Updates	4-4
4.5 Quality assurance.....	4-4
Chapter 5. C-EFB management system.....	5-1
5.1 General.....	5-1
5.2 Dedicated personnel.....	5-1
5.3 Technical support	5-2
5.4 User manual	5-2
Chapter 6. Cabin crew operating procedures and training.....	6-1
6.1 Operating procedures.....	6-1
6.2 Workload and cabin crew coordination.....	6-3
6.3 Training	6-3

	<i>Page</i>
Chapter 7. C-EFB risk assessment	7-1
7.1 General.....	7-1
7.2 Risk assessment	7-1
7.3 Risk mitigation strategies.....	7-2
7.4 Changes to the C-EFB	7-3
Chapter 8. C-EFB evaluation process.....	8-1
8.1 General.....	8-1
8.2 Initial discussion with the State (Phase 1)	8-1
8.3 Application (phase 2).....	8-1
8.4 Review by the State (phase 3)	8-2
8.5 Operational evaluation (phase 4)	8-2
8.6 Issuance of C-EFB approval/operations specifications (phase 5)	8-3
Appendix to Chapter 8. Specific operational approval checklist	8-A-1

GLOSSARY

DEFINITIONS

Aircraft interface device (AID). A device or function that provides an interface between the EFBs and other aircraft systems which protects the aircraft systems and related functions from the undesired effects from non-certified equipment and related functions.

Cabin crew member. A crew member who performs, in the interest of safety of passengers, duties assigned by the operator or the pilot-in-command of the aircraft, but who shall not act as a flight crew member.

Cabin electronic flight bag (C-EFB). An electronic information system, comprised of equipment and applications for cabin crew, which allows for the storing, updating, displaying and processing of C-EFB functions to support flight and cabin operations or duties.

Change management. A formal process to manage changes within an organization in a systematic manner, so that changes which may impact identified hazards and risk mitigation strategies are accounted for, before the implementation of such changes.

Crew member. A person assigned by an operator to duty on an aircraft during a flight duty period.

Critical phases of flight. The period of high workload on the flight deck, normally being the periods between the beginning of taxiing until the aircraft is on the route climb phase and between the final part of descent to aircraft parking.

Electronic flight bag (EFB). An electronic information system, comprised of equipment and applications for flight crew, which allows for the storing, updating, displaying and processing of EFB functions to support flight operations or duties.

EFB software application. Software hosted on an EFB platform, providing one or more EFB functions.

Flight crew member. A licensed crew member charged with duties essential to the operation of an aircraft during a flight duty period.

Hazard. A condition or an object with the potential to cause or contribute to an aircraft incident or accident.

Installed resources. Hardware/software installed in accordance with airworthiness requirements.

Independent EFB platforms. Multiple EFB platforms that are designed in such a way that no single failure makes all of them unavailable.

Non-transmitting portable electronic device. A portable electronic device that is not equipped with a radio frequency transmitting function or a portable electronic device that has all of the device's radio frequency transmitting functions turned off or is in airplane mode with the transmitting capability also turned off.

Operations manual. A manual containing procedures, instructions and guidance for use by operational personnel in the execution of their duties.

Operator. The person, organization or enterprise engaged in or offering to engage in an aircraft operation.

Passenger. A person who is not an operating crew member.

Portable electronic device (PED). Any lightweight, electrically-powered equipment. These devices are typically consumer electronic devices capable of communication, data processing and/or utility. Examples range from hand held, lightweight electronic devices such as tablets, e-readers, and smart phones to small devices such as MP3 players and electronic toys.

Note.— The definition of PED encompasses both transmitting and non-transmitting PEDs.

PED interference event. Unusual behavior of on-board electronic systems and equipment that may be suspected as originating from portable electronic device (PED) use. May also be referred to as an electromagnetic interference (EMI) event.

Risk mitigation. The process of incorporating defences, preventive controls or recovery measures to lower the severity and/or likelihood of a hazard's projected consequence.

Safety management system (SMS). A systematic approach to managing safety, including the necessary organizational structures, accountability, responsibilities, policies and procedures.

State of the Operator. The State in which the operator's principal place of business is located or, if there is no such place of business, the operator's permanent residence.

Transmitting portable electronic device (T-PED). A PED that contains an intentional transmitter, which has some or all of the device's radio frequency transmitting functions turned on. Intentional transmitters may include devices enabled with cellular technology, wireless radio frequency network devices, and other wireless-enabled devices such as remote control equipment (which may include toys), two-way radios, cellular/mobile/smart phones and satellite phones.

ABBREVIATIONS AND ACRONYMS

CCOM	Cabin crew operations manual
C-EFB	Cabin electronic flight bag
EFB	Electronic flight bag
HMI	Human-machine interface
PED	Portable electronic device
TC	Type certificate

Chapter 1

INTRODUCTION

1.1 BACKGROUND

1.1.1 Traditionally, documentation and information available to crew members for use during operations have been presented mainly in paper format. These include the cabin crew portion of the operations manual (referred to as the cabin crew operations manual (CCOM)) and the operator's occurrence reporting forms. Much of an operator's documentation and information can be made available in electronic format. Cabin crew members may have access to electronic versions of operator procedures, data and information services. An electronic flight bag (EFB) is an electronic information management device that may help crew members perform flight-related tasks more easily and efficiently with less paper. An EFB reduces or replaces paper-based reference materials that crew members need to carry in their flight bags or that must be on board aircraft.

1.1.2 An EFB is defined in Annex 6 — *Operation of Aircraft*, Part I — *International Commercial Air Transport* as: "an electronic information system, comprised of equipment and applications for flight crew, which allows for the storing, updating, displaying and processing of EFB functions to support flight operations or duties".

1.1.3 The use of EFBs was initially intended to cover an alternative method of storing, retrieving and using the manuals and information required to be on board by the applicable operational requirements. Subsequent technical developments have led to the hosting of software applications on EFBs, such as databases or real-time data coming from operations (e.g. weather information, passenger information lists).

1.1.4 Although EFBs were originally developed for flight crew members to perform flight management tasks, it is possible to implement EFBs for use in cabin operations. An EFB developed for cabin operations is referred to as a cabin electronic flight bag (C-EFB). The functions of a C-EFB may include but are not limited to: cabin crew operations manual, checklists, forms, passenger information, and real-time reporting.

1.2 PURPOSE

1.2.1 The *Manual on the Implementation and Use of Cabin Electronic Flight Bags* (Doc 10111) has been developed based on the EFB provisions contained in Annex 6, Part I. ICAO Standards and Recommended Practices (SARPs) related to EFBs address the responsibilities of States and operators regarding EFB hardware and EFB functions for flight crew members. This manual complements these SARPs by presenting guidance specific to EFBs for cabin crew members.

1.2.2 The purpose of this document is to provide guidelines on the implementation and use of C-EFBs by cabin crew members. It is intended for all operators who want to replace required paper-based information or utilize other select software applications as part of C-EFB functions. The manual presents guidance on the implementation process, including a defined evaluation process that all C-EFBs should be subjected to, if they are to be used onboard an aircraft; this includes approval or acceptance by the State of the Operator, where applicable. In addition, it outlines the process that should be conducted by the State of the Operator for portable and installed C-EFBs proposed for use by the operator as a means to display information with an equivalent level of accessibility, usability and reliability to the means they replace. The manual also provides recommendations to assist operators in starting and managing the required

elements of a C-EFB programme, including: C-EFB functions; hardware and software considerations; C-EFB management system; cabin crew operating procedures; and training and risk assessment, as part of the transition to a C-EFB device.

1.3 SCOPE

1.3.1 The content of this manual is presented as guidance material. The approach outlined is considered an acceptable means, but not the sole means, to establish national regulations or guidance materials on the implementation and use of C-EFBs. Operators should consult specific requirements with their State and comply with national regulations as applicable. These requirements include the basic information, documentation and data sources that would need to be carried on board aircraft. The operator remains responsible for ensuring the accuracy of the information used in a C-EFB and that it is derived from verifiable sources.

1.3.2 This manual does not address EFB airworthiness issues; these are covered in ICAO Annex 8 — *Airworthiness of Aircraft*.