GUERNSEY ADVISORY CIRCULAR (GACs)

GAC OPS-8

Electronic Flight Bag (EFB)

BAILIWICK OF GUERNSEY
Director of Civil Aviation

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Guernsey Advisory Circulars (GACs) are issued to provide advice, guidance and information on standards, practices and procedures necessary to facilitate the application and processing of applications for services related to the Guernsey Aircraft Register.

They are not in themselves law or a regulation but may amplify provisions of the laws and regulations, including the Guernsey Aviation requirements, or provide practical guidance. Since GAC's are non-binding, regulated persons may choose alternative means to comply with the guidance. In this case, however, they lose the presumption of compliance provided by the circular and need to demonstrate to the Office of the Director Civil Aviation (ODCA) that they do comply with the law.
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Enquiries regarding the content of this publication should be addressed to the Director of Civil Aviation, Guernsey Airport, Airport Terminal Building, La Villiaze, Forest, Guernsey, GY8 0DS.

Processing of applications will be done by the Guernsey Aircraft Registry, which operates as '2-REG'.
For further information consult http://www.2-reg.com or send a message to info@2-reg.com.

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Contents

1 - Purpose

The purpose of this Guernsey Advisory Circular (GAC) is to present guidance to applicants for obtaining a specific approval for an Electronic Flight Bag (EFB).

2 - Related requirements

This GAC relates to the following Guernsey requirements:

- GAR 91.75 Portable Electronic Device;
- GAR 91.375 Electronic Flight Bag;
- GAR Part 91, 121, 125, 135, Subpart SPA, Section I, General Requirements;
- GAR Part 91, 121, 125, 135, Subpart SPA, Section V, Electronic Flight Bag.

3 - Sources

In addition to the related GARs, this GAC contains material from the following sources:

- ICAO Document 10020 – Manual of Electronic Flight Bags (EFBs), 2nd edition;
- EASA, Easy Access Rules for Air Operations, Dec. 2022: CAT.GEN.MPA.141, including Acceptable Means of Compliance and Guidance Material.

4 - Definitions

Definitions, in the context of this GAC shall have the meanings listed in GAR Part 1 (Definitions, Abbreviations and Units of Measurement).

5 - The concept of an Electronic Flight Bag specific approval

An EFB is defined in GAR 1 as: "*an electronic information system, comprised of equipment and applications for flight crew, which allows for storing, updating, displaying and processing of EFB functions to support flight operations or duties.*"

EFBs replace printed material on board aircraft flight decks. In addition, they allow pilots to perform such functions as quick searches and performance calculations.

To ensure that private and commercial air transport operators organize their proper introduction and application, and to ensure that they do not adversely affect the aircraft's systems, the operation of an EFB is subject to a specific approval by the Director, as codified in GAR 91.375.

6 - Types of EFB hardware

EFBs can be either installed or portable.

Installed EFBs are integrated into the aircraft, subject to airworthiness requirements and under design approval. The approval of these EFBs is included in the aircraft's type acceptance certificate (TAC) or in an approved modification. The operator is responsible for maintaining the integrity of the system by adhering to the design approval holder's instructions, both for operation and continuing airworthiness.

Portable EFBs are not part of the aircraft design and are considered as Portable Electronic Devices (PED). They generally have self-contained power and may rely on data connectivity to achieve full functionality. The operator is responsible for ensuring the integrity of the entire system, including compliance with the requirements for PEDs.

7 - Types of EFB software applications

Two EFB software applications are discerned:

Type A, not used for the safe operation of aircraft: EFB applications whose malfunction or misuse would have no adverse effect on the safety of any flight operation, i.e. a hazard level defined as no greater than a 'no safety effect' failure condition classification.

Type B, used for the safe operation of aircraft : EFB applications whose failure, malfunction or misuse would have an adverse effect on the safety of flight operations (e.g. increase in-flight crew workload during critical phases of flight, reduction in functional capabilities or safety margins). These functions should be recorded in the operations manual.

For determining whether an application falls under Type A or Type B, classification guidance is presented in Appendix 1. Appendices 2 and 3 contain examples of Type A and Type B software applications respectively.

8 - EFB initial approval process

As a starting point applicants should request an on-line meeting with 2-REG Flight Operations department to help identify the approval requirements for the particular operation. Operators who seek EFB Specific Approval should study GAR 91/121/135 Subpart SPA sections I and V and this Guernsey Advisory Circular (GAC).

Understanding of the GARs and this GAC should be the first step for operators who wish to use EFBs; following the standards and guidance contained within these documents will help to achieve a timely approval. A good way to understand the requirements would be to start to compile an EFB Policy and Procedures manual. This can be worked up during the preparation for approval and will be required in due course for inclusion in the relevant Operations Manual or used as a stand-alone manual.

As part of the application, applicants should submit the following:

a. For an installed EFB: proof of design approval of entire system, including:
    1. operating instructions;
    2. instructions for continuing airworthiness
b. For a portable EFB: proof of:
    1. design approval of mounting device and cabling;
    2. evaluation of physical characteristics, readability, environmental, non-interference testing, power source availability, duration and means to switch off, stowage provisions;

c. For inclusion in the Operations Manual:
   1. an EFB Policy and Procedures Manual (see appendix 4 for a sample contents list), including:
      i. an EFB companion list of hardware / software (see appendix 5 for an example);
      ii. the nomination of a person responsible for overall control of the operator's EFB;
   2. a flight crew training programme for using the EFB;
   3. EFB check lists for:
      i. normal procedures; and
      ii. abnormal/emergency procedures for fault, failure, overheat of the EFB device.

d. MEL entries, as necessary to EFB application;

Appendix 6 provides a check list that applicants may use.

9 - EFB continuing compliance

Once a specific approval for EFB has been granted, the holder should:

- ensure that continuing airworthiness instructions from the design approval holder are adhered to;
- control changes to EFB software in accordance with its EFB Policy and Procedures Manual;
- inform the Director of any changes or amendments to either hardware or software being used;
- review and assess EFB related safety reports and mitigate any issues with EFB application output, software or hardware.

Appendix 1 - Classification of software applications

1. Purpose

The classification of Type A and Type B EFB applications is based on the severity of failure conditions resulting from malfunctions and misuse (hereinafter referred to as 'failures') of the EFB applications. It is not required to perform a full system safety assessment in order to classify EFB applications. The severity of the failure conditions will determine the classification of the EFB applications.

2. Process

As a first step, it should be verified that the application does not belong to the following list of applications that are not eligible for classification as either Type A or B:
Applications:

(a) displaying information which may be tactically used by the flight-crew members to check, control, or deduce the aircraft position or trajectory, either to follow the intended navigation route or to avoid adverse weather, obstacles or other traffic, in flight or on ground;
(b) displaying information which may be directly used by the flight crew to assess the real time status of aircraft critical and essential systems, as a replacement for existing installed avionics, and/or to manage aircraft critical and essential systems following failure;
(c) communications with air traffic services;
(d) sending data to the certified aircraft systems other than the EFB installed/shared resources.

Then, this process should:

(e) identify failure conditions resulting from potential losses of function or malfunction (detected and undetected erroneous output) with consideration of any relevant factors (aircraft/system failures, flight crew procedures, operational or environmental conditions, etc.) which would alleviate or intensify the effects; and
(f) classify the failure conditions according to the severity of their effects

Failure conditions classified as minor should then be verified through a qualitative appraisal of the integrity and safety of the system design and installation.

Software applications with failure conditions classified above minor are ineligible as EFB Type A or B applications.

Notes:

- The severity of the failure conditions linked to displaying a function already existing in the certified type design, or already authorised through a TSO or ETSO, and used with same concept of operation, cannot be less than already assessed for this function;
- The data resulting from this process may be reused by the operators in the context of the EFB risk assessment process.

Appendix 2 - Examples of Type A software applications

1. Documents

Document browser displaying:

(a) the certificates and other documents required to be carried by Guernsey Aviation Requirements and where copies are acceptable such as:
  (1) the noise certificate;
  (2) the air operator certificate (AOC) or private operator certificate (POC) and associated operations specifications;
  (3) foreign certificates, such as the EASA third-country operator certificate; and
  (4) the Third-Party Liability Insurance Certificate(s);

(b) some manuals and additional information and forms required to be carried by the applicable operational regulations such as:
  (1) notification of special categories of passenger (SCPs) and special loads; and
  (2) passenger and cargo manifests, if applicable; and

(c) other information within the operator's aircraft library such as:
  (1) airport diversion policy guidance, including a list of special designated airports and/or approved airports with emergency medical service (EMS) support facilities;
  (2) maintenance manuals;
  (3) aircraft parts manuals;
  (4) service bulletins/published Airworthiness Directives, etc.;
  (5) current fuel prices at various airports;
  (6) trip scheduling and bid lists;
  (7) passenger information requests;
  (8) check airman and flight instructor records; and
  (9) flight crew currency requirements.

2. Crew rest calculation

Interactive applications for crew rest calculation in the framework of flight time limitation;

3. Reporting forms

Interactive forms to comply with the reporting requirements of the competent authority and the operator.

Appendix 3 - Examples of Type B software applications

1. Documents

Document browser displaying the following documents, interactive or not, or not in precomposed format, and not driven by sensed aircraft parameters:

(a) The manuals and additional information and forms required to be carried by Guernsey Aviation Requirements such as:
   (1) the Operations Manual (including the MEL and CDL);
   (2) the Aircraft Flight Manual;
   (3) the Operational Flight Plan;
   (4) the aircraft continuing airworthiness records, including the technical Log;
   (5) meteorological information including with graphical interpretation;
   (6) ATS Flight Plan;
   (7) notices to airmen (NOTAMs) and aeronautical information service (AIS) briefing documentation;

2. Aeronautical charts

Electronic aeronautical chart applications including en route, area, approach, and airport surface maps. These applications may offer features such as panning, zooming, scrolling, and rotation, centering and page turning, but without display of aircraft/own-ship position.

3. Airport Moving Map Displays

Airport Moving Map Displays (AMMD) applications.

4. Data links

Applications that make use of the internet and/or other aircraft operational communications (AAC) or company maintenance-specific data links to collect, process, and then disseminate data for uses such as spare parts and budget management, spares/inventory control, unscheduled maintenance scheduling, etc.

5. Surveillance camera displays

Cabin-mounted video and aircraft exterior surveillance camera displays;

6. Performance calculation applications

Aircraft performance calculation application that uses algorithmic data or calculates using software algorithms to provide:

(a) take-off, en route, approach and landing, missed approach, etc. performance calculations providing limiting masses, distances, times and/or speeds;

(b) power settings, including reduced take-off thrust settings;

(c) mass and balance calculation application used to establish the mass and centre of gravity of the aircraft and to determine that the load and its distribution is such that the mass and balance limits of the aircraft are not exceeded.

7. Other applications

Other applications that meet the classification of a Type B application as per the guidance presented in Appendix 1.

Appendix 4 - EFB policy and procedures manual - sample contents list

These are the typical contents of an EFB policy and procedures manual (PPM) that can be fully or partly integrated in the Operations Manual.

The structure and contents of the EFB policy and procedures manual should correspond to the size of the operator, the complexity of its activities and the complexity of the EFB used.

Introduction
- EFB general philosophy
- EFB limitations
- EFB approved hardware and software applications

EFB management
- Responsibilities
- Data management
- Updates and changes management

Hardware description
- Operating system description
- List and description of aplications hosted

Flight crew training

Operation procedures

Maintenance considerations

Security considerations

Appendix 5 - Example of an EFB hardware/software companion sheet

EFB (hardware and software) with specific approval		
Approved hardware for aircraft type	EFB applications (list of EFB functions, versions and any applicable limitations)	Specific references and/or remarks
EFB for aircraft type1	Aircraft performance calculation – AppName1 ver x.x. Airport moving map – AppName2 ver x.x. Charts application: En route – AppName3 ver x.x. Airport charts (SID, STAR, approach) – AppName4 ver x.x.	See procedures in Operations Manual page x Back up: QRH Refer to Operations Manual page x See Operations Manual page y Back up: paper Paperless operation Refer to Operations Manual page z
EFB for aircraft type1	Charts application: En route – AppName3 ver x.x.	

Appendix 6 - Compliance checklist for EFB specific approval application

			Means of compliance
SPA.020.GEN Application for a specific approval			
a		Applicants for the initial issue of a specific approval shall provide the Director with the documentation required by the applicable subpart and the following information:	
	1	The official name and business name, address and mailing address of the applicant; and	Self evident
	2	A description of the intended operation.	Self evident
b		Applicants for a specific approval shall demonstrate to the Director that:	
	1	they comply with the requirements of the applicable section;	Complete this checklist
	2	the aircraft and required equipment comply with the applicable airworthiness requirements/approvals;	Proof of design approval
	3	a training programme has been established for flight crew and, as applicable, personnel involved in these operations; and	Relevant portion of training programme
	4	operating procedures in accordance with the applicable subpart have been specified in the operations manual.	Relevant portion of OM
c		Records relating to the requirements of (a) and (b) above shall be retained by the operator in accordance with 91.1265.	Record retainment requirements in OM
SPA.001.EFB EFB equipment			
		Where portable EFBs are used on board, the operator shall ensure that they do not affect the performance of the aeroplane systems, equipment or the ability to operate the aeroplane	Checklist J.SPA.EFB[1]
SPA.005.EFB EFB functions			
a		Where EFBs are used on board an aeroplane the pilot-in-command and/or the owner/operator shall:	
	1	describe the EFB function(s) in the Operations Manual;	Relevant portion of OM
	2	assess the safety risk(s) associated with each EFB function;	Checklist J.SPA.EFB
	3	Establish and document the procedures for the use of, and training requirements for, the device and each EFB function; and	Relevant portion of training programme
	4	ensure that, in the event of an EFB failure, sufficient information is readily available to the flight crew for the flight to be conducted safely.	Checklist J.SPA.EFB
SPA.010.EFB EFB operational approval			
a		The holder of an air operator certificate or a Section 77 approval shall only use EFBs when so approved by the Director.	Self-evident
b		To obtain such approval, the operator shall ensure that:	
	1	the EFB equipment and its associated installation hardware, including interaction with aircraft systems if applicable meet the appropriate airworthiness certification requirements;	Proof of design approval; proof of implementation of ICA
	2	the operator has assessed the safety risks associated with the operations supported by the EFB function(s);	Checklist J.SPA.EFB
	3	the operator has established requirements for redundancy of the information (if appropriate) contained in and displayed by the EFB function(s);	Checklist J.SPA.EFB
	4	the operator has established and documented procedures for the management of the EFB function(s) including any database it may use; and	Checklist J.SPA.EFB
	5	The operator has established and documented the procedures for the use of, and training requirements for, the EFB and the EFB function(s).	Relevant portions of OM

[1] Checklist J.SPA.EFB is available on www.2-reg.com/donwloads/