



NOTICE TO OPERATORS 11/05

Subject: Use of Electronic Flight Bag (EFB) – BCAA Approval procedure

Date: 13 April 2011

Description:

1. Regulatory references

- (a) Annex III to Regulation (EEC) No 3922/91 ("EU-OPS"), the following articles are to be used as references: EU-OPS 1.110, 1.130, 1.135, 1.140, 1.150, 1.155, 1.175, 1.185, 1.200, 1.290, 1.475, 1.625, 1.965, 1.1040, 1.1045, 1.1055, 1.1060, 1.1065, 1.1071.
- (b) JAR-OPS 3.
- (c) JAA Temporary Guidance Leaflet – Leaflet N°36: Approval of EFBs
- (d) JAA Temporary Guidance Leaflet – Leaflet N°29: Guidance concerning the use of portable electronic devices on board aircraft
- (e) JAA Safety Information Communication N°7

2. Definitions

Portable Electronic Device (PED)

PED are typically lightweight consumer electronic devices, which are personally owned (passenger or crew-member) and personally operated and have functional capability for communications, entertainment, data processing, and/or utility. There are two basic categories of PEDs – those with and those without intentional transmitting capability.

Controlled Portable Electronic Device (PED)

A controlled PED is subject to administrative control by the company. This will include, inter alia, tracking the location of the devices to specific aircraft or persons and ensuring that no unauthorized changes are made to the hardware, software or databases. A controlled PED will also be subject to procedures to ensure that it is maintained to the latest amendment state.

Data Connectivity for EFB Systems

Data connectivity for EFB system supports either uni- or bi-directional data communication between the EFB and the aircraft systems (e.g., avionics).

Electronic Flight Bag (EFB)

An electronic system intended for flight crew or cabin crew functions traditionally accomplished using paper references (e.g., navigation charts, operating manuals,

performance calculations). The EFB may also support other functions that have no paper equivalent (e.g., a video surveillance display).

EFB Administrator

The EFB Administrator is the person appointed by the operator, held responsible for the administration of the EFB system within the company. The EFB administrator is the primary link between the operator and the EFB system and hardware/software suppliers.

He/she will be the person in overall charge of the EFB system and will be responsible for ensuring that any hardware conforms to the required specification and that no unauthorized software is installed. He/she will also be responsible for ensuring that only the current version of the application software and data packages are installed on the EFB system.

EFB System

An EFB system includes the hardware and software needed to support an intended function.

Hosted Application

Software installed on an EFB system that allows specific operational functionality.

Interactive Information

Information presented on the EFB that, via software applications, could be selected and rendered in a number of dynamic ways. This includes variables in the information presented based on data-oriented software algorithms, concepts of de-cluttering, and “on-the-fly” composition as opposed to pre-composed information.

Mounting Device

A mounting device holds up portable equipment. It may include arm-mounted, kneeboard, cradle, or docking-stations, etc. It may have aircraft power and data connectivity. It may require quick-disconnect for egress.

Pre-Composed Information

Information previously composed into a static composed state (non-interactive). The composed displays have consistent, defined and verifiable content, and formats that are fixed in composition. Applications based on pre-composed information may contain “contextual access” like hyperlink, bookmark.

3. Hardware Classes of EFB systems

Class 1

Class 1 EFB systems:

- a. Are generally Commercial-Off-The-Shelf (COTS)-based computer systems used for aircraft operations (e.g. laptop, tablet PC);
- b. Are not attached to an aircraft mounting device;
- c. Are considered to be a controlled PED;
- d. May only connect to aircraft power through a certified power source ;
- e. Are normally without aircraft data connectivity except under specific condition; and
- f. Are stowed during critical phases of flight.

A Class 1 EFB is not considered to be part of the certified aircraft configuration, i.e. not in the aircraft Type design nor installed by a change to the Type design nor

added by a Supplemental Type Certificate. Therefore, Class 1 EFB systems do not require airworthiness approval.

Class 2

Class 2 EFB systems:

Generally include COTS-based computer systems used for aircraft operations (e.g., laptop, tablet PC) considered as a controlled PED;
Are attached to an aircraft mounting device, allowing use during all phases of flight;
May be connected to installed resources (e.g. a remote display unit, cursor control device, keyboard etc.);
May only connect to aircraft power through a certified power source;
May receive data from the aircraft systems; and
Should not have the capability to send data to the aircraft systems except under specific conditions.

Class 2 EFB systems require airworthiness approval as described in the TGL-36 Section 6.

A Class 2 EFB or a part of a Class 2 EFB system, are considered portable if tools are not required to remove an EFB from the flight deck and a flight crew member is able to perform the task. Portable EFBs should be located on the flight deck and controlled by the flight crew during all phase of flight. Any EFB components/hardware not accessible on the flight deck by the flight crew and/or not portable should be installed and certificated equipment covered by a Type Certificate (TC), changed TC or Supplemental (S)TC. (The one exception to being accessible on the flight deck is a remotely mounted antenna that provides signal reception to a Class 1 or 2 EFB) A portable EFB is considered as a controlled PED.

Class 3

Class 3 EFB systems are installed equipment requiring an airworthiness approval. This approval covers the EFB host platform and installed resources (e.g. server, display, control device, power, switching), including hardware and operating system software qualification.

4. Software applications for EFB systems

The functionality associated with the EFB system depends upon the applications loaded on the host. The classification of the applications into three Types (A, B and C) is intended to provide clear divisions between the scope and therefore the approval process applied to each. Although guidelines and examples are included in the appendices of the TGL-36 to provide guidance as to the Type assigned to a particular application, there is still the potential for misclassification.

The Type of application will determine the level of participation of the Belgian CAA, Operational Evaluation Board (OEB) coordinated by EASA and indeed the involvement of EASA's airworthiness experts (e.g. aircraft performance calculation applications) in the assessment.

Type A

Type A applications include pre-composed, fixed presentations of data currently presented in paper format. Type A applications:
May be hosted on any of the hardware classes;
Require an operational approval by the BCAA.
Do not require an airworthiness approval.

Typical examples of Type A applications can be found in the Appendix A of the JAA TGL-36.

Type B

Type B applications include interactive applications that can manipulate data and presentation. Type B applications:
May be hosted on any of the hardware classes;
Require an operational approval by the BCAA.

Typical examples of Type B applications can be found in Appendix B of the JAA TGL-36.

Type C

Type C applications are dynamic EFB applications considered to be ineligible for classification as either Type A or B. Type C applications:
May only be hosted on Class 3 Hardware;
May be installed together with Type A and/or B applications provided the Type A and/or Type B EFB applications do not interfere with Type C applications (e.g. a partition, a segregation or by demonstration);
Require both Airworthiness and Operational approvals.

Typical examples of Type C applications can be found in Appendix C of the JAA TGL-36.

5. Approval procedure

- (a) The operator shall transmit the following documents to BCAA OPS Department:
- 1) The EFB application form (form 1163),
 - 2) The EFB policy and procedures manual,
 - 3) The revision of the OM part A, B, C, and D if applicable,
 - 4) The MEL, if applicable,
 - 5) The EMI demonstration report,
 - 6) The operational risk analysis,
 - 7) The proposed software and data base validation plan.
- (b) The EFB policy and procedures manual should be adapted to the EFB system and to the size and complexity of the operations in which the operator is involved. Typical contents of such manual can be:
- 1) Introduction
 - Glossary of terms, definitions and acronyms
 - Hardware description
 - Operating system description

- Software application(s) description
- 2) Hardware and operating system control and configuration
 - Purpose and scope
 - Description
 - o Hardware configuration and part No. control
 - o Operating system configuration and control
 - o Accessibility control
 - o Hardware maintenance
 - o Operating system updating
 - Responsibilities and accountabilities
 - Records and filing
 - Documentary references
- 3) Software application(s) control and configuration
 - Purpose and scope
 - Description
 - o Part No. control
 - o Software(s) configuration
 - o Application(s) updating
 - Responsibilities and accountabilities
 - Records and filing
 - Documentary references
- 4) Flight crew
 - Training
 - Operating procedures (normal, abnormal and emergency)
- 5) EFB Administrator
 - Training
 - Procedures
- 6) Human-machine interface assessment
- 7) Maintenance considerations
- 8) EFB Security policy
- 9) Quality control
- 10) Operational risk analysis
- 11) Software applications(s) and data base(s) validation plan
- 12) Proposed operational evaluation test

- (c) If the software application for the EFB system is a Type A, the BCAA shall continue with this procedure to item (g).
- (d) If the software application for the EFB system is a Type B, the BCAA shall continue with this procedure to item (g). In case of mass & balance and performance calculation application, the assessment can be undertaken by the EASA OEB if the BCAA consider that it is necessary. In this particular case, the operator shall transmit the application and the related documents to the EASA OEB (see EASA website). The EASA OEB will assist the BCAA in the operational approval.
- (e) If the software application for the EFB system is a Type C, the operator shall transmit the application and the related documents to the EASA OEB (see EASA website). The EASA OEB will perform the operational approval.
- (f) If the EFB system is based on a class 3 hardware, the operator shall transmit the application and the related documents to the EASA OEB (see EASA website). The EASA OEB will perform the operational approval.
- (g) OPS surveyor (assisted with an expert if necessary) will check those documents to determine if the format and the content are in conformity with the JAA TGL-36. This check shall be done with the check-list EFB file (form 1162).

- (h) OPS surveyor shall transmit the conclusions of the EFB file check to the operator.
- (i) If corrections are needed, the operator shall amend his EFB file to take into account the conclusions of the EFB file check performed by the BCAA.
- (j) When the EFB file is accepted by the BCAA (by a letter), the OPS surveyor (assisted with an expert if necessary) shall perform a check of the EFB training which is given to the crew (check K) (classroom training).
- (k) When the EFB file is accepted and when the training given to the crew is acceptable, the BCAA will issue a temporary approval (form 1165) which defines the operational limitations of the EFB use. The operator can begin the operational evaluation test during a defined period with paper back up.
- (l) The duration of the operational evaluation test will depend on the complexity of the EFB system (minimum 6 months and maximum 18 months). The decision will be made by head of C-OPS following the recommendations made by the POS.
- (m) During this operational evaluation test with paper back up, the operator shall demonstrate to the BCAA that:
- The operator's flight crew are able to operate the EFB applications without reference to paper, in other words, the application fulfils all the needs of the paper documentation it is supposed to replace;
 - The operator's administration procedures are in place and function correctly;
 - The operator is capable of providing timely updates to the applications on the EFB, where a data base is provided;
 - The introduction of the EFB without paper back up does not adversely affect the operator's operating procedures and alternative procedures for the use when the EFB system is not available provide an acceptable equivalent; and
 - For a system including uncertified elements (hardware or software), that the system operates correctly and reliably;
 - Any malfunction or error is documented and eliminated before further use;
 - Any human-machine interface problem or flight crew error induced by the use of EFB is reported.
- (n) During the operational evaluation test with paper back up, the BCAA will performs at least the following checks:
- In-flight cockpit check (check D) with a particular attention to the EFB use;
 - Training simulator LOFT session (check K) to verify the use of the EFB under operational conditions including normal, abnormal and emergency conditions. Item such a late runway change and diversion to an alternate should also be included;
 - Check loading, performance and fuel reserves (check A) with a particular attention to the EFB use;
- (o) At the end of the operational evaluation test, the operator shall provide to the BCAA a complete report which shall demonstrate the performance of the EFB system during this period. This report shall contain at least:

- An analysis of the crew reports related to the use of the EFB system;
 - The results of the quality checks performed during this period with regard to the EFB system (hardware checks and software/database checks);
 - An safety analysis of the ASRs related to the use of the EFB system.
 - An update of the operational risk analysis which has been performed before the operational evaluation test (with new hazards which have been identified during the operational evaluation test);
 - How the identified problems are addressed.
- (p) The report submitted by the operator will be checked by the OPS surveyor (check I).
- (q) If the report is acceptable to the BCAA, the BCAA will grant an operational approval to the operator to use the EFB system without paper back up (form 1166).
- (r) If the report is not acceptable to the BCAA, the BCAA will extend the period of operational evaluation test with paper back up to allow the operator to take the appropriate actions to mitigate the risks related to the use of the EFB system, impose additional limitations or refuse its approval.

6. Information and contact

If you need more information on the EFB approval process, please contact your responsible coordinator.



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