**APPLICATION FOR ELECTRONIC FLIGHT BAG (EFB)**



**INSTRUCTIONS**

1. The operator will tick (√) the appropriate yes/no boxes and as applicable insert references from the AFM or Operations Manual with sample pages attached as appendix.

2. Operator must obtain and submit manufacturer’s written confirmation with regard to continuing maintenance.

3. Operating policy and procedures, training syllabus and lesson plan must be submitted for approval before commencement of flight crew / dispatcher training.

**PARTICULARS**

**Operator: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_AOC No:\_\_\_\_\_\_\_\_\_\_ Rep’s Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Position:\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| Aircraft make,Model | Serial number | Registration  | EFB manufacturerModel | Class of EFBLimitation, if any. | Software Type.Limitations, if any  | Type of paper back-up | Remarks / Compliance statement |
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| **AC 98-7-1(0)** | **Title of Paragraph** | **Operator Compliance Reference** | **CAAS Use** |
| **4** | **HARDWARE OR HOST PLATFORMS** |  |  |
| 4.1 | **Portable EFB** | □Yes □No |  |  |
| 4.2 | **Installed EFB** | □Yes □No |  |  |

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| **5. ENGINEERING, CONTINUING AIRWORTHINESS and OPERATIONAL APPROVAL** | **Operator Compliance Reference** | **CAAS Use** |
| 5.1 | **EFB** Certification | □Yes □No |  |  |
| 5.2  | **MEL**  Minimum Equipment List | □Yes □No |  |  |
| 5.3  | **HMI** Human / Machine Interface review. | □Yes □No |  |  |
| 5.4 | **QSRA** Qualitative Safety Risk Assessment | □Yes □No |  |  |
| 6**. HARDWARE** | **Operator Compliance Reference** | **CAAS Use** |
| 6.1 | Have the installed EFB resources been certified by a CAA to accepted aviation standards either during the certification of the aircraft, service bulletin by the original equipment manufacturer, or by a third-party STC? | Yes □No □N/A □ |  |  |
| 6.2 | Has the operator assessed the physical use of the device on the flight deck to include safe stowage, crashworthiness (mounting devices and EFBs, if installed), safety and use under normal environmental conditions including turbulence? | Yes □No □N/A □ |  |  |
| 6.3 | Will the display be readable in all the ambient lighting conditions, both day and night, encountered on the flight deck? | Yes □No □N/A □ |  |  |
| 6.4 | Has the operator demonstrated that the EFB will not electromagnetically interfere with the operation of aircraft equipment? | Yes □No □N/A □ |  |  |
| 6.5 | Has the EFB been tested to confirm operation in the anticipated environmental conditions (e.g. temperature range, low humidity, altitude, etc.)? | Yes □No □N/A □ |  |  |
| 6.6 | Have procedures been developed to establish the level of battery capacity degradation during the life of the EFB? | Yes □No □N/A □ |  |  |
| 6.7 | Is the capability of connecting the EFB to certified aircraft systems covered by an airworthiness approval? | Yes □No □N/A □ |  |  |
| 6.8 | When using the transmitting functions of a portable EFB during flight, has the operator ensured that the device does not electromagnetically interfere with the operation of the aircraft equipment in any way? | Yes □No □N/A □ |  |  |
| 6.9 | If two or more EFBs on the flight deck are connected to each other, has the operator demonstrated that this connection does not negatively affect otherwise independent EFB platforms? | Yes □No □N/A □ |  |  |
| 6.10 | Can the brightness or contrast of the EFB display be easily adjusted by the flight crew for various lighting conditions? | Yes □No □N/A □ |  |  |
| **INSTALLATION** |  |  |
| **7. MOUNTING** | **Operator Compliance Reference** | **CAAS Use** |
| 7.1 | Has the installation of the mounting device been approved in accordance with the appropriate airworthiness regulations? | Yes □No □N/A □ |  |  |
| 7.2 | Is it evident that there are no mechanical interference issues between the EFB in its mounting device and any of the flight controls in terms of full and free movement, under all operating conditions and no interference with other equipment such as buckles, oxygen hoses, etc.? | Yes □No □N/A □ |  |  |
| 7.3 | Has it been confirmed that the mounted EFB location does not impede crew ingress, egress and emergency egress path? | Yes □No □N/A □ |  |  |
| 7.4 | Is it evident that the mounted EFB does not obstruct visual or physical access to aircraft displays or controls? | Yes □No □N/A □ |  |  |
| 7.5 | Does the mounted EFB location minimise the effects of glare and/or reflections? | Yes □No □N/A □ |  |  |
| 7.6 | Does the mounting method for the EFB allow easy access to the EFB controls and a clear unobstructed view of the EFB display? | Yes □No □N/A □ |  |  |
| 7.7 | Is the EFB mounting easily adjustable by flight crew to compensate for glare and reflections? | Yes □No □N/A □ |  |  |
| 7.8 | Does the placement of the EFB allow sufficient airflow around the unit, if required? | Yes □No □N/A □ |  |  |

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| **8. SOFTWARE** |
| *Note — This part should be completed multiple times to account for the different software* |
| **Software application: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** (fill in name of software application) | **Operator Compliance Reference** | **CAAS Use** |
| 8.1 | Is the application considered an EFB function [please refer paragraph 4 of CAAS AC‑98-7-1()?] | Yes □No □N/A □ |  |  |
| 8.2 | Has the software application been evaluated to confirm that the information being provided to the pilot is a true and accurate representation of the documents or charts being replaced? | Yes □No □N/A □ |  |  |
| 8.3 | Has the software application been evaluated to confirm that the computational solution(s) being provided to the pilot is a true and accurate solution (e.g. performance, and mass and balance (M&B), etc.)? | Yes □No □N/A □ |  |  |
| 8.4 | Does the software application have adequate security measures to ensure data integrity (e.g. preventing unauthorised manipulation)? | Yes □No □N/A □ |  |  |
| 8.5 | Does the EFB system provide, in general, a consistent and intuitive user interface, within and across the various hosted applications? | Yes □No □N/A □ |  |  |
| 8.6 | Has the EFB software been evaluated to consider HMI and workload aspects? | Yes □No □N/A □ |  |  |
| 8.7 | Does the software application follow Human Factors guidance? | Yes □No □N/A □ |  |  |
| 8.8 | Can the flight crew easily determine the validity and currency of the software application and databases installed on the EFB, if required? | Yes □No □N/A □ |  |  |

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| **9. POWER CONNECTION / BATTERY** | **Operator Compliance Reference** | **CAAS Use** |
| 9.1 | Is there a means other than a circuit-breaker to turn off the power source (e.g. can the pilot easily remove the plug from the installed outlet)? | Yes □No □N/A □ |  |  |
| 9.2 | Is the power source suitable for the device? | Yes □No □N/A □ |  |  |
| 9.3 | Have guidance/procedures been provided for battery failure or malfunction? | Yes □No □N/A □ |  |  |
| 9.4 | Is power to the EFB, either by battery and/or supplied power, available to the extent required for the intended operation? | Yes □No □N/A □ |  |  |
| 9.5 | Has the operator ensured that the batteries are compliant to acceptable standards? | Yes □No □N/A □ |  |  |
| **10. CABLING** | **Operator Compliance Reference** | **CAAS Use** |
| 10.1 | Has the operator ensured that any cabling attached to the EFB, whilst mounted or *hand-held* does not present an operational or safety hazard (e.g. it does not interfere with flight controls movement, egress, oxygen mask deployment, etc.)? | Yes □No □N/A □ |  |  |
| **11. STOWAGE** |  |  |
| 11.1 | If there is no mounting device available, can the EFB be easily stowed securely and readily accessible in flight? | Yes □No □N/A □ |  |  |
| 11.2 | Is it evident that stowage does not cause any hazard during aircraft operations? | Yes □No □N/A □ |  |  |

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| **12. VIEWABLE STORAGE** |  |  |
| 12.1 | Has the operator documented the location of its viewable stowage? | Yes □No □N/A □ |  |  |
| 12.2 | Has the operator assessed that the stowage characteristics remain within acceptable limits for the proposed operations? | Yes □No □N/A □ |  |  |
| 12.3 | Has the operator assessed that if the EFB moves or is separated from its stowage, or if the viewable stowage is unsecured from the aircraft (because of turbulence, maneuvering, or other action), it will not interfere with flight controls, damage flight deck equipment, or injure flight crew members? (A full motion flight simulator may be used for this assessment) | Yes □No □N/A □ |  |  |

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| **MANAGEMENT** |
| **13. EFB MANAGEMENT** | **Operator Compliance Reference** | **CAAS Use** |
| 13.1 | Is there an EFB management system in place? | Yes □No □N/A □ |  |  |
| 13.2 | Does one person possess an overview of the complete EFB system and responsibilities within the operator’s management structure? | Yes □No □N/A □ |  |  |
| 13.3 | Are the authorities and responsibilities clearly defined within the EFB management system? | Yes □No □N/A □ |  |  |
| 13.4 | Are there adequate resources assigned for managing the EFB? | Yes □No □N/A □ |  |  |
| 13.5 | Are third parties (e.g. software vendor) responsibilities clearly defined? | Yes □No □N/A □ |  |  |
| **14. CREW PROCEDURES** |  |  |
| 14.1 | Is there a clear description of the system, its operational philosophy and operational limitations? | Yes □No □N/A □ |  |  |
| 14.2 | Are the requirements for EFB availability stated in the operations manual and / or as part of the minimum equipment list (MEL)? | Yes □No □N/A □ |  |  |
| 14.3 | Have crew procedures for EFB operation been integrated within the existing operations manual? | Yes □No □N/A □ |  |  |
| 14.4 | Are there suitable crew cross-checks for verifying safety-critical data [e.g. performance, mass & balance (M&B) calculations]? | Yes □No □N/A □ |  |  |
| 14.5 | If an EFB generates information similar to that generated by existing flight deck systems, do procedures identify which information will be primary? | Yes □No □N/A □ |  |  |
| 14.6 | Are there procedures when information provided by an EFB does not agree with that from other flight deck sources, or, if more than one EFB is used, when one EFB disagrees with another? | Yes □No □N/A □ |  |  |
| 14.7 | Are there procedures that specify what actions to take if the software applications or databases loaded on the EFB are out of date? | Yes □No □N/A □ |  |  |
| 14.8 | Are there procedures in place to prevent the use of erroneous information by flight crews? | Yes □No □N/A □ |  |  |
| 14.9 | Is there a reporting system for system failures?  | Yes □No □N/A □ |  |  |
| 14.10 | Have crew operating procedures been designed to mitigate and/or control additional workload created by using an EFB? | Yes □No □N/A □ |  |  |
| 14.11 | Are there procedures in place to inform maintenance and flight crews about a fault or failure of the EFB, including actions to isolate it until corrective action is taken? | Yes □No □N/A □ |  |  |

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| **15. EFB RISK ASSESSMENT** | **Operator Compliance Reference** | **CAAS Use** |
| 15.1 | Has an EFB risk assessment been performed? | Yes □No □N/A □ |  |  |
| 15.2 | Are there procedures/guidance for loss of data and identification of corrupt/erroneous outputs? | Yes □No □N/A □ |  |  |
| 15.3 | Are there contingency procedures for total or partial EFB failure? | Yes □No □N/A □ |  |  |
| 15.4 | Is there a procedure in the event of EFB failure? The operator may employ mitigation strategies to reduce the probability of EFB failures prior to becoming airborne. Adequate mitigations must be employed to ensure pertinent critical information resident on the EFB is available to the flight crew during the flight. In such cases the operator will have to demonstrate to CAAS a full Operational Risk Assessment with suitable means of mitigation against failure or malfunction of all EFBs. | Yes □No □N/A □ |  |  |
| 15.5 | Have the EFB dispatch requirements (e.g. minimum number of EFBs on board) been incorporated into the operations manual? | Yes □No □N/A □ |  |  |
| 15.6 | Have MEL or procedures in case of EFB failure been considered and published? | Yes □No □N/A □ |  |  |
| **16. TRAINING** | **Operator Compliance Reference** | **CAAS Use** |
| 16.1 | Is the training material appropriate with respect to the EFB equipment and published procedures? | Yes □No □N/A □ |  |  |
| 16.2 | Does the training cover the list of items in paragraph 9 (*Flight crew training)* of the CAAS AC-98-7-1()? | Yes □No □N/A □ |  |  |

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| **17. HARDWARE MANAGEMENT PROCEDURES** | **Operator Compliance Reference** | **CAAS Use** |
| 17.1 | Are there documented procedures for the control of EFB hardware configuration? | Yes □No □N/A □ |  |  |
| 17.2 | Do the procedures include maintenance of EFB equipment? | Yes □No □N/A □ |  |  |
| **18. SOFTWARE MANAGEMENT PROCEDURES** | **Operator Compliance Reference** | **CAAS Use** |
| 18.1 | Are there documented procedures for the configuration control of loaded software and software access rights to the EFB? | Yes □No □N/A □ |  |  |
| 18.2 | Are there adequate controls to prevent corruption of operating systems, software, and databases? | Yes □No □N/A □ |  |  |
| 18.3 | Are there adequate security measures to prevent system degradation, malware and unauthorised access? | Yes □No □N/A □ |  |  |
| 18.4 | Are procedures defined to track database expiration/updates? | Yes □No □N/A □ |  |  |
| 18.5 | Are there documented procedures for the management of data integrity? | Yes □No □N/A □ |  |  |
| 18.6 | If the hardware is assigned to the flight crew, does a policy on private use exist? | Yes □No □N/A □ |  |  |

**Warning: Notice is given that the operator shall accept full responsibility for all information given in this application form. Any attempt to provide false information will result in rejection of the application and, if already granted, the withdrawal of the Operational Approval. In addition, the operator may render himself liable to prosecution under section 29C(1)(b) of the Air Navigation Act.**

**I declare to the best of my knowledge and belief that the statements made and the information supplied in this form are complete and correct. I understand that any false representations made by me for the purpose of procuring the Singapore aviation safety instrument is an offence under section 29C(1)(b) of the Air Navigation Act and I may be subject to the penalties stipulated thereunder and any Singapore aviation safety instrument granted pursuant to the application will be revoked.**

**I have read the above Warning and declare that the information given is true and accurate.**

**Signature / Name of person representing the operator:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| **FOR OFFICIAL USE** |
| **Signature / Name of FS Officer (AE) accepting this form:** |
| **Signature / Name of FS Officer (CA) accepting this form:** |
| **Signature / Name of FS Officer (FO) accepting this form:** |

**REFERENCES**

Regulatory: (1) ANR 98, Regulation 3, PART 2, Division 7, Regulations 37, 38. 39 and 40.

 (2) ANR 121 Regulations 182, FOURTH SCHEDULE PART A Sub-para (zm)

Compliance: (1) CAAS AC 98-7-1(0)

References (1) ICAO Doc 10020 (2) EASA AMC 20-25 (3) FAA AC 120-76D (4) Hong Kong CAD 562