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| Manuali ENAC D-Flight per Operatori Droni - Ispezionicondrone | **Electronic Flight Bag (EFB) – Compliance Checklist** | Ed.1 |

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| **General informations and EFB approval process**  In accordance with SPA.EFB.100, a commercial air transport (CAT) operator shall only use a type B EFB application if has been granted an approval by the competent authority for such use.  Upon request of approval, ENAC Team will request to meet the operator in order to have a general view of the EFB project. The operator will nominate a project manager.  Operators will be then required to complete and sign the EFB compliance checklist to ENAC along with, risk assessment, EFB Policy and Procedures Manual, OMA, OMB and OMD amendments and any other supporting documentation.  Once reviewed, ENAC will authorise commencement of the Operational Evaluation Test.  On the successful completion of the test the operator must submit the Final Operational Report; once this is accepted by ENAC, the approval to conduct EFB operations will be added to the operator’s Operations Specification.  The Operations Specification will report the reference to OMA, para 8.9 for hardware and type B applications.  The approval process does not verify acceptance of the EFB hardware, operating systems or database information. Approval confirms only that the system is capable of performing its intended functions to an acceptable standard.  **Electronic Flight Bag (EFB)**  There are two possibilities for the hardware of EFB systems: portable and installed.  [**Portable**](https://www.caa.co.uk/Commercial-industry/Aircraft/Airworthiness/Aircraft-equipment/Electronic-flight-bags/#4294975344-collapse-0) **EFB**  A portable EFB is a portable EFB host platform, used on the flight deck, which is not part of the certified aircraft configuration. It can host type A and/or type B as well as miscellaneous (non- EFB) software applications. If mounted, the portable EFB must be easily removable from its mounting device without the use of tools, by the flight crew.  A Transmitting Portable Electronic Device (T-PED) will have conditions for use of its transmitting capability established in the approved Aircraft Flight Manual (AFM), although in the absence of information in the AFM the EFB transmitting capability may be allowed during non-critical phases of flight.  Any EFB component that is either not accessible in the flight crew compartment by the flight crew members, or not removable by the flight crew should be installed as 'certified equipment' covered by a Type Certificate (TC), changed TC or Supplemental Type Certificate (STC).  Portable EFBs may only be used in all phases of flight if secured to a certified mount or securely attached to a viewable stowage device. A mounting device is an aircraft certified part which secures a portable or installed EFB, or EFB system components. A viewable stowage device is secured either on the flight crew (for example, a kneeboard) or in/to an existing aircraft part (for example, utilising suction cups), with the intention to hold charts or to hold acceptable light mass portable devices.  Mounting device is approved in accordance with existing Modification approval processes.  [**Installed**](https://www.caa.co.uk/Commercial-industry/Aircraft/Airworthiness/Aircraft-equipment/Electronic-flight-bags/#4294975344-collapse-1) **EFB**  An EFB host platform installed in the aircraft is managed under the aircraft type design configuration and considered as an aircraft part, covered by the aircraft airworthiness approval. Normal aircraft certification processes are expected to cover installed devices.  No additional equipment approval is expected to be required, although an Operational Approval in accordance with SPA.EFB will be required (for CAT).  In addition to hosting Type A and B applications, an installed EFB may host certified applications, provided the EFB meets the certification requirements for hosting such applications, including assurance that the non-certified software applications do not adversely affect the certified application(s).  In order to meet all requirements, operator shall verify elements and indications about EFB reported in the OSD of the aircraft, if any.  **Applications**  The functionality associated with the EFB system depends, in part, upon the applications loaded on the host platform (hardware). The classification of the applications (Type A or Type B), based on respective safety effects, is reported in AMC1, AMC2, AMC3 CAT.GEN.MPA.141(b). For CAT operators, use of Type B applications requires ENAC approval.  **Compliance checklist**  Prior to the approval for additional electronic devices to form part of an AOC operation, it will be necessary to demonstrate that, when fitted to an aircraft, no additional hazards will result.  This compliance checklist must be completed on initial application for use of an EFB and for subsequent significant changes, e.g. introduction of a new Type B application, change of hardware, or hardware operating system, in accordance with changes procedures reported AMC2 SPA.EFB.100 (b) and specified in the operator’s EFB manual. | |
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| **Operator** |  | **AOC N.** |  | | |
| **Aircraft types** |  | | | | |
| ***Requirement*** | | | | ***Reference*** | ***Operator’s Reference in OM or EFB Policy and Procedures Manual*** |
| |  | | --- | | Has an EMI assessment of the EFB been undertaken, and using which method? | | | | | *AMC1 CAT.GEN.MPA.140* |  |
| Is the EFB hardware Installed or Portable? | | | | *AMC1 CAT.GEN.MPA.141(a)*   |  | | --- | |  |   *AMC1 CAT.GEN.MPA.141(a)* |  |
| Is the EFB able to be easily removed from its mount or stowage? | | | |  |
| Does the EFB have a suitable Mount or Viewable Stowage? If not have procedures been developed to ensure that it is stowed  during critical phases of flight? | | | |  |
| The placement of the EFB  is such that to avoid any impairment to the crew’s external view, the access to instruments and it does not impede emergency egress? | | | |  |
| Is the display within 90 degrees of the crew member’s line of sight, and would glare or reflection interfere with the pilot? | | | |  |
| If aircraft power is used, are the characteristics compatible with the EFB? | | | |  |
| Does the EFB have data connectivity to the aircraft; if so, how is transfer of data controlled? | | | |  |
| Are all connecting cables/power adaptors approved by the EFB manufacturer and placed so as not to cause obstruction? | | | |  |
| Does the EFB battery, and any additional battery power sources, meet the requirements of AMC1 CAT.GEN.MPA.140 para (f)? | | | |  |
| If a viewable stowage (support) is used has its location been documented as part of the EFB policy? | | | |  |
| The viewable stowage and associated mechanisms  is such that it does not impede the flight crew members in the performance of any task (open window, switches, levels…)? | | | |  |
| Is the viewable stowage easily locked in position? | | | |  |
| Does the viewable stowage’s range of movement accommodate  the expected range of anthropometric constraints? | | | |  |
| Will the viewable stowage be able to withstand all foreseeable conditions such as turbulence or hard landings? | | | |  |
| With the viewable stowage fitted is there any interference with aircraft controls or equipment? | | | |  |
| Can the viewable stowage be removed from the aircraft without the use of tools? | | | |  |
| Have procedures been put in place to ensure that the means of securing the viewable stowage remain within acceptable limits, and who will be responsible for conducting these serviceability checks? | | | |  |
| If the viewable stowage uses a suction cup type attachment, how was it demonstrated that they will function following a rapid decompression? | | | |  |
| How has it been demonstrated that following detachment of a viewable stowage it will not jam the flight controls, injure the crew or cause damage? (See GM1 CAT.GEN.MPA.141(a) ) | | | |  |
| Have all applications to be used on the EFB been classified (Type A or Type B) and detailed in the Policy and Procedures Manual and listed in the OM Part A Section 8.9? | | | | |  | | --- | | *AMC1, AMC2, AMC3 CAT.GEN.MPA.141(b)* | |  |
| Has a risk assessment been undertaken, and submitted, incorporating all the elements required by AMC1 SPA.EFB.100(b)(1)? | | | | *SPA.EFB.100 (b)(1)* |  |
| Have the Human Machine Interfaces (HMI) of the EFB device and its applications been assessed against human factors principles as detailed in AMC1 SPA.EFB.100 (b)(2) | | | | *SPA.EFB.100 (b)(2)* |  |
| The placement of the EFB  is such that it does not create unacceptable workload for the pilot or require undue ‘head-down’ movements during critical stages of flight? | | | | *AMC1 SPA.EFB.100(b)* |  |
| Has the degradation of the display due to ageing/abrasion been  considered? | | | |  |
| Can the screen brightness be adjusted through a range to suit all  ambient conditions | | | |  |
| Are all required EFB buttons suitably back-lit? | | | |  |
| Are all controls properly labelled? | | | |  |
| Is there an independent power source for multiple EFBs? | | | |  |
| Has the EFB undergone environmental testing, especially for rapid decompression in accordance with EUROCAE ED-14D/RTCA DO-160D guidelines? | | | |  |
| Does the EFB Policy and Procedures Manual contain a process to determine which modifications to the EFB system require ENAC approval? | | | | *AMC2 SPA.EFB.100(b)* |  |
| Have the details of the Operational Evaluation Test been confirmed and a plan submitted to ENAC? | | | | *AMC3 SPA.EFB.100(b)* |  |
| Will paper-backups be used during the Evaluation Test? If not have arrangements for a LOFT, and possible flight, observations been arranged? | | | |  |
| When the Final Operational Report is issued, will it conform to the requirements of, and follow the format shown in GM1  SPA.EFB.100(b)? | | | |  |
| Has an EFB Administrator been appointed, and where are his/her  terms of reference defined? | | | | *AMC1*  *SPA.EFB.100 (b)(3)* |  |
| Has an EFB Policy and Procedures Manual been produced? Is this a stand-alone document or incorporated into other sections of the OM Manual? | | | | *AMC2 SPA.EFB.100(b)(3)* |  |
| Does the EFB Policy and Procedures Manual follow the format shown in GM1 SPA.EFB.100(b)(3)? If not, how will the operator demonstrate that all required sections have been adequately addressed? | | | |  |
| If the EFB duplicates information provided by aircraft avionics, is clear guidance as to which has primacy stated? | | | | *AMC3*  *SPA.EFB.100 (b)(3)* |  |
| Has a procedure been developed to ensure that crew verify that the configuration of the EFB and its databases are up to date? | | | |  |
| Have procedures been developed to ensure that crew workload is not adversely affected by use of the EFB, and list any times when the EFB should not be used? | | | |  |
| Have procedures been included to ensure the serviceability of the EFB before flight? | | | |  |
| Does MEL provide dispatch guidance for unserviceable elements of the EFB? | | | |  |
| Have maintenance procedures for the EFB been developed? | | | |  |
| How are EFB failures reported and how are crew notified of any unserviceability? | | | |  |
| How does the operator ensure the security of the EFB and its data? (Guidance given in GM3 SPA.EFB.100(b)(3) ) | | | |  |
| If electronic signatures are to be used, what procedures has the operator put in place? | | | |  |
| Has OMD amendment with EFB training syllabus submitted to ENAC for approval? | | | | *AMC4 SPA.EFB.100(b)(3)* |  |
| Has initial training on the EFB and its applications been conducted in accordance with the AMC and GM2 SPA.EFB.100(b)(3)?  (training shall be performed before commencing operational evaluation) | | | |  |
| Is EFB operation/training included in recurrent training packages? | | | |  |
| If **performance or mass and balance (M&B)** applications are used, what is the source material for the information used by the software? | | | | *AMC5 SPA.EFB.100(b)(3)* |  |
| How is the integrity of the database files protected from unintentional modifications? | | | |  |
| Does each software version have a unique version number? | | | |  |
| Does the EFB record each performance and M&B calculation for a minimum of 3 month? | | | |  |
| Have performance and M&B data figures been compared to AFM data across a range of conditions? (See paragraph (b) for criteria) | | | |  |
| Do procedures specify that calculations must be performed independently by both pilots with a formal cross check, including aircraft output if appropriate, and include a gross error check? | | | |  |
| How does the performance application allow the display of both dispatch (regulatory, factored) and other results (e.g. in-flight or unfactored) for landing calculations? | | | |  |
| Have specific procedures been developed in the event of a single EFB failure? | | | |  |
| How have the additional training requirements of paragraph (d) been addressed? | | | |  |
| How does the M&B application meet the requirement to show a  diagram displaying mass and c-of-g positions? | | | |  |
| How have the Human-factors considerations of paragraph (f) been addressed? | | | |  |
| How does the presentation of user entries differ from that of default values or entries from aircraft systems/other components of the EFB? | | | |  |
| What indication is shown when an unachievable operation is calculated(e.g. insufficient runway length)? | | | |  |
| Are all data input fields automatically cleared when the EFB shuts down or enters sleep mode, or when modifications are made? | | | |  |
| If an **Airport Moving Map Display (AMMD)** is used, does the position source meet the requirements of ETSO-C165a? | | | | *AMC6 SPA.EFB.100(b)(3)* |  |
| How has it been demonstrated that the EFB platform meets the software requirements of the AMMD? | | | |  |
| Have specific AMMD crew procedures and training been developed highlighting that it is only an aid to positional awareness and not to be used as the basis for ground manoeuvring? | | | |  |
| If a **commercial off-the-shelf (COTS)** position source has been used, how have the requirements of AMC 7 been met? (Further guidance given in GM5 SPA.EFB.100(b)(3) ) | | | | *AMC7 SPA.EFB.100(b)(3)* |  |
| Do **navigational chart** applications display all necessary information in an appropriate form? | | | | *AMC8 SPA.EFB.100(b)(3)* |  |
| If **in-flight weather (IFW)** applications are used, do procedures dictate the primacy of documented weather data and that they are not to be used for tactical decisions or to replace certified weather radar? | | | | *AMC9 SPA.EFB.100(b)(3)* |  |
| Does the IFW display distinguish between observed and forecast weather? | | | |  |
| Is the validity time of the data displayed? | | | |  |
| Does the IFW display have an appropriate legend? | | | |  |
| Does the IFW display indicate partial or total loss of data? | | | |  |
| What additional training and SOPs have been developed specific to the use of IFW? | | | |  |
| If **own-ship position** is to be displayed, does the aircraft also have a certified navigational moving map display? (Mandatory except on VFR flights) | | | | *AMC10 SPA.EFB.100(b)(3)* |  |
| Does the position source for own-ship display meet the requirements of AMC7 SPA.EFB.100(b)(3)? | | | |  |
| Is the own-ship position removed when position data is lost? | | | |  |
| Are the flight crew able to unambiguously differentiate the EFB function from avionics functions available in the cockpit, and in particular with the navigation display. | | | |  |
| If the own-ship position is displayed on terminal charts (SID, STAR or approach plates) is the label ‘AIRCRAFT POSITION NOT TO BE USED FOR NAVIGATION’ displayed? | | | |  |
| Is the EFB own-ship symbol different from that used in the aircraft’s primary navigation display. | | | |  |
| How is map orientation displayed (e.g. North-up or track-up), and how is this indicated? | | | |  |
| Apart from day-VFR with visual references, is information on track/ETA/Altitude/coordinates/speed removed? | | | |  |
| How do crew disable the own-ship position indication? | | | |  |
| Does EFB training emphasise that EFB own-ship position should not be used as a primary source of navigation? | | | |  |
| Do procedures specify the intended use of the own-ship position? | | | |  |
| Do procedures include EFB into the regular scan of flight deck systems indications, in particular, systematic cross-check with avionics before being used, whatever the position source? | | | |  |
| Have procedures been developed for the case of identification of a discrepancy between the EFB and Avionics? | | | |  |
| Does the **OM Part A** Section 8.9 include the details of the EFB procedures/hardware/software? | | | | *AMC3 ORO.MLR.100* |  |
| Does the **OM Part B/SOP/checklist/expanded checklists** include detailed pre- in- post- flight procedures for the use of EFB, including contingency /emergency procedures, for each aircraft type? | | | | *AMC3 ORO.MLR.100* |  |

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