Civil Aviation Authority of Bangladesh, Headquarter
Kurmitola, Dhaka - 1229
www.caab.gov.bd

No: 30.31.0000.111.49.001.19. Dated: March 2021

CIVIL AVATION DIRECTIVES (CAD-OPS) 17/2021

Subject: ELECTRONIC FLIGHT BAG (EFB)

1. Introduction:

(a) Civil Aviation Directives (CAD) are issued by the Civil Aviation Authority of Bangladesh (CAAB) from time to time to provide practical guidance or certainty in respect of the statutory requirements for aviation safety. This CAD provides to demonstrate compliance with the requirements regarding, and information related to an application for, an approval for operations with Electronic Flight Bag (EFB).

(b) An Electronic Flight Bag or EFB is defined by ICAO 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. EFB is an information management and display system by electronic means, intended primarily for flight crew or cabin crew functions that were traditionally accomplished using paper references (e.g. navigation charts, operating manuals, performance calculations).

(c) The EFB may also support other functions that have no paper equivalent, e.g. a video surveillance display or flight dispatch function such as flight performance calculations based on data provided to the airline's flight crew. The EFB may also be used to host other secondary functions on the same display system.

(d) An EFB system has essentially two components, viz. a host platform or hardware to run the software programmes and software programmes or applications to provide the required functionality.

(e) An EFB may be portable or installed either as an independent system or as part of an integrated onboard information system.

(f) The operator is hereby reminded that it is the sole the responsibility of the operator to ensure the accuracy and integrity of the information used and all data derived from are from verifiable sources.

(g) This CAD provides the guidance to understand the intent and objectives of the requirements for the performance of operational evaluation of the EFB system and its commonly used functions; and, where appropriate, enables the operator to seek the grant operational approval from CAAB.

(h) This CAD does not cover EFB Airworthiness Certification issues.

(i) This CAD is effective from 25 March 2021.

2. DEFINITIONS:

AID (Aircraft Interface Device) means 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.

AMM (Airport Moving Map) means a software application displaying airport maps and using a navigation source to depict the aircraft current position on this map while on ground.

COTS means commercial off the shelf that refers non-developmental items (NDI) sold in commercial marketplace and used or obtained through government contracts. A COTS product is usually a computer hardware or software product tailored for specific uses and made available to the general public.

Critical phases of flight means all ground operations involving taxi, takeoff and landing; all other flight operations conducted below 10,000 feet; and when handling abnormal situations.

Data connectivity for EFB systems means either uni-or bi-directional data communication between the EFB and other aircraft systems (e.g. avionics). Direct interconnectivity between EFBs or direct connectivity between EFBs and ground systems are not covered by this definition.

EMI/EMC means Electromagnetic Interference/Electromagnetic Compatibility

EFB administrator means a 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 software suppliers.

EFB host platform means the equipment (i.e. hardware) in which the computing capabilities and basic software (e.g. operating system, input/output software) reside.

EFB risk assessment and mitigation means a process that considers an EFB system, its software applications, and its integration inside a specific aircraft, to identify the potential malfunctions and failure scenarios; analyze their operational repercussions; and, if necessary, propose mitigation means.

EFB software application means a Software installed on an EFB system that allows specific operational functionality.

EFB system means the hardware (including any battery, connectivity provision, I/O devices) and software (including databases) needed to support the intended EFB function(s).

EFB system supplier means the company responsible for developing, or for having developed, the EFB system or part of it. The EFB system supplier is not necessarily a host platform or aircraft manufacturer.

EMI means electromagnetic interference

Mounting device means an aircraft certified part which secures portable or installed EFB, and/or its system components.

HMI means Human Machine Interface

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

Independent EFB platforms means multiple EFBs that are designed in such a way that no single failure makes all of them unavailable

OEM means an original equipment manufacturer is generally perceived as a company that produces parts and equipment that may be marketed by another company.

Portable Electronic Device (PED) means a typically consumer electronic devices, which 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

Viewable Stowage means a device that is secured either on the flight crew (e.g. kneeboard) or in/to an existing aircraft part (e.g. suction cups) with the intent to hold a portable EFB (e.g. a tablet) viewable to the pilot at her/his duty station. The device is not necessarily part of the certified aircraft configuration.

3. HARDWARE OR HOST PLATFORMS

3.1 Class 1 EFB systems

3.1.1 Considered as controlled personal electronic devices (PEDs), Class 1 EFBs are essentially commercially-off-the-shelf (COTS) portable computer system for use on an aircraft. It is not attached to any aircraft mounting device and must be secured during critical phases of flight.

3.1.2 Aircraft power may be connected to the EFB through a certified power source only. Except under specified conditions, EFB to aircraft data connectivity is not authorized.

3.1.3 A portable EFB provides a portable host platform, although when used on the flight deck, it is not part of the certified aircraft configuration. Portable EFBs can be used either as hand-held equipment or secured in a mounting device / viewable stowage solution.

3.1.4 Class 1 EFBs do not normally require airworthiness approval for the system.

3.2 Class 2 EFB systems

3.2.1 Though still considered as controlled PEDs, Class 2 EFBs are generally COTS-based computer systems connected to aircraft mounting devices during normal operations.

3.2.2 Aircraft power connection to Class 2 EFBs is through a certified power source and connectivity to aircraft avionics is possible.

3.2.3 A Class 2 EFB requires an airworthiness approval.

3.3 Class 3 EFB Systems

3.3.1 Class 3 EFB systems are installed equipment requiring an airworthiness approval. This approval should cover the integrity of the EFB hardware installation (e.g. server, display, keyboard, power, switching) and include hardware and software qualifications. Such aspects as the human machine interface should also be addressed.

4. SOFTWARE PROGRAMMES OR APPLICATIONS

4.1 Type A Programmes

4.1.1 Type A programmes typically comprise applications including pre composed, fixed data which may be hosted by any of the 3 EFB hardware classes. Though requiring processing for operational approval by the CAAB, there is no necessity to obtain an airworthiness approval for these programmes.

4.2 Type B Programmes

4.2.1 Type B programmes are applications which are capable of dynamic and interactive activities that can manipulate data and presentation. The data may be hosted by any of the 3 EFB hardware classes. Type B programmes do not require airworthiness approval but are subject to operational approval process by the Authority.

5. AIRWORTHINESS CONSIDERATIONS

5.1 Hardware or Host Platform

5.1.1 Class 1 EFBs:

(a) A Class 1 EFB does not require airworthiness approval for use during critical phases of a flight.

(b) The following items should be assessed in relation to the physical use of the device in the flight deck, its safe stowage, crashworthiness, security and the use of it under normal environmental conditions including turbulence:

(1) **EMI Emission:** If the EFB is to be used during critical phases of flight such as take-off and landing, the EFBs should be tested for compliance RTCA/DO-160(F)/EUROCAE ED-4(F)- Environmental conditions and test procedure for airborne equipment is a standard for environmental testing of avionics hardware.

(2) **Lithium Batteries:** As a minimum, lithium batteries should be tested to UL1642 standards for risk of leakage, hazards of overheating and short circuiting.

(3) **Power Source:** The design of the power source should be such that it's easy for the crew to deactivate, remove or un-plug from the EFB, failing which a clearly labelled and conspicuous means such as an on/off switch be provided.

(4) **Data Connectivity:** Data connectivity to other aircraft systems is not authorized except if the EFB system is connected to a system which is completely isolated from the avionics/aircraft systems (e.g., EFB system connected to a transmission medium that receives and transmits data for Aircraft Administrative Communications (AAC) purposes on the ground only). Any other type of data connectivity requires an airworthiness approval.

5.1.2 Class 2 EFBs:

(a) A Class 2 EFB requires an airworthiness approval for the mounting device, crashworthiness, data connectivity and EFB power connection.

(b) Evaluation of the EFB mounting device and flight deck location should be conducted as follows:

(1) Design and placement of Mounting Device: The mounting device should not obstruct visual or physical access to aircraft controls and/or displays, flight crew ingress or egress, or external vision. It should allow easy access to the EFB controls and afford a clear view of the EFB display while in use. The following are considerations for the design of an EFB mounting device:

(i) Impedance to flight crew performing the task of operating the aircraft or aircraft system;

(ii) Location of mount to afford optimum visual scope and physical accessibility of the EFB to the flight crew in his normal seated position;

(iii) The mount should be easily locked in place and secured out of the way when not in use;

(iv) The OEM data should be used when dealing with issues pertaining to mechanical interference adversely affecting control column forces or aircraft handling qualities;

(v) Cable to mate aircraft systems or other EFBs should be of optimal length and can easily and safely be secured to avoid becoming operational or safety hazard.

(2) EMI emission, Lithium Batteries and Power Source: In respect of EMI emission, Lithium batteries and Power source guidelines provided for Class 1 EFB in paragraphs 5.1.1(b)(1) and 5.1.1(b)(2) are also valid for Class 2 EFB.

(3) Data Connectivity: EFB data connectivity should be validated and verified to ensure non-interference and isolation from aircraft systems during transmission and reception.

5.1.3 Class 3 EFBs:

(a) A Class 3 EFB is considered an installed equipment and is subject to assessment of compliance with airworthiness requirements as well as approval. The airworthiness requirements are typically concerned with:

(1) The intended function and safety (e,g. security and integrity) of interfaces between EFB and avionics data sources including failure modes under normal and fault conditions. Software applications do not require airworthiness approval but are subject to operational approval process.

(2) Hardware and software qualification should be conducted in accordance with an agreed Design Assurance Level (DAL) for the system and its interfaces. The DAL may take into consideration provisions for future needs.

(b) Human factor assessment relating to display, keyboard, switches, annunciators, etc., should be conducted in accordance with criteria of the aircraft type design or basis of aircraft certification if it is a modification.

5.2 EFB Software Applications (Type A and Type B):

5.2.1 Type A and Type B EFB software applications do not require airworthiness approval, but should be approved through the operational approval process.

5.2.2 EFB software applications not classified Type A or Type B under EASA or classified Type C under FAA AC 120-76D should undergo full airworthiness approval.

5.3 Specific Considerations for Performance and Electronic Checklist Applications:

5.3.1 The operator must ensure that all EFB derived performance calculations are consistent with those derived from the approved Airplane Flight Manual (AFM).

5.3.2 The operator shall consult the CAAB on any changes to the electronic checklist which differs from the approved procedures contained in the AFM.

6. OPERATIONAL APPROVAL

6.1 The Civil Aviation Authority of Bangladesh (CAAB) grants EFB operational approval on a case-by-case basic taking into consideration the robustness of the EFB system and the reliability and integrity of information the EFB provides to the crew. A quality assurance system must also be established to approve the integrity of the software data prior to installation on the EFB.

7. MODES OF EFB OPERATIONS

7.1 The operator may opt for EFB operations with no paper back-up in which case the operator will have to demonstrate to the CAAB a full Operational Risk Assessment with suitable means of mitigation against failure or malfunction conditions.

7.2 Alternatively the operator may opt for EFB operations with paper back-up for cross-checking and mitigation against system failure or malfunction in which case the CAAB may accept a safety review consistent with the operator's Safety Management System.

7..3 The third option is a combination of paragraphs 7.1 and 7.2 with limited paper back-up for which the operator has to satisfy the CAAB of its merits and comply with specific conditions stipulated by the CAAB. Approval of this mode of EFB operation is at the absolute discretion of the CAAB.

8. OPERATIONAL RISK ANALYSIS

8.1 The Civil Aviation Authority of Bangladesh (CAAB) must be satisfied that the operator has taken into consideration for the analysis failure of the complete EFB system as well as individual applications including corruption or loss of data and erroneously displayed information.

8.2 The scope of analysis is operator-specific but should include:

(a) How to minimize undetected erroneous application output;

(b) Effective detection of erroneous outputs from software applications by
  (i) Description of corruption scenario;
  (ii) Description of mitigation means (crew monitoring).

(c) Upstream development quality process
  (i) Root data reliability (qualified/verified input data)
  (ii) Software partitioning predicated on safety effect.

(d) Mitigation means to the above.

9. HUMAN MACHINE INTERFACE ASSESSMENT FOR TYPE A AND B SOFTWARE APPLICATION

9.1 Assessment of Human Machine interface and Cockpit of Resource Management (CRM) to include at least the review of:

(a) Human/machine interface;

(b) Legibility of text;

(c) Approach/departure and navigation chart display;

(d) Responsiveness of application;

(e) Off-screen text and content;

(f) Active regions;

(g) Managing multiple open applications and documents;

(h) Messages and the use of colours;

(i) System error messages;

(j) Data entry screening and error messages;

10. FLIGHT CREW OPERATING PROCEDURES

10.1 The procedures for using EFB systems with other Flight Deck System should be designed such as to ensure the flight crew are able to:

(a) Determine the correct use of the appropriate system for a given purpose;

(b) Determine the appropriate course of action to deal with any information mismatch;

(c) Distinguish primary from backup information and decide upon the appropriate use of the backup information.

10.2 As far as possible the EFB/user interfaces should be consistent with the flight deck design philosophy.

10.3 A procedure should be in place to enable flight crew to determine at pre-flight the validity of the database, its version, revision number and the effective date. The verification should cover data that could adversely affect flight operations and the procedure should specify actions to deal with out-of-date application software or databases.

10.4 To mitigate and/or control additional workload arising from the use of EFB system, procedures should be developed to:

(a) Preclude both flight crewmembers become preoccupied with the EFB system at the same time; and

(b) Clearly define crew functions so to ease workload and enhance monitoring of operations of EFB and other aircraft systems.

10.5 The procedures should be strictly applied in flight and should include specific time periods during which the flight crew may not use the EFB system.

10.6 The operator should develop procedures to define the roles of the flight crew and dispatch office in creating, reviewing, and using performance calculations supported by the EFB systems.

11. QUALITY ASSURANCE

11.1 The operator should document procedures for the quality control of the EFB system. This should detail an overall in-charge of the EFB system, i.e. the EFB Administrator who will have authority to authorize and activate amendments to the hardware and software.

11.2 Maintenance procedures should be established for the EFB system to deal with unserviceability and failures to assure the integrity of the EFB system. The maintenance procedures will include the handling of updated information, the acceptance and timely promulgation to all users and aircraft platforms.

11.3 A fault or failure of the system should be brought to the immediate attention of the flight crew and the faulty or failed system isolated until rectification action is taken. In addition to back-up procedures to deal with system failures, a reporting system needs to be in place so that necessary actions are to prevent the erroneous information being used by the flight crew.

11.4 The EFB hardware should be secured physically and protected against unauthorized access by the use of password protected system updates. Such measures should also include the control of laptop software installations to prevent unauthorized use of data.

12. EFB ADMINISTRATOR

12.1 An Administrator is essential in the running the EFB system. The Administrator needs to be trained in his role and should have a good working knowledge of the proposed system hardware and operating system.

12.2 The Administrator should seek guidance from the EFB system supplier to identify clearly which parts of the EFB system that can be accessed and modified by the Administrator and the parts that are only to be accessed by the supplier.

12.3 Certain specified roles of the Administrator involving changes and modifications to the EFB may be procedurally delegated by the Administrator to maintenance and support staff. The Administrator must ensure these procedural guidelines are strictly adhered to and that no unauthorized changes can take place.

12.4 The Administrator shall also be responsible for conducting audits and to ensure compliance with company procedures by all personnel and the audits should include systematic audits/checks against the procedures as well as random checks of reports for followed-up actions.

13. FLIGHT CREW TRAINING

13.1 Specific training should be given to flight crew on the use of the EFB system and the training should include at least the following:

(a) An overview of the system architecture

(b) Pre-flight checks of the system

(c) Limitations of the system

(d) Specific use of each application and the conditions specifying EFB usability.

(e) Restrictions on system usage including system is non-availability

(f) Procedures for cross-checking data entry and computed information

(g) Phases of flight when the EFB system may and may not be used

(h) CRM and human factor considerations on the use of the EFB

(i) Training for new applications or changes to the hardware configuration

13.2 The EFB system may be used to play a role in the operator's Proficiency Checks as part of recurrent training and checking.

13.3 Operational Evaluation Test (OET): The purpose of the OET is to verify satisfactory compliance with the above elements prior to final approval of the EFB to replace paper documentation.

13.4 Where the operator opts for initial retention of paper back-up, a two-stage operational evaluation will be conducted and the first stage should:

(a) run in parallel with the equivalent paper format verification of correctness and reliability of the system;

(b) run for 6 month or as determined by the CAAB; and

(c) Include an evaluation and audits of the procedures used as well as checks on the accuracy of any computed data.

13.5 A report of satisfactory completion of the first stage should be submitted to the CAAB for acceptance and issue of approval for the use of the system in place of the paper format.

13.6 The second stage will still involve with carriage of paper documentation as precaution against any event cause by EFB system non-availability or fault.

13.7 The CAAB may ultimately grant approval to allow removal of paper documentation when it is satisfied that the back-up procedures are sufficiently robust.

13.8 Where the operator opts to start operations without paper back-up the OET will comprise of the followings:

(a) A detailed review of the operational risk analysis;

(b) A simulator LOFT session to validate the use of the EFB in normal, abnormal and emergency operating conditions. Such items as a late runway change and diversion to an alternate should also be included. The LOFT should precede any actual line flights, as the LOFT outcome may result in changes to flight crew training and/or administrative procedures.

(c) Observation by the authority of the initial line flights.

13.9 The CAAB must be satisfied that the operator is able to maintain the EFB to the required standard by the EFB Administrator and the quality assurance system.

14. FINAL OPERATIONAL REPORT (OPERATIONAL COMPLIANCE SUMMARY)

14.1 As final operational report to the CAAB, the operator shall submit an Operational Compliance Summary (OCS) summarizing all activities conducted or demonstrated as means of compliance with the requirements for the issue of an operational approval for the EFB system. The report should include, but not be limited to, the following:

(a) EFB platform/hardware description;

(b) Description of each software application to be included in the approval;

(c) Risk analysis summary for each application and mitigation means put in place;

(d) Human factor assessment for the complete EFB system, human machine interface and all software applications;

(e) Pilot workload in both single-pilot and multi-crew flown aircraft;

(f) Size, resolution, and legibility of symbols and text;

(g) Navigation chart display: access to desired charts, access to information within a chart, grouping of information, general layout, orientation (e.g. track-up, north-up), depiction of scale information;

(h) Training; and

(i) EFB Administrator qualification.

14.2 An operational approval based on the submission above will depend upon satisfactory evaluation by the Authority that the EFB is suitable for use as replacement or as an alternative to paper based information.

15. WITHDRAWAL OF OPERATIONAL APPROVAL:

15.1 The operator shall develop its maintenance programme for EFB system including conduct of regular evaluation and audit.

15.2 Any defect or operational anomaly must be investigated and rectified promptly. Failure to comply with the terms of approval may result in the Authority withdrawing the operational approval.

Air Vice Marshal M Mafidur Rahman, BSP, BUP, ndu, afwc,psc

Chairman

Civil Aviation Authority of Bangladesh

APPENDIX - I

	CHECKLIST FOR APPROVAL OF ELECTRONIC FLIGHT BAG (EFB)	**CAAB FORM NO:** **IHB 6-1 APP-50**

NAME OF THE OPERATOR:	**DATE OF INSPECTION:**
AOC NO:	**NAME OF INSPECTOR(S):**

LEGEND: Y– YES | N-NO | NA- NOT APPLICABLE

	PART-1 GENERAL	**GRADES**	**REMARKS**
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 supplemental Type certification(STC)?		
2.	Has the operator assessed the physical use of the device on the flight deck to include safe stowage, crash worthiness (mounting devices and EFBs, if installed) safety and use under normal environmental conditions including turbulence?		
3.	Will the display be readable in all the ambient lighting conditions, both day and night, encountered on the flight deck?		
4.	Has the operator demonstrated that the EFB will not electromagnetically interfere with the operation of aircraft equipment?		
5.	Has the EFB been tested to confirm operation in the anticipated environmental conditions (e.g temperature range, low humidity, altitude, etc.)?		
6.	Have procedures been developed to establish the level of battery capacity degradation during the life of the EFB?		
7.	Is the capability of connecting the EFB to certified aircraft systems covered by an airworthiness approval?		
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?		

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?		
10.	Can the brightness or contrast of the EFB display be easily adjusted by the flight crew for various lighting conditions?		

PART- 2 INSTALLATION (MOUNTING)		GRADES	REMARKS
1.	Has the installation of the mounting device been approved in accordance with the appropriate airworthiness regulations?		
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.?		
3.	Has it been confirmed that the mounted EFB location does not impede crew ingress, egress and emergency egress path?		
4.	Is it evident that the mounted EFB does not obstruct visual or physical access to aircraft displays or controls?		
5.	Does the mounted EFB location minimize the effects of glare and/or reflections?		
6.	Does the mounting method for the EFB allow easy access to the EFB controls and a clear unobstructed view of the EFB display?		
7.	Is the EFB mounting easily adjustable by flight crew to compensate for glare and reflections?		
8.	Does the placement of the EFB allow sufficient airflow around the unit, if required?		

PART- 3 SOFTWARE		GRADES	REMARKS
1.	Is the application considered an EFB function?		
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?		
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.)?		
4.	Does the software application have adequate security measures to ensure data integrity (e.g. preventing unauthorized manipulation)?		

5.	Does the EFB system provide, in general, a consistent and intuitive user interface, within and across the various hosted applications?		
6.	Has the EFB software been evaluated to consider HMI and workload aspects?		
7.	Does the software application follow Human Factors guidance?		
8.	Can the flight crew easily determine the validity and currency of the software application and databases installed on the EFB, if required?		

PART- 4 POWER CONNECTION/BATTERY		GRADES	REMARKS
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)?		
2.	Is the power source suitable for the device?		
3.	Have guidance/procedures been provided for battery failure or malfunction?		
4.	Is power to the EFB, either by battery and/or supplied power, available to the extent required for the intended operation?		
5.	Has the operator ensured that the batteries are compliant to acceptable standards?		

PART- 5 CABLING		GRADES	REMARKS
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.) remove the plug from the installed outlet)?		
PART- 6 STOWAGE			
1.	If there is no mounting device available, can the EFB be easily stowed securely and readily accessible in flight?		
2.	Is it evident that stowage does not cause any hazard during aircraft operations?		
PART – 7 VIEWABLE STOWAGE			
1.	Has the operator documented the location of its viewable stowage?		
2.	Has the operator assessed that the stowage characteristics remain within acceptable limits for the proposed operations?		
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)		

PART- 8 MANAGEMENT (EFB MANAGEMENT)		GRADES	REMARKS
1.	Is there an EFB management system in place?		
2.	Does one person possess an overview of the complete EFB system and responsibilities within the operator's management structure?		
3.	Are the authorities and responsibilities clearly defined within the EFB management system?		
4.	Are there adequate resources assigned for managing the EFB?		
5.	Are third parties (e.g. software vendor) responsibilities clearly defined?		

PART- 9 CREW PROCEDURES		GRADES	REMARKS
1.	Is there a clear description of the system its operational philosophy and operational limitations?		
2.	Are the requirements for EFB availability in the operations manual and / or as part of the minimum equipment list (MEL)?		
3.	Have crew procedures for EFB operation been integrated within the existing operations manual?		
4.	Are there suitable crew cross-checks for verifying safety-critical data (e.g. performance, mass & balance (M&B) calculations)?		
5.	If an EFB generates information similar to that generated by existing flight deck systems, do procedures identify which information will be primary?		
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?		
7.	Are there procedures that specify what actions to take if the software applications or databases loaded on the EFB are out of date?		
8.	Are there procedures in place to prevent the use of erroneous information by flight crews?		
9.	Is there a reporting system for system failures?		
10.	Have crew operating procedures been designed to mitigate and/or control additional workload created by using an EFB?		
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?		

PART 10 - TRAINING		GRADES	REMARKS
1.	Is the training material appropriate with respect to the EFB equipment and published procedures?		
2.	Does the training cover the list of items in Paragraph 13 (Flight Crew Training of this CAD)?		
PART 11 - HARDWARE MANAGEMENT PROCEDURES			
1.	Are there documented procedures for the control of EFB hardware configuration?		
2.	Do the procedures include maintenance of EFB equipment?		
PART 12 - SOFTWARE MANAGEMENT PROCEDURES			
1	Are there documented procedures for the configuration control of loaded software and software access rights to the EFB?		
2.	Are there adequate controls to prevent corruption of operating systems, software, and databases?		
3.	Are there adequate security measures to prevent system degradation, malware and unauthorized access?		
4	Are procedures defined to track database expiration /updates?		
5.	Are there documented procedures for the management of data integrity?		
6.	If the hardware is assigned to the flight crew, does a policy on private use exist?		

REMARKS:

SATISFACTORY ☐ **UNSATISFCTORY** ☐

_____

SIGNATURE OF THE OPS INSPECTOR(S)

APPENDIX - II

	CHECKLIST FOR APPROVAL OF ELECTRONIC DATA MANAGEMENT	**CAAB FORM NO: AOG 6-8-1**

OPERATOR'S NAME:	**DATE OF INSPECION :**
AOC NO:	**CAAB INSPECTOR'S NAME:**

LEGEND: S-SATISFACTORY | U – UNSATISFACTORY | N/A – NOT APPLICABLE

SL.NO	ITEM	GRADES	REMARKS
1.	Has the Operator's Operation Manual developed as per CAR 84 Rule 143(4)?		
2.	Has the operator got CAAB's approval for using the electronic navigation data for application in air or ground?		
3.	Is there any procedure developed by the operator for implementation in Operation Manual for timely distribution and insertion current and an altered navigation data to each aircraft requiring insertion of such data??		
4.	Is the process applied and the data product delivered meet the acceptable standard so integrity?		
5.	Is there any process to ensure that the data products are continuously monitored so that they meet the standards of integrity?		
6.	Is the data product compatible with and meets the specifications of the intended function of the equipment that will use the data product?		
7.	Ensure that the electronic navigation data is valid with an expiry date?		
8.	Does the data supplier comply with the standard set by agencies like FAA/EASA/CASA or equivalent standard acceptable to CAAB?		
9.	Does the operator have a procedure in both operation manual (OM) and maintenance control manual (MCM) regarding updating and uploading of the related data?		
10.	If the approval by CAAB is for Class A type then has the operator developed any acceptable procedure for carriage and updating?		

REMARKS:

SATISFACORY ☐ **UNSATISFACORY ☐**

SIGNATURE OF OPS INSPECTOR(S)