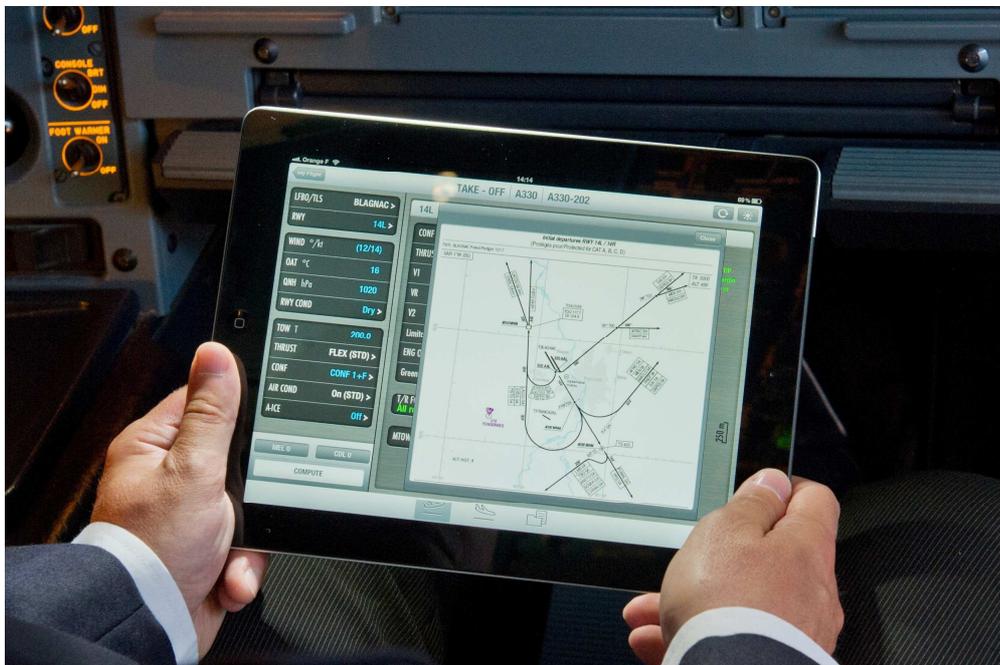


EUROPEAN AVIATION SAFETY AGENCY ELECTRONIC FLIGHT BAG (EFB) EVALUATION REPORT



AIRBUS

FlySmart with Airbus for iPad – V2

12 December 2013

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TABLE OF CONTENTS

1	PURPOSE AND APPLICABILITY.....	11
1.1	Purpose.....	11
1.2	Applicability.....	11
1.3	Use of the AMC 20-25 as Acceptable Means of Compliance.....	11
2	GENERAL DESCRIPTION OF THE SOFTWARE	12
2.1	My Flight page	12
2.1	Takeoff performance.....	13
2.2	Landing performance	13
2.3	Loadsheet.....	13
2.4	Operational Library Browser (OLB).....	13
2.5	Airbus Manager.....	13
3	EFB CLASSIFICATION.....	14
3.1	Hardware Classification	14
3.2	Software Classification.....	14
3.3	Non-EFB Applications.....	14
4	HARDWARE OPERATIONAL EVALUATION	15
5	SOFTWARE OPERATIONAL EVALUATION	15
5.1	Risk Assessment	15
5.2	Changes to the EFB system.....	15
5.3	Dispatch Considerations	15
5.4	Human Factors and HMI Assessment.....	15
5.4.1	<i>Human Machine Interface</i>	<i>15</i>
5.4.2	<i>Legibility of Text</i>	<i>16</i>
5.4.3	<i>Input Devices</i>	<i>16</i>
5.4.4	<i>User Interfaces Consistencies.....</i>	<i>16</i>
5.4.5	<i>Messages and Use of Colours</i>	<i>16</i>
5.4.6	<i>System Error Messages.....</i>	<i>17</i>
5.4.7	<i>Data Entry Screening and Error Messages</i>	<i>17</i>
5.4.8	<i>Error and Failure Modes.....</i>	<i>17</i>
5.4.8.1	<i>Flight Crew Error.....</i>	<i>17</i>
5.4.8.2	<i>Identifying Failure Modes.....</i>	<i>17</i>
5.4.9	<i>Responsiveness of Applications.....</i>	<i>17</i>
5.4.10	<i>Off-Screen Text and Content.....</i>	<i>17</i>
5.4.11	<i>Active Regions.....</i>	<i>17</i>
5.4.12	<i>Managing Multiple Open Applications and Documents.....</i>	<i>17</i>
5.4.13	<i>Flight Crew Workload.....</i>	<i>18</i>
5.4.14	HMI - Performance and Mass & Balance applications.....	18
5.5	Specific Considerations for Performance and Mass & Balance applications	19
5.5.1	<i>General</i>	<i>19</i>
5.5.2	<i>Testing</i>	<i>19</i>
5.5.3	<i>Procedures (Performance and Mass & Balance).....</i>	<i>20</i>
5.5.4	<i>Training (Performance and Mass & Balance).....</i>	<i>20</i>
5.5.5	<i>Additional Considerations for Mass & Balance applications.....</i>	<i>20</i>
5.6	Flight Crew Operating Procedures	20
5.6.1	<i>Procedures for using EFB systems with other flight crew compartment systems.....</i>	<i>20</i>
5.6.2	<i>Flight crew awareness of EFB Software / Databases Revisions.....</i>	<i>20</i>
5.6.3	<i>Procedures to mitigate and/or control workload.....</i>	<i>21</i>
5.6.4	<i>Flight Crew Responsibilities for Performance Calculations.....</i>	<i>21</i>

5.7	Compliance Monitoring	21
5.8	EFB System Security	21
5.9	Electronic Signatures	21
5.10	EFB Administration	21
5.10.1	<i>Considerations regarding Performance and M&B software administration</i>	22
5.10.2	<i>EFB Policy and Procedures Manual</i>	22
5.10.3	<i>System updates (iOS)</i>	22
5.10.4	<i>Non-EFB Software applications</i>	23
5.11	System Maintenance.....	23
5.12	Flight Crew Training.....	24
5.13	Operational Evaluation Test.....	25
5.13.1	<i>Initial Retention of Paper Back Up</i>	25
5.13.2	<i>Commencement of Operations Without Paper Back Up</i>	26
5.14	Final operational report	26
6	APPLICATION OF EFB EVALUATION REPORT	26
7	ALTERNATE MEANS OF COMPLIANCE	27
8	APPENDICES.....	27
APPENDIX A:	EFB RISK ASSESSMENT.....	28
APPENDIX B:	COMPLIANCE MATRIX	29

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ACRONYMS AND ABBREVIATIONS

AMC	Acceptable Means of Compliance
AMMD	Airport Moving Map Display
CBT	Computer Based Training
CDL	Configuration Deviation List
EASA	European Aviation Safety Agency
EFB	Electronic Flight Bag
EMI	Electromagnetic Interference
FAA	United States Federal Aviation Administration
FCOM	Flight Crew Operating Manual
FSTD	Flight Simulation Training Device
HMI	Human Machine Interface
LIFUS	Line Flying Under Supervision
MFD	Multi-function Display
MMEL	Master Minimum Equipment List
NAA	National Aviation Authority
OEB	Operational Evaluation Board (EASA term)
TGL	Temporary Guidance Leaflet

EXECUTIVE SUMMARY

The OEB evaluation found that the FlySmart with Airbus software suite satisfies the guidelines of JAA TGL 36 and AMC 20-25 (CRD version). This report also addresses parts of the demonstration of the hardware compliance required during the operational evaluation. The evaluation of the hardware is also addressed in a separate appendix.

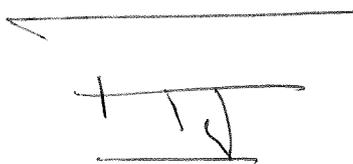
This current evaluation has been performed using the following methods:

- Desktop review of the software specifications;
- Review of the results from the software evaluations performed by Airbus;
- Review of Airbus compliance documents;
- Limited functional tests on sample EFBs.

Requirements contained in Commission Regulation (EC) N° 859/2008 of 20 August 2008 (EU-OPS) and Commission Regulation (EU) N° 965/2012 of 5 October 2012 (Air Operations Rules) have been considered together with guidance material in JAA TGL 36 (Approval of Electronic Flight Bags) and AMC 20-25 (Airworthiness and Operational considerations for Electronic Flight Bags, CRD version published in July 2013).

This report does not substitute for, or prevail over, any of the terms of the Airbus applications End User License Agreements (EULA) or the Apple hardware and software Product Agreements. The operators must read the EULA and take the responsibility to accept the different agreements prior to using the applications.

The EASA-OEB sees no technical objections to the grant by the National Authorities of an operational approval for the use of FlySmart with Airbus software applications taking the recommendations proposed in this report into account.



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Deputy Head of Flight department:
Date:

12/12/13



Jean Baril
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Date:

12/12/13

1 PURPOSE AND APPLICABILITY

1.1 Purpose

This Report specifies EASA requirements and recommendations applicable to operators seeking Operational Approval to use the FlySmart with Airbus applications under Commission Regulation (EC) N° 859/2008 of 20 August 2008 (EU-OPS), or Commission Regulation (EU) No 965/2012 of 5 October 2012 (referred to in this Report as “Part-OPS”), and it additionally provides guidance to National Aviation Authorities (NAAs) responsible for granting such approvals.

1.2 Applicability

This report is applicable to the applications of the FlySmart with Airbus for iPad V2.0.2 software suite, as well as subsequent versions added via addendum or not requiring a further evaluation by EASA (see chapter 5.2).

Findings of compliance and recommendations of approval contained in this report are consistent with the guidance specified in JAA TGL 36 and AMC 20-25 (CRD version – see paragraph 1.3).

This Report assumes that the parts not covered by this report regarding the evaluation of the compliance of the EFB will be performed by the operator and evaluated by its competent authority. Chapter 6 summarizes which parts are covered by this report and which are not.

This report includes:

- Minimum requirements which should be applied by the NAA when considering the grant of an Operational Approval;
- Information which is advisory in general, but is mandatory for particular operators if the designated configurations apply and if approved for that operator.

Provisions of this Report are effective until amended, superseded, or withdrawn.

1.3 Use of the AMC 20-25 as Acceptable Means of Compliance

This evaluation has been performed while the AMC 20-25 was in the Notice of Proposed Amendment process (NPA 2012-02 published on the 12th March 2012).

In order to facilitate the use of the evaluation results by operators and NAAs, it was decided to use the version of the AMC 20-25 that was proposed in the Comments Response Document (published on 31st July 2013).

The resulting AMC 20-25 is significantly more detailed than TGL-36 and different in some areas (for example for the EFB classes and software types definition). This report will underline the potential differences.

The structure of this report (chapters 4 and 5) has been adapted to follow the structure of the AMC 20-25.

2 GENERAL DESCRIPTION OF THE SOFTWARE

The FlySmart with Airbus for iPad suite is composed of several different applications:

- Takeoff performance
- Landing performance
- Loadsheet
- Operational Library Browser
- Airbus Manager

2.1 My Flight page

The “My Flight” page is common to all applications and enables access to all applications:



2.1 Takeoff performance

The Takeoff module provides the necessary take off performance data that the flight crew needs on board to take off.

The Takeoff module provides the following take-off performance:

- The take-off performance data for a take-off at TOGA thrust: V1, VR, V2, Engine Out Acceleration Altitude, limitation codes;
- The take-off performance for a take-off at flexible thrust: Flexible temperature, V1, VR, V2, Engine Out Acceleration altitude, limitation codes;
- The performance limit weight (if applicable), the optimum configuration (if applicable), the optimum engine option (if applicable);
- The detailed outputs: provided to the crew depending administration settings on a separate page. Example of generic parameters: runway lengths used, different V1 (min, max or balanced), limiting weights, minimum and maximum altitudes. Recommendations regarding the use of the detailed outputs are given during the Performance Administrator training.

2.2 Landing performance

Based on actual or selected conditions, the Landing module provides the necessary landing performance that the flight crew needs on board to land.

The Landing module provides the following detailed landing performance:

- The Maximum Landing Weight;
- The Limitation Code;
- The Regulatory Landing Distance or In-flight landing distances (as applicable);
- Vapp (final approach speed) in case of abnormal aircraft configuration;
- The detailed results: provided to the crew upon request on a separate page. The list of these detailed parameters depends on the operator administrator choice. Generic ones are: weight limited by landing distance, by approach climb gradient, Actual Landing Distance, Approach Climb Speed, etc.

2.3 Loadsheet

The aim of the Loadsheet module is to calculate the position of the center of gravity of the aircraft and relevant masses at takeoff. This module produces number of parameters that may be used by the aircraft avionics after pilot validation.

The parameters taken into account are the zero fuel weight (ZFW), zero fuel center of gravity (ZFCG), takeoff weight (TOW), takeoff center of gravity (TOCG) and the trim setting at takeoff (THS).

The Loadsheet module allows to ensure that the center of gravity and weights are within the operational envelopes (zero fuel, takeoff, and landing).

2.4 Operational Library Browser (OLB)

The OLB application enables to display the operational documentation. The operational documentation contains Airbus issued manuals and/or operator manuals (FCOM / MMEL-MEL / CDL.).

2.5 Airbus Manager

The Manager application is used for updating the operational data on the iPad, which is used by the FlySmart applications (performance data and operational manuals).

3 EFB CLASSIFICATION

3.1 Hardware Classification

The iPad is a “portable EFB” according to AMC 20-25 chapter 5.1.1. Under TGL-36, it can be either an EFB class 1 or class 2 depending on the solution chosen by the operator.

The physical use of the iPad is under the operator’s responsibility and was not covered by this evaluation. Airbus does not provide any mounting solution.

Operators must however be careful about the suitability of the whole EFB solution in the cockpit of their particular aircraft types. Although performance and loadsheet applications may not be needed frequently and in all flight phases, the documentation provided by the OLB may have to be accessed at any time.

The use during critical phases of flight is authorized if secured to a certified mount or if the EFB is securely attached to a viewable stowage device in a manner which allows its normal use (AMC 20-25 chapter 6.2.1.6 applies). These considerations are not covered by this evaluation. Refer to AMC 20-25.

The operator’s solution should ensure compliance with the AMC to CAT.GEN.MPA.180, in particular that “an electronic storage medium is acceptable if accessibility, usability and reliability can be assured”.

3.2 Software Classification

All the applications proposed in the FlySmart with Airbus for iPad V2.0.2 are classified as type B, both under TGL-36 and AMC 20-25.

To achieve this classification, Performance and Loadsheet applications malfunctions and misuses must be properly mitigated by operator’s SOPs and training as detailed in this report.

3.3 Non-EFB Applications

The iOS system provides defaults applications not related to flight operations and allows easy installation of additional applications.

These applications are out of the scope of this document. An operators EFB administrator should ensure that non-EFB software applications do not adversely impact the operation of the EFB (see chapter 4.7.4) and include them in the EFB configuration management.

It is reminded that third party applications enabling a display of own-ship position or flight parameters are considered to be Type C applications under TGL-36, or normal avionics functions under AMC 20-25, if the present position function is not inhibited and locked by the administrator.

4 HARDWARE OPERATIONAL EVALUATION

All aspects related to the hardware compliance evaluation are provided in Appendix C, available upon request from Airbus.

5 SOFTWARE OPERATIONAL EVALUATION

5.1 Risk Assessment

The Risk Assessment process of AMC 20-25 corresponds to the former Operational Risk Analysis from TGL-36.

Elements of the Risk Assessment required by AMC 20-25 §7.2 were elaborated during this evaluation and are provided in Appendix A (available on request).

These elements can be reused by operators to produce a Risk Assessment tailored to their operations, as required by AMC 20-25 §7.2.

5.2 Changes to the EFB system

As stated in AMC 20-25, the modifications to the EFB applications that do not bring changes to the calculation algorithm or HMI, or introduce new functionalities, do not require a supplementary approval from the competent authority. See also chapter 5.10 which contains considerations on the EFB administration.

5.3 Dispatch Considerations

Airbus provides generic dispatch considerations to support the EFB risk assessment. The document covers all FlySmart EFB solutions (portable including iPad and installed). It contains recommendations for use by operators in the drafting of their own policies.

The proposed recommended mitigation means for the iPad (refer to “portable EFB” tables in the document) are deemed acceptable by EASA.

5.4 Human Factors and HMI Assessment

The following elements are based on a limited EASA evaluation and on supporting material provided by Airbus during the evaluation.

These elements have led to the content of the chapters below, including recommendations for the flight crew training. In addition, several HMI points raised during the evaluation were discussed with Airbus, and upon agreement several modifications were brought to the applications.

The HMI is deemed satisfactory and compliant with AMC 20-25 appendix D, provided the training recommendations are implemented.

The results of this evaluation may be reused by operators. It is reminded however that operators should carry out a complementary HMI assessment of the integration of the EFB in the flight deck environment (see AMC 20-25 §7.5).

5.4.1 Human Machine Interface

An EASA evaluation of the applications was performed on a standard iPad loaded with V1, then V2, FlySmart applications. In general, the HMI was found consistent and intuitive. Several modifications

were agreed by Airbus and are planned for implementation in future versions.

5.4.2 Legibility of Text

It is expected that the text displayed on the EFB will be legible to the typical user at all likely and reasonable viewing distances.

A good responsiveness of the device and applications allows to easily zoom in on / pan to smaller portions of text and labels if needed.

5.4.3 Input Devices

The assessment of the input device (touch screen) was out of scope of this evaluation. However, the behaviour of the touch screen during limited ground trials was satisfactory (see also chapter 4.2.7.).

Operators and their competent authorities should evaluate on a case by case basis that flight deck reasonably expected environmental factors (in particular turbulence) do not affect the usability of the touch screen.

5.4.4 User Interfaces Consistencies

Consistency between EFB applications:

Airbus has developed the various FlySmart applications following a consistent set of requirements. The consistency is deemed satisfactory.

Consistency with flight deck applications:

The applications were developed to be consistent as far as applicable with the flight deck systems. The performance applications allow in particular to display calculation results in a format similar to that of the MCDU. The consistency with flight deck applications is deemed satisfactory.

5.4.5 Messages and Use of Colours

Use of colour:

In general, FlySmart with Airbus on iPad satisfy the guidance provided by the TGL-36 and the AMC 20-25.

Messages:

Although applications comply independently, there is no way to ensure at the applications level that interactions (visual and auditory) coming from other (non-EFB) applications, or from the OS, are disabled. Pop-ups, notifications and alarm sounds may be triggered unexpectedly depending on the configuration.

Thorough testing is therefore recommended to check the possible interactions of the suite of applications considered for use as part of the operator's EFB solution. Updates to the operating system (iOS) may also require a re-assessment of potentially unwanted messages or pop-ups over EFB applications.

Possible work-around solutions in case of interference include turning notifications and sound off in the crew procedures. Certain pop-ups will however not be de-configurable, e.g. low battery warnings.

The use of wifi on ground may also be a source of spurious notification or pop-ups.

5.4.6 System Error Messages

FlySmart on iPad is deemed compliant. Errors in the FlySmart applications trigger notifications (e.g. calculation error).

Non-EFB applications should be assessed in order to avoid the triggering of undue error messages.

The stability of the applications has been good during the evaluation (both from Airbus and EASA). In case “crashes” of the EFB applications occur, it is recommended that there is a process for the crew to report this to the EFB administrator.

5.4.7 Data Entry Screening and Error Messages

User entry fields implement checks against erroneous formats. When a user makes an entry with a wrong format, he is advised through a message in the application.

5.4.8 Error and Failure Modes

5.4.8.1 Flight Crew Error

The applications have been designed to be consistent with Airbus flight deck systems, through the use of the colour coding and entry formats.

5.4.8.2 Identifying Failure Modes

Failure identification is ensured by the use of error messages (see 5.4.6 & 5.4.7).

5.4.9 Responsiveness of Applications

During the limited hands-on trial by EASA the responsiveness of the device and of the applications was satisfactory.

A system busy indicator (standard iOS widget) is implemented in all applications.

A performance computation may require several tens of seconds. The performance calculation time increases with the complexity of the calculation point. A busy indicator and a message window inform that the calculation is on-going.

5.4.10 Off-Screen Text and Content

In the OLB, any Documentary Unit (DU) that is displayed ends by a End of DU tag (“// END” indication). This enables the user to ensure that all information contained in the DU has been displayed.

5.4.11 Active Regions

The applications use the consistent HMI widgets and standard iOS (version 6.x) interaction means that there is no ambiguity concerning the active regions.

5.4.12 Managing Multiple Open Applications and Documents

Toggling between the different FlySmart applications is conveniently ensured through a bar at the bottom of the screen. The indication of the active application is unambiguous.



The toggling with other EFB or non-EFB applications can be ensured through the iOS taskbar. It is recommended this is highlighted to crews during the EFB training (see [5.12](#)).

5.4.13 Flight Crew Workload

The crew workload evaluation can be considered out of the scope of this document since it depends on operator specificities, like other EFB applications used, positioning of the device and standard procedures.

Operators and their competent authorities should evaluate the EFB positioning, stowing, and intended use during applicable phases of flight (including possible use of a viewable stowage device, and in an operationally representative situation), to insure there is no unacceptable flight crew workload or adverse safety implications.

This evaluation should be performed taking into account the specific operators SOPs.

5.4.14 HMI - Performance and Mass & Balance applications

AMC 20-25 introduces a new paragraph dedicated to specific HMI requirements for performance and mass & balance applications (Appendix D, chapter D.3.2).

This has been considered during the evaluation and FlySmart on iPad is deemed to be compliant with this material.

As required by AMC 20-25, data outputs and certain inputs are deleted after a certain period of time in standby. This is to prevent the use of outdated information. The loadsheet is however not cleared. The behaviour of the automatic deletion has to be emphasized during training as mentioned in [5.12](#).

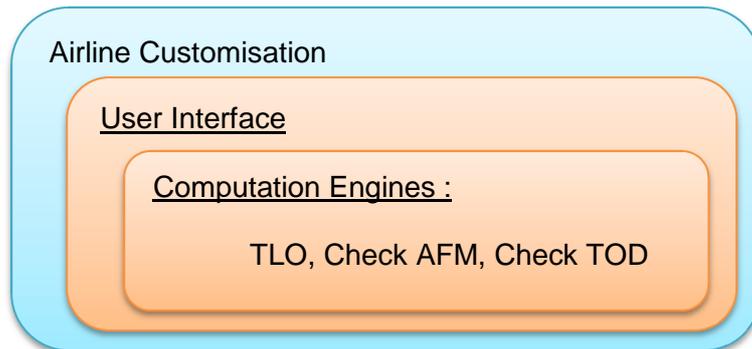
5.5 Specific Considerations for Performance and Mass & Balance applications

AMC 20-25 introduces in Appendix F several considerations that operators need to consider and comply with in case of use of performance and/or mass & balance applications.

These means of compliance were taken into account during the evaluation.

5.5.1 General

In operations, computations are achieved through the use of following layers:



This evaluation has focused on the process used to develop and validate the two inner layers. The validation of the outer customisation layer is under responsibility of the operator and its EFB administrator (see 5.10.1).

The performance database provided by Airbus for the FlySmart applications are based both on the certified AFM data and on additional operational data (e.g. MEL, CDL penalties) that are not covered under the certification processes. These operational data are used in an optimised manner and results are tailored to the conditions entered by the user. Therefore, some differences may exist compared to the paper documentation.

The EFB administrator is responsible to ensure the compliance to the applicable OPS rules through the settings available in the administration tool (PAADMin).

An individual performance computation uses a chain of different algorithms designed to secure the results. Each algorithm is validated by Airbus, either through a full validation process, or through a results comparison with an already validated Windows algorithm.

The validation processes presented by Airbus of the applications interface and the computation engines are deemed satisfactory and compliant with AMC 20-25.

As required by AMC 20-25, all references regarding the performance and W&B applications are available. They are accessible in the applications settings, through the generic iOS settings icon.

5.5.2 Testing

Airbus testing method for the interface and computation engines is described in documents X446RP1330952 and X060RP0618691.

The test coverage includes non-regression and validation of the changes.

The development and validation process presented by Airbus are deemed compliant with the AMC 20-25 material regarding testing. The evaluation has covered the validation and testing processes and not their results; Airbus remains responsible to ensure that the testing is performed on each version and that

results are satisfactory before releasing the applications.

It is recommended that operators follow all Airbus guidelines and communications related to the continued development, maintenance, and feedback regarding the applications.

5.5.3 Procedures (Performance and Mass & Balance)

Although the use of the performance applications allow the crew to get accurate and optimised results, the trust in those results over time, and the automation of the simple actions required to get them, may degrade the importance given to the critical analysis of each calculation and to the procedures used to obtain the results.

It is therefore important to remind crew members during training, that the procedures should be strictly applied and that results are only as good as the entries they come from.

Past experience regarding performance applications show that entry errors (e.g. typing slip) are quite common.

AMC 20-25 chapter F.1.3 provides guidance to operators regarding the procedures related to the use of performance and mass & balance applications.

Airbus provides in FCOM PRO-SUP-92-20 supplementary procedures for the use of FlySmart on iPad. Those should be used as a basis for an operator's SOPs.

Procedures should in any case incorporate independent gross error checks, such as the green dot speed check. Other checks might be considered additionally, such as comparing actual ZFW with planned ZFW.

5.5.4 Training (Performance and Mass & Balance)

The recommendations provided in chapter 5.12 cover the requirement of chapter F.1.4 of the AMC 20-25.

5.5.5 Additional Considerations for Mass & Balance applications

All basic data used in the Loadsheet application, such as aircrafts basic weights, CGs, default passenger and baggage weights, are modifiable by the EFB administrator.

The EFB administrator should ensure that the applications are set up correctly and in accordance with the applicable legal requirements.

A diagram in the Loadsheet application allows to visualize the mass and CG position of the aircraft.

5.6 Flight Crew Operating Procedures

5.6.1 Procedures for using EFB systems with other flight crew compartment systems

Procedures for using the EFB with other flight deck systems is out of scope of this evaluation and remain under the operator's responsibility.

5.6.2 Flight crew awareness of EFB Software / Databases Revisions

Flight Crew must be made aware of the applicable revision status. Procedures should include the verification of the applicable software and database load.

5.6.3 Procedures to mitigate and/or control workload

The flight crew procedures are out of scope of this evaluation and remain under the operator's responsibility.

Operators can base their procedures on the content suggested by Airbus, provided they are compliant to the requirements of AMC 20-25.

Where an operator modifies these procedures to integrate with the operating policies that define their own Standard Operating Procedures, the operator should ensure, and the NAA should verify, that the operator's SOPs do not compromise the operating philosophy and level of safety established by the Airbus procedures.

5.6.4 Flight Crew Responsibilities for Performance Calculations

Airbus proposed SOPs define the role of both crew members for the use of the performance application. Operators should in addition have a clear defined policy defining the role of other parties involved, such as EFB performance administrator and dispatch office.

5.7 Compliance Monitoring

The operators compliance monitoring programme (required by Part-OPS, ORO.GEN.200) should include procedures related to the EFB system.

These procedures should ensure that the EFB operations and administration are conducted in accordance with all applicable requirements, standards and operational procedures.

5.8 EFB System Security

The operator's EFB Administration procedures must be capable of ensuring an appropriate level of EFB security as described in the AMC 20-25.

The operator should use technologies and/or procedures to assure that unauthorized content cannot enter the EFB system.

These evaluations may take credit of the protections which are already built-in in the FlySmart applications. Integrity checks are performed after each data transfer, for full data sets and delta sets.

5.9 Electronic Signatures

The loadsheet application provides an electronic signature system that is deemed equivalent to a handwritten signature.

5.10 EFB Administration

The administration workflows are described in Airbus document ref. X46RP1200843.

Operators are responsible to define the administrator role and appoint him.

Considerations regarding the administrator role, training, and responsibilities are contained in AMC 20-25 7.11.

5.10.1 Considerations regarding Performance and M&B software administration

The FlySmart applications suite is customizable to suit an airline needs and the specificities of its operation.

This customization is under the responsibility of the EFB administrator, or, under delegation, of a performance administrator.

Each person involved in the administration of the performance and loadsheet applications should have an appropriate background (e.g. as a performance engineer) and should have received proper training on the applications.

During the evaluation the following items of emphasis were identified, and should be considered both during the administrator training and continuously during the process of administering the Performance / loadsheet applications:

- The management of the aircraft fleet must ensure that correct performance data (e.g. aircraft weights, engine configurations) are used at all time for each tail number.
- The management of the airport data is critical. The administrator is responsible for the data quality, accuracy of the runway/obstacle data and must ensure, together with the data provider, of the achievement of the data integrity.
- The administrator must set up the applications in a way that the computations are compliant with the applicable regulations (Part-CAT). This include for instance activating in the configuration some performance checks for contaminated runway results (“wet-check”).
- The take-off results page 3/3 provides detailed calculation parameters. The parameters are selected by the administrator according to the operator policy. The customization of that page should ensure that the details provided are consistent and relevant for the crew to use.
- It is recommended that if engine out procedures are available in the airport data set (in order to appear in the take-off results page), each procedure content is prefixed by a label such as “EOP:” in order to clearly characterize them and avoid confusion with normal procedures.
- The “snapshot” function, that allows to record snapshots of performance results and consult them, must be deactivated by the administrator. It may be activated in a future version where snapshots will be kept only for a limited time.

It is furthermore reminded that an operator should conduct testing related to its customisation of the applications and to any element specific to its operation. Refer to AMC 20-25 F.1.2.1.

5.10.2 EFB Policy and Procedures Manual

The EFB policy and procedures manual is under operator’s responsibility. Refer to AMC 20-25 7.11.1.

5.10.3 System updates (iOS)

This evaluation is applicable to iOS 7.

Any new iOS version should imply a complementary evaluation to verify that it has no adverse effect on the EFB applications.

It is recommended that operators implement administrator procedures to not update their devices to new

major releases of iOS until such time as Airbus reports that no compatibility issues remain between the revised OS and all FlySmart applications.

It is also recommended that the administrator configures the devices in a way which prevents crew to perform updates themselves. Experience with the iPad have shown that inadvertent updates have in the past already prevented the use of the EFB applications.

In all cases the configuration management responsibilities are with the EFB administrator.

5.10.4 *Non-EFB Software applications*

The iOS system provides defaults applications not related to flight operations and allows as well to install additional applications that may be defined as “Miscellaneous” under chapter 5.2.3 and 6.2.2.3 of the AMC 20-25.

These applications are out of the scope of this evaluation, however their use is subject to the applicable operational rules and to chapter 6.2.2.3 of the AMC 20-25.

It is recommended that the EFB administrator inhibits the possibility to install new applications, once the EFB is in the defined software configuration. This should be achieved with a passcode.

5.11 System Maintenance

The EFB system maintenance is under operator’s responsibility. AMC 20-25 7.12 applies.

The operator is in particular responsible for the maintenance of the iPad batteries, and should ensure that they are periodically checked and replaced as required.

5.12 Flight Crew Training

Training for the use of the EFB should be for the purpose of operating the EFB itself and the FlySmart applications hosted on it, and should not be intended to provide basic competence in areas such as aircraft performance, etc. Initial EFB training, therefore, should assume basic competence in the functions addressed by the software applications installed. Where flight crew do not have the necessary experience, additional requirements may have to be applied by the NAA.

Training programmes for the EFB may take credit for previous EFB experience. It is however recommended that crew already familiar with the FlySmart Windows application undergo the full initial training for the iPad applications, due to the differences in use.

In addition to the areas provided in AMC 20-25 chapters 7.13 and Appendix E, it is recommended that the initial training include the following areas of emphasis:

Generalities:

- Hardware-related aspects, i.e. use of the EFB hardware and the need for proper adjustment of lighting when the system is used in-flight, hardware environmental limitations, management of the EFB battery and its charge.
- Basic common philosophy of the EFB applications, color coding, default values.
- The training should emphasize the importance of executing all calculations in accordance with the SOPs, to assure fully independent calculations and to perform the necessary cross- and gross-error checks.
- The training should stress that care should be taken while performing calculations, and that upon distraction or interruption during the input sequence it should be considered to start from the beginning again.
- The importance of using and updating the “My Flight” page for each flight should be emphasized. This allows in particular ensuring a fresh start for each computation.
- Responsibilities and requirements regarding the installation and use of non-EFB applications.
- Toggling between the various EFB and non-EFB applications (in iOS 6 and below, accessing the taskbar through a double click of the Home button, or with a 4 fingers up slide). Exiting applications in the taskbar.

Loadsheet:

- Workflow in the loadsheet application and use of the different entry modes.
- Retention of the loadsheet data, transfer to the performance applications.

Performance applications:

- Training on the use of the Runway Condition Assessment Matrix (RCAM) and associated runway states, reported braking actions.
- Use and differences between the various “clear” functions.
- Differences between Dispatch and In-flight landing calculations and conditions of use of each mode.

- Depending on operator's customization, content of the "EOP" area (take-off results page 1) and of the detailed results page (results page 3).
- Use of take-off flaps optimization vis-à-vis company policy. If necessary the crew should be trained to the behaviour of the aircraft in any new take-off configurations that may emerge due to the flaps optimization.

Ops Library Browser (OLB):

- The philosophy of the application should be understood, in particular the navigation inside a document and between different documents.
- Use of bookmarks (temporary or permanent) and selection of the level of detail.
- The OLB might not be suitable as a mean to "study" a document, compared for instance to a pdf file. This is due to the structured approach that require to select each chapter individually, without continuous scrolling in the document.

Use of MEL/CDL items:

The training should emphasize that in case of open MEL or CDL items, it is important to entirely check the associated provisos and restrictions.

The crew should understand in particular that not all MEL/CDL items that have an impact on performance have their effect fully taken into account by the performance applications. Examples that may be used during the training are:

- ❖ A "NWS Inop" item does not reduce the crosswind limits in the application, nor does it disable the selection of contaminated runways runway states.
- ❖ An "ADR2 Inop" item will not prevent that an optimized take-off calculation proposes a take-off in configuration 1+F, which may not be allowed by the MEL.

The training should in addition highlight that if available, the OLB is the preferred way of managing MEL or CDL items. Inserting items directly in the performance applications should be reserved to studying particular cases. Crews should be aware that a MEL or CDL item entered in one of the performance applications (e.g. Take-off) is not shared with the other (e.g. Landing).

5.13 Operational Evaluation Test

Before the granting of an Operational Approval, the operator should ensure, and the NAA should verify by means of an Operational Evaluation Test, that the guidance and recommendations of JAA TGL-36 or AMC 20-25 (as applicable) and those contained in this OEB Report have been satisfied.

5.13.1 Initial Retention of Paper Back Up

Where paper is initially retained as back-up for the purpose of validating the paperless-solution provided by the Airbus OLB for iPad, the Operational Evaluation Test will consist of an in-service proving period typically performed via an operationally-appropriate number of test and evaluation flights.

The purpose of the in-service proving period is for the operator to demonstrate to the NAA that the EFB system provides an acceptable level of accessibility; usability and reliability to those required by the applicable operational requirements (see OPS 1.135(b) and 1.1040(m) / AMC1 to CAT.GEN.MPA.180). In particular that:

- The operator's flight crew are able to operate the EFB applications without reference to paper;
- 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 database is involved;
- The introduction of the EFB without paper back up does not adversely affect the operator's operating procedures and that alternative procedures for use when the EFB system is not available provide an acceptable equivalent;
- The six month period dedicated to this check should take the frequency of the flights into account.

The results of the demonstration may be documented in the form of a Report from the in-service proving period on the performance of the EFB system.

The operator may then be granted an Operational Approval of the EFB to allow removal of the paper back up by their NAA if they have shown that the EFB system is sufficiently robust.

5.13.2 Commencement of Operations Without Paper Back Up

Where an operator seeks to start operations without paper backup, the operational evaluation test should consist of the following elements:

- a detailed review of the EFB risk assessment, proper to the operator and based on the risk assessment of [Appendix A](#);
- a simulator LOFT session to verify the use of the EFB under operational conditions including normal, abnormal, and emergency conditions; and
- observation by the competent authority of the initial operator's line flights.

The operator should demonstrate that they will be able to continue to maintain the EFB to the required standard through the actions of the Administrator and Compliance Monitoring Programme.

5.14 Final operational report

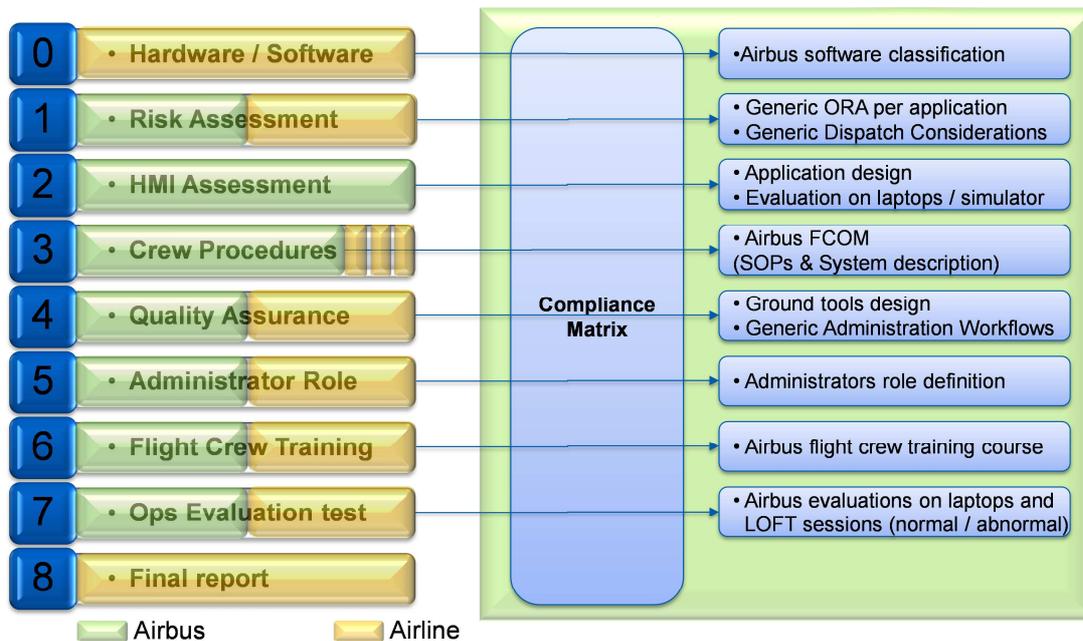
Operators should produce and retain a final operational report, which summarises all activities conducted and the means of compliance used, supporting the operational use of the EFB system. Refer to AMC 20-25 7.15 and Appendix I.

6 APPLICATION OF EFB EVALUATION REPORT

This OEB EFB Software Evaluation Report is applicable to both operators and NAAs when considering an application for Operational Approval with use of the FlySmart with Airbus for iPad applications. The OEB has found that the software as evaluated satisfy the corresponding guidance of JAA TGL 36 and AMC 20-25 (CRD Version).

However, the evaluation of the hardware and its compliance with regulations remains a responsibility of the operators and their competent authority. The findings of this report do not constitute an Operational Approval and individual operators must obtain approval from their NAA prior to use of these applications.

In addition to all recommendations provided in this report, the following figure provides an overview of which parts have been covered with Airbus during this evaluation, and which remain under operator's responsibility.



Note: Although the Hardware / Software are shown here under Airline responsibility, parts can be covered by Airbus and this report.

7 ALTERNATE MEANS OF COMPLIANCE

Alternate means of compliance to the recommendations contained in this Report may be approved by National Authorities. If alternate means of compliance are proposed, operators may be required to establish that any proposed alternate means provides an equivalent level of safety to the recommendations of JAA TGL-36, AMC 20-25 and this OEB Report. Analysis, demonstrations, proof of concept testing, differences documentation, or other evidence may be required.

8 APPENDICES

The following Appendices are part of the report, and the corresponding documents available on request.

Appendix A EFB Risk Assessment

Appendix B Compliance Matrix

Appendix C Hardware Compliance

APPENDIX A: EFB RISK ASSESSMENT

The document is available on request to Airbus.

APPENDIX B: COMPLIANCE MATRIX

(document X46RP1304301, version 1.1 from 01/08/2013)

The document is available on request to Airbus.

APPENDIX C: HARDWARE COMPLIANCE

This appendix has been written by the EASA evaluation team following evaluation of the hardware compliance documents provided by Airbus.

The appendix is available on request to Airbus.