

SEATTLE AIRCRAFT EVALUATION GROUP

OPERATIONAL SUITABILITY REPORT

Lufthansa Systems

Electronic Flight Bag (EFB) Type B Software,

Lido/iRM Application Ver 1.05

presented on the Apple iPad™ and iPad2™

Report

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1. Purpose and Applicability

- 1.1 The purpose of this report is to establish the Operational Suitability of the LIDO/iRM application software as presented on the Apple iPad™ and the second generation iPad2™. All references to iPad™ in this report apply equally to the first generation iPad™ and the second generation iPad2™. This report does not approve the operational use of this software/hardware combination. Operators must apply to their assigned operations authority for applicable operational use authorization.
- 1.2 Operations Aviation Safety Inspectors from the Seattle Aircraft Evaluation Group (AEG) performed the original Operational Suitability Evaluations in accordance with AC 120-76A and FSIMS 8900.1 Vol. 4, CH. 15, Sec. 1.
- 1.3 Operations Aviation Safety Inspectors from the SEA AEG performed the Operational Suitability Evaluations on Lido/iRM Version 1.05 using the checklist contained in Appendix 3 to this report.
- 1.4 Operations Aviation Safety Inspectors from the SEA AEG performed the Operational Suitability Evaluation on both the Apple iPad™ and iPad2™.
- 1.5 This report addresses the LIDO/iRM application for Class 1 or Class 2 Electronic Flight Bag operations under applicable 14 CFRs (see Appendix 2).
- 1.6 Provisions of this report are consistent with the guidance defined in FAA Advisory Circular 120-76A and assume that appropriate airworthiness certification for installation of the EFB hardware is accomplished. The following information related to operational suitability is included:
 - A general description of the EFB application evaluated for this report, including:
 - The version and build number of the application
 - The applicable operating system
 - A revision process procedure/method that ensures appropriate database accuracy and currency
 - Specifications for training and typical acceptable training course description
 - Specifications for Currency
 - Configuration Control – including procedures governing the distribution of updates to the application.
 - Compliance Checklist

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- List of documents to meet the requirements of AC120-76A for operational use and continued airworthiness. (Appendix 1)
- List regulatory compliance status (compliance checklist) for pertinent parts of 14 CFR (Appendix 2)

1.7 This report utilizes the suggested outline listed in 8900.1 Vol. 4, CH. 15, Sec. 1, Figure 4-81, Evaluation Report Information Template. Sections not related to this software application have been marked, "Not applicable to this report."

2. Electronic Flight Bag (EFB) evaluation identified by EFB make/model and aircraft make/model.

2.1 The LIDO/iRM Electronic Flight Bag application is currently designed for use on the entire range of Apple iPad™ devices. This report covers only the Apple iPad™ and iPad2™ installation. All subsequent sections of this report related to descriptions, operations and/or capabilities of EFB hardware other than the Apple iPad™ and iPad2™ installation will be stated as, "Not Applicable." Please refer to the Operation Specifications governing the approval of the Apple iPad or iPad2™ as a Class I or Class II EFB for that specific approval.

3. Manufacturer's name and model number of the mounting system evaluated.

3.1 Not applicable to this report.

4. EFB location and stowage suitability.

4.1 Not applicable to this report.

5. EFB Display lighting.

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- 5.1 The iRM application features a dimming function (sun shaped symbol) in the upper menu bar which allows the user to dim the display in addition to the iPad™ dimming function accessible in the iPad™ settings menu.
- 5.2 The iRM application features a “Sleep/No Sleep” button at the lower menu bar which allows the user to overwrite the iPads™ systems setting for auto-lock. If set to “Sleep” the iPad™ will auto lock after the time specified in the iPad’s™ General Settings. If set to “No Sleep” the iPad™ will not auto lock and the chart will remain visible. The “No Sleep” setting is of particular importance during final approach phases. It is only enabled for the individual chart. Whenever a new chart is opened up, the default setting is “Sleep”.

6. Suitability of procedures for EFB use during all phases of flight.

- 6.1 Provided the Apple iPad™ and iPad2™ are properly certified for use, the LIDO iRM application is able to depict Lufthansa Systems Lido/RouteManual electronic airport diagrams, departure, arrival, and approach charts traditionally provided in paper form.

7. Suitability of procedures to follow when one unit fails and when both units fail to include alternate means of accessing data.

- 7.1 This is not an evaluation of operational procedures.

8. A revision process procedure/method that ensures appropriate database accuracy and currency.

- 8.1 The iRM application follows the following convention in displaying the currency of data:
 - 8.1.1 On the far left of the airport list, there is a colored bar next to the airport name.
 - 8.1.2 If green, then you have downloaded the charts within the past week; your charts are current.
 - 8.1.3 It changes color from green to red every second Thursday (biweekly revision cycle in accordance with AIRAC 28 days cycle) as a reminder to update your charts. If red, you should check for availability of revised charts.

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Figure 1: Airport revision status
(left: red – immediately check for updates; right: green – charts are current)

8.2 The iRM application offers three different ways of maintaining chart currency:

- 8.2.1 The “Update All” button located at the bottom of the airport list will update all airports within your airport library by the click of one button. The “Update All” process requires the longest time to complete and thus may not be feasible to conduct shortly prior to a flight. Time required to complete an “Update All” depends on the connection’s speed, the number of airports in your airport library and the number of charts revised. Once you tap the button, the number of airports that have been updated and the overall number of airports in your airport library will be indicated. If canceled, the airports were all charts have been completely updated will remain updated
- 8.2.2 The “Update Clipboard” button is located at the bottom of the clipboard’s airport page. By tapping the “Update Clipboard” button all charts of the airports that have been loaded into the clipboard will be updated. If cancelled, the airports were all charts have been completely updated will remain updated. The “Update Clipboard” has been designed to allow a fast update of those charts required for a specific flight.
- 8.2.3 The “Download” button available at the airport page at the airport page will update the charts just for the airport opened. Therefore, you should tap the airport in the airport list. The airport’s page will appear. On the airport’s list, tap on the button download. This will download the most current charts for this airport. Once you are on the airport’s page (by tapping on it), tap the button “Download”.

9. Training effectiveness and typical acceptable training course completion.

- 9.1 Training programs for the EFB may take credit for previous EFB experience. For example, previous experience using a Class 1 or 2 charting application using similar software may be credited toward EFB training. Principal Inspectors for operators initially introducing a new EFB system may approve programs consistent with programs previously approved for other operators. For information regarding previously approved programs or programs crediting previous EFB experience, FAA Principal Inspectors for other operators may be consulted.

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- 9.2 Pilots should be trained to proficiency using Level C training as defined in AC120-53A (i.e. classroom instruction, pictures, videotape, ground training devices, computer-based instruction and static aircraft training).
- 9.3 Operators must emphasize during initial line operating experience, the need to avoid fixation on the display during critical phases of flight, including taxi operations.
- 9.4 Recurrent training specific to the Lido/iRM application is not required provided the functions are used regularly in line operations. Operators should include use of the application as a component of simulator recurrent training consistent with AC120-53A.

10. Usability of each application (for example):

- 10.1 Electronic documents functional suitability.
 - 10.1.1 Not applicable to this report.
- 10.2 Aircraft performance, Weight and Balance (W&B), speeds reference functional suitability.
 - 10.2.1 Not applicable to this report.
- 10.3 Electronic charts functional suitability.
 - 10.3.1 The Lido/iRM Electronic Flight Bag (EFB) application for the Apple iPad™ device provides electronic flight deck displays that may be used to depict Lufthansa Systems Lido/RouteManual electronic airport diagrams, departure, arrival, and approach charts traditionally provided in paper form. The application is applicable to either a Class 1 or Class 2 EFB system. Charts, as well as text oriented material, are provided for departure, arrival, and approach phases.

11. Usability of multiple applications at one time.

- 11.1 Not applicable to this report.

12. Crew workload and currency for proficient use.

- 12.1 The crew workload for the LIDO iRM application mirrors that of the previously approved LIDO eRM EFB application in use on operational Class 2 NavAero EFBs.

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12.2 As mentioned in item 9.4 above, recurrent training specific to the Lido/iRM application is not required provided the functions are used regularly in line operations.

13. Effectiveness of procedures which govern the distribution of application software updates to the aircraft and confirmation of the aircraft EFB configuration.

13.1 A data revision process for the Lido/iRM application has been developed by Lufthansa Systems. It is available through a secure internet connection using a secure data distribution network (i.e. WiFi, LAN, 3G, 4G, etc.) using procedures specified by the hardware provider. EFB Data will be loaded to hardware using procedures specified by the hardware manufacturer. The system must also include a process by which it confirms to the operator delivery and installation of the updates.

14. Flight Report - when and how reports of malfunctions or anomalies are reported and resolved.

14.1 For malfunction and anomalies reporting purposes, Lufthansa Systems has established a dedicated helpdesk that can be contacted by email and phone. Lufthansa Systems will remedy a reported malfunction or anomalies within defined response times depending on the severity of the problem. Three different severity levels of problems exist:

Level 1 means

- First contact with the customer and assessment of the problem's severity
- Information gathering and problem identification
- Basic analysis and resolution of simple technical or functional problems
- Dispatching other problems to Level 2, as required

Level 2 means

- Analysis and investigation, including problem reproduction
- Proposal for technical and/or functional solution to the problem (i.e., workaround, temporary or definitive solution)
- Dispatching other problems to Level 3, as required
- Follow-up of corrective actions
- Feedback to Level 1 regarding communication to customer

Level 3 means

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- Resolution of problems requiring expertise in a specific area
- Development of the technical and/or functional solution for Applications and Data

Appendix 1 - Documents Reviewed

The following documents have been reviewed and evaluated by the SEA AEG during the determination of this report.

LIDO iRM User's Guide, Version 1.05, April 2011

Appendix 2 - Compliance References

1. TITLE 14 OF THE CODE OF FEDERAL REGULATIONS (14 CFR).

The following regulations apply:

(1) Title 14 CFR §§ 91.103(b), 91.175(a), 91.503(a)(4).

(2) Title 14 CFR § 121 – 121.97(b), 121.97(c), 121.117(b), 121.117(c), 121.135(a), 121.135(b)(8)(i) / (iv) / (v).

(3) Title 14 CFR §§ 125 – 125.215(a)(4).

(4) Title 14 CFR §§ 135.23(r), 135.83(a)(4).

2. FEDERAL AVIATION ADMINISTRATION (FAA) ADVISORY CIRCULARS (AC), ORDERS, POLICY STATEMENTS, AND TECHNICAL STANDARD ORDERS (TSO).

a. ACs (current version)

AC-120-76A

b. FAA Orders, Policy Statements, and TSOs (current version).

FSIMS 8900.1 Vol. 4, CH. 15, Sec. 1

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Appendix 3 - FSIMS 8900.1 Figure 4-79 Checklist 1

Electronic Charts

Electronic Charts (If Applicable)

- | | | |
|--|--|---|
| 1. Is there a way to pre-select specific charts for easy access during a particular flight? | <input type="checkbox"/> No | <input checked="" type="checkbox"/> Yes |
| 2. Is there more than one way to search for a chart? | <input type="checkbox"/> No | <input checked="" type="checkbox"/> Yes |
| 3. Is It easy to access charts when a last minute change is necessary? | <input type="checkbox"/> No | <input checked="" type="checkbox"/> Yes |
| 4. If the chart application uses aircraft location to facilitate access to charts, is this function appropriate? (i.e., either approved by Aircraft Certification or explicitly allowed by the current edition of FAA AC 120-76. | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes |
| 5. Is it easy to switch between a de-cluttered and normal display if de-cluttering is supported? | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes |
| 6. Is there a clear indication when any chart elements are suppressed? | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes |

Provide the Number and a Comment for each Electronic Documents and Charts Question checked as "No."

4. N/A Application does not utilize aircraft position for any function.

5. N/A Application does not provide a de-clutter option.

6. N/A Application does not provide a de-clutter option.

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