



**Management Coordination**

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## 1 Purpose and Applicability

This Operational Suitability Report (OSR) specifies FAA requirements applicable to operators seeking to use the **Fujitsu Lifebook P1610 Electronic Flight Bag (EFB)** as a **Class 1 EFB**, kneeboard mounted, in all modes of flight operations. Provisions of this report are consistent with the guidance specified in FAA Advisory Circular (AC) 120-76A. This Report also assumes that appropriate airworthiness certification for installation of the EFB is, or will be, accomplished.

### Purpose

The following information related to operational suitability is included:

- 1.1 A general description of the EFB system evaluated under this report, including:
  - 1.1.1 EFB manufacturer
  - 1.1.2 EFB model
  - 1.1.3 A list of major components within the EFB
  - 1.1.4 The EFB operating system and version
  - 1.1.5 A list of the applications evaluated under this report.
- 1.2 The manufacturer's name and model number of the mounting system evaluated under this report. Reference to certification of the mounting system is also included.
- 1.3 EFB Display Lighting and Reflectivity
- 1.4 Typical acceptable procedures for EFB use during all phases of flight
- 1.5 Typical acceptable procedures to follow when one unit fails and when both units fail to include alternate means of accessing data
- 1.6 A revision process procedure/method that ensures appropriate database accuracy and currency
- 1.7 FSB specifications for training and typical acceptable training course description
- 1.8 FSB specifications for Checking including specification of those checks that must be administered by FAA or operators

- 1.9 FSB specifications for Currency
- 1.10 Portable Electronic Device Non-Interference
- 1.11 Electromagnetic Interference (E.M.I.)
- 1.12 Rapid Depressurization Testing
- 1.13 Operating system change requirements
- 1.14 Configuration Control, including the procedures which govern the distribution of updates to the aircraft and confirmation of the aircraft EFB configuration.
- 1.15 Instructions for Continued Airworthiness
- 1.16 Compliance Checklist
- 1.17 FSB Specifications for Devices and Simulators (Reserved)
- 1.18 The applicability of this report
- 1.19 Alternate Means of Compliance
- 1.20 List of documents or their equivalents, required to meet the requirements of AC 120-76A for authorization and continued airworthiness. (Appendix 1)
- 1.21 List of regulatory compliance status (compliance checklist) for pertinent parts of 14 CFR and other guidance documents (Appendix 2)

### **Applicability**

The following aircraft have been evaluated for operational suitability with the **Fujitsu Lifebook P1610** Class 1 EFB System:

The Eclipse Model EA-500 jet airplane, operated with a two-pilot flight crew, with one EFB System attached to a kneeboard bracket mounted on the inboard knee of the pilot not flying.

## **2 EFB Description**

This EFB system provides electronic flight deck displays as well as flight deck data storage and retrieval that may be used to present a variety of aviation data traditionally provided in paper form. This system is a Class 1 EFB system using

a kneeboard-mounted display and it provides Type A and B applications, some of which require display for all phases of flight operations.

The EFB evaluated in this report consists of a commercial off the shelf (COTS) tablet computer with the Microsoft Windows operating system and applications as listed in this Report. This EFB system is not connected to any aircraft power source and is in operational use by the flight crew during takeoff and landing.

## 2.1 Manufacturer

Fujitsu is the manufacturer of this EFB system.

## 2.2 Model

The model of this EFB is a Lifebook P1610. The manufacturer's part number for this EFB is CP307300.

## 2.3 Components

The following major components are included with this make/model of EFB:

Component	Manufacturer	Model	Part Number
Motherboard	Intel (chipset)	945GMS	CP3307206-XX
BIOS	Phoenix BIOS	1.13	CP3307206-XX
Processor	Intel	Intel U1400	CP3307206-XX
Video Card	Intel	Intel 950	CP3307206-XX
Hard Drive	Toshiba	MK8007GAH	CP3307206-XX
CD-ROM	N/A	N/A	N/A
DVD Drive	N/A	N/A	N/A
Wireless Connection	Intel	Intel 3945ABG	CP307206-XX
USB EV-DO Card <i>or</i>	Verizon	USB720	N/A
PCMCIA EV-DO	Verizon	PC5750VW	N/A
Power Supply	Fujitsu	Not Available	CP235918-01

## 2.4 Operating System and Version

This EFB has been demonstrated with Microsoft Windows XP Tablet PC Edition, with Service Pack 2.

The EFB system also includes the Jeppesen Jeppview-Flightdeck program for the display of arrival, departure and approach charts as well as airport layout diagrams.

## **2.5 Applications**

The following applications have been demonstrated for use on the Fujitsu Lifebook P1610 EFB System.

### 2.5.1 "Type A" Applications

- Operations Specifications
- General Maintenance Manual
- Flight Operations Manual
- Airplane Flight Manual
- Minimum Equipment List (MEL)
- Aeronautical Information Manual (AIM)
- Quick Reference Handbook (QRH)
- Normal Checklist
- Aeronautical Information Manual (AIM)
- NOTAMS
- Title 14, Code of Federal Regulations (14 CFR) Part 91 and 135

### 2.4.1 "Type B" Applications

- Non-interactive electronic approach charts (approach, arrival and departure) in a pre-composed format, but without display of aircraft position
- Panning, zooming, scrolling and rotation for electronic charts
- Weight and balance calculations
- Airport aeronautical data
- Weather data for pre-flight planning purposes only
- Takeoff, enroute, approach and landing performance calculations derived from performance calculations based on software algorithms (pre-flight planning purposes only)

### 2.4.2 "Type C" Applications

No Type C applications were evaluated.

## **3 EFB Mounting System and Stowage**

No aircraft mounting system is used with this Class 1 EFB. The mounting system consists of a RAM Products kneeboard bracket upon which the EFB locks into position. Two separate EFB systems are required to be carried on the aircraft and be available in the event of a primary EFB failure.

The primary EFB is to be used as a kneeboard, attached to the upper leg of the pilot not flying while seated at his (her) respective pilot station. The secondary or backup EFB is stowed in a carrying case, which will be located between the two flight crewmember's seats.

Accessibility to both EFB's while the flight crew is seated is required. These procedures have been evaluated and were found to be acceptable for all phases of flight. The EFB must be securely attached to its kneeboard mounting bracket or be stowed for takeoff and landing.

## **4 EFB Display Lighting and Reflectivity**

### **4.1 Display Lighting**

The Fujitsu Lifebook P1610 was evaluated in both low-light and full sunlight conditions. Since this EFB is knee-mounted in a horizontal position, sunlight or bright light affects its readability. An operator must ensure that the EFB unit is either shielded, or tilted by the pilot not flying, to improve readability for the pilot flying under all daytime flight conditions.

### **4.2 Display Reflectivity**

The display has been evaluated under night lighting conditions. There is no distracting reflectivity observed from the display under these conditions.

## **5 Acceptable Operations Procedures for Use of EFB**

**5.1** Normal operating procedures shall be included in the applicable Flight Operations Manual, Flight Crew Training Manual and Cockpit Checklists. Descriptions of specific applications may be contained in a "User Guide" supplied by the application vendor and/or EFB manufacturer.

**5.2** Non-normal procedures for use with the Fujitsu Lifebook P1610 shall be developed for failure of one EFB unit and for failure of both EFB units to ensure access to required data. The carrying case must always contain an additional spare battery that is fully charged for emergency use.

**5.3** Current aeronautical charts for en route navigation, terminal area charts and approach charts for departure, destination, alternates and diversion airports must be available during all phases of flight operations by either printed, electronic or a combination of these formats. If electronic format is used, a printed copy of charts to be used for the intended flight is required for a minimum of six months in accordance with AC 120-76A. Thereafter, approval for the electronic format only is at the discretion of the assigned principal operations inspector.

## **6 Acceptable EFB Data Revision Process**

- 6.1** Operators shall establish an acceptable data revision process, which will use a secure data distribution network. Data will be loaded to the EFB system using procedures specified by the manufacturer and which are included in the operator's operations manual or user's guide. Only authorized personnel may complete data revisions.

The data distribution system must include procedures to protect the EFBs from virus infection and other threats to the system. It must also include a process by which the operator can verify that the data distribution system confirms delivery and the revisions have been installed satisfactorily.

## **7 FSB Specifications for Training**

### **7.1 General**

Successful completion of EFB training is required for flight crewmembers. An EFB training program must be FAA-Approved as required by 14 CFR Part 135. An FAA Approved computer based training course presented on either a desktop or laptop computer is an acceptable means of conducting EFB system training.

### **7.2 Programs Crediting Previous EFB Experience**

Training programs for this EFB system may grant training credit to crewmembers with previous EFB experience using similar software and performance applications. Principal inspectors for operators introducing a new EFB system may approve programs consistent with programs previously approved in accordance with AC 120-76A and other FAA guidance documents

### **7.3 Pilots Initial, Transition and Upgrade Ground Training**

#### **7.3.1 Pilots: Initial Training**

Initial EFB training is accomplished as specified by an approved training program but shall consist of ground training in the following subjects:

- EFB system and related equipment
- Data revision process
- Information access and operational procedures
- System applications
- System limitations
- Normal and non-normal procedures

- 7.3.2 Although a minimum number of flight hours are not required, EFB training shall be integrated into the flight training segment of the company training program.
- 7.3.3 Areas of Emphasis - Operators must emphasize during EFB training and during initial line operating experience the need to avoid fixation on the display during critical phases of flight including taxi operations.

## **7.4 Recurrent Training**

- 7.4.1 Recurrent training is not normally required for EFB operation provided the EFB system has been regularly used in line operations. Operators are encouraged to include EFB as a component of simulator recurrent training to the extent practical.
- 7.4.2 As part of an approved training program, an operator may use many methods when conducting recurrent training, including classroom instruction, videotape presentations, ground training devices, computer-based instruction, and static aircraft training.
- 7.4.3 Recurrent training simulator requirements (reserved).

## **8 FSB Specifications for Checking**

### **8.1 Checking Items**

Pertinent knowledge and operational procedures for EFB use should be checked following initial EFB training. Initial checking shall integrate the use of the EFB system in flight, or in an approved simulator or flight training device. Operators are encouraged to include EFB system use as a part of recurrent checking where practical.

### **8.2 Proficiency Checks/Practical Tests**

If an EFB system is installed in the operator's aircraft, training device or simulator, and approved for the operator's use, its operational use by flight crewmembers shall be evaluated during practical tests and/or annual proficiency checks.

### **8.3 Areas of Emphasis**

The following areas of emphasis should be considered for evaluation during line checks when the EFB system is in operational use on the aircraft:

- 8.3.1 Proficiency with use of EFB applications;

- 8.3.2 Proper outside visual scan without prolonged fixation on EFB equipment;
- 8.3.3 Proper selection and use of EFB displays, and
- 8.3.4 EFB system or component failure to include non-normal procedures.

## **9 FSB Specifications for Currency**

If an operator's flight personnel use this EFB system regularly, no specific currency requirements will apply to the continued operational use of the EFB.

## **10 Portable Electronic Device Non-Interference**

The operator is responsible to determine non-interference of this Class 1 EFB system in accordance with Advisory Circular 91-21.1B, Use of Portable Electronic Devices Aboard Aircraft.

## **11 Electromagnetic Interference (EMI)**

No EMI testing beyond the basic FCC testing has been demonstrated. The operator is responsible to determine no unacceptable levels of electromagnetic radiation exist by conducting non-interference testing in accordance with AC 91-21.1B.

Changes of any of the components listed in paragraph 2.3 of this report will require that the EFB is checked again for acceptable levels of EMI.

## **12 Rapid Depressurization Testing**

There is no evidence that rapid depressurization testing, in accordance with the standards specified by RTCA DO-160E, has been completed for the Fujitsu Lifebook P1610 System. The operator is responsible for risk mitigation and to determine pressure altitudes where the unit will function normally while in operation, and to develop EFB non-normal procedures or emergency procedures accordingly.

## **13 Operating System**

Changes to the windows operating system will require that the operator notify the FAA Principal Inspector that the operation of all evaluated applications continues to meet intended function.

## **14 Configuration Control**

The certificate holder or the operator will need to satisfy the Principal Inspector that they have procedures in place to manage the hardware and software configuration of any Class 1 EFBs that will be in operational use.

## **15 Instructions for Continued Airworthiness**

The certificate holder, or the operator, is responsible to demonstrate that they have procedures in place to track repairs to EFB units and to ensure each EFB remains in compliance with the evaluated configuration.

Regular battery output monitoring and maintenance is required to maintain EFB useful functionality. Battery replacement is required to be accomplished at the manufacturer's recommended interval.

## **16 Compliance Checklist**

### **16.1 Compliance Checklist (Appendix 2)**

Compliance checklists are provided as an aid to identify those specific rules or policies for which compliance has been demonstrated to FAA. The checklist includes rules or policies for which compliance must be demonstrated by individual operators. Not all rules, policies or variants are necessarily listed or addressed.

### **16.2 Discussion of Specific Compliance Checklist Items (Reserved)**

## **17 FSB Specifications for Devices And Simulators (Reserved)**

## **18 Application of OSR Report**

Relevant parts of this report are effective for the specific combination of Class 1 EFB and aircraft model when this report is approved by FAA.

## **19 Alternate Means of Compliance**

### **19.1 Approval Level and Approval Criteria**

Alternate means of compliance to the provisions of this report, must be approved by MKC-AEG. If alternate compliance is sought, operators will be required to establish that any proposed alternate means provides an equivalent level of safety to the provisions of AC 120-76A and this OSR report. Analysis, demonstrations, proof of concept testing, differences documentation, or other evidence may be required.

### **19.2 Requires Equivalent Safety**

In the event alternate compliance is sought, training program hour reductions, simulator approvals, and device approvals, may be significantly limited and reporting requirements may be increased to assure equivalent safety. FAA will generally not consider relief through

alternate compliance means, unless sufficient lead time has been planned by an operator to allow for any necessary testing and evaluation.

### **19.3 Unforeseen Circumstances**

In the event of clearly unforeseen circumstances in which it is not possible for an operator to comply with report provisions, the operators may seek an interim equivalent program rather than a permanent alternate compliance method. Financial arrangements, schedule adjustment, and other such reasons are not considered "unforeseen circumstances" for the purposes of this provision.

## **20 Miscellaneous - (Reserved)**

## **Appendix 1**

### **List of Required Documents for Authorization and Continued Airworthiness**

Flight Crew Operations Manual

Cockpit Checklists

Flight Crew Training Manual

Training Courseware

- Flight Crew
- Maintenance Personnel
- Operations Office Personnel

Electronic Flight Bag Pilot's Guide

Company Maintenance Procedures

EFB System Maintenance Manual

Minimum Equipment List

Data Delivery and Management Description and Procedures

EFB Configuration Control Description and Procedures

## **Appendix 2**

### **Compliance Checklist**

The provisions of this report have shown compliance with the following regulations:

**(1)** Title 14 CFR §§ 91.9, 91.21, 91.103, 91.167, 91.169, 91.213, 91.503, 91.1023, 91.1025, 91.1063, 91.1065, 91.1067, 91.1069, 91.1073, 91.1075, 91.1077, 91.1079, 91.1081

**(2)** Title 14 CFR §§ 135.21, 135.23, 135.63, 135.81, 135.83, 135.144, 135.179, 135.213, 135.293, 135.297, 135.299, 135.323, 135.325, 135.327, 135.329.

The provisions of this report have shown compliance with the following FAA guidance:

**(1)** AC 120-76A – Guidelines for the Certification, Airworthiness and Operational Approval of Electronic Flight Bag Computing Devices.

**(2)** AC 91-21.1B – Use of Portable Electronic Devices Aboard Aircraft

**(3)** AC 91-78 – Use of Class I or Class 2 Electronic Flight Bag (EFB)

**(4)** Electronic Flight bag (EFB) Operational Evaluation and Approval Job Aid, Version 1.0

**(5)** FAA Order 8900.10