

FLIGHT STANDARDIZATION BOARD REPORT

Advanced Data Research
FG-6000

Class 1 Electronic Flight Bag (EFB)
(Viewable Stowage)

Approved by
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Advanced Data Research, FG-6000
CLASS 1 EFB REPORT

REVISION RECORD

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Advanced Data Research, FG-6000
CLASS 1 EFB REPORT

Table of Contents

Title and Approval Page	
Revision Record	1
Table of Contents	2
1 Purpose and Applicability	3
2 EFB Description	5
3 EFB Mounting System or Stowage	6
4 EFB Display Lighting and Reflectivity	7
5 Acceptable Operations Procedures for Use of EFB	7
6 Acceptable EFB Data Revision Process	7
7 FSB Specifications for Training	8
8 FSB Specifications for Checking	8
9 FSB Specifications for Currency	9
10 Portable Electronic Device Non-Interference (91.21)	9
11 Electromagnetic Interference	9
12 Rapid Depressurization Testing	9
13 Operating System	10
14 Configuration Control	10
15 Instructions for Continued Airworthiness	10
16 Compliance Checklist	10
17 FSB Specifications for Devices and Simulators (reserved)	10
18 Application of FSB Report	10
19 Alternate Means of Compliance	11
20 Miscellaneous (reserved)	11
Appendix 1	12
Appendix 2	13

1. Purpose and Applicability

This FSB report specifies FAA requirements applicable to operators seeking operations approval to use the **Advanced Data Research, FG-6000** (modified Fujitsu Stylistic LT-860P) as a **Class 1 EFB**, with viewable stowage in all phases of flight operation. 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 is/will be accomplished.

Purpose

The following information related to operational approval is included:

- 1.1 A general description of the EFB system approved 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 approved under this report.
- 1.2 The manufacturer's name and model number of the mounting system approved under this report. Reference to the Part 25 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

Advanced Data Research, FG-6000
CLASS 1 EFB REPORT

- 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 airline equivalents, to meet the requirements of AC120-76A for operational approval and continued airworthiness. (Appendix 1)
- 1.21 List regulatory compliance status (compliance checklist) for pertinent parts of the FARs (Appendix 2)

Applicability

The following aircraft have received operational approval for the ADR, FG-6000 Class 1 EFB:

(A3EU Type Certificate Data Sheet)

Raytheon Aircraft Company, HS-125 Series with Forward Observer Seat Tracks installed.
Raytheon Aircraft Company, BAe-125 Series with Forward Observer Seat Tracks installed.
Raytheon Aircraft Company, Hawker 800XP with Forward Observer Seat Tracks installed.
Raytheon Aircraft Company, Hawker 850XP with Forward Observer Seat Tracks installed.

2 EFB Description

The Electronic Flight Bag (EFB) system provides electronic 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 viewable stowage to provide availability of Type B applications that require display for all modes of flight operations. This provision for viewable stowage is unique to the HS-125/BAe-125 series of aircraft allowing non-administrative use of a stowage device installed on the existing Forward Observer Seat Tracks that is viewable from the pilots seats at all times. The EFB may also be removed from stowage to view but must be stowed for taxi, takeoff and landing.

The EFB approved under this report consists of a COTS tablet computer with the Microsoft Windows operating system and applications as listed. The EFB is connected to airplane power source (PED outlet) for battery recharging as contained in the certification documentation.

2.1 Manufacturer

This EFB has been manufactured by *Fujitsu* and modified by *Advanced Data Research*.

2.2 Model

Fujitsu *Stylistic LT-860P*, as modified it is the Advanced Data Research *FG-6000*.

2.3 Components

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

Component	Manufacturer	Model	Part Number
Motherboard	Fujitsu	Intel 830MB	CP147701
BIOS	Phoenix	Version 1.06	
Processor	Intel	P3860	Intel 830MG
Video Card	Intel	82830M	Intel 830MG
Display	Fujitsu	LCD TFT SVGA	
Hard Drive	Hitachi	Travelstar	HTS548080M9AT00
External CD-ROM	Fujitsu	FPCCD33	CP175196-01
DVD	N/A		
Wireless Connection	Intersil	PRISM Wireless LAN PCI Card 802.11b	CP024075
Power Supply (Primary)	???	???	???
Power Supply (DC)	Lind Electronics	FJ1640-616LR	
Power Supply (AC)	Fujitsu	FMV-AC311S	CA01007-0850
Printer	none		

2.4 Operating System and Version

This EFB has been demonstrated and approved with Microsoft Windows XP Professional, Version 5.1, with Service Pack 2, Build 2600.

Additional Installed Software : Adobe 7.0 to display documents, Microsoft Office 97, JeppView – Flight Deck, Collins Portable Access Software 3000 (CPAS, ground use only) and UltraNav Performance software.

2.5 Applications

The following applications have been demonstrated and approved for use on this specific EFB. Airplane specific information used in these applications must be verified accurate to respective aircraft.

Collins Portable Access Software 3000 is restricted to ground use only and must not be operated while other EFB functions are being used.

“Type A” Applications
(Using Adobe Reader, Microsoft Office)

- 2.5.1.1 Flight Operations Manual
 - Airplane Flight Manuals
 - Maintenance Manuals
 - Minimum Equipment List (MEL)
 - Configuration Deviation List (CDL)
 - Aeronautical Information Manual (AIM)
 - Title 14 of the Code of Federal Regulations (14 CFR)
 - Other Documents in .PDF Format

2.5.2 “Type B” Applications

(Using JeppView – Flight Deck software & UltraNav Performance Software)

- 2.5.2.1 Non-interactive electronic approach charts in pre-composed format
 - Pre-composed or dynamic interactive electronic aeronautical charts (Aircraft own ships position using GPS is not authorized)
 - Aircraft Performance calculations (subject to AFM confirmation)

2.5.3 “Type C” Applications

- 2.5.3.1 No Type C applications are approved.

3 EFB Mounting System or Stowage

This Class 1 EFB is viewable in its stowed position. The primary stowage provision is secured non-administratively to the Forward Observer Seat Tracks by the flight crew. Dual EFB availability is required. Only one EFB may be in viewable stowage at a time. If two Class 1 EFBs are carried, the second or backup EFB is stowed in a secure location where it is accessible to the flight crew while seated. These provisions have been evaluated and found to be acceptable for all phases of flight. **Both EFBs, primary and backup, must be stowed for taxi, takeoff and landing.**

4 EFB Display Lighting and Reflectivity

4.1 Display lighting.

This EFB has been evaluated in both low-light and full sunlight conditions. The display is readable under the full range of lighting conditions without distraction. Screen protectors must be maintained in good condition to preclude opacity.

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 must be included in the applicable airplane General Operations Manual and Flight Crew Training Manual and Cockpit Checklists. Descriptions of specific applications may be contained in a "User Guide" supplied by the application vendor.
- 5.2 There are no Non-Normal procedures for use with the EFB.
- 5.3 Current Pertinent 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, dual redundancy is required.

6 Acceptable EFB Data Revision Process

- 6.1 An acceptable data revision process is to use an established secure data distribution network. Data will be loaded to the EFB using procedures included in the operator's manual system. This data distribution system must include the procedures to protect the EFBs from virus infection and other threats to the system. It must also include the process by which the operator assures that the data distribution system assures delivery and installation of the updates.

7 FSB Specifications for Training

- 7.1 **General.** Successful completion of EFB training is required. EFB training programs must be FAA approved when specified by FAR. An FAA approved Computer Based Training course carried out on either a desktop or laptop computer is an acceptable means of conducting EFB training.
- 7.2 **Programs Crediting Previous EFB Experience.** Training programs for the EFB may take credit for previous EFB experience. For example, previous experience using a Class 1 or 2 performance 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 information regarding previously approved programs or programs crediting previous EFB experience, FAA Principal Inspectors for other operators may be consulted.
- 7.3 **Pilots Initial, Transition and Upgrade Ground Training**
- 7.3.1 **Pilots: Initial Training.** Initial EFB training is accomplished as specified by this FSB report or included in an approved training program. No unique provisions or requirements are specified.
- 7.3.2 **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 functions are used regularly 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, pictures, videotape, 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, procedures for EFB use should be checked following initial EFB training. This checking may be accomplished as an automated component of EFB computer-based training. Operators are encouraged to include EFB use as a part of recurrent checking where practical. Proper EFB use should be included in line checks.
- 8.2 **Areas of emphasis.** The following areas of emphasis should be addressed during line checks as necessary:
- 8.2.1 Proficiency with use of EFB applications must be demonstrated,
 - 8.2.2 Proper outside visual scan without prolonged fixation on EFB operation should be demonstrated, and failure of component(s) of the EFB should be addressed,
 - 8.2.3 Proper selection and use of EFB displays should be demonstrated.
 - 8.2.4 Proper use of the chart printing in flight function should be demonstrated
 - 8.2.5 Proper cross-check of data entered into the performance application
- 8.3 **Proficiency Checks/Practical Tests.** At the discretion of the evaluator, and if the EFB is installed in the operator's training device or simulator, EFB may be included in the practical testing and annual proficiency checks.

9 FSB Specifications for Currency

- 9.1 Assuming EFB is used regularly, no unique currency provisions apply to the EFB.

10 Portable Electronic Device Non-Interference (91.21)

The operator is responsible to determine non-interference of this Class 1 EFB in accordance with Advisory Circular 91.21A Use of Portable Electronic Devices Aboard Aircraft.

11 Electromagnetic Interference (E.M.I.)

EMI testing of a similar Fujitsu Stylistic has been conducted by the USAF to MIL-ATD-461E in compliance with AFI 11-202(V3). The Fujitsu Stylistic meets AFI 11-202V3, Para. 2.5, Electromagnetic Interference Certification, to be operated during all phases of flight. The operator is responsible to determine no unacceptable levels of electromagnetic radiation exist by non-interference testing for the ADR, FG-6000.

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

12 Rapid Depressurization Testing

The *Fujitsu LT P-600 Pen Tablet*, a unit similar to the ADR, FG-6000 has been tested by *Rockwell Collins* for survivability of a rapid depressurization. No faults were evident after the rapid depressurization that would prevent continued normal operation of the EFB once normal cabin pressure altitudes are restored.

13 Operating System

Changes to the Windows operating system that involve .exe, .dll files or Java scripts will require that the operator notify the FAA Principal Inspector that the operation of all approved 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 approved configuration. Regular battery maintenance is required and battery replacement is required to maintain at least two (2) hours of battery life in designated operating configuration or at manufactures recommended interval, which ever comes first.

16 Compliance Checklist

16.1 Compliance Checklist (see 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 FSB 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 FSB 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 and Artifacts for Operational Approval 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
Component 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, 91.503, 91.605, 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.