



The European Organisation for Civil Aviation Equipment  
L'Organisation Européenne pour l'Équipement de l'Aviation Civile

## MINIMUM OPERATIONAL PERFORMANCE SPECIFICATION FOR FLIGHT DECK DOOR MONITORING SYSTEM

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March 2005

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## FOREWORD

1. This document was prepared by EUROCAE Working Group 66 "Flight Deck Door Monitoring System" (FDDMS), and was accepted by the Council of EUROCAE on March 2005.
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3. The findings of EUROCAE are resolved after discussion among its members and, where appropriate, in collaboration with RTCA Inc, Washington D.C. USA and/or the Society of Automotive Engineers (SAE), Warrendale, PA, USA through their appropriate committees.
4. The document represents the minimum specification required for the design, installation and certification of a system to provide the flight crew a view of the area outside the cockpit door and is expected to become a basis for new equipment and installation standards when introduced by the certification authorities. Chapters 1 and 2 provide information applicable to all means for providing monitoring and subsequent Chapters provide information specific to CCTV systems.
5. The Performance Specifications detailed in this document are based on the Standards and Recommended Practices (SARPs) published by ICAO in Annex 6 Chapter 13 (Security) of the Chicago Convention. Account has been taken of regulations issued by various certification authorities together with the advice and recommendations given by safety and security specialists.
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## CHAPTER 1

### INTRODUCTION

#### 1.1 PURPOSE AND SCOPE

This document defines the minimum operating performance specification of Flight Deck Door Monitoring Systems (FDDMS), in response to ICAO Annex 6.13.2.3(b). The applicability of this ICAO standard and the acceptance of this document is defined in the national security programmes as issued by the responsible authorities in each individual state.

Detailed information on ICAO Annex 6.13.2.3(b) for use by the responsible authorities is provided in the ICAO Manual for Annex 6 (Doc 9811 AN 766) ; ECAC guidance is provided to ECAC member states.

The FDDMS defined in this document allows the flight crew to assess the area outside the flight deck door before opening for any reason, such as:

- a) A Flight Attendant or some other authorised person requesting entry to the flight deck.
- b) A flight crew member, flight attendant or other authorised person leaving the flight deck.
- c) A flight crew member returning to the flight deck.

The requirements stated and the systems defined in this document are based on the system and the aeroplane as a whole being operated as designed. This document does not address overt acts from persons onboard the aeroplane to compromise the system or aeroplane for the purpose of gaining access to the flight deck.

#### 1.1.1 Description of Content

This document is divided into 6 Chapters.

Chapter 1 of this document provides information required to understand the need for the equipment characteristics and tests defined in the remaining chapters. It describes typical equipment applications and operational objectives and is the basis for the performance criteria stated in Chapter 2 and Chapter 3. Definitions essential to proper understanding of this document are also provided in Chapter 1.

Chapter 2 contains general design requirements for any method of monitoring.

The remaining chapters describe the specification of a CCTV system, which is one method, but not the only method, of achieving compliance with ICAO Annex 6 13.2.3(b), above.

Chapter 3 contains the design specification for CCTV equipment,

Chapter 4 defines minimum performance of CCTV systems under standard conditions.

Chapter 5 describes the environmental test conditions for CCTV systems, which provide a laboratory means of determining the overall performance characteristics of the equipment under conditions representative of those that may be encountered in actual operations.

Chapter 6 contains recommended test procedures for CCTV systems, for demonstrating compliance with the performance required of the installed CCTV equipment, specified in Chapters 2 and 3. Ground and flight tests for the installed equipment are included when performance cannot be adequately determined through testing under standard test conditions.

## 1.2 APPLICATIONS

Compliance with this minimum operational performance specification by manufacturers, installers and users is recommended as a means of assuring that the system will satisfactorily perform its intended function(s) under all conditions normally encountered in routine aeroplane operations.

Any regulatory application of this document in whole or in part is the sole responsibility of appropriate government agencies.

As the measured values of equipment performance characteristics may be a function of the method of measurement, standard test conditions and methods of test are recommended in this document.

## 1.3 MANDATING AND RECOMMENDATION PHRASES

### 1.3.1 "Shall"

The use of the word "shall" indicates a mandated criterion; i.e. compliance with the particular procedure or specification is mandatory and no alternative may be applied.

### 1.3.2 "Should"

The use of the word "should" (and phrases such as "It is recommended that...", etc.) indicate that the procedure or criterion is regarded as the preferred option. However, omission, alternative procedures, specifications or criteria may be applied.

### 1.3.3 System Design Objectives

The system has two distinct design objectives.

First is to aid the flight crew with the visual identification on the flight deck of any person requesting access to the flight deck.

Second is to provide the flight crew with a visual image of the flight deck door area, which will serve as one of the several elements required in assessing any suspicious behaviour or potential threats within the required coverage area.

**NOTE:** *It is acknowledged that this system is not designed to protect against all conceivable threats, especially while the flight deck door is opened.*

Issues of passenger privacy have been addressed where applicable. By limiting the required field of view to forward of the first row of passenger seats, the system is not required to cover the passenger seating area.

## 1.4 DEFINITIONS AND ABBREVIATIONS

The following definitions and abbreviations are provided for the terms that are used in this document.

### 1.4.1 Definition of Terms

|                    |                                                                                                                                                                                 |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Artefacts          | Unintended picture elements, distortions or aberrations introduced during image transmission, processing or display.                                                            |
| Depth of Focus     | The range of distances over which no loss in sharpness can be detected by the eye viewing the system display.                                                                   |
| Design ID position | The position at which a person requesting entry to the Flight Deck is expected to stand, and therefore which the system is designed to monitor for the identification function. |
| Field of View      | The area that can be seen from a given location by the visual device.                                                                                                           |
| Image              | A visual representation of an object.                                                                                                                                           |

|                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Imaging Systems                        | The means by which images are captured and displayed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| Lux                                    | A measurement equal to one lumen per square metre.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| Monument                               | As used in this document, a monument can be assumed to be one of more but not limited to one of the following: lavatory, galley, closet, and fixed partition (opaque or transparent).                                                                                                                                                                                                                                                                                                                                                                            |
| Nit                                    | An SI unit, equivalent to one candela per square metre.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Normal Aeroplane Operations            | As used in this document, means when the external aeroplane doors are closed and locked.                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| Normal Operational Lighting Conditions | Lighting that the particular aeroplane configuration would experience during normal aeroplane operations:<br><br><div style="margin-left: 40px;">External Ambient Lighting: From bright/full sunlight, as it enters the aeroplane, to the dark of night.</div> <div style="margin-left: 40px;">Interior lighting: Lights in, or that can affect, the coverage area or Flight Deck, from fully bright to near darkness with cabin lighting set to night levels.</div><br>As used in this document, it is assumed that Emergency Lighting falls within this range. |
| Pop-up                                 | A function that changes the current display from one image to another, or displays an image on a previously blank screen, without action by the flight crew.                                                                                                                                                                                                                                                                                                                                                                                                     |
| Test                                   | A means of demonstrating compliance, whether it is in a lab or using a test aeroplane in a configuration representative of the configuration to be certified, in a ground and/or flight environment.                                                                                                                                                                                                                                                                                                                                                             |
| Test Cube                              | A cube used for testing the coverage area, as defined in 0.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Visual Device                          | Equipment that captures an image which can be displayed.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

## 1.5.2

### Abbreviations

|       |                                                                                                                                           |
|-------|-------------------------------------------------------------------------------------------------------------------------------------------|
| AEEC  | Airlines Electronic Engineering Committee                                                                                                 |
| ARINC | Aeronautical Radio Inc.                                                                                                                   |
| C     | Celsius                                                                                                                                   |
| CCTV  | Closed Circuit Television. An electronic system that captures, transmits and displays images, but does not necessarily include recording. |
| cm    | Centimetre                                                                                                                                |
| CS    | Certification Specification, that is, requirements developed and maintained by the EASA                                                   |
| EASA  | European Aviation Safety Agency                                                                                                           |
| ERP   | Eye Reference Position. The position at which a pilot's eye is located due to the design of the flight deck.                              |

|         |                                                                                                                                |
|---------|--------------------------------------------------------------------------------------------------------------------------------|
| EUROCAE | European Organisation for Civil Aviation Equipment                                                                             |
| FAA     | Federal Aviation Administration                                                                                                |
| FAR     | "Federal Aviation Regulation", that is, requirements developed and maintained by the FAA                                       |
| FDDMS   | Flight Deck Door Monitoring System                                                                                             |
| ICAO    | International Civil Aviation Organisation                                                                                      |
| in      | inch(es)                                                                                                                       |
| JAA     | Joint Aviation Authorities                                                                                                     |
| JAR     | "Joint Airworthiness Requirements", that is requirements developed and maintained by the JAA including procedural requirements |
| kPa     | Kilo pascals                                                                                                                   |
| LRU     | Line Replaceable Unit                                                                                                          |
| m       | meters                                                                                                                         |
| mohms   | milliohms                                                                                                                      |
| Mohms   | Mega ohms                                                                                                                      |
| MOPS    | Minimum Operational Performance Specification                                                                                  |
| ms      | milliseconds                                                                                                                   |
| NTSC    | National Television System Committee, as defined by SMPTE 170                                                                  |
| RTCA    | RTCA Inc.                                                                                                                      |
| SAE     | Society of Automotive Engineers                                                                                                |
| SARPs   | Standard and Recommended Practices                                                                                             |
| SI      | Le Système International d'Unités, the International System of units.                                                          |
| SMPTE   | Society of Motion Picture and Television Engineers                                                                             |
| WG      | Working Group                                                                                                                  |
| yds     | yards                                                                                                                          |

## 1.6

### REFERENCES

EUROCAE ED-14D "Environmental Conditions and Test Procedures for Airborne Equipment" (RTCA DO- 160D)

EUROCAE ED-12B "Software Considerations in Airborne Systems and Equipment Certification" (RTCA DO-178B )

EUROCAE ED-80 "Design Assurance Guidance for Airborne Electronic Hardware". (RTCA DO-254)

JAR 25 "Large Aeroplanes"

FAR Part 25 "Airworthiness Standards: Transport Category Airplanes"

MIL-HDBK-759C Handbook for Human Engineering Design Guidelines

ICAO International Standards and Recommended Practices - Operation of Aircraft, ANNEX 6, Parts I, II and III

CS 25 "European Aviation Safety Agency Certification Specifications for Large Aeroplanes"

FAA AC 43.13-1b

FAA AC 25-10 Guidance for installation of miscellaneous non-required electrical equipment

FAA AC 25-16 Electrical Fault and Fire Prevention and Protection

**NOTE 1:** *FAR/JAR/CS: This document shall not imply compliance to a specific FAR/JAR/CS amendment level. The specific amendment level shall be determined by the certification basis for the aeroplane/programme.*