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Safety, Performance and Interoperability Requirements Document for Airborne Spacing – Flight Deck Interval Management (ASPA-FIM)

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FOREWORD

This document was prepared by the "ADS-B Requirements Focus Group" (RFG). The RFG was established through the FAA/EUROCONTROL Memorandum of Cooperation. The RFG operates as a joint RTCA Special Committee 186 (SC-186) and EUROCAE Working Group 51 (WG51) activity. This document was approved by the RTCA Program Management Committee (PMC) on June 22, 2011.

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- Analyzing and recommending solutions to system technical issues that aviation faces as it continues to pursue increased safety, system capacity and efficiency.

- Developing consensus on the application of pertinent technology to fulfill user and provider requirements, including development of minimum operational performance standards for electronic systems and equipment that support aviation.

- Assisting in developing the appropriate technical material upon which positions for the International Civil Aviation Organization, the International Telecommunication Union, and other appropriate international organizations can be based.

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CHAPTER 1 INTRODUCTION

This document provides the minimum operational, Safety and Performance Requirements (SPR) and Interoperability Requirements (INTEROP) to implement Airborne Spacing (ASPA) - Flight Deck Interval Management (FIM) in support of an identified set of operational scenarios. ASPA-FIM is defined as the flight deck component of a larger Interval Management (IM) System. The IM System includes the ground domain's tools to plan and schedule traffic to assist the controller in determining what IM Clearances might be applicable to specific aircraft. ASPA-FIM then, based upon the IM Clearance provided by the controller and surveillance information received on the Target Aircraft, generates guidance for the flight crew to successfully and safely execute the IM Clearance.

All material in this document was developed jointly by EUROCAE Working Group 51 and RTCA Special Committee 186 within the group commonly referred to as the "ADS-B Requirements Focus Group" (RFG).

This document was developed based on the criteria for the SPR and INTEROP documents set forth in RTCA DO-264/EUROCAE ED-78A, "Guidelines for Approval of the Provision and Use of Air Traffic Services Supported by Data Communications" [9]. This SPR provides the set of minimum requirements applying to any ASPA-FIM implementation. Implementations of ASPA-FIM designed to support specific IM Operations within a given operational environment are to be defined within these basic minimum requirements. This document refers to these implementations as "Operational Applications" and the supported operations as "IM Operations." The Operational Services and Environment Definition (OSED) includes sample scenarios depicting IM Operations that are representative of most near-term Operational Applications. These depictions span the capabilities required by the Operational Applications. This SPR defines the methodology that is to be applied to the Operational Applications to determine appropriate operational objectives and associated safety and performance requirements for ASPA-FIM systems that support additional operational scenarios not directly analyzed in this document.

The requirements in this document are necessary to provide adequate assurance that the appropriate aspects of the relevant Communications Navigation Surveillance/Air Traffic Management (CNS/ATM) system, when operating together, will perform their intended function for the basic IM Operations represented within the Core Scenarios and defined by the OSED (Annex A, Section A.4.1) acceptably, and in a safe manner.

Note: The requirements in this document are focused on the on-board requirements for the FIM Equipment and for the received Surveillance data (e.g., ADS-B) quality needed to provide guidance to the flight crew to perform the IM Operation. Also examined are the interactions between the ground domain (ATC) and the receive aircraft domain (IM Aircraft) and communication requirements that are needed to issue IM Clearances and the operational status of the resulting IM Operation.

While all detailed SPR-related assessments are found in the Annexes to this document, Chapter 3 presents the results of reconciling all of these assessment results into a single set of underlying Safety and Performance Requirements. This process retains the most stringent requirements for those attributes or parameters commonly applied by both the