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Minimum Aviation System Performance Standards (MASPS) for a Combined Vision Systems for Helicopter Operations

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FOREWORD

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- analyzing and recommending solutions to the 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; and

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

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1 PURPOSE AND SCOPE

1.1 Introduction and purpose of document

This document contains Minimum Aviation System Performance Standards for a Combined Vision System for Helicopter Operations.

Compliance with these standards is recommended as one means of assuring that the system and each subsystem will perform its intended function(s) satisfactorily under conditions normally encountered in routine aeronautical operations for the environments intended. The Minimum Aviation System Performance Standards (MASPS) may be implemented by one or more regulatory documents and/or advisory documents (e.g., certifications, authorizations, approvals, commissioning, advisory circulars, notices, etc.) and may be implemented in part or in total. Any regulatory application of this document is the sole responsibility of appropriate governmental agencies.

1.2 Scope of the document

This document addresses Combined Vision Systems (CVS) technologies applied to helicopter operations. While RTCA DO-315x / EUROCAE ED-179x and DO-371 / EUROCAE ED-249 documents are not specialized for a particular type of platform or mission, they were mostly written with fixed-wing platforms and operations in mind. The present document is oriented specifically towards helicopter platforms and operations. It defines performance standards for CVS over head down and transparent displays, which intended function is to provide a supplemental view of the external scene and visual references to the pilot. Such a CVS does not provide “additional operational credit’ and is not intended to change the helicopter’s existing operational capability or certification basis. The pilot(s) is expected to follow the existing operational procedures and adhere to all published minimums.

1.3 Structure of the document

Chapter 1 (the current chapter) provides an explanation of the scope and purpose of this document and introduces the Combined Vision Systems for Helicopter Operations.

Chapter 2 describes the approach and methodology aspects applied for the development of this Combined Vision Systems for Helicopter Operations and outlines performance and interoperability assessments made in this document.

Chapter 3 contains the minimum performance standards and subsystem/functions that are required elements of minimum system performance in Section 2. These standards specify the required performance under the standard environmental conditions described.

Chapter 4 introduces the Interoperability Requirements applicable to the Combined Vision Systems for Helicopter Operations.

Chapter 5 describes the minimum system test procedures to verify system/application performance (e.g., end-to-end performance verification) and that subsystem performance meets the minimum performance requirements in Section 3. These system test procedures should be particularly helpful in prototyping and pre-operational trials of the system/application.

The verification procedures specified in this document are intended to be used as one means of demonstrating compliance with the performance requirements. Although specific test procedures are cited, it is recognized that other methods may be used. These alternate procedures may be used if it can be demonstrated that they provide at least equivalent information. System performance tests as they relate to operational capability are the most important test. Subsystem tests are useful as subsystems are added during system buildup and to ensure continued subsystem performance as it relates to system performance.

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Appendix A is not used.

Appendix B is not used.

Appendix C contains the acronyms and definitions used throughout the document.

Appendix D provides a list of the typical visual references in support of the intended functions described in § 3.1.3.

1.4 Relationship with ICAO Documents

Reserved

1.5 References

EUROCAE and RTCA Documents

EUROCAE	RTCA	Title
ED-179B	DO-315B	Minimum Aviation System Performance Standards (MASPS) for Enhanced Vision Systems, Synthetic Vision Systems, Combined Vision Systems and Enhanced Flight Vision Systems
ED-12()	DO-178()	Software Considerations in Airborne Systems and Equipment Certification
ED-14G	DO-160G	Environmental Conditions and Test Procedures for Airborne Equipment
ED-80	DO-254	Design Assurance Guidance for Airborne Electronic Hardware
ED-98C	DO-276C	User Requirements for Terrain and Obstacle Data
ED-76A	DO-200B	Standards for Processing Aeronautical Data
ED-249	DO-371	Minimum Aviation System Performance Standards (MASPS) for Aircraft State Awareness Synthetic Vision Systems

Note: () indicates any currently acceptable version of RTCA-178()/ED-12()

Other Documents

Organization	Number	Title
FAA	AC 25-11B	Electronic Flight Displays
FAA	AC 29-2C MG 18	Helicopter Terrain Awareness and Warning System (HTAWS)
FAA	AC 20-167A	Airworthiness Approval of Enhanced Vision System, Synthetic Vision System, Combined Vision System, and Enhanced Flight Vision System Equipment
SAE	ARP5288	Transport Category Airplane Head Up Display (HUD) Systems
SAE	ARP6377 draft	Behavioral Engineering Technology Recommended Practices for Implementation of Head Worn Displays
SAE	ARP6023	Human Engineering Considerations for Implementing Enhanced SVS in Vertical Flight capable platforms
CICTT	CICTT – Phase of Flight - 1.3	Phase of Flight – Definitions and Usage Notes

Note: *FAA AC 25-11B applies to Part 25 aircraft, but useful guidance may be found in it for part 23, part 27 and part 29 aircraft.*