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Minimum Operational Performance Standards (MOPS) for Surveillance Transmit Processing (STP)

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1 PURPOSE AND SCOPE

1.1 Introduction

This document contains Minimum Operational Performance Standards (MOPS) for ***Surveillance Transmit Processing (STP)***.[1] These standards specify system characteristics that should be useful to designers, manufacturers, installers and users of the equipment.

These MOPS for STP contain requirements for interfacing ADS-B avionics to on-board position sources such as GPS and Flight Management Systems. Proper integration and installation of ADS-B equipment into aircraft is essential to successful implementation of ADS-B air-to-ground and air-to-air applications.

Compliance with these standards is recommended as one means of assuring that the equipment will perform its intended function(s) satisfactorily under all conditions normally encountered in routine aeronautical operation. Any regulatory application of this document is the sole responsibility of appropriate governmental agencies.

Section 1 of this document provides information needed to understand the rationale for equipment characteristics and requirements stated in the remaining sections. It describes typical equipment operations and operation goals, as envisioned by the members of RTCA Special Committee **186**, and establishes the basis for the standards stated in sections 2 through 3. Definitions and assumptions essential to proper understanding of this document are also provided in this section.

Section 2 contains the Minimum Performance Standards for the equipment. These standards specify the required performance under standard environmental conditions. Also included are recommended bench test procedures necessary to demonstrate equipment compliance with the stated minimum requirements.

Section 3 describes the performance required of installed equipment. Tests for the installed equipment are included when performance cannot be adequately determined through bench testing.

Section 4 describes the operational performance characteristics for equipment installations and defines conditions that will assure the equipment user that operations can be conducted safely and reliably in the expected operational environment.

These MOPS specify functional requirements for Surveillance Transmit Processing (STP). Operational performance standards for functions or components that refer to equipment capabilities that exceed the stated minimum requirements are identified as optional features.

The word "function" as used in this document includes all components and units necessary for the system to properly perform its intended function(s). For example, the "function" may be implemented in hardware or software, as appropriate, and the function

[1] Bold-italic text in this Guide pertains to the specific equipment described in the MOPS and provides guidance on what type of text needs to be developed.

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may be partitioned within the hardware and software as is most convenient for a particular implementation.

Since the functional implementation will almost certainly include a computer software package, the guidelines contained in RTCA Document No. DO-178B, Software Consideration in Airborne Systems and Equipment Certification, should be considered.

1.2 Systems Overview

The systems supporting both ground based and aircraft-to-aircraft applications consist of ground systems and the Aircraft Surveillance Applications (ASA) system (Figure 1-1). The ASA system consists of five major subsystems, of which this Surveillance Transmit Processing (STP) MOPS specifies one subsystem. The five subsystems of ASA are: (1) a surveillance transmit processing subsystem, (2) a surveillance subsystem (including ADS-B and TIS-B transmit and receive), (3) a surveillance data processing subsystem, (4) Airborne Surveillance and Separation Assurance Processing (ASSAP), and (5) a display subsystem Cockpit Display of Traffic Information (CDTI). ASA also interfaces with other aircraft systems. Figure 1-1 provides an overview of the system architecture and depicts the interfaces between functional elements for an ASA aircraft participant. Note that the ADS-B transmit and receive subsystems are specified in RTCA/DO-260() and RTCA/DO-282() for the 1090 MHz Extended Squitter and Universal Access Transceiver (UAT) systems, respectively.

The Surveillance Transmit Processing subsystem prepares the required surveillance information from on-board aircraft sensors for the ADS-B Transmit Subsystem. Traffic Information Service Broadcast (TIS-B) Messages are processed to include similar surveillance information obtained through ground surveillance systems. TIS-B Messages are broadcast by the ground-based TIS-B Transmit Subsystem.

ADS-B and TIS-B Messages are received by the ADS-B/TIS-B Receive Subsystem at the receiving ASA Aircraft/Vehicle (A/V). The ADS-B/TIS-B Receive Subsystem processes these Messages and provides ADS-B and TIS-B traffic reports to ASSAP.

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