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**Safety Requirements Standard for
Aeronautical Operational Control (AOC)
Datalink Messages**

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FOREWORD

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1 INTRODUCTION

This document provides minimum safety requirements for Aeronautical Operational Control (AOC) and certain Air Traffic Services (ATS) datalink messages. The two means of addressing the hazards identified in this document are approval via design assurance alone or design assurance in conjunction with risk reduction strategies. To satisfy regulatory means of compliance, the solution must provide adequate assurance that the parts of the AOC datalink system, when operating together, will perform their intended function for the purpose of receiving and displaying/printing AOC data messages within the datalink system in an acceptably safe manner. These datalink system components comprise the ground airline host, datalink service provider and aircraft system. This document provides recommendations of alternative strategies that could be used to demonstrate to a regulatory authority a composite approach to safety that is deemed equivalent to that provided solely by a design assurance solution.

1.1 BACKGROUND

1.1-1 Aeronautical Operational Control messages are typically exchanged with ground system components via aircraft equipment commonly referred to as the Aircraft Communications Addressing and Reporting System (ACARS). The ACARS was originally certified on a “non-interference, no hazard” basis. This approval basis allowed for installation of datalink equipment without having to assess the hardware/software design assurance considerations. Airworthiness authorities accepted this basis because the initial intended uses of datalink had no impact on safety, e.g., the operational basis for approval was intended for Aeronautical Administrative Communication (AAC) only. Datalink has evolved to include applications for AOC and ATS communications. **The anomalous behavior of AOC and ATS applications has the potential to affect the safety of operations by contributing to major category hazards as defined in various aircraft certification advisory material in compliance with AC 25.1309-1A. A higher severity classification is excluded from evaluation using this document.**

1.1-2 Guidance for the design approval of airborne data communication equipment is provided in FAA Advisory Circular (AC) 20-140. RTCA and EUROCAE committees and working groups, such as RTCA SC-189/EUROCAE WG-53, are also producing documents to provide for identification and coordination of safety, performance, and interoperability of ATS datalink messages. There is no commensurate guidance, nor standards, for AOC datalink messages.

1.1-3 Currently, Airplane Flight Manual (AFM) or Rotorcraft Flight Manual (RFM) limitations require flight crew “procedural” risk reduction strategies to provide adequate protection against major hazards. However, based on procedures approved by Operations Specifications (OpSpecs) and relevant service experience, operators are confident that the datalink and associated procedures are adequate for the intended AOC uses without the need for AFM/RFM limitations.

1.1-4 Additionally, airworthiness authorities are concerned with potential error sources which are not part of the aircraft architecture, but which may contribute to aircraft level hazards. This includes procedural errors on the flight deck and within company AOC,