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INTEROPERABILITY REQUIREMENTS STANDARD FOR BASELINE 2 ATS DATA COMMUNICATIONS, ATN BASELINE 1 ACCOMMODATION (ATN BASELINE 1 - BASELINE 2 INTEROP STANDARD)

DO-353B
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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 INTRODUCTION

This standard was developed to enable air traffic service providers (ATSPs) to interoperate with data link equipped aircraft when one of the systems is still compliant with the Baseline 1 Standard.

1.1 Purpose

By design, a Baseline 2 (B2 Rev A or B2 Rev B) system is not able to communicate with a Baseline 1 (B1) system.

This document provides the additional interoperability requirements to allow backward compatibility as depicted in Figure 1-1 between:

NOTE*:* *The definition of the air (A'x') and ground (G'x') configurations identified in the figures below is provided in the ATS INTEROP document [7].*

- B2 Rev B ground systems supporting B1 Backward compatibility (G15, G14, G11, G10), accommodating "non B2 Rev B" aircraft supporting "B1 capabilities" aircraft systems (A2, A3, A4, A6, A8, A9):

  B2 Rev B Ground systems with a backward capability

  - B2 Rev B ground system supporting B1 backward compatibility (G10);
  - B2 Rev B ground system supporting FANS 1/A accommodation and B1 backward compatibility (G11);
  - B2 Rev B ground system supporting B2 Rev A backward compatibility supporting B1 backward compatibility (G14);
  - B2 Rev B ground system supporting B2 Rev A backward compatibility supporting B1 backward compatibility and FANS 1/A accommodation (G15);

  "Non B2 Rev B" Aircraft supporting "B1 capabilities."

  Monolingual aircraft:

  - B1 only aircraft (A3);

  Aircraft with B1 backward compatibility capability:

  - B2 Rev A aircraft supporting B1 backward compatibility (A6).

  Bilingual aircraft:

  - Bilingual FANS1/A+ and B1 aircraft (A2);
  - Bilingual FANS1/A+ and B2 Rev A aircraft supporting B1 backward compatibility (A4);
  - Bilingual B1 and B2 Rev A aircraft (A8).

  Trilingual aircraft:

  - Trilingual FANS1/A+, B1 and B2 Rev A aircraft (A9).

- B2 Rev B aircraft systems supporting B1 Backward compatibility (A11, A13) accommodating "non B2 Rev B" ground systems supporting B1 Capabilities (G2, G3, G4, G7).

  "Non B2 Rev B» Ground systems supporting "B1 capabilities."

  Monolingual ground systems:

  - B1 only ground system (G3);

  B2 Rev B Ground systems with a backward capability

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- B1 ground system supporting FANS 1/A accommodation (G2);
- B2 Rev A ground system supporting B1 backward compatibility (G4);
- B2 Rev A ground system supporting FANS 1/A accommodation and B1 backward compatibility (G7);

B2 Rev B Aircraft with a backward compatibility capability:

- B2 Rev B aircraft supporting B1 backward compatibility (A11).

Bilingual aircraft:

- Bilingual FANS1/A+ and B2 Rev B aircraft supporting B1 backward compatibility (A13).

NOTE*:* *The Baseline 1 ground systems compliant with the Data Link Implementing Rules are identified in this document as "B1" systems.*

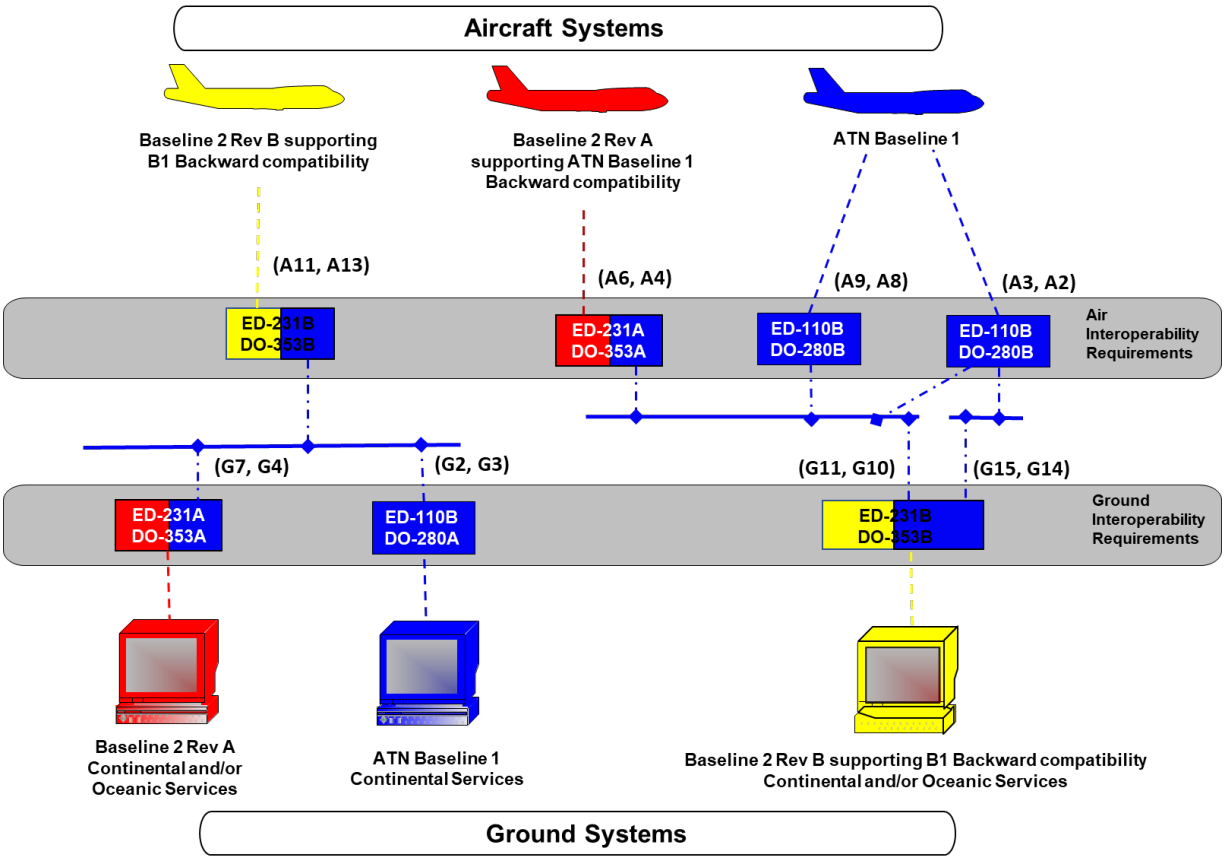


FIGURE 1-1: B2 / B1 BACKWARD COMPATIBILITY

1.2 Scope

This standard provides:

a. Interoperability requirements for the B2 Rev B ground systems to interoperate with known B1 compliant airborne implementations. See paragraph 2.3.

b. Interoperability requirements for the B2 Rev B aircraft system to interoperate with known B1 compliant ground implementations. See paragraph 2.4.

This standard defines the backward compatibility interoperability requirements on air and ground systems compliant with the ATS B2 Rev B Interoperability Standard [7] in order to support the CDR, IER, ACM and AMC services when communicating to B1 ground and air implementations.

Backward requirements are defined to permit as much as possible uplink messages supported by B2 Rev B ground systems but not implemented by B1 aircraft to be sent as free text messages or equivalent messages (e.g., combination of B1 message elements or B1 message elements with similar operational intent).

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NOTE*:*

1. *No backward compatibility requirements are defined for D-TAXI, ITP, DCL, IM and PTM CPDLC services and ADS-C services. These B2 services are never provided to or by B1 systems.*
2. *No backward compatibility requirements are defined for CM. The B1 and B2 CM applications are fully compatible.*

This document (EUROCAE ED-231B / RTCA DO-353B) supersedes EUROCAE ED-231A / RTCA DO-353A.

1.3 Relationships to other Documents

In addition to ICAO material, this standard is intended for use with the following RTCA/EUROCAE documents:

- DO-350B/ED-228B [6], ATS SPR (Safety and Performance Requirements Standard for Advanced ATS Data Communications), which provides the definition of the term, "advanced data link services," as used in this document.
- DO-280B/ED-110B [4], Baseline 1 Interoperability (INTEROP) Standard ground system.
- ETSI Data Link Community Specification for application under the Single European Sky Interoperability Regulation EC 552/2004 [10], which provides the definition of the term "B1 ground system".
- DO-351B/ED-229B, ATS INTEROP Standard [7], which provides the definition of the terms, "ATN ground system" and "ATN aircraft," as used in this document.
- DO-264/ED-78A, Guidelines for the Provision and Use of Air Traffic Services Supported by Data Communications [2], for provides guidance material for implementation and approval of air traffic data link services.
- EUROCONTROL SPEC-0116 'EUROCONTROL SPECIFICATION on Data Link Services" Ed2.1 [15], which provides the air and ground specifications for Link2000+ implementation of B1 services and capabilities.

1.4 Description of This Document

1.1.1 Mandating And Recommending Phrases

This document uses the word "shall" to indicate a mandated criterion; i.e., compliance is mandatory, and no alternative may be applied.

NOTE*:* *In an approval context, the "shalls" are considered a mandated criterion if the:*

- *Applicant defines this standard, with relevant SPR standard, and any adaptation (Refer to RTCA DO-264/EUROCAE ED-78A [2], paragraph 1.3.3), as the approval basis, and*
- *Approval authority accepts this approval basis, which then defines the criteria for compliance.*

This document uses the word "should" to indicate that although the criterion is regarded as the preferred option, alternative criteria may be applied. In such cases, alternatives should be identified in appropriate approval plans and agreement sought from the approval authority.

NOTE*:* *In all requirements and recommendations quoted here below the terminology 'B2 Rev B' stands for 'B2 Rev B supporting B1 backward compatibility'.*