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**Minimum Operational Performance Standards for Automatic Direction
Finding (ADF) Equipment**

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SC-146

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FOREWORD

This document was prepared by Special Committee 146 of the Radio Technical Commission for Aeronautics (RTCA). It was approved by RTCA on May 13, 1982, and supersedes RTCA/DO-137, "Minimum Operational Characteristics Airborne Automatic Direction Finding (ADF) Systems," April 11, 1968 and RTCA/DO-142, "Minimum Performance Standards - Airborne Radio Receiving and Direction Finding Equipment Operating Within the Radio-Frequency Range of 200-850 Kilohertz," January 8, 1970.

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Although these standards were coordinated with the European Organisation for Civil Aviation Electronics (EUROCAE) WG-7D, it should be noted that the NDB environment in Europe is significantly different from that in the United States and the work of EUROCAE addresses factors outside the scope of this document. Therefore, the standards specified in this document pertain only to the NDB environment of the United States.

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TABLE OF CONTENTS

	<u>Page</u>
FOREWORD	i
TABLE OF CONTENTS	iii
1.0 PURPOSE AND SCOPE	1
1.1 Introduction	1
1.2 System Overview	2
1.2.1 Basic System Description	2
1.2.2 Background	3
1.2.3 Future Direction	3
1.2.4 Transition Strategy	4
1.3 Operational Applications	5
1.4 Operational Goals	6
1.4.1 Sensitivity	6
1.4.2 Receiver Selectivity	6
1.4.3 Spurious Response, Cross Modulation and Intermodulation	7
1.4.4 Bearing Accuracy	7
1.5 Assumptions	7
1.5.1 Field Strength	7
1.5.2 Selectivity	8
1.5.3 Warnings and Flags	8
1.6 Test Procedures	8
1.6.1 Environmental Tests	9
1.6.2 Bench Tests	9
1.6.3 Installed System Tests	9
1.6.4 Operational Tests	10
1.7 Definitions of Terms	10

2.0	AUTOMATIC DIRECTION FINDING EQUIPMENT PERFORMANCE REQUIREMENTS AND TEST PROCEDURES	11
2.1	General Requirements	11
2.1.1	Airworthiness	11
2.1.2	Intended Function	11
2.1.3	Federal Communications Commission Rules	11
2.1.4	Fire Protection	11
2.1.5	Operation of Controls	11
2.1.6	Accessibility of Controls	11
2.1.7	Effects of Test	11
2.2	Equipment Performance - Standard Conditions	12
2.2.1	Tuning Resolution	12
2.2.2	Ground Station Interoperability	12
2.2.3	Sensitivity (MCW Receiver Function)	12
2.2.4	Sensitivity (CW Receiver Function)	13
2.2.5	Bearing Accuracy (ADF Function)	13
2.2.6	Station Passage (ADF Function)	13
2.2.7	Audio Frequency Response	13
2.2.8	Audio Output Level Variation With Load Impedance	13
2.2.9	Distortion	14
2.2.10	AGC Characteristics	14
2.2.11	Receiver Selectivity (MCW Receiver Function)	14
2.2.12	Receiver Selectivity (ADF Function)	14
2.2.13	Spurious Response	15
2.2.14	Cross Modulation	15
2.2.15	Intermodulation	16
2.2.16	Direction Finder Operation with Beat Frequency Oscillator	16
2.3	Equipment Performance - Environmental Conditions	17
2.3.1	Temperature and Altitude Tests	17
2.3.2	Temperature Variation Test	19
2.3.3	Humidity Test	19
2.3.4	Shock Tests	19
2.3.5	Vibration Tests	20
2.3.6	Explosion Test	20
2.3.7	Waterproofness Test	20
2.3.8	Fluids Susceptibility Tests	21
2.3.9	Sand and Dust Test	21
2.3.10	Fungus Resistance Test	22
2.3.11	Salt Spray Test	22
2.3.12	Magnetic Effect Test	22

2.3.13	Power Input Tests	22
2.3.14	Voltage Spike Conducted Test	23
2.3.15	Audio Frequency Conducted Susceptibility Test	23
2.3.16	Induced Signal Susceptibility Test	24
2.3.17	Radio Frequency Susceptibility Test	24
2.3.18	Emission of Radio Frequency Energy Test	24
2.4	Equipment Test Procedures	25
2.4.1	Definitions of Terms and Conditions of Test	25
2.4.2	Detailed Test Procedures	34
3.0	INSTALLED EQUIPMENT PERFORMANCE	43
3.1	Test Conditions	43
3.1.1	Power Input	43
3.1.2	Associated Equipment	43
3.1.3	Environment	43
3.1.4	Adjustment of Equipment	43
3.1.5	Warm-up Period	43
3.2	Equipment Installation	43
3.2.1	Equipment Accessibility	43
3.2.2	Display Visibility	43
3.2.3	Interference Effects	44
3.2.4	Dynamic Response During Maneuvers	44
3.2.5	Inadvertent Turnoff	44
3.2.6	Aircraft Power Source	44
3.3	Minimum Installed Equipment Performance	44
3.3.1	Controls and Displays	44
3.3.2	Audio Reception	44
3.3.3	Bearing Accuracy	44
4.0	OPERATIONAL CHARACTERISTICS	45
4.1	Required Operational Characteristics	45
4.1.1	Power Input	45
4.1.2	Equipment Operating Modes	45
4.2	Test Procedures for Operational Characteristics	45
4.2.1	Power Input	45
4.2.2	Equipment Operating Modes	45
MEMBERSHIP	47

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1.0 PURPOSE AND SCOPE

1.1 Introduction

This document sets forth minimum operational performance standards for automatic direction finding (ADF) equipment within the United States NDB environment. Incorporated in these standards are system characteristics that will benefit users of the system as well as designers, manufacturers and installers. These characteristics are intended to be in accord with requirements of various users. These characteristics are also intended to be in accord with the ground system characteristics and the intended operational use.

Section 1.0 of this document is intended to be tutorial in nature and provides information needed to understand the rationale for equipment characteristics and requirements stated in the remaining sections. It describes typical equipment applications and operational goals, as envisioned by the members of Special Committee 146, and is the basis for the standards stated in Sections 2.0 through 4.0. Definitions and assumptions essential to proper understanding of this document are also provided in Section 1.0.

Section 2.0 contains the minimum performance standards for the equipment. These standards define the required performance under standard operating conditions and stressed physical environmental conditions. It also details the recommended bench test procedures necessary to demonstrate compliance.

Section 3.0 describes the performance required of the installed equipment. Tests for the installed equipment are included when performance cannot be adequately determined through bench testing.

Section 4.0 describes the operational characteristics for equipment installations and defines conditions that will assure the operator that operations can be conducted safely and reliably in the expected operational environment.

Compliance with these standards by manufacturers, installers and users is recommended as a means of assuring that the equipment will satisfactorily perform its intended function(s) under all conditions normally encountered in routine aeronautical operations.

If the equipment implementation includes a computer software package, the guidelines contained in RTCA/DO-178, "Software Considerations in Airborne Systems and Equipment Certification," November 18, 1981, should be considered.

It is recognized that any regulatory application of this