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Minimum Operational Performance Standards (MOPS) for Airborne Radio Communications Equipment Operating Within the Radio Frequency Range 117.975 – 137.000 MHz

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FOREWORD

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- 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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TABLE OF CONTENTS

Page

1.0 PURPOSE AND SCOPE 1
1.1 Introduction 1
1.2 System Overview 2
1.3 Operational Applications 3
1.4 Operational Goals 3
1.5 Test Procedures 4
1.6 Definitions of Terms 5

2.0 EQUIPMENT PERFORMANCE REQUIREMENTS AND TEST PROCEDURES 7

2.1 General Requirements 7
2.1.1 Airworthiness 7
2.1.2 Intended Function 7
2.1.3 Federal Communications Commission Rules 7
2.1.4 Fire Protection 7
2.1.5 Operation of Controls 7
2.1.6 Accessibility of Controls 7
2.1.7 Effects of Test 7
2.1.8 Equipment Classes 8

2.2 Receiver Performance - Standard Conditions 8
2.2.1 Audio Frequency Response 8
2.2.2 AGC Characteristics 8
2.2.3 Sensitivity (Signal-plus-Noise to Noise Ratio) 9
2.2.4 Output Level Control 9
2.2.5 Distortion 9
2.2.6 Noise Level 9
2.2.7 Selectivity 9
2.2.8 Spurious Responses 11
2.2.9 Cross Modulation 12
2.2.10 Intermodulation 12
2.2.11 Desensitization 12
2.2.12 Emission of Radio Frequency Energy 12
2.2.13 Channel Selection Time 13
2.2.14 Antenna VSWR 13
2.2.15 Antenna Efficiency 13
2.2.16 Adjacent Channel Rejection - Class E Receivers Only 13
2.2.17 Receiver Muting – Class A and C Receivers Only 13

2.3 Transmitter Performance - Standard Conditions 14
2.3.1 Output Power 14
2.3.2 Residual Radiation 14
2.3.3 Modulation Capability 14
2.3.4 Audio Frequency Distortion 14
2.3.5 Audio Frequency Response 14
2.3.5.1 Modulation Fidelity 14
2.3.5.2 Sidetone Fidelity 14
2.3.6 Carrier Noise Level 15
2.3.7 Emission of Radio Frequency Energy 15
2.3.8 Channel Selection Time 15
2.3.9 Antenna VSWR 16

Page

2.3.10 Antenna Efficiency 16
2.3.11 Frequency Tolerance 16
2.3.12 Effects of Antenna Mismatch 16
2.3.13 Transmitter Occupied Spectrum for 8.33 kHz Mode 16

2.4 Receiver Performance - Environmental Conditions 18
2.4.1 Temperature and Altitude Tests (DO-160C, Section 4.0) 18
2.4.1.1 Low Temperature Test 18
2.4.1.2 High Temperature Test 19
2.4.1.2.1 High Short-Time Operating Temperature 19
2.4.1.2.2 High Operating Temperature 19
2.4.1.3 Altitude Test 19
2.4.1.4 Decompression Test (When Required) 19
2.4.1.5 Overpressure Test (When Required) 20
2.4.2 Temperature Variation Test (DO-160C, Section 5.0) 20
2.4.3 Humidity Test (DO-160C, Section 6.0) 20
2.4.4 Shock Tests (DO-160C, Section 7.0) 20
2.4.4.1 Operational Shocks 20
2.4.4.2 Crash Safety Shocks 20
2.4.5 Vibration Tests (DO-160C, Section 8.0) 20
2.4.6 Explosion Test (DO-160C, Section 9.0) (When Required) 21
2.4.7 Waterproofness Test (DO-160C, Section 10.0) 21
2.4.8 Fluids Susceptibility Tests (DO-160C, Section 11.0) 21
2.4.9 Sand and Dust Test (DO-160C, Section 12.0) (When Required) 21
2.4.10 Fungus Resistance Test (DO-160C, Section 13.0) (When Required) 21
2.4.11 Salt Spray Test (DO-160C, Section 14.0) (When Required) 22
2.4.12 Magnetic Effect Test (DO-160C, Section 15.0) 22
2.4.13 Power Input Tests (DO-160C, Section 16.0) 22
2.4.13.1 Normal Operating Conditions 22
2.4.13.2 Abnormal Operating Conditions 22
2.4.14 Voltage Spike Conducted Test (DO-160C, Section 17.0) 22
2.4.14.1 Category A Requirements (If Applicable) 23
2.4.14.2 Category B Requirements (If Applicable) 23
2.4.15 Audio Frequency Conducted Susceptibility Test (DO-160C, Section 18.0) 23
2.4.16 Induced Signal Susceptibility Test (DO-160C, Section 19.0) 23
2.4.17 Radio Frequency Susceptibility Test (Radiated and Conducted) (DO-160C, Section 20.0) 23
2.4.18 Emission of Radio Frequency Energy (DO-160C, Section 21.0) 23

2.5 Transmitter Performance - Environmental Conditions 24
2.5.1 Temperature and Altitude Tests (DO-160C, Section 4.0) 24
2.5.1.1 Low Temperature Test 24
2.5.1.2 High Temperature Test 25
2.5.1.3 Altitude Test 25
2.5.1.4 Decompression Test (When Required) 25
2.5.1.5 Overpressure Test (When Required) 26
2.5.2 Temperature Variation Test (DO-160C, Section 5.0) 26
2.5.3 Humidity Test (DO-160C, Section 6.0) 26
2.5.4 Shock Tests (DO-160C, Section 7.0) 26
2.5.4.1 Operational Shocks 26
2.5.4.2 Crash Safety Shocks 26
2.5.5 Vibration Tests (DO-160C, Section 8.0) 27
2.5.6 Explosion Test (DO-160C, Section 9.0) (When Required) 27
2.5.7 Waterproofness Test (DO-160C, Section 10.0) (When Required) 27
2.5.8 Fluids Susceptibility Tests (DO-160C, Section 11.0) 27
2.5.9 Sand and Dust Test (DO-160C, Section 12.0) (When Required) 27
2.5.10 Fungus Resistance Test (DO-160C, Section 13.0) (When Required) 28

Page

2.5.11 Salt Spray Test (DO-160C, Section 14.0) (When Required) 28
2.5.12 Magnetic Effect Test (DO-160C, Section 15.0) 28
2.5.13 Power Input Tests (DO-160C, Section 16.0) 28
2.5.13.1 Normal Operating Conditions 28
2.5.13.2 Abnormal Operating Conditions 28
2.5.14 Voltage Spike Conducted Test (DO-160C, Section 17.0) 29
2.5.14.1 Category A Requirements (If Applicable) 29
2.5.14.2 Category B Requirements (If Applicable) 29
2.5.15 Audio Frequency Conducted Susceptibility Test (DO-160C, Section 18.0) 29
2.5.16 Induced Signal Susceptibility Test (DO-160C, Section 19.0) 29
2.5.17 Radio Frequency Susceptibility Test (Radiated and Conducted) (DO-160C, Section 20.0) 29
2.5.18 Emission of Radio Frequency Energy (DO-160C, Section 21.0) 29

2.6 Receiver Test Procedures 30
2.6.1 Definitions of Terms and Conditions of Test 30
2.6.2 Detailed Test Procedures 32
2.6.2.1 Audio Frequency Response (Paragraph 2.2.1) 32
2.6.2.2 AGC Characteristics (Paragraph 2.2.2) 32
2.6.2.3 Sensitivity (Paragraph 2.2.3) 33
2.6.2.4 Output Level Control (Paragraph 2.2.4) 36
2.6.2.5 Distortion (Paragraph 2.2.5) 36
2.6.2.6 Noise Level (Paragraph 2.2.6) 37
2.6.2.7 Selectivity (Paragraph 2.2.7) 37
2.6.2.8 Spurious Responses (Paragraph 2.2.8) 38
2.6.2.9 Cross Modulation (Paragraph 2.2.9) 38
2.6.2.10 Intermodulation (Paragraph 2.2.10) 39
2.6.2.11 Desensitization (Paragraph 2.2.11) 40
2.6.2.12 Emission of Radio Frequency (Paragraph 2.2.12) 41
2.6.2.13 Channel Selection Time (Paragraph 2.2.13) 41
2.6.2.14 Antenna VSWR (Paragraph 2.2.14) 41
2.6.2.15 Antenna Efficiency (Paragraph 2.2.15) 41
2.6.2.16 Adjacent Channel Rejection, Class E Equipment Only (Paragraph 2.2.16) 43
2.6.2.17 Receiver Muting – Class A and C Receivers Only (Paragraph 2.2.17) 43

2.7 Transmitter Test Procedures 44
2.7.1 Definitions of Terms and Conditions of Test 44
2.7.2 Detailed Test Procedures 46
2.7.2.1 Output Power (Paragraph 2.3.1) 46
2.7.2.2 Residual Radiation (Paragraph 2.3.2) 46
2.7.2.3 Modulation Capability (Paragraph 2.3.3) 47
2.7.2.4 Audio Frequency Distortion (Paragraph 2.3.4) 47
2.7.2.5 Audio Frequency Response (Paragraph 2.3.5) 50
2.7.2.6 Carrier Noise Level (Paragraph 2.3.6) 51
2.7.2.7 Emission of Radio Frequency Energy (Paragraph 2.3.7) 51
2.7.2.8 Channel Selection Time (Paragraph 2.3.8) 52
2.7.2.9 Antenna VSWR (Paragraph 2.3.9) 52
2.7.2.10 Antenna Efficiency (Paragraph 2.3.10) 53
2.7.2.11 Frequency Tolerance (Paragraph 2.3.11) 54
2.7.2.12 Effects of Antenna Mismatch (Paragraph 2.3.12) 55
2.7.2.13 Occupied Spectrum for Class 5 and Class 6 Transmitters (Paragraph 2.3.13) 57

3.0 INSTALLED EQUIPMENT PERFORMANCE 59

3.1 Equipment Installation 59
3.1.1 Accessibility 59

Page

3.1.2 Aircraft Environment 59
3.1.3 Display Visibility 59
3.1.4 Dynamic Response 59
3.1.5 Failure Protection 59
3.1.6 Inadvertent Turnoff 59
3.1.7 Aircraft Power Source 59

3.2 Installed Equipment Performance Requirements 59
3.2.1 Dynamic Response 60
3.2.2 Interference Effects 60

3.3 Conditions of Test 62
3.3.1 Power Input 62
3.3.2 Associated Equipment or Systems 62
3.3.3 Environment 62

3.4 Test Procedures for Installed Equipment Performance 62
3.4.1 Ground Test Procedures 62
3.4.1.1 Conformity Inspection 62
3.4.1.2 Equipment Function 63
3.4.1.3 Equipment Accessibility 63
3.4.1.4 Interference Effects 63
3.4.1.5 Power Supply Fluctuations 63
3.4.1.6 Reception 63
3.4.1.7 Transmission 63
3.4.2 Flight Test Procedures 63
3.4.2.1 Displayed Data Readability 63
3.4.2.2 Interference Effects 63
3.4.2.3 Communication System Performance 64

4.0 OPERATIONAL CHARACTERISTICS 65

4.1 Required Operational Characteristics 65
4.1.1 Power Input 65
4.1.2 Equipment Operating Modes 65
4.1.3 Displays 65
4.1.4 Equipment Functional Test 65

MEMBERSHIP 67

Page

LIST of FIGURES

FIGURE 2-1 SPECTRUM MASK....17
FIGURE 2-2 REPRESENTATIVE T PAD USING T CONNECTOR (INSERTION LOSS 6 DB)....34
FIGURE 2-3 TEST EQUIPMENT CONNECTION - RECEIVER RECOVERY TIME....35
FIGURE 2-4 TEST EQUIPMENT CONNECTION - RECEIVER RECOVERY TIME (AFTER TRANSMIT)....35
FIGURE 2-5 VERTICAL ANTENNA EFFICIENCY TEST SETUP....36
FIGURE 2-6 TEST EQUIPMENT CONNECTION -RECEIVER SELECTIVITY....38
FIGURE 2-7 TEST EQUIPMENT CONNECTION - RECEIVER CROSS MODULATION, DESENSITIZATION AND INTERMODULATION....39
FIGURE 2-8 SETUP FOR OBTAINING ANTENNA EFFICIENCY REFERENCE LEVELS - VERTICAL ANTENNA....42
FIGURE 2-9 TEST EQUIPMENT – RECEIVER MUTING....44
FIGURE 2-10 CIRCUIT DIAGRAM OF THE PHANTOM MICROPHONE....45
FIGURE 2-11 TEST CONNECTIONS FOR MODULATION CAPABILITY....48
FIGURE 2-12A SCHEMATIC OF REPRESENTATIVE TYPE OF DETECTOR....49
FIGURE 2-12B SCHEMATIC OF REPRESENTATIVE TYPE OF DETECTOR....49
FIGURE 2-13 TEST CONNECTIONS FOR AUDIO FREQUENCY DISTORTION, RESPONSE AND NOISE LEVEL....50
FIGURE 2-14 CHANNEL SELECTION TEST SETUP....52
FIGURE 2-15 SETUP FOR OBTAINING ANTENNA EFFICIENCY REFERENCE LEVELS - VERTICAL ANTENNA....54
FIGURE 2-16 TEST CONNECTIONS FOR MEASURING FREQUENCY ACCURACY AND FM DEVIATION....56
FIGURE 2-17 ANTENNA MISMATCH....56
FIGURE 2-18 OCCUPIED SPECTRUM....57

LIST of TABLES

TABLE 3-1 EXAMPLE OF INTERFERENCE PROTECTION FOR GNSS AND AMSS 61

1.0 PURPOSE AND SCOPE

1.1 Introduction

This document contains minimum operational performance standards for aircraft radio communications equipment operating in the radio-frequency range of 117.975 to 137.000 MHz. In the following text the channel spacing for 8.33 kHz channel assignments is defined as 25 kHz divided by 3, which is 8.3333 kHz. These standards specify system characteristics that should be useful to designers, manufacturers, installers and users of the equipment.

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 operations.

Any regulatory application of this document is the sole responsibility of appropriate governmental agencies.

Section 1.0 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 and establishes the basis for the standards contained 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. The standards specify the required performance under standard and environmental conditions. Also included are recommended bench test procedures necessary to demonstrate equipment compliance with the stated minimum requirements.

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 equipment user that operations can be conducted safely and reliably in the expected operational environment.

This document considers an equipment configuration consisting of a receiver, transmitter, control box, power supply and an antenna. Additional functions and components that refer to expanded equipment capabilities are identified as optional features.

Manufacturers should note that in the future part or all of the frequency band 108.000 to 117.975 MHz may become available for ground-to-air and/or air-to-ground communication.

The word “equipment” as used in this document includes all components and units necessary for the system to properly perform its intended function(s). For example, the “equipment” may include an antenna, a receiver unit, a transmitter unit, a control box, a power supply, a shock mount, etc. In the case of this example, all of the foregoing components or units comprise the “equipment.” It should not be inferred from this example, however, that each equipment design will necessarily

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include all of the foregoing components. This will depend on the design chosen by the equipment manufacturer.

If the equipment implementation includes a computer software package, the guidelines contained in RTCA/DO-178B, "Software Considerations in Airborne Systems and Equipment Certification," December 1, 1992, should be considered.

1.2 System Overview

The VHF communications system includes ground-based aircraft receiving and transmitting equipment which provides air-to-ground, ground-to-air, air-to-air, and ground-to-ground voice and data communications. The equipment utilizes amplitude modulation and operates on assigned channels spaced 25 and/or 8.33 kHz apart within the radio-frequency range 117.975 MHz to 137.000 MHz.

Note: The above operational frequency range limitations may not apply to all receiver transmitters and their associated control panels. For some applications the receiver transmitter may be capable of tuning channels outside of these limits.

The channel labeling used within this radio-frequency range is based on the following frequency-channel pairing plan which allows unique identification of the 8.33 kHz channels.

Frequency (MHz)	Channel Spacing (kHz)	Channel ID	Receiver Class
118.0000	25/50	118.000	A,B,C or D
118.0000	8.33	118.005	E
118.0083	8.33	118.010	E
118.0167	8.33	118.015	E
118.0250	25	118.025	C or D
118.0250	8.33	118.030	E
118.0333	8.33	118.035	E
118.0417	8.33	118.040	E
118.0500	25/50	118.050	A,B,C or D
118.0500	8.33	118.055	E
118.0583	8.33	118.060	E
118.0667	8.33	118.065	E
118.0750	25	118.075	C or D
118.0750	8.33	118.080	E
118.0833	8.33	118.085	E
118.0917	8.33	118.090	E
118.1000	25/50	118.100	A,B,C or D
etc.			

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