SENSOR CALIBRATION AND TESTING PROCEDURES

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NaviFloor Robotics, Inc.

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1. PURPOSE AND SCOPE

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1. This document establishes the mandatory procedures for calibration, testin

2. These procedures apply to all NaviFloor Robotics manufacturing facilities

2. DEFINITIONS

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1. "Calibration" refers to the process of comparing measurement values deliv

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2. "Testing Environment" means the controlled facility meeting ISO/IEC 170

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3. "Validation Protocol" refers to the documented process of verifying that a

3. CALIBRATION REQUIREMENTS

1. Primary Sensor Systems

a) LiDAR Arrays (Model NF-LDR-2000 Series)

- Calibration frequency: Every 500 operational hours or quarterly

- Temperature range: 15°C to 35°C

- Humidity requirements: 45% ± 5% RH

- 2. Depth-Sensing Modules (Model NF-DSM-500 Series)

a) Zero-point calibration

b) Range verification (0.05m to 50m)

c) Angular resolution testing (0.1° increment)

3. Terrain-Mapping Systems

a) Surface texture analysis

b) Incline detection accuracy

c) Material composition sensing

4. TESTING PROCEDURES

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1. Pre-Calibration Requirements

a) Equipment warm-up period: 30 minutes minimum

b) Environmental condition stabilization

c) Reference standard verification

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2. Standard Testing Protocol

a) Static position accuracy test

b) Dynamic response measurement

c) Cross-validation with secondary reference systems

d) Data logging requirements

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3. Quality Control Measures

a) Statistical analysis of calibration data

b) Uncertainty calculation and documentation

c) Performance trend analysis

5. VALIDATION CRITERIA

1. Acceptance Parameters

a) Position accuracy: ±0.5mm at 10m range

b) Angular precision: ±0.05° deviation maximum

c) Response time: <50ms for critical measurements

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2. Documentation Requirements

a) Calibration certificates

b) Test result logs

c) Deviation reports

d) Corrective action documentation

6. SAFETY PROTOCOLS

1. Personnel Requirements

a) Certified calibration technicians only

b) Minimum Level 2 safety clearance

c) Current training certification

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2. Equipment Safety

a) Laser safety protocols (Class 1M)

b) Electrical safety measures

c) Emergency shutdown procedures

7. QUALITY ASSURANCE

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1. Record Keeping

a) Digital logging system requirements

b) Backup procedures

c) Audit trail maintenance

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2. Periodic Review

a) Quarterly procedure evaluation

b) Annual system audit

c) Compliance verification

8. PROPRIETARY INFORMATION

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1. All calibration procedures, testing methodologies, and validation criteria c

9. COMPLIANCE AND LIABILITY

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1. These procedures comply with ISO 9001:2015, ISO/IEC 17025:2017, and

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2. Failure to follow these procedures may result in sensor malfunction and vo

10. REVISION HISTORY

Version 3.2 - January 1, 2024

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Updated LiDAR calibration frequency requirements

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Added new terrain-mapping validation criteria

Revised safety protocols

11. AUTHORIZATION

APPROVED BY:

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Date: December 15, 2023

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