

# Element Materials Technology Denver-Longmont A.K.A. NTS Labs, LLC

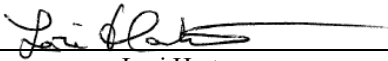
## Test Report for Environmental/Dynamics Testing of the SMARTMACTIC VSR1 2.1 Ballot Box BMD

**Prepared For**

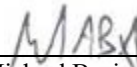
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**Revision History**

| Rev. | Description     | Issue Date |
|------|-----------------|------------|
| 0    | Initial Release | 02/28/2024 |

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## 1.0 Introduction

This document presents the test procedures used and the results obtained during the performance of an Environmental/Dynamics test program at Element Materials Technology Denver-Longmont (hereafter referred to as “Element”). The test program was conducted to assess the ability of the specified Equipment Under Test (EUT) to successfully satisfy the requirements defined in the test specification.

## 2.0 References

The following references listed below form a part of this document to the extent specified herein.

- Test Specification: See Table 5.0-1
- Pro V&V, Inc Purchase Order 2023-009 dated 03/17/2023.
- Element Quotation OPO0636249-0 dated 03/16/2023.
- ISO/IEC 17025:2017(E) *General Requirements for the Competence of Testing and Calibration Laboratories*, dated 11/2017.

## 3.0 Product Selection and Description

Pro V&V, Inc selected and provided the following test sample(s) to be used as the Equipment Under Test.

**Table 3.0-1: Product Identification – Equipment Under Test (EUT)**

| Item | Qty. | Name/Description                       | Part Number | Serial Number   |
|------|------|----------------------------------------|-------------|-----------------|
| 1    | 1    | SMARTMACTIC VSR1 2.1 Ballot Box<br>BMD | None        | CNIBBAA00001100 |

## 3.1 Security Classification

Non-classified

## 4.0 General Test Requirements

### 4.1 Test Equipment

The instrumentation used in the performance of these tests is periodically calibrated and standardized within manufacturer's rated accuracies and are traceable to the National Institute of Standards and Technology. The calibration procedures and practices are in accordance with ISO 17025:2017. Certification of calibration is on file subject to inspection by authorized personnel.

## 5.0 Test Description and Results

**Table 5.0-1: Summary of Test Information & Results**

| Section | Test                     | Specification                | Test Facility | Test Date                  | Part # | Serial #        | Test Result               |
|---------|--------------------------|------------------------------|---------------|----------------------------|--------|-----------------|---------------------------|
| 5.1     | Low Temp                 | MIL-STD 810D<br>Method 501.2 | Longmont      | 11/29/2023-<br>11/30/2023  | None   | CNIBBAA00001100 | Customer<br>Determination |
| 5.2     | High Temp                | MIL-STD 810D<br>Method 501.2 | Longmont      | 11/30/2023-<br>12/01/2023  | None   | CNIBBAA00001100 | Customer<br>Determination |
| 5.3     | Bench Handling           | MIL-STD 810D<br>Method 516.3 | Longmont      | 12/06/2023 -<br>12/07/2023 | None   | CNIBBAA00001100 | Customer<br>Determination |
| 5.4     | Transportation Vibration | MIL STD 810H                 | Longmont      | 12/01/2023 -<br>12/04/2023 | None   | CNIBBAA00001100 | Customer<br>Determination |



#### 5.1.4 Test Photographs



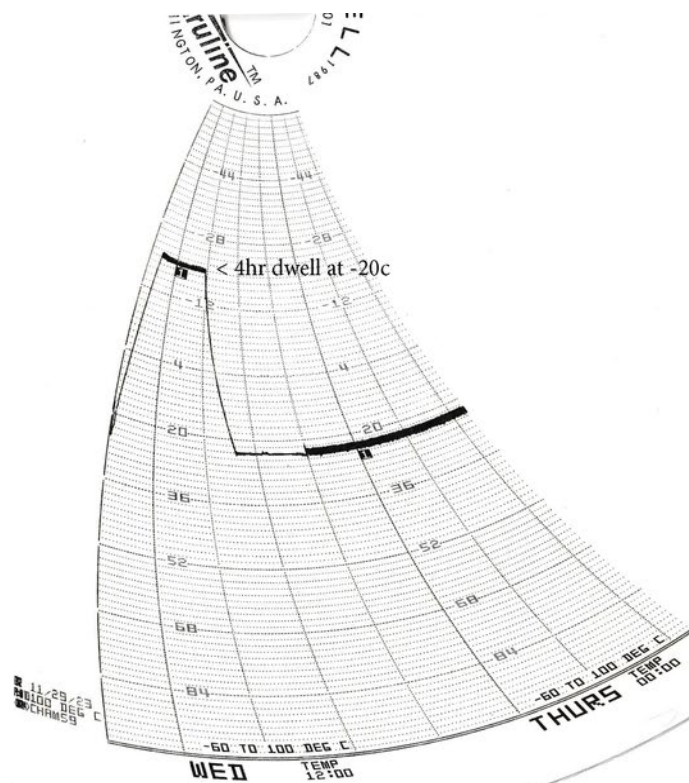
Low\_Temp\_Test\_01



PR170750-00\_Pro V&V\_Low\_Temp\_Test\_02

Low\_Temp\_Test\_02

### 5.1.5 Test Data



PR170750-00\_Pro V&V\_Low\_Temp\_Test



### 5.1.6 Test Equipment List

**Table 5.1-1: Low Temp Test Equipment List**

| Asset Number | Asset Type                     | Manufacturer | Model         | Calibrated | Due        |
|--------------|--------------------------------|--------------|---------------|------------|------------|
| WC061559     | Chamber (Temperature/Humidity) | StorageTek   | Large Walk In | 09/05/2023 | 09/05/2024 |
| WC061560     | Controller (Temperature)       | Watlow       | F4            | 09/05/2023 | 09/05/2024 |
| WC061561     | Recorder (Chart)               | Honeywell    | DR45AT        | 09/05/2023 | 09/05/2024 |

#### Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



#### 5.2.4 Test Photographs



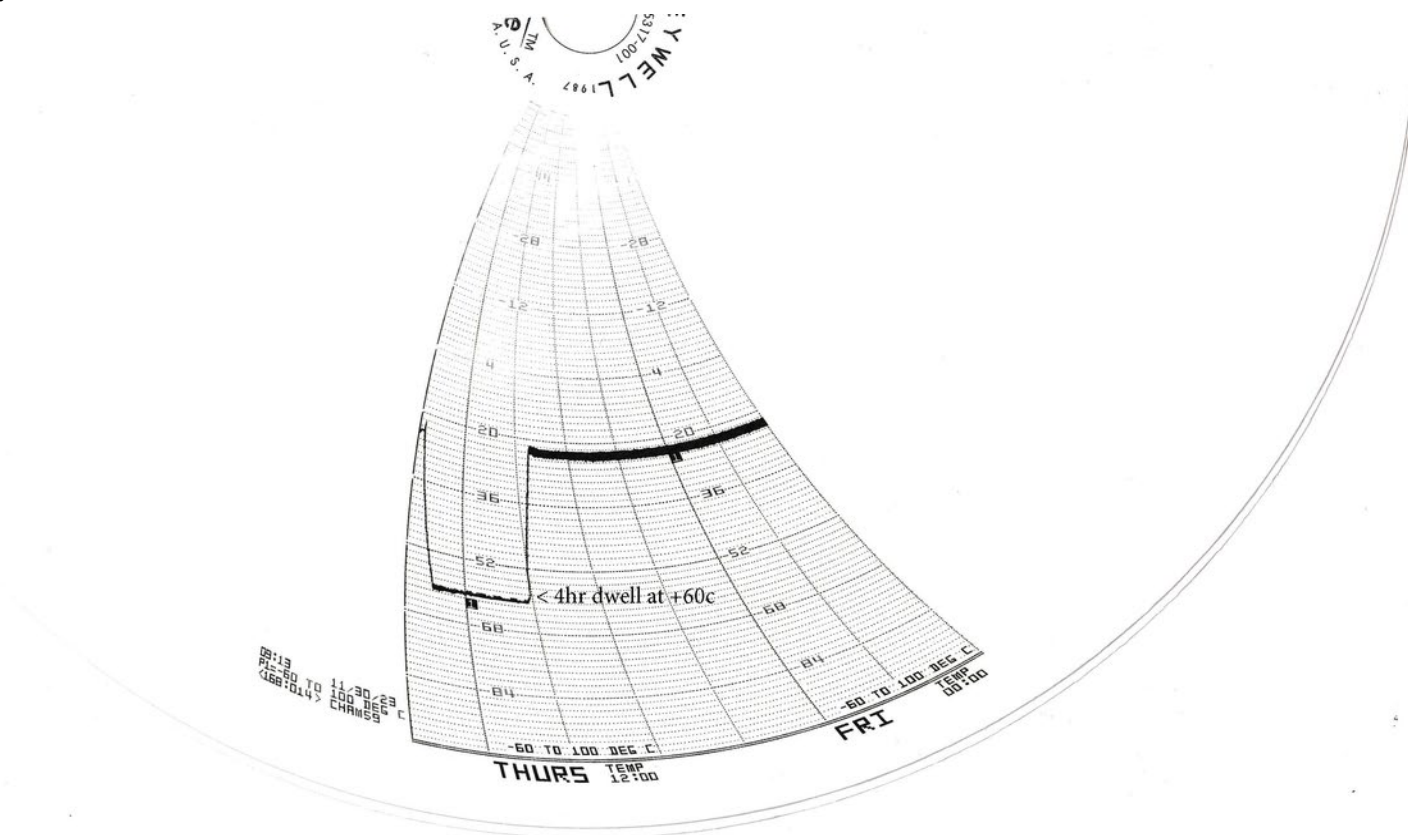
High\_Temp\_Test\_01



PR170750-00\_Pro V&V\_High\_Temp\_Test\_02

High\_Temp\_Test\_02

## 5.2.5 Test Data



PR170750-00\_Pro V&V\_High\_Temp\_Test

## 5.2.6 Test Equipment List

**Table 5.2-1: High Temp Test Equipment List**

| Asset Number | Asset Type                     | Manufacturer | Model         | Calibrated | Due        |
|--------------|--------------------------------|--------------|---------------|------------|------------|
| WC061559     | Chamber (Temperature/Humidity) | StorageTek   | Large Walk In | 09/05/2023 | 09/05/2024 |

### Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required

**5.3 Bench Handling****5.3.1 Test Procedure**

MIL-STD\_810D Method 516.3

**5.3.2 Test Result**

The EUT's results will be determined by Pro V & V, Inc.

[illegible]

#### 5.3.4 Test Photographs



Bench\_Test\_01



### 5.3.5 Test Equipment List

**Table 5.3-1: Bench Handling Test Equipment List**

| Asset Number | Asset Type               | Manufacturer | Model        | Calibrated | Due |
|--------------|--------------------------|--------------|--------------|------------|-----|
| WC078513     | Measurement Tools (Rule) | StorageTek   | 4 Inch Block | NCR        | NCR |

#### **Calibration Abbreviations**

CAL: Calibration

NCR: No Calibration Required

## 5.4 Transportation Vibration

### 5.4.1 Test Procedure

MIL STD 810H

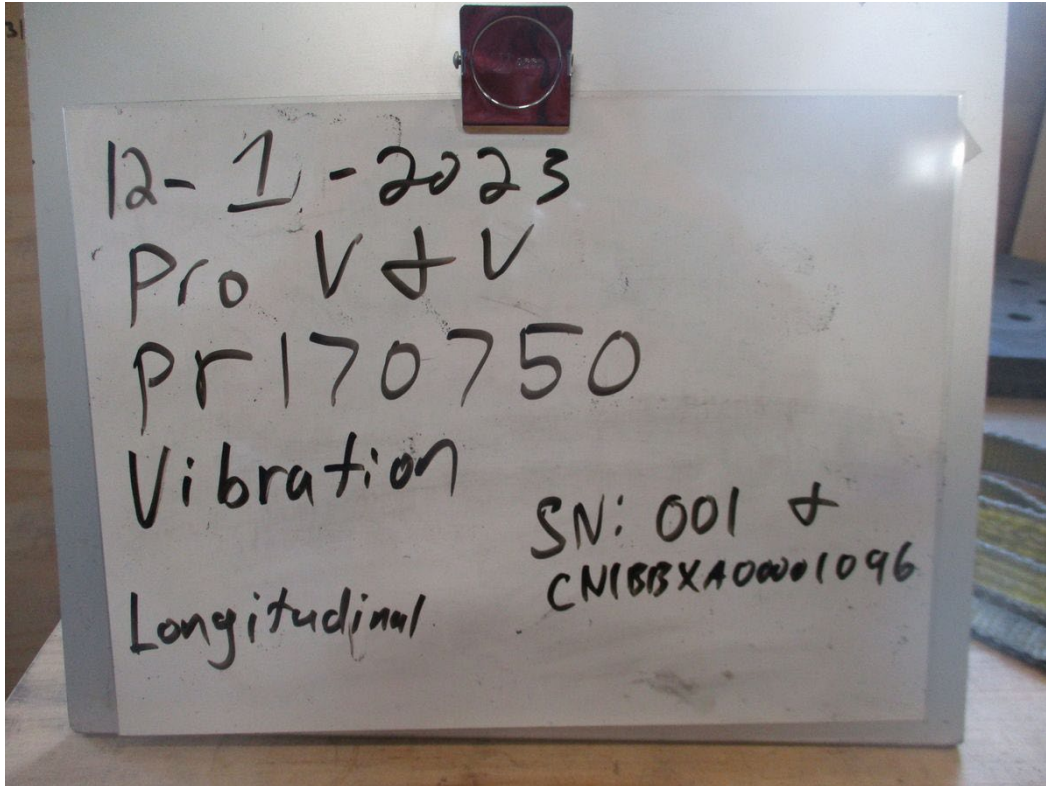
### 5.4.2 Test Result

The EUT's results will be determined by Pro V & V, Inc.

### 5.4.3 Test Datasheets

[illegible]

5.4.4 Test Photographs

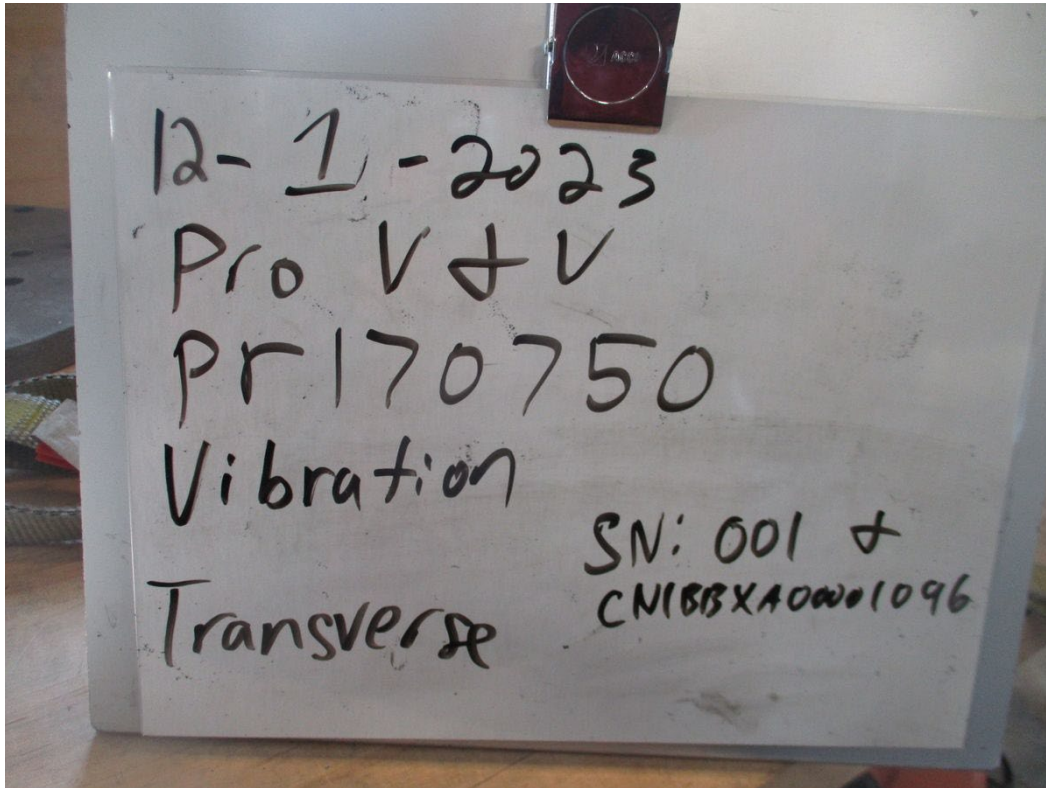


SN-001 & CNIBBXA00001096\_Longitudinal



SN-001 & CNIBBXA00001096\_Longitudinal

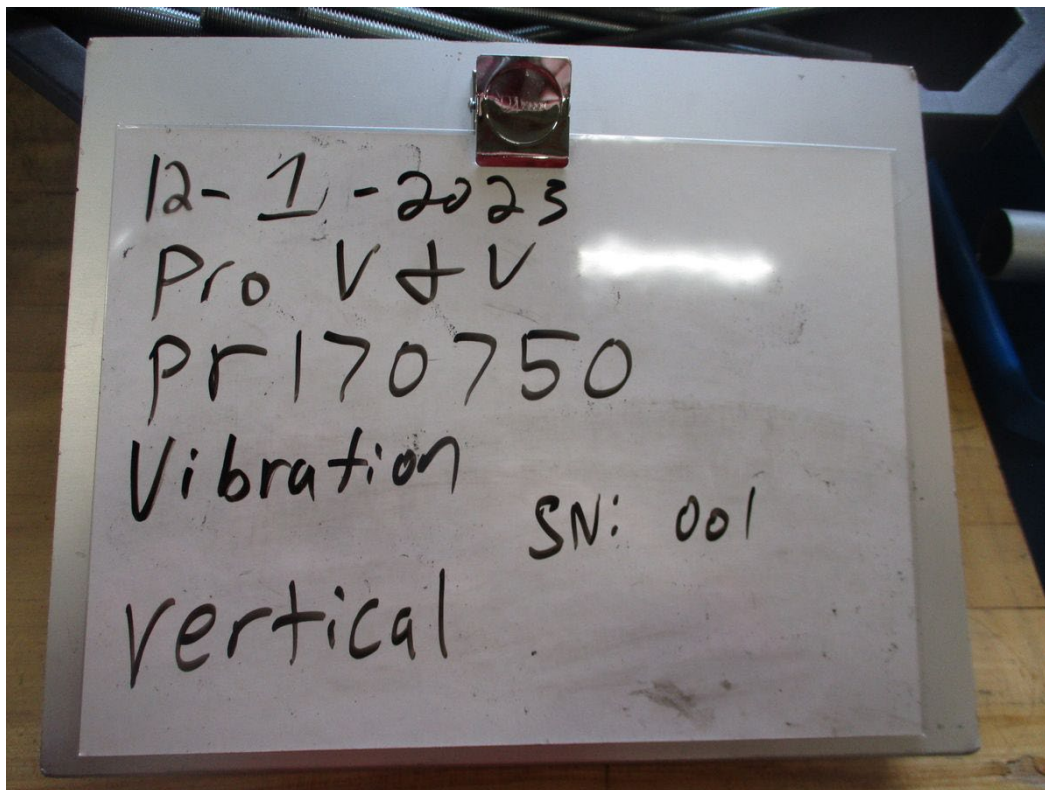




SN-001 & CNIBBXA00001096\_Transverse



SN-001 & CNIBBXA00001096\_Transverse



SN-01\_Vertical

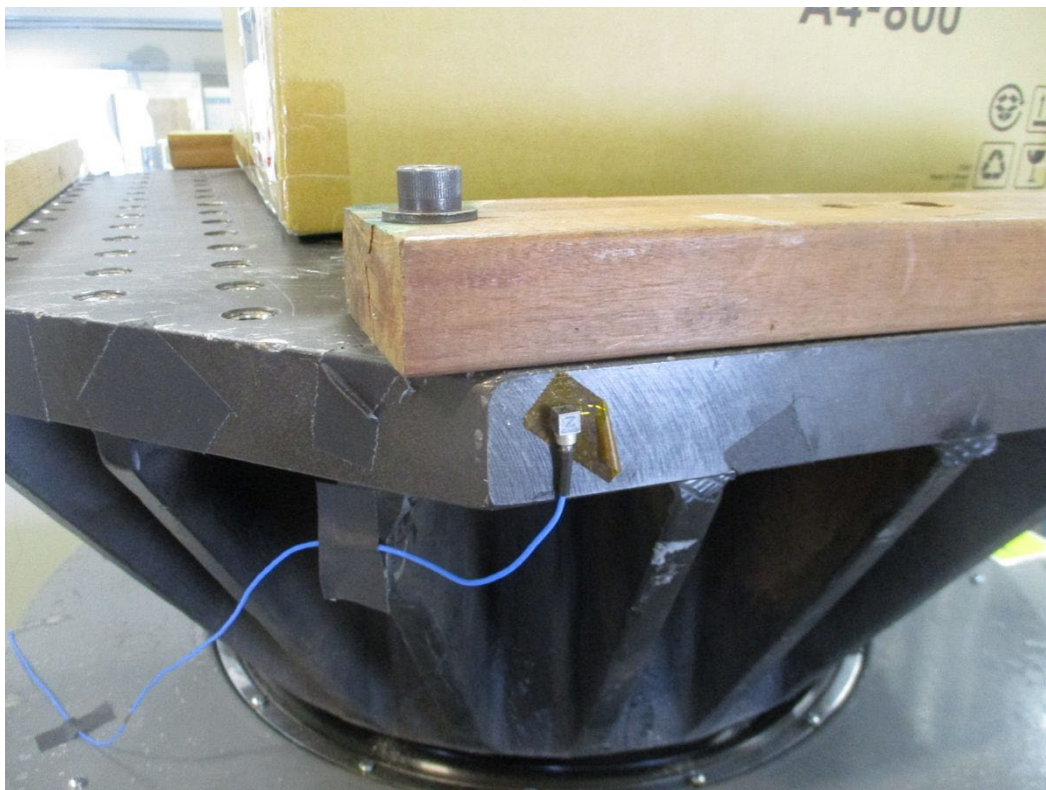


SN-01\_Vertical

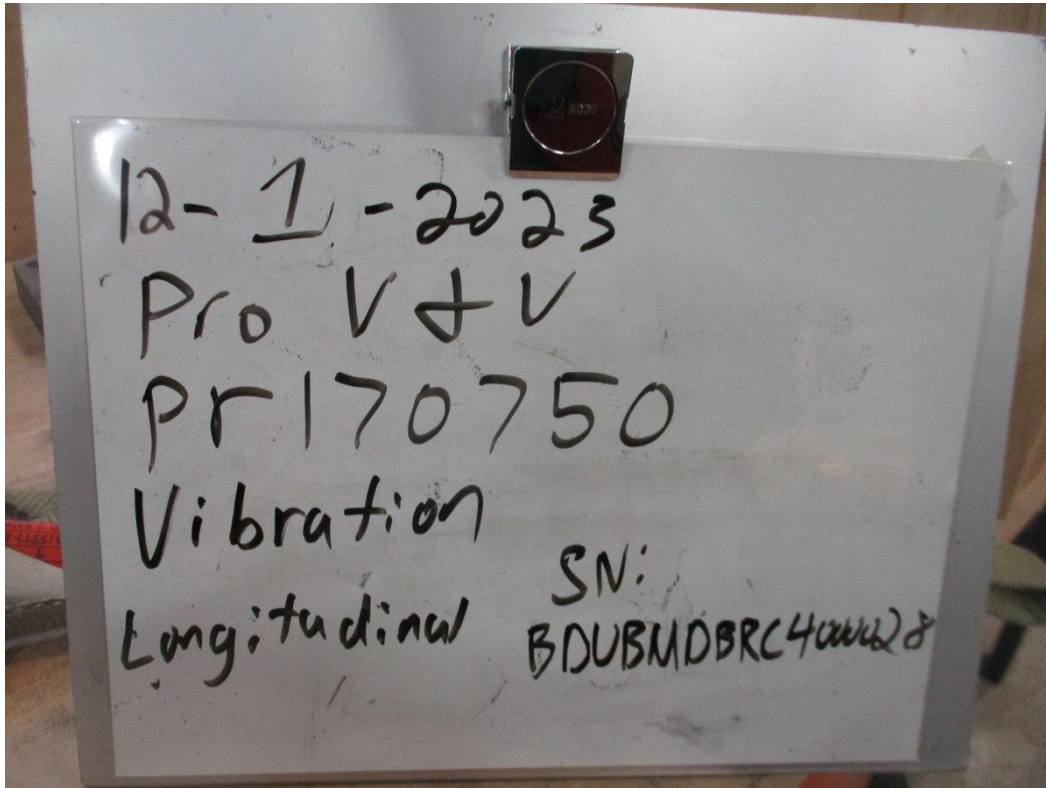




SN-01\_Vertical



SN-01\_Vertical



SN-BDUBMDBRC4000028\_Longitudinal

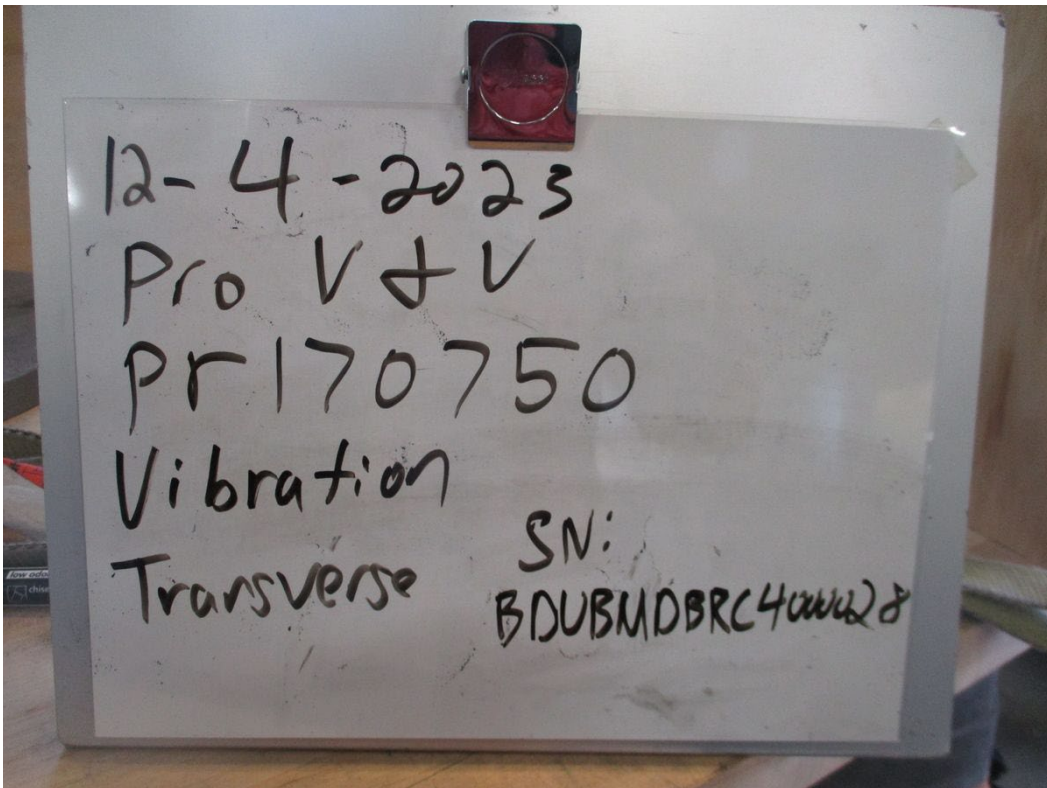


SN-BDUBMDBRC4000028\_Longitudinal





SN-BDUBMDBRC4000028\_Longitudinal



SN-BDUBMDBRC4000028\_Transverse

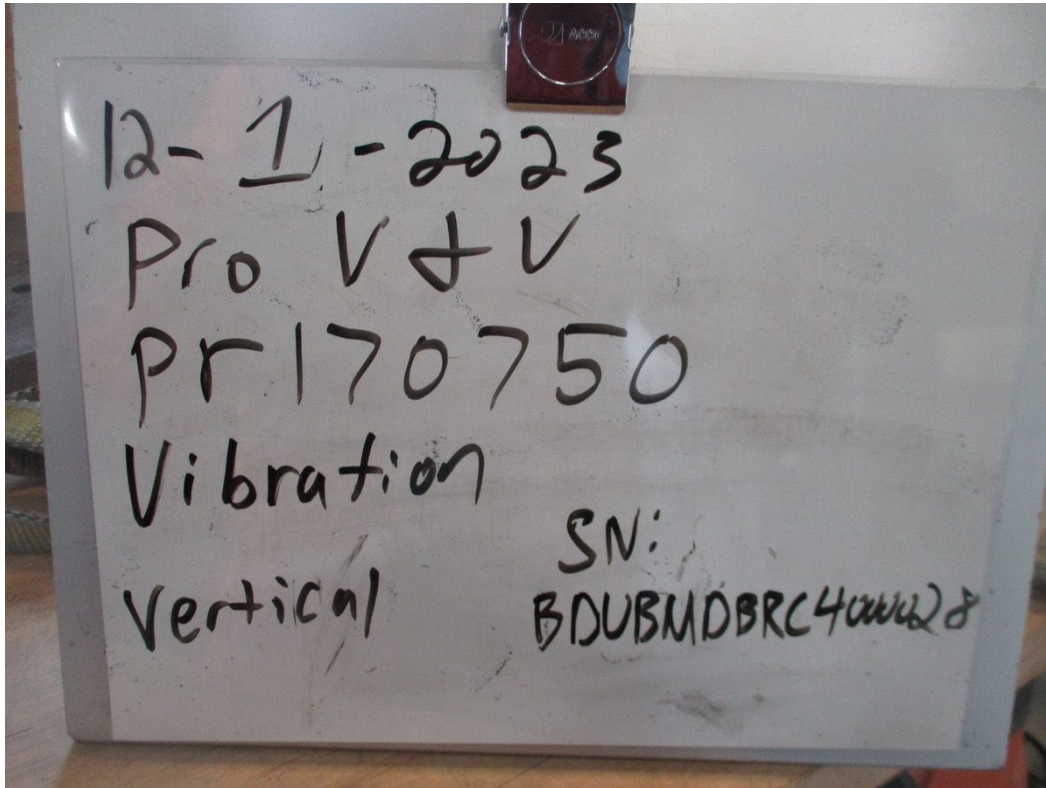




SN-BDUBMDBRC4000028\_Transverse



SN-BDUBMDBRC4000028\_Transverse



SN-BDUBMDBRC4000028\_Vertical



SN-BDUBMDBRC4000028\_Vertical

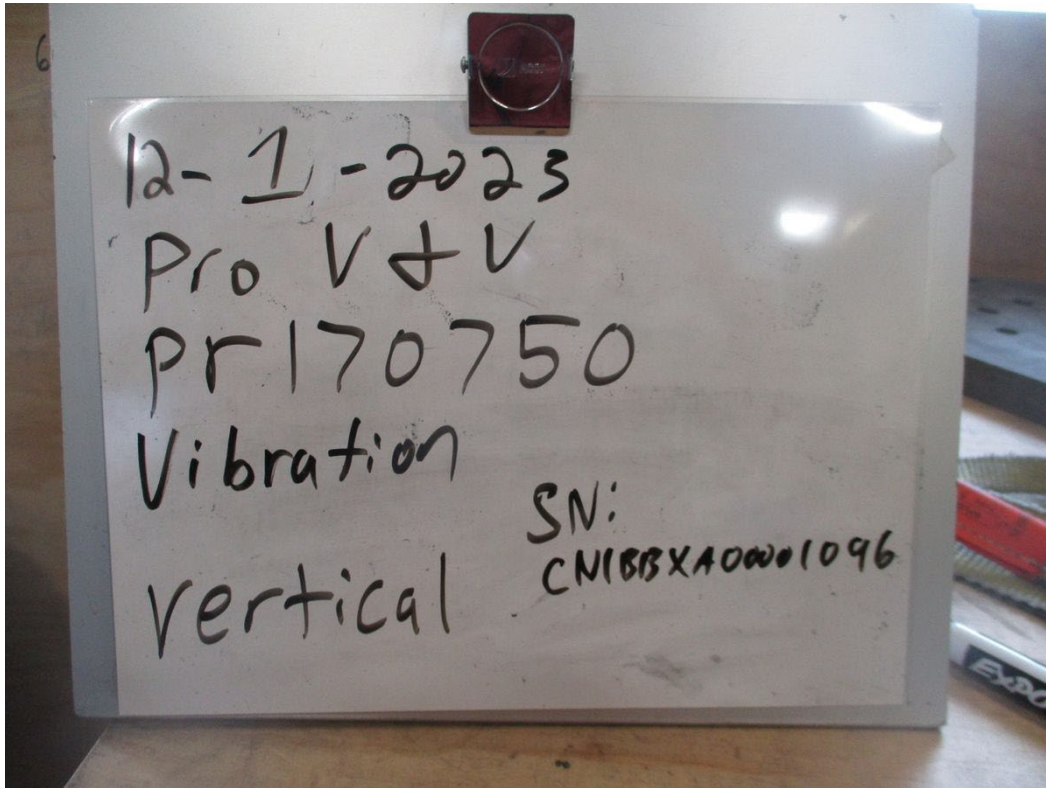




SN-BDUBMDBRC4000028\_Vertical



SN-BDUBMDBRC4000028\_Vertical

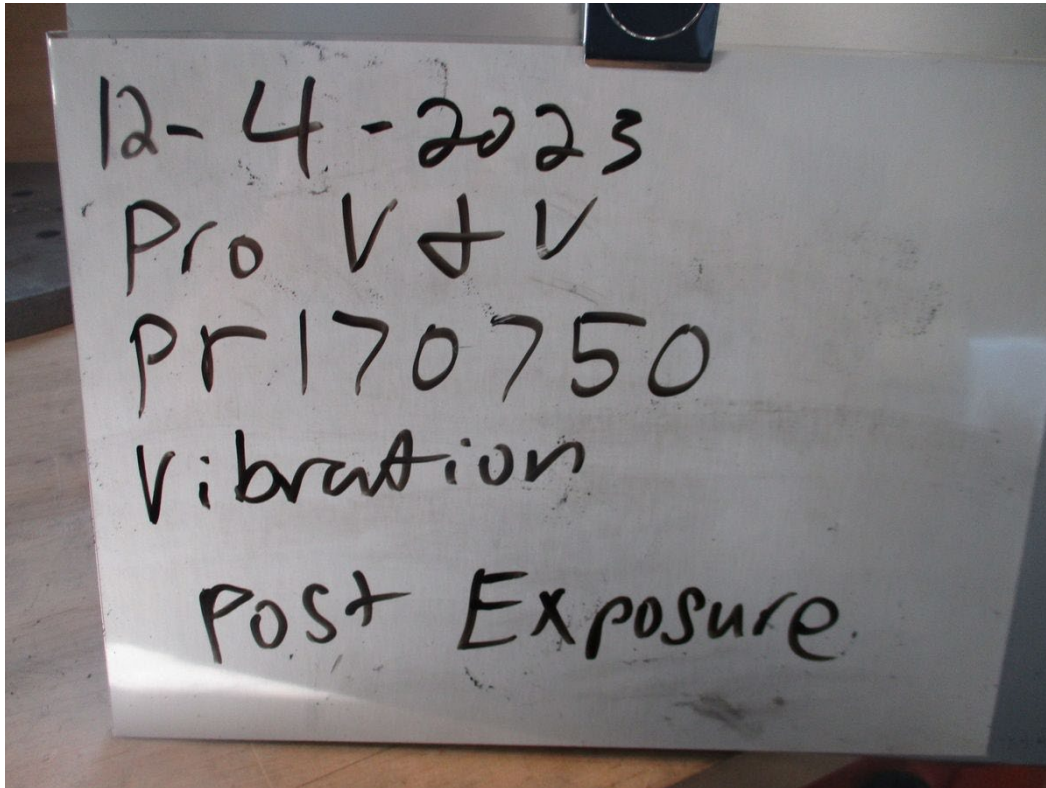


SN-CNIBBXA00001096\_Vertical



SN-CNIBBXA00001096\_Vertical





PR17050 Post Exposure



PR17050 Post Exposure





PR17050 Post Exposure



PR17050 Post Exposure



PR17050 Post Exposure

### 5.4.5 Test Data

ELEMENT - DENVER

Remaining: 0:00:00

Level: 0 dB

Job Number: PR170750

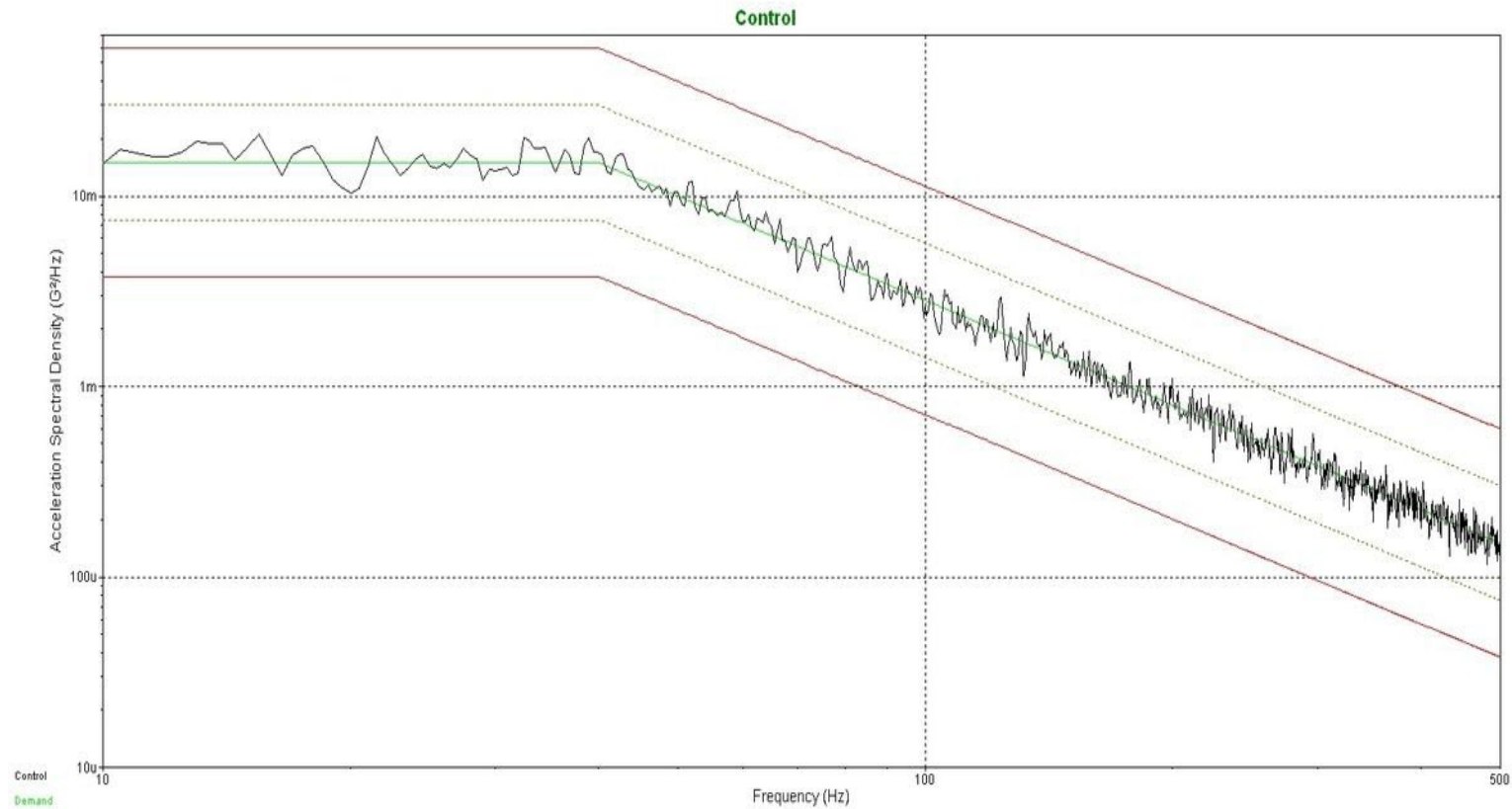
At Level: 1:00:00

Demand: 1.045 G RMS

For Customer: Pro V&V

Elapsed: 1:00:35

Control: 1.065 G RMS



Axis: Vertical

Start Time: Dec 01, 2023 10:24:23

Test Item(s): A4-800

End Time: Dec 01, 2023 11:24:58

S/N(s): 001

ELEMENT - DENVER

Remaining: 0:00:00

Level: 0 dB

Job Number: PR170750

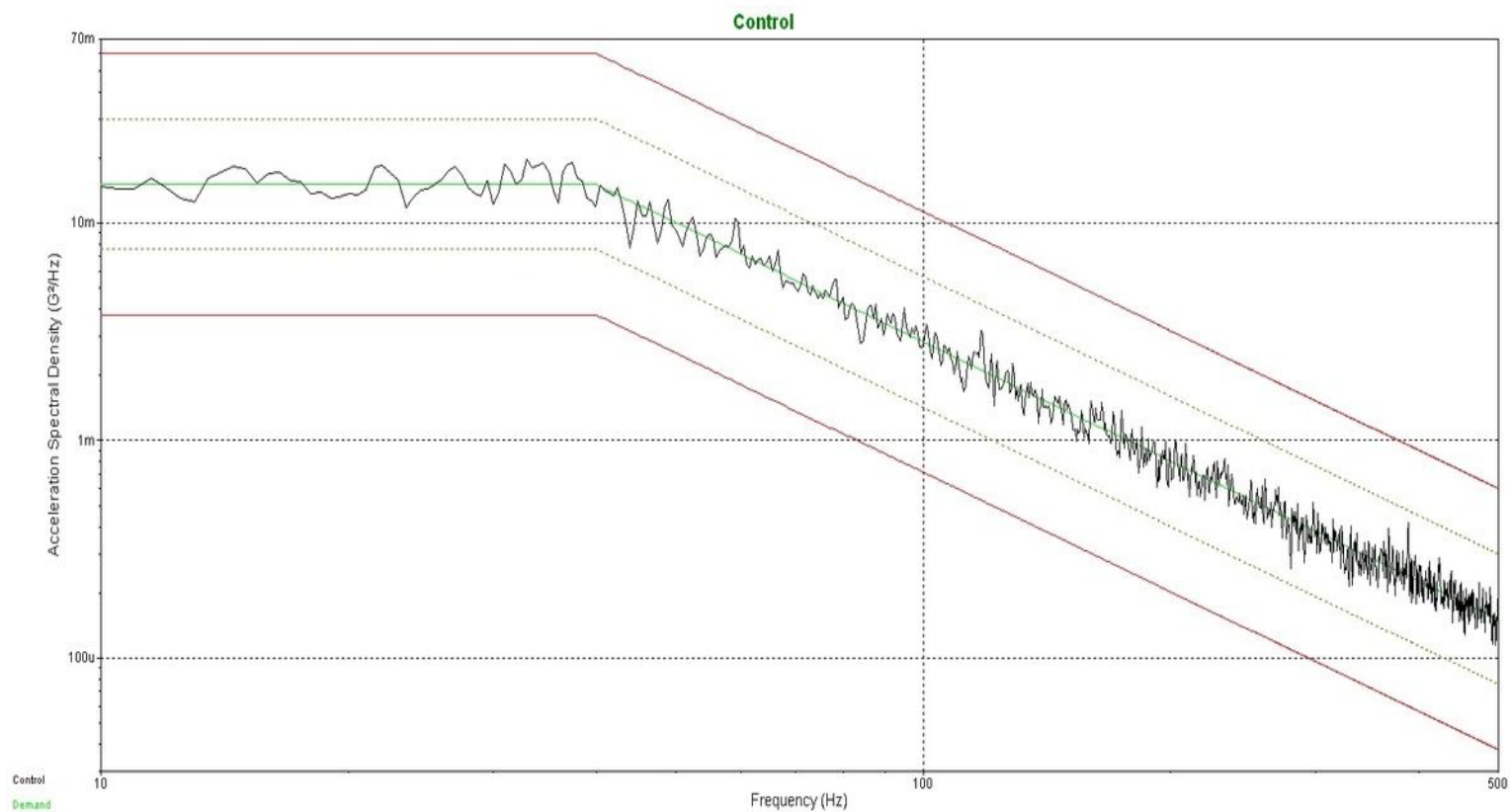
At Level: 1:00:00

Demand: 1.045 G RMS

For Customer: Pro V&V

Elapsed: 1:00:34

Control: 1.049 G RMS



Axis: Vertical

Start Time: Dec 01, 2023 11:27:16

Test Item(s): LACC Voting Solution Set (B)

End Time: Dec 01, 2023 12:27:51

S/N(s): CNIBBXAA00001096



ELEMENT - DENVER

Remaining: 0:00:00

Level: 0 dB

Job Number: PR170750

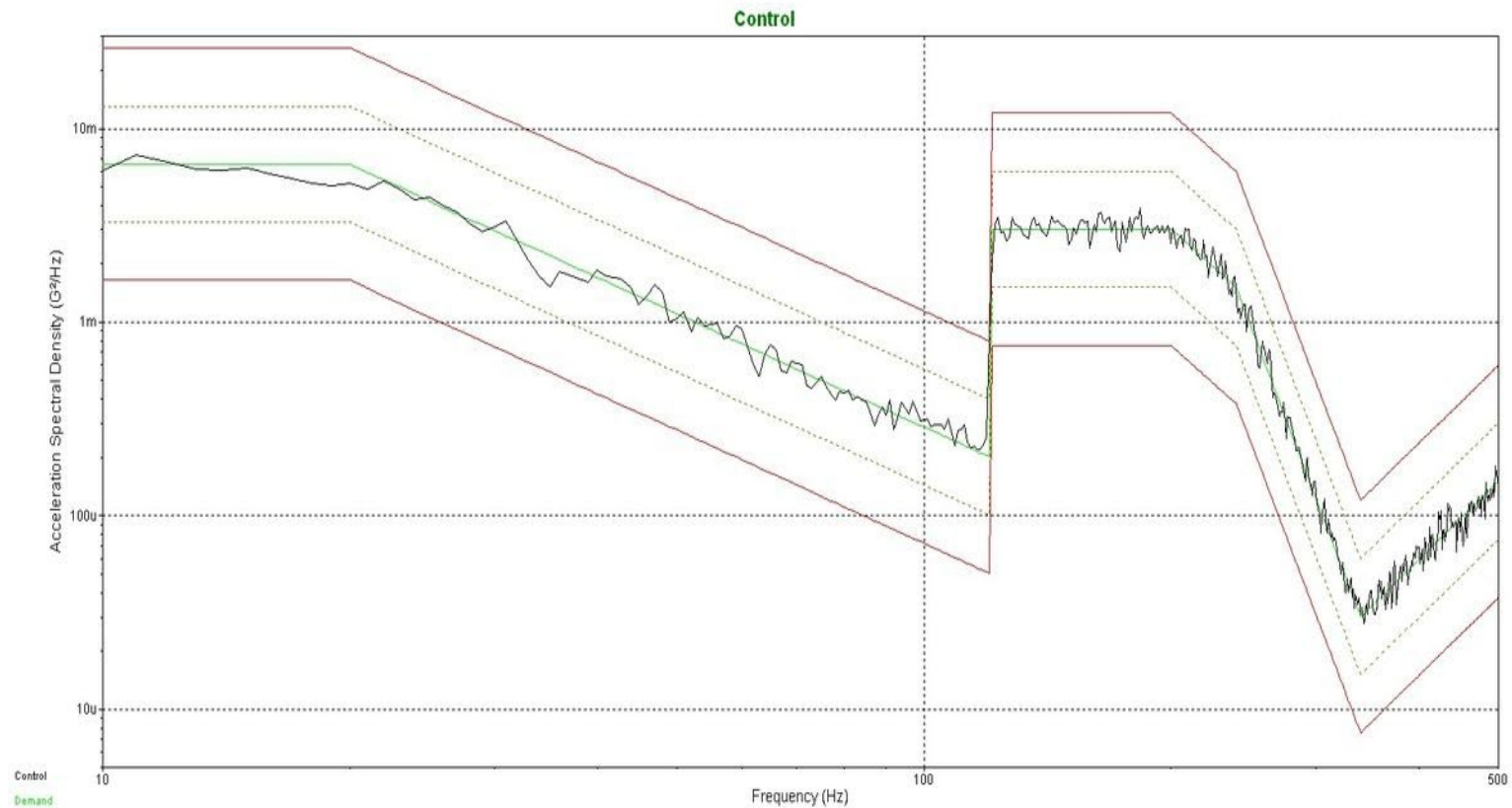
At Level: 1:00:00

Demand: 0.7428 G RMS

For Customer: Pro V&V

Elapsed: 1:00:17

Control: 0.7444 G RMS



Axis: Longitudinal

Start Time: Dec 01, 2023 12:32:20

Test Item(s): LACC Voting Solution Set (B) & A4-800

End Time: Dec 01, 2023 13:32:37

S/N(s): CNIBBXAA00001096 & 001

ELEMENT - DENVER

Remaining: 0:00:00

Level: 0 dB

Job Number: PR170750

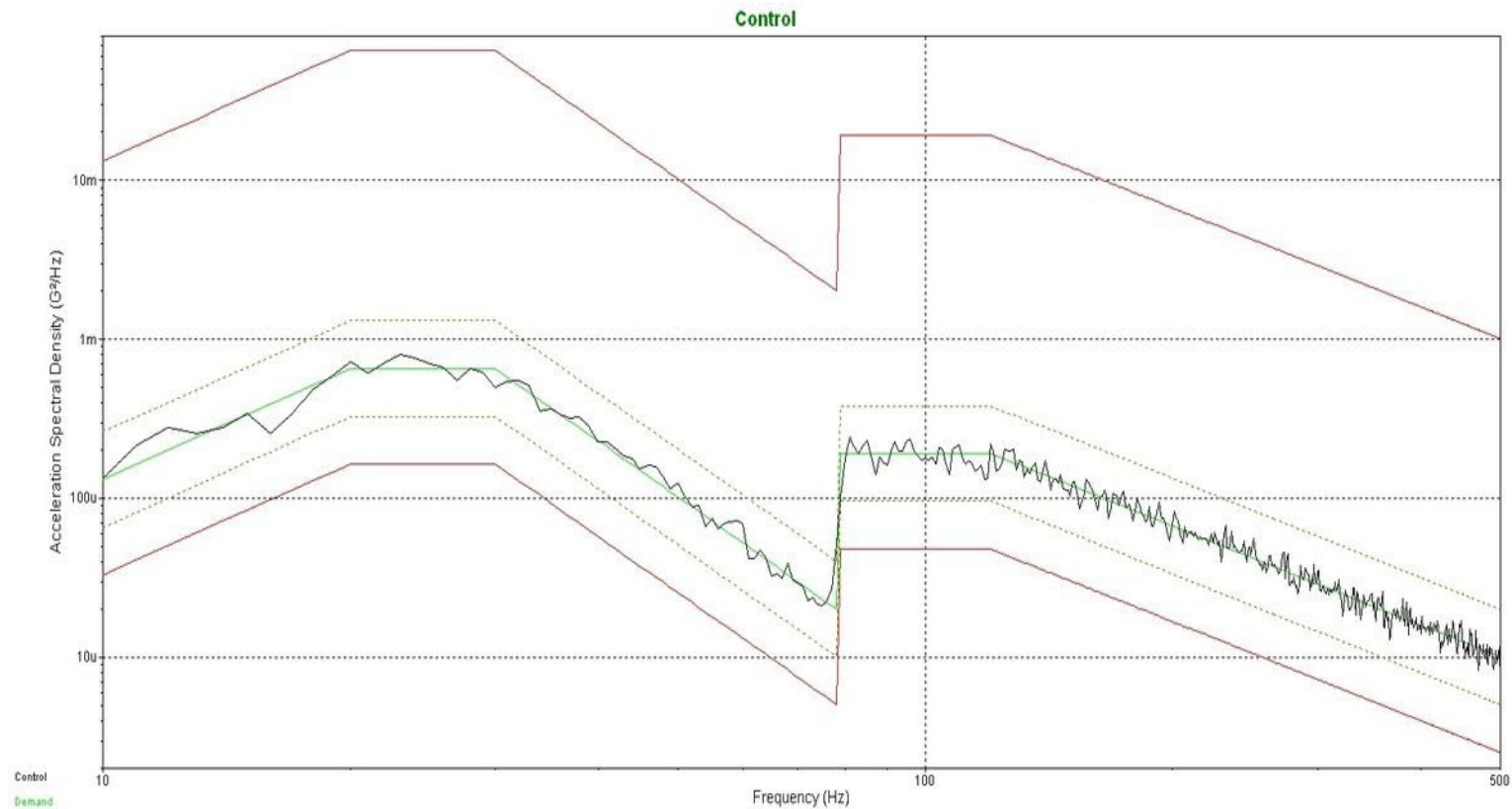
At Level: 1:00:00

Demand: 0.2038 G RMS

For Customer: Pro V&V

Elapsed: 1:00:14

Control: 0.2042 G RMS



Axis: Transverse

Start Time: Dec 01, 2023 13:35:46

Test Item(s): LACC Voting Solution Set (B) & A4-800

End Time: Dec 01, 2023 14:35:59

S/N(s): CNIBBXAA00001096 & 001

ELEMENT - DENVER

Remaining: 0:00:00

Level: 0 dB

Job Number: PR170750

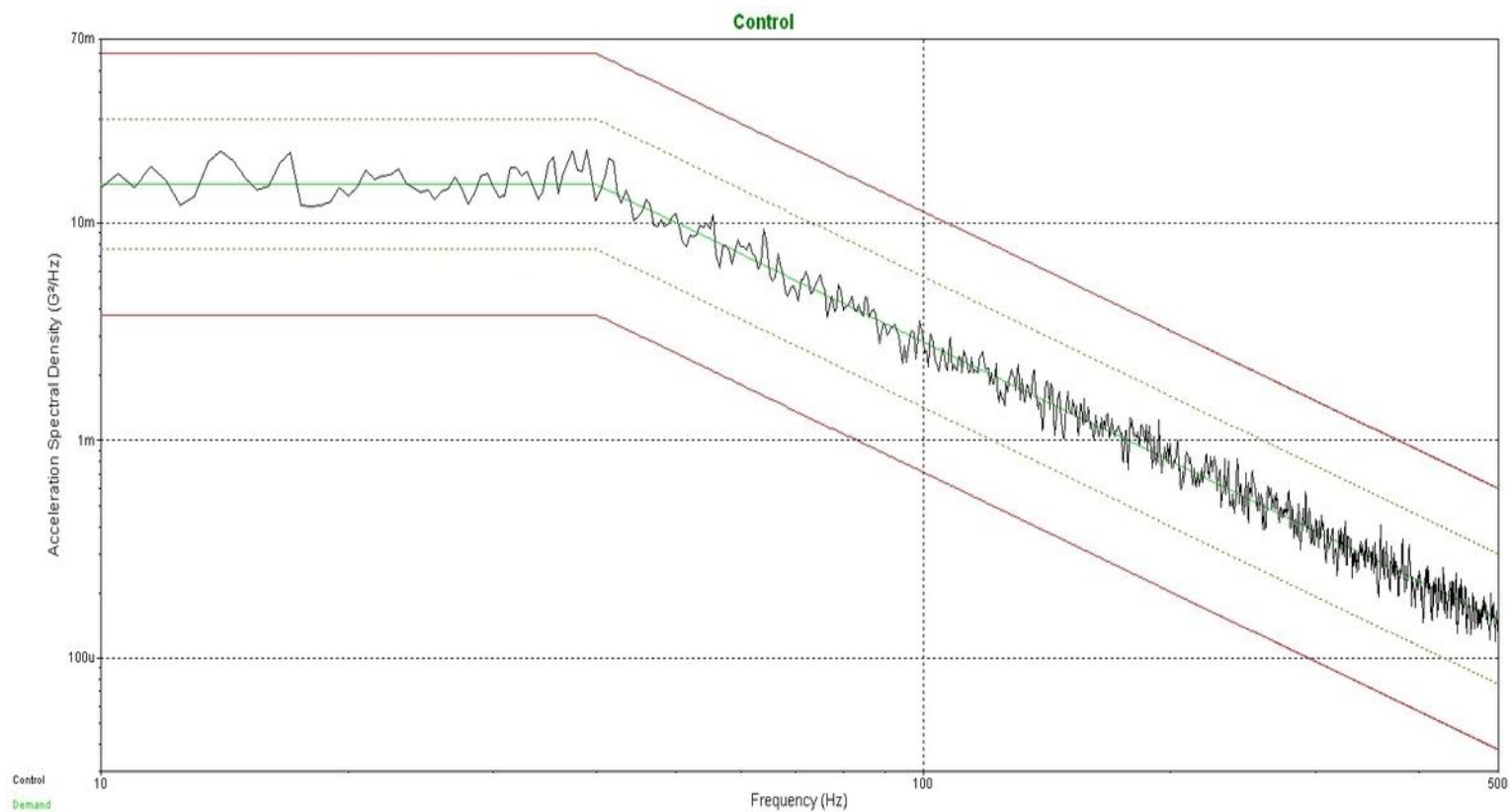
At Level: 1:00:00

Demand: 1.045 G RMS

For Customer: Pro V&amp;V

Elapsed: 1:00:34

Control: 1.061 G RMS



Axis: Vertical

Start Time: Dec 01, 2023 14:55:09

Test Item(s): BMD-100 Series

End Time: Dec 01, 2023 15:55:43

S/N(s): BDUBMDMRC4000028

ELEMENT - DENVER

Remaining: 0:00:00

Level: 0 dB

Job Number: PR170750

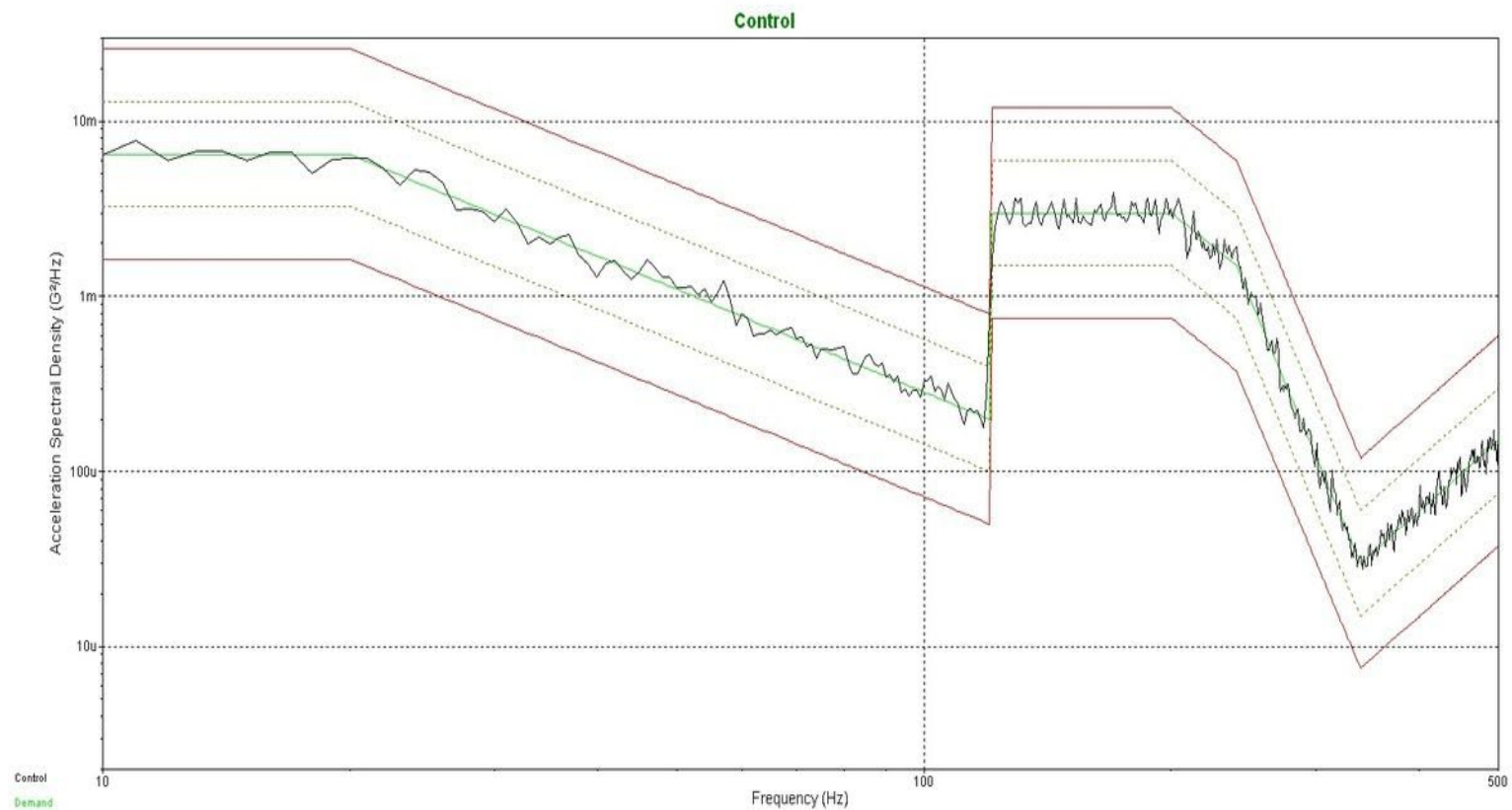
At Level: 1:00:00

Demand: 0.7428 G RMS

For Customer: Pro V&V

Elapsed: 1:00:17

Control: 0.7472 G RMS



Axis: Longitudinal

Start Time: Dec 01, 2023 16:00:55

Test Item(s): BMD-100 Series

End Time: Dec 01, 2023 17:01:12

S/N(s): BDUBMDMRC4000028



ELEMENT - DENVER

Remaining: 0:00:00

Level: 0 dB

Job Number: PR170750

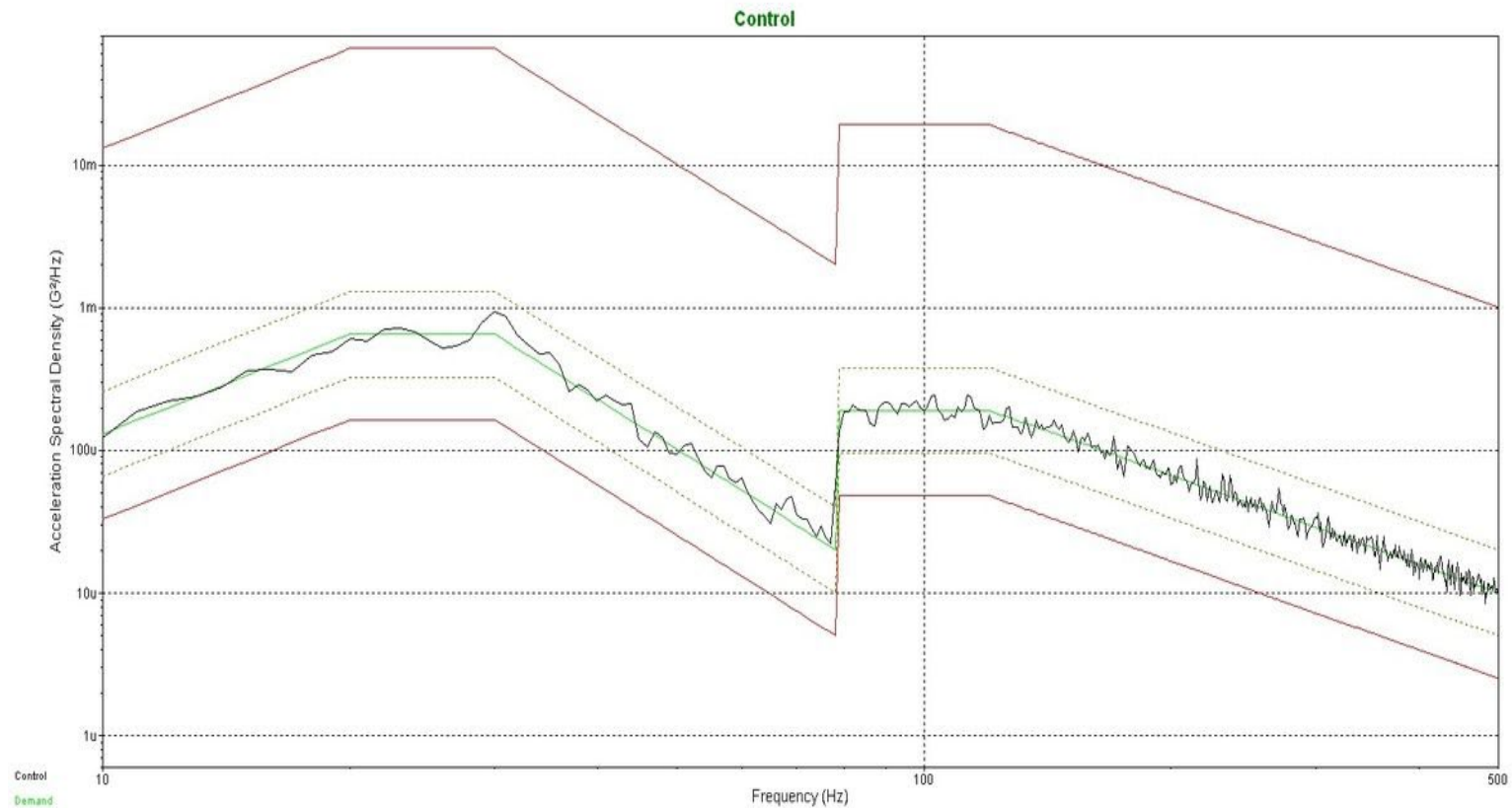
At Level: 1:00:00

Demand: 0.2038 G RMS

For Customer: Pro V&V

Elapsed: 1:00:15

Control: 0.2069 G RMS



Axis: Transverse

Start Time: Dec 04, 2023 08:01:09

Test Item(s): BMD-100 Series

End Time: Dec 04, 2023 09:01:24

S/N(s): BDUBMDMRC4000028

#### 5.4.6 Test Equipment List

**Table 5.4-1: Transportation Vibration Test Equipment List**

| Asset Number | Asset Type                      | Manufacturer       | Model   | Calibrated | Due        |
|--------------|---------------------------------|--------------------|---------|------------|------------|
| WC061429     | Shaker (Hydraulic)              | Team Corporation   | 80/10.5 | NCR        | NCR        |
| WC059875     | Computer (Vibration Controller) | Vibration Research | VR9500  | 05/02/2023 | 05/01/2024 |
| WC080804     | Accelerometer (Tri-Axial)       | PCB Piezotronics   | 356A01  | 04/06/2023 | 04/06/2024 |
| WC080844     | Controller (Vibration)          | Vibration Research | VR9500  | 10/25/2023 | 10/25/2024 |
| WC084277     | Accelerometer (Tri-Axial)       | PCB Piezotronics   | 356A03  | 05/14/2023 | 05/14/2024 |

#### Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required

**End of Test Report**