

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

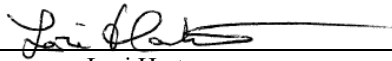
Test Report for Environmental/Dynamics Testing of the SMARTMATIC VSR1 2.1 PCOS

Prepared For

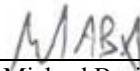
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Revision History

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 2023-008 dated 03/17/2023.
- Element Quotation OP0636252-0 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	SMARTMATIC VSR1 2.1 PCOS	A4-800	GESA-481A01000167

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

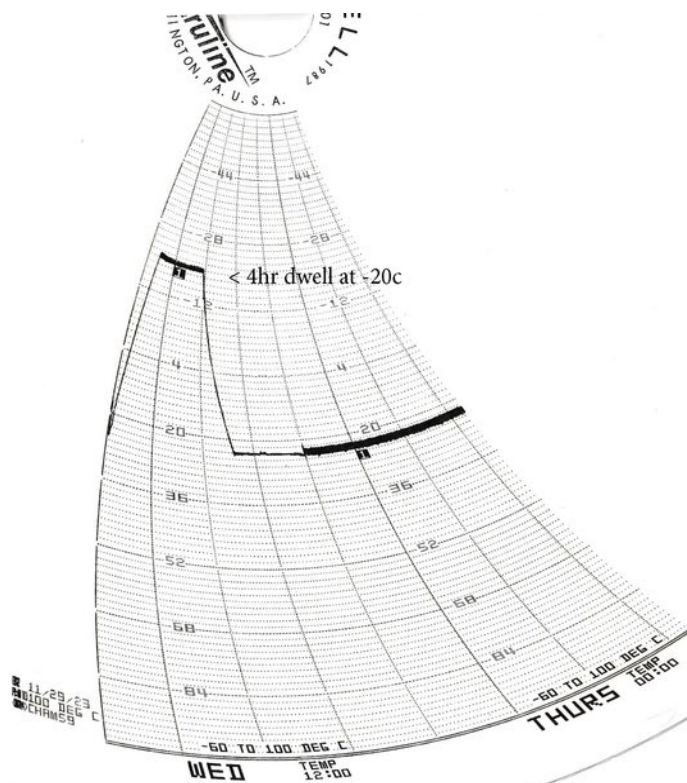
Section	Test	Specification	Test Facility	Test Date	Part #	Serial #	Test Result
5.1	Low Temp	MIL-STD_810D Method 502.2	Longmont	11/29/2023- 11/30/2023	A4-800	GESA- 481A01000167	Customer Determination
5.2	High Temp	MIL-STD_810D Method 501.2	Longmont	11/30/2023- 12/01/2023	A4-800	GESA- 481A01000167	Customer Determination
5.3	Bench Handling	: MIL-STD_810D Method 516.3	Longmont	12/06/2023 - 12/07/2023	A4-800	GESA- 481A01000167	Customer Determination
5.4	Transportation Vibration	MIL STD 810H	Longmont	12/01/2023	A4-800	GESA- 481A01000167	Customer Determination

5.1.4 Test Photographs



Low_Temp_Test_01

5.1.5 Test Data



PR170752-00_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

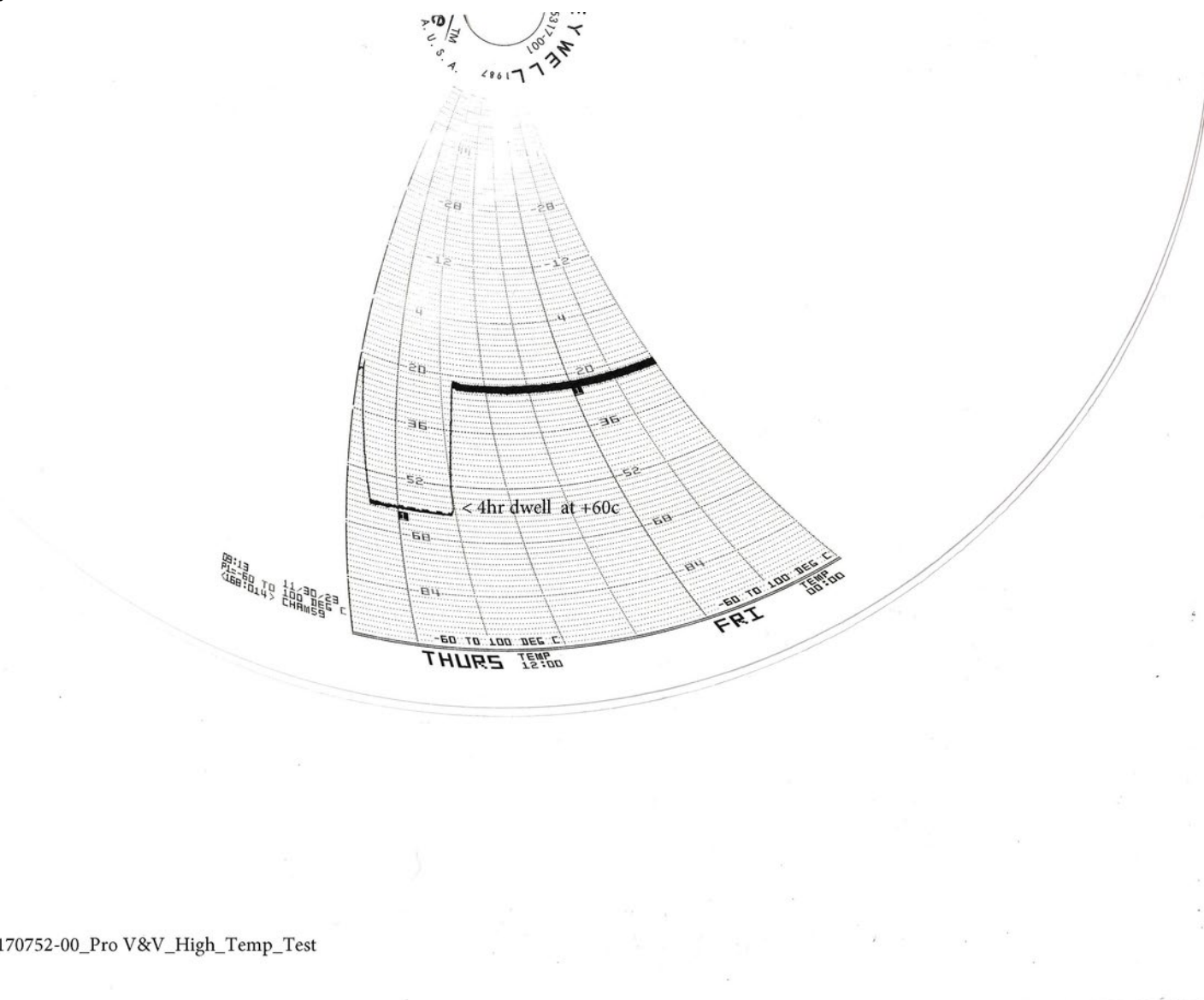
NCR: No Calibration Required

5.2.4 Test Photographs



High_Temp_Test_01

5.2.5 Test Data



PR170752-00_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
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

5.3.4 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

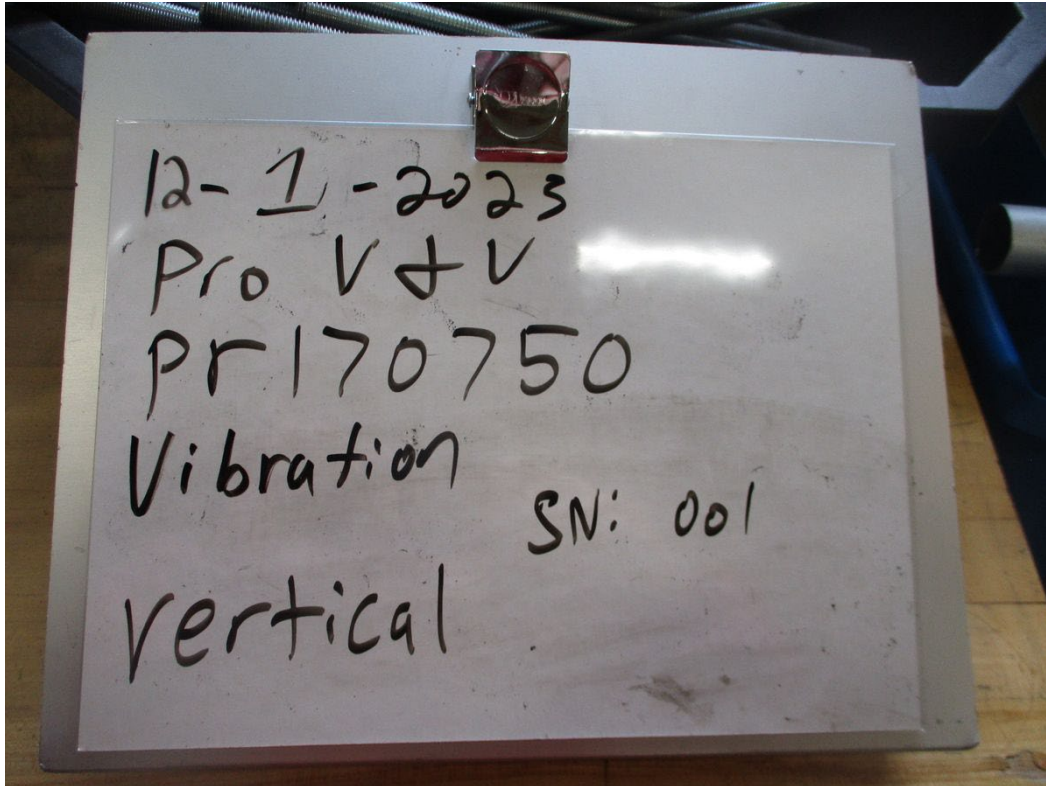
5.4.2 Test Result

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

5.4.3 Test Datasheets

[illegible]

5.4.4 Test Photographs



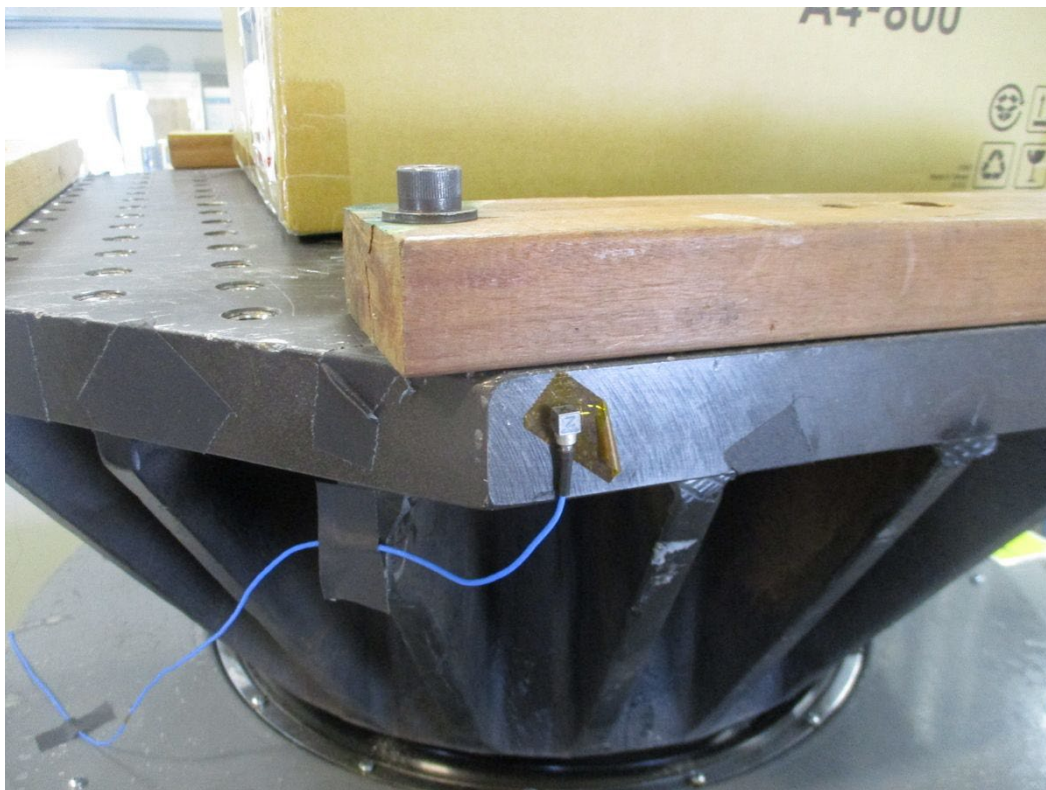
SN-01_Vertical



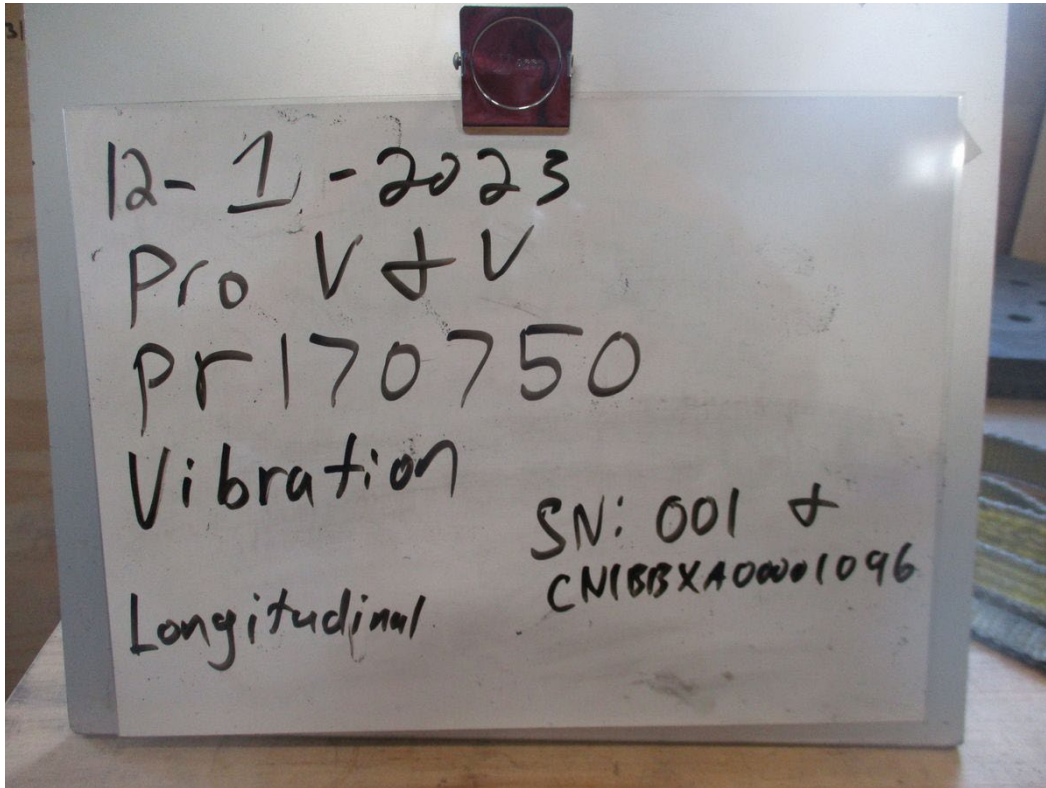
SN-01_Vertical



SN-01_Vertical



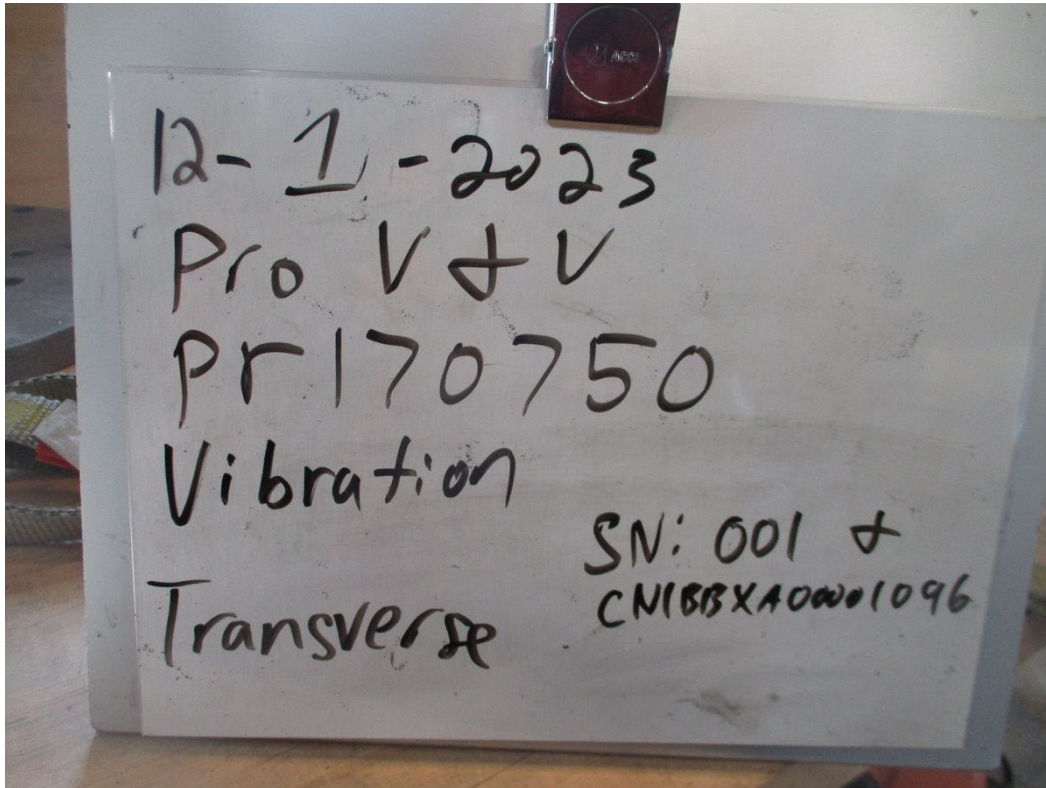
SN-01_Vertical



SN-001 & CNIBBXA00001096_Longitudinal



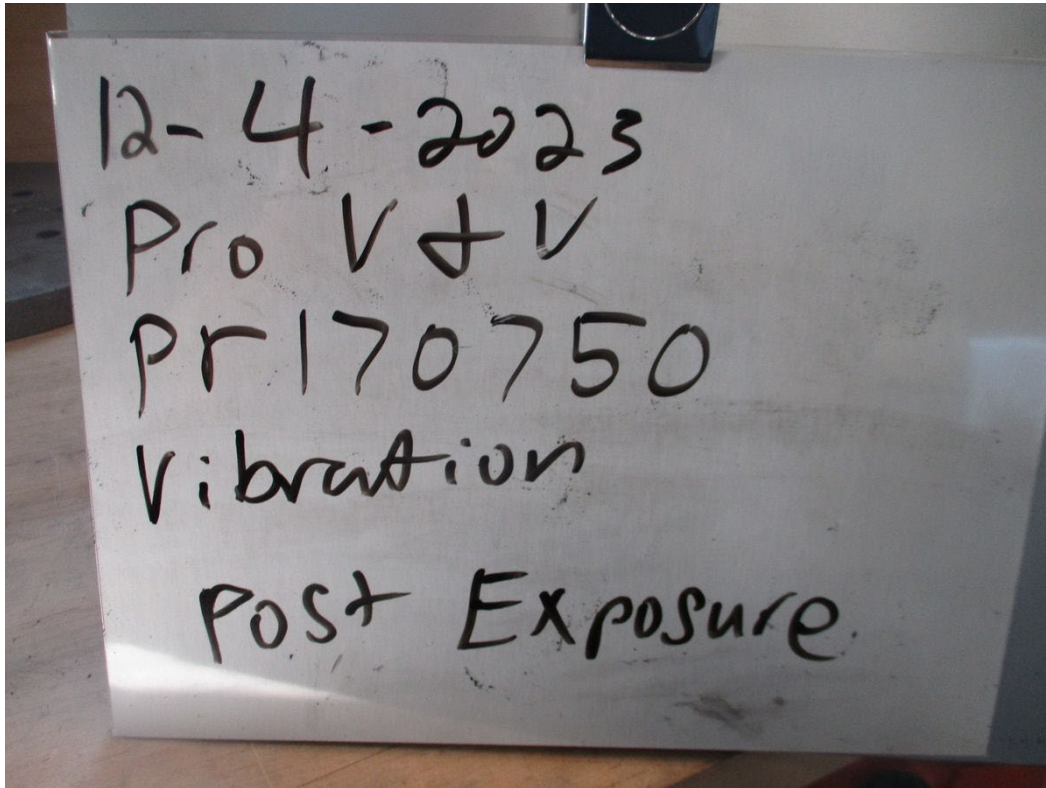
SN-001 & CNIBBXA00001096_Longitudinal



SN-001 & CNIBBXA00001096_Transverse



SN-001 & CNIBBXA00001096_Transverse



Post Exposure



Post Exposure



Post Exposure



Post Exposure



Post Exposure

5.4.5 Test Data

ELEMENT - DENVER

Remaining: 0:00:00

Level: 0 dB

Job Number: PR170750

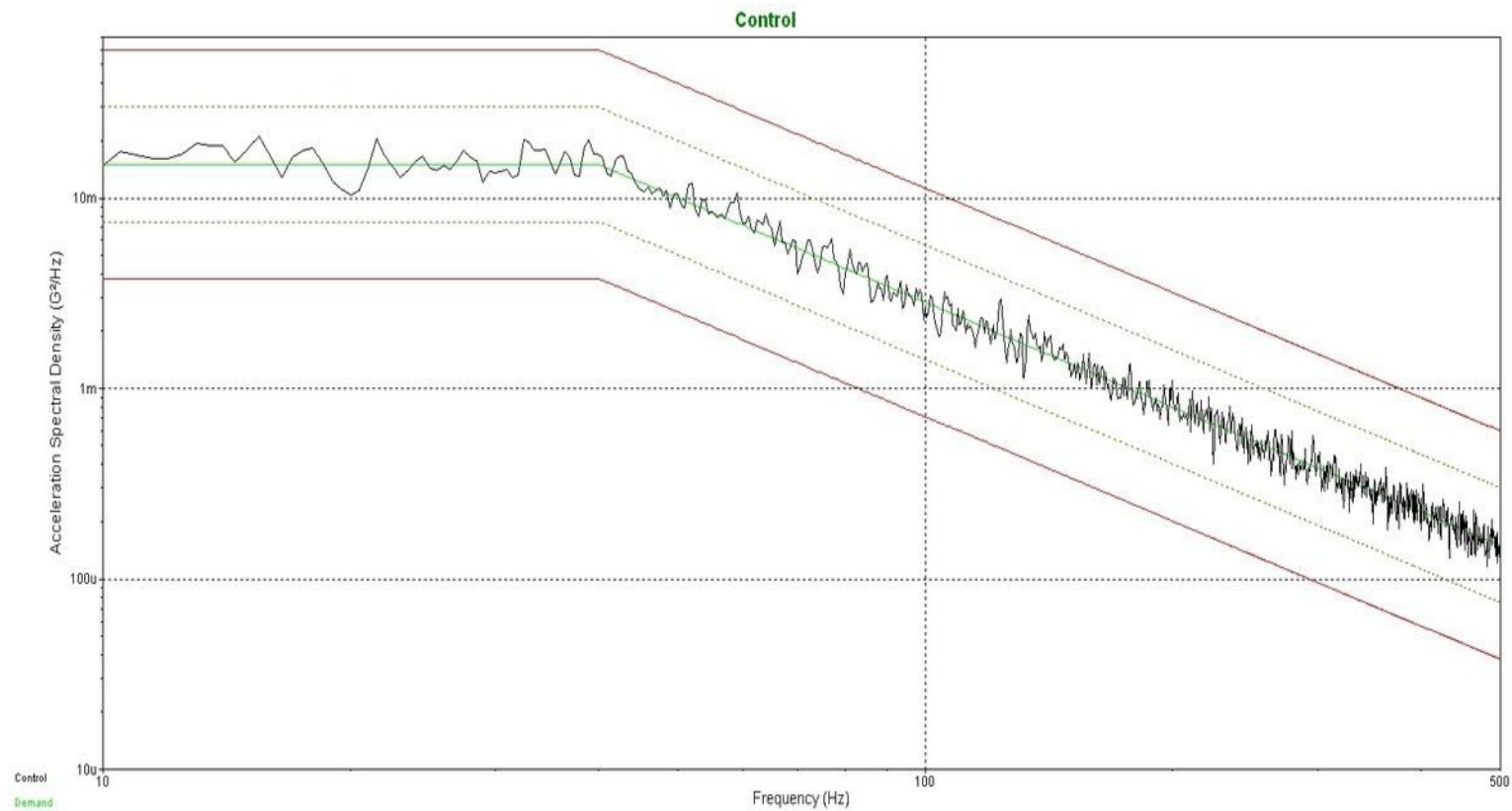
At Level: 1:00:00

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

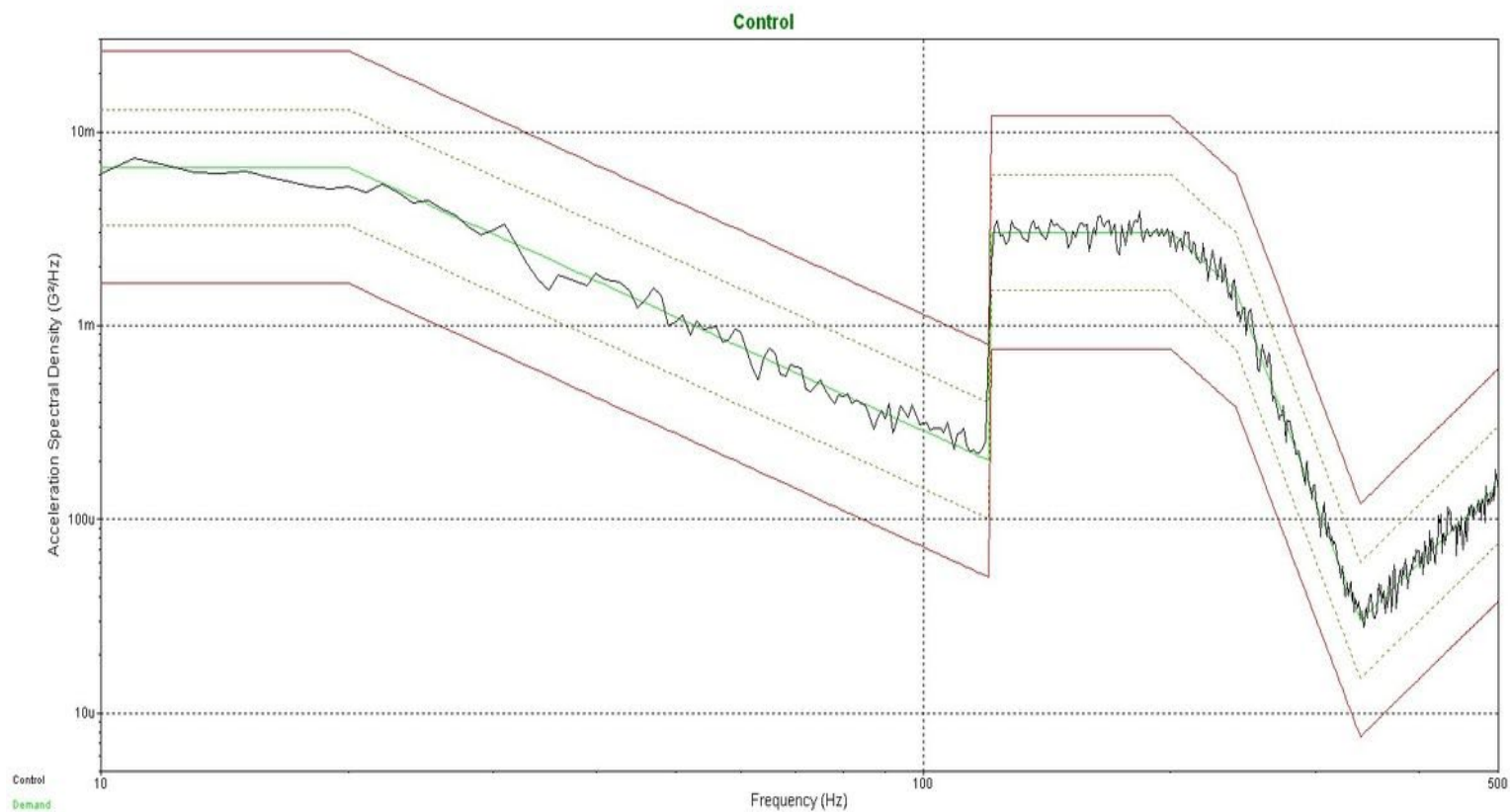
At Level: 1:00:00

Demand: 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

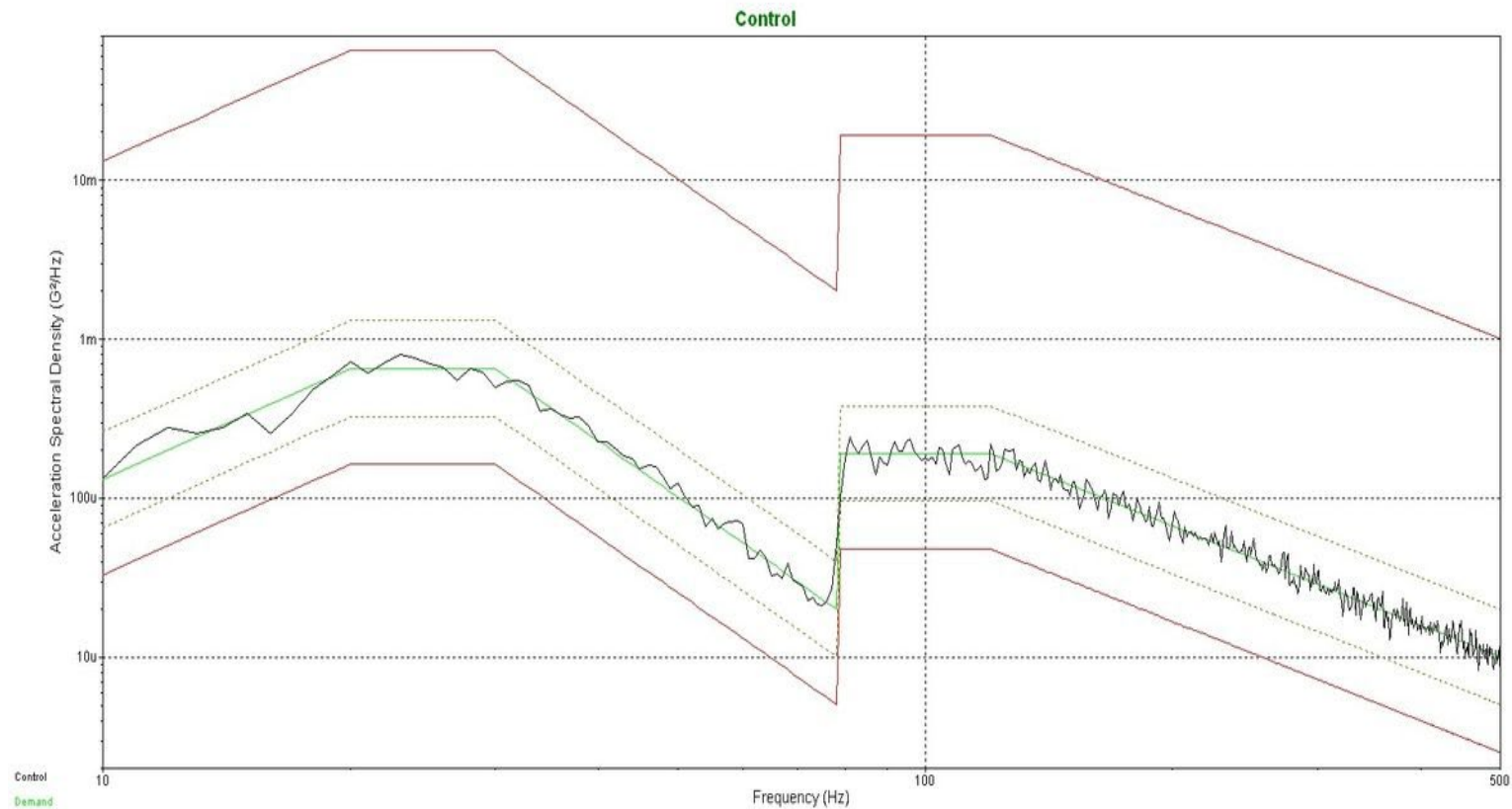
At Level: 1:00:00

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

5.4.6 Test Equipment List

Table 5.4-1: Transportation Vibration Test Equipment List

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC084305	Shaker (Electro-Dynamic)	Unholtz-Dickie	T1000IAR-58	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