

# NTS Labs LLC Test Report for Environmental/Dynamics Testing of the ExpressVote® XL

**Prepared For**

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**Performed By**

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### Revision History

Rev.	Description	Issue Date
0	Initial Release	09/05/2023
1	Corrected item name, and spec	10/06/2023
2	Corrected item name on cover page and in Table 3.0-1; Revised test results in Table 5.0-1 and in all Test Result sections	10/11/2023

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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. The test program was conducted to assess the ability of the specified Equipment Under Test (EUT) to successfully satisfy the requirements listed in Section 2.0.

**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(s) 2023-010, dated 04/24/2023.
- NTS Labs LLC Quote(s) OP0638254-0 dated 04/21/2023.
- ISO/IEC 17025:2017(E) *General Requirements for the Competence of Testing and Calibration Laboratories*, dated 11/1/2017.

**3.0 Product Selection and Description**

Pro V&V, Inc selected and provided the 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	ExpressVote® XL	ExpressVoteXL	XL0119010062
2	1	UVC	UVC	UVC08180003
3	1	ExpressVote® XL	ExpressVoteXL	XL0119040262
4	1	UVC	UVC	UVC08180917
5	1	ExpressVote® XL	ExpressVoteXL	XL0122080177
6	1	UVC	UVC	UVC01200424
7	1	ExpressVote® XL	ExpressVoteXL	XL0118120458
8	1	UVC	UVC	UVC09211419

**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 Descriptions 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-810H Method 502.7	Longmont	08/08/2023 - 08/09/2023	ExpressVoteXL, UVC	XL0119010062, UVC08180003	Passed
5.2	High Temp	MIL-810H Method 501.7	Longmont	08/09/2023 - 08/10/2023	ExpressVoteXL, UVC	XL0119010062, UVC08180003	Passed
5.3	Bench Handling	MIL-STD-810H	Longmont	08/14/2023	ExpressVoteXL, UVC	XL0119010062, UVC08180003	Passed
5.4	Transportation Vibration	MIL-STD-810H	Longmont	08/15/2023	ExpressVoteXL, UVC	XL0119010062, UVC08180003	Passed
5.5	Continuous Operation	MIL-STD-810H, Methods 501.7 and 502.7, Procedure II	Longmont	08/28/2023-09/01/2023	ExpressVoteXL, UVC	XL0119040262, UVC08180917	Passed
						XL0122080177, UVC01200424	Passed
						XL0118120458, UVC09211419	Passed



**5.1 Low Temp**

**5.1.1 Test Procedure**

The ExpressVote XL was tested in accordance with MIL-810H Method 502.7.

**5.1.2 Test Result**

The EUT passed all defined requirements.



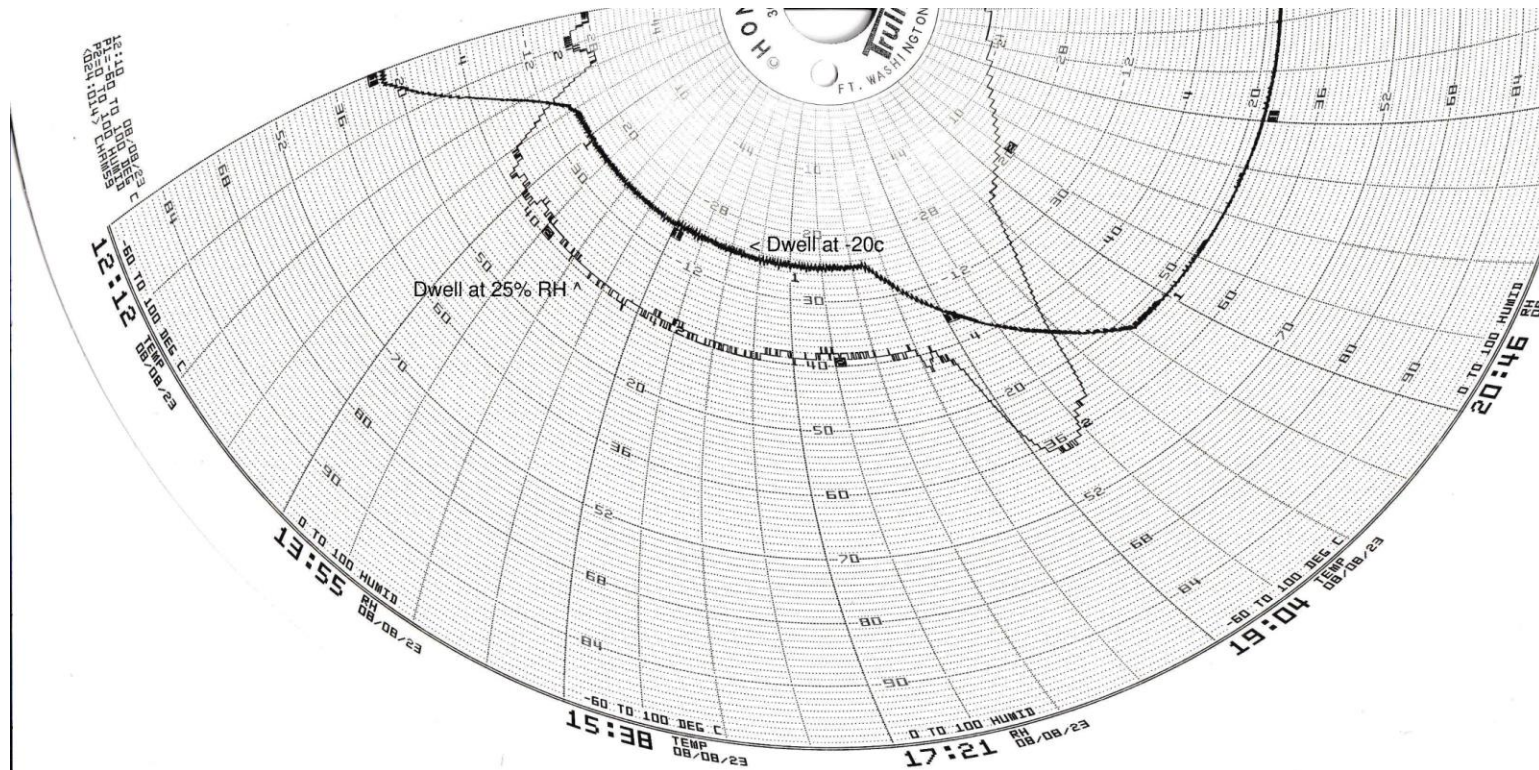
**5.1.4 Test Photographs**



Low\_Temperature & Humidity\_-20c & 25%\_RH\_Test



5.1.5 Test Data





**5.1.6 Test Equipment List**

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

<b>Asset Number</b>	<b>Asset Type</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Calibrated</b>	<b>Due</b>
WC061559	Chamber (Temperature/Humidity)	StorageTek	Large Walk In	09/02/2022	09/02/2023
WC061560	Controller (Temperature)	Watlow	F4	09/02/2022	09/02/2023
WC061561	Recorder (Chart)	Honeywell	DR45AT	09/02/2022	09/02/2023

**Calibration Abbreviations**

CAL: Calibration

NCR: No Calibration Required



**5.2 High Temp**

**5.2.1 Test Procedure**

The ExpressVote XL was tested in accordance with MIL-810H Method 501.7.

**5.2.2 Test Result**

The EUT passed all defined requirements.

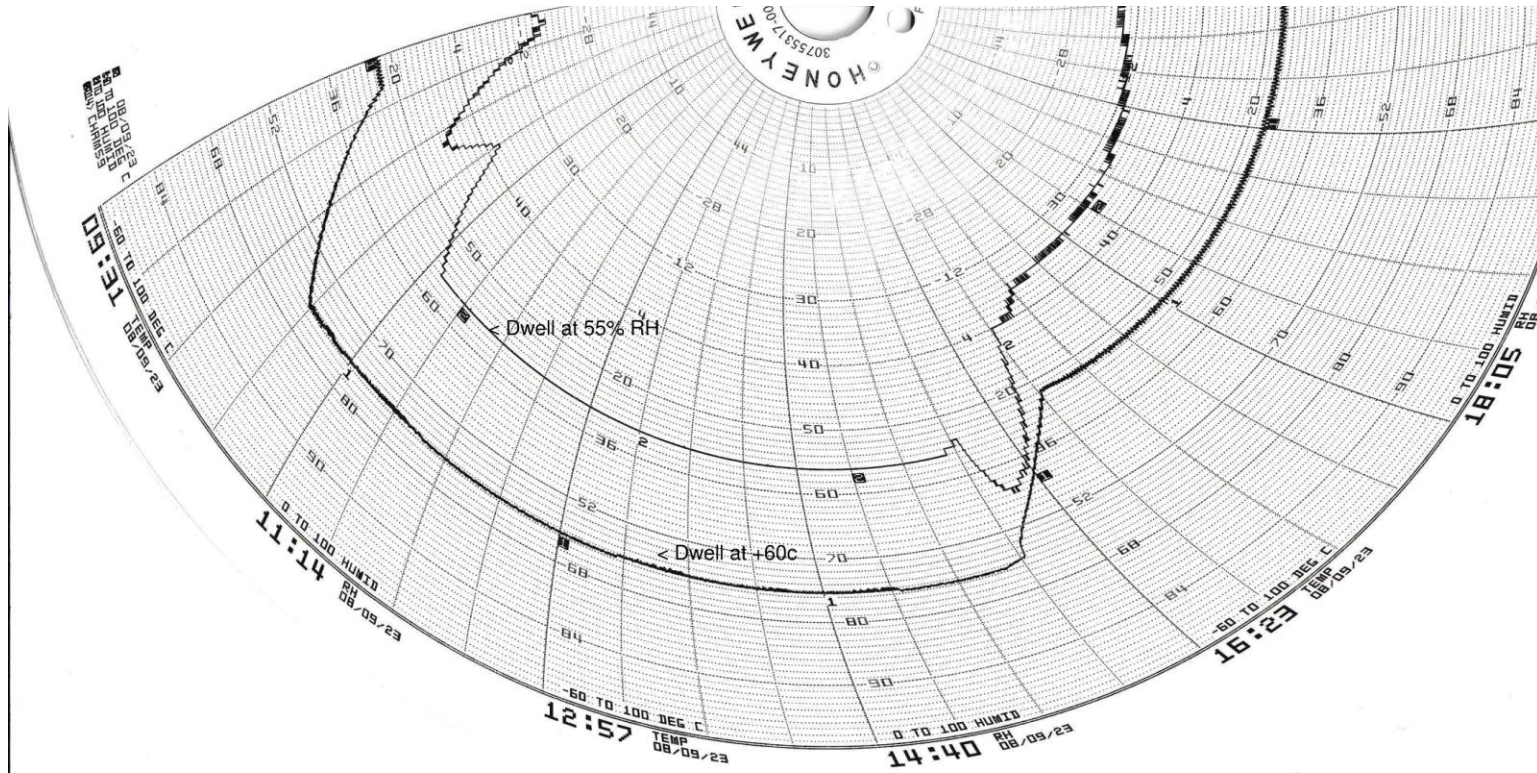


### 5.2.4 Test Photographs



High\_Temperature & Humidity\_+60c & 55%\_RH\_Test

5.2.5 Test Data





### 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	09/02/2022	09/02/2023
WC061560	Controller (Temperature)	Watlow	F4	09/02/2022	09/02/2023
WC061561	Recorder (Chart)	Honeywell	DR45AT	09/02/2022	09/02/2023

#### Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



**5.3 Bench Handling**

**5.3.1 Test Procedure**

The ExpressVote XL was tested in accordance with MIL-STD-810H.

**5.3.2 Test Result**

The EUT passed all defined requirements.

**5.3.3 Test Datasheets**

Start Date: 8/14/23		End Date: 8/14/23		Project No: PR171953-00			
Test Engineer: Michael Nash				Customer Witness: n/a		Temp: 66° Humidity: 46%	
Date	Time	Axis	Plot No.	Serial No.	Remarks	Initials	
8/14/23	1040	Corner 1		All	Perform 4 inch drops on Corner 1, 6 total drops	MN	
	1044	Corner 2			Perform 4 inch drops on Corner 2, 6 total drops	MN	
	1048	Corner 3			Perform 4 inch drops on Corner 3, 6 total drops	MN	
	1052	Corner 4			Perform 4 inch drops on Corner 4, 6 total drops	MN	
					Test complete, no damage noted	MN	



5.3.4 Test Photographs



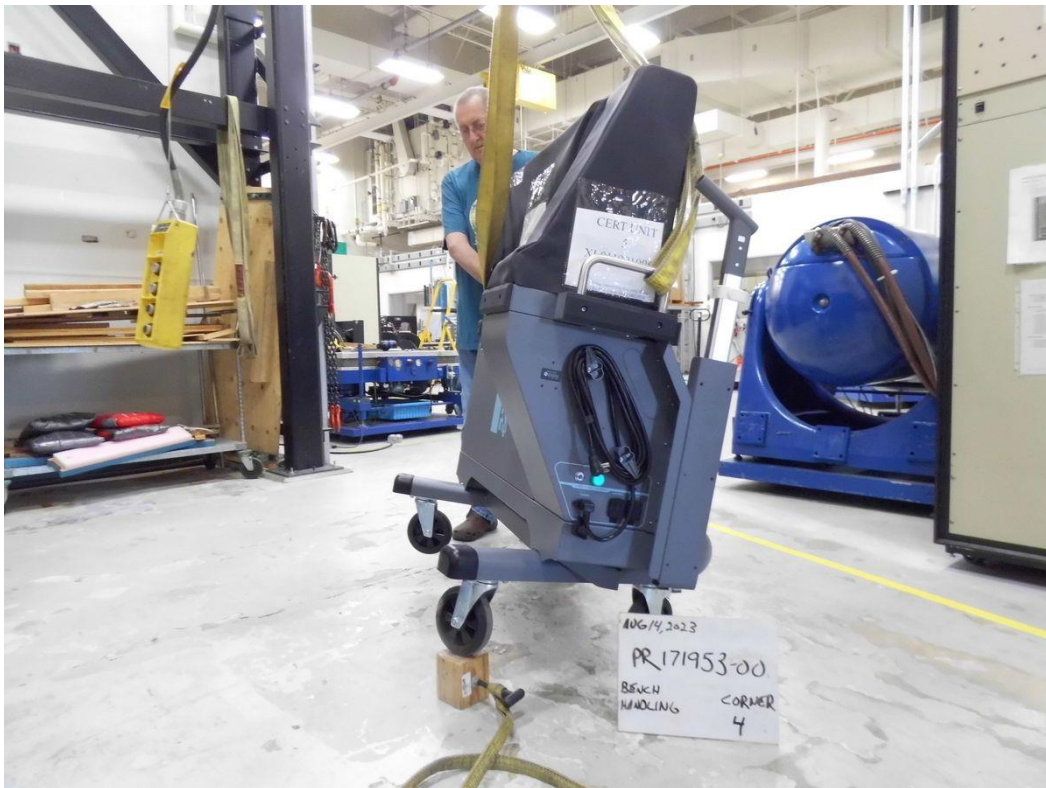
Bench Handling Corner 1



Bench Handling Corner 2



Bench Handling Corner 3



Bench Handling Corner 4



### 5.3.5 Test Equipment List

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

Asset Number	Asset Type	Manufacturer	Model	Calibrated	Due
WC070466	Meter (Hygrometer)	Fluke	971	06/14/2023	06/14/2024
WC078485	Measurement Tools (Ruler)	Starrett	C604R	NCR	NCR

#### Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required



**5.4 Transportation Vibration**

**5.4.1 Test Procedure**

The ExpressVote XL was tested in accordance with MIL-STD-810H.

**5.4.2 Test Result**

The EUT passed all defined requirements.

**5.4.3 Test Datasheets**

Start Date: 8/15/23		End Date: 8/15/23		Project No: PR171953-00		
Test Engineer: Michael Nash			Customer Witness: n/a		Temp: 66° Humidity: 46%	
Date	Time	Axis	Plot No.	Serial No.	Remarks	Initials
8/15/23		Vertical		All	Setup UUT to Shaker HYD06 in Vertical Axis	MN
			Run 1		Run 1.04 Grms random vibration on the UUT for 60 min	MN
					Test complete, no damage noted	MN

5.4.4 Test Photographs



Vibration



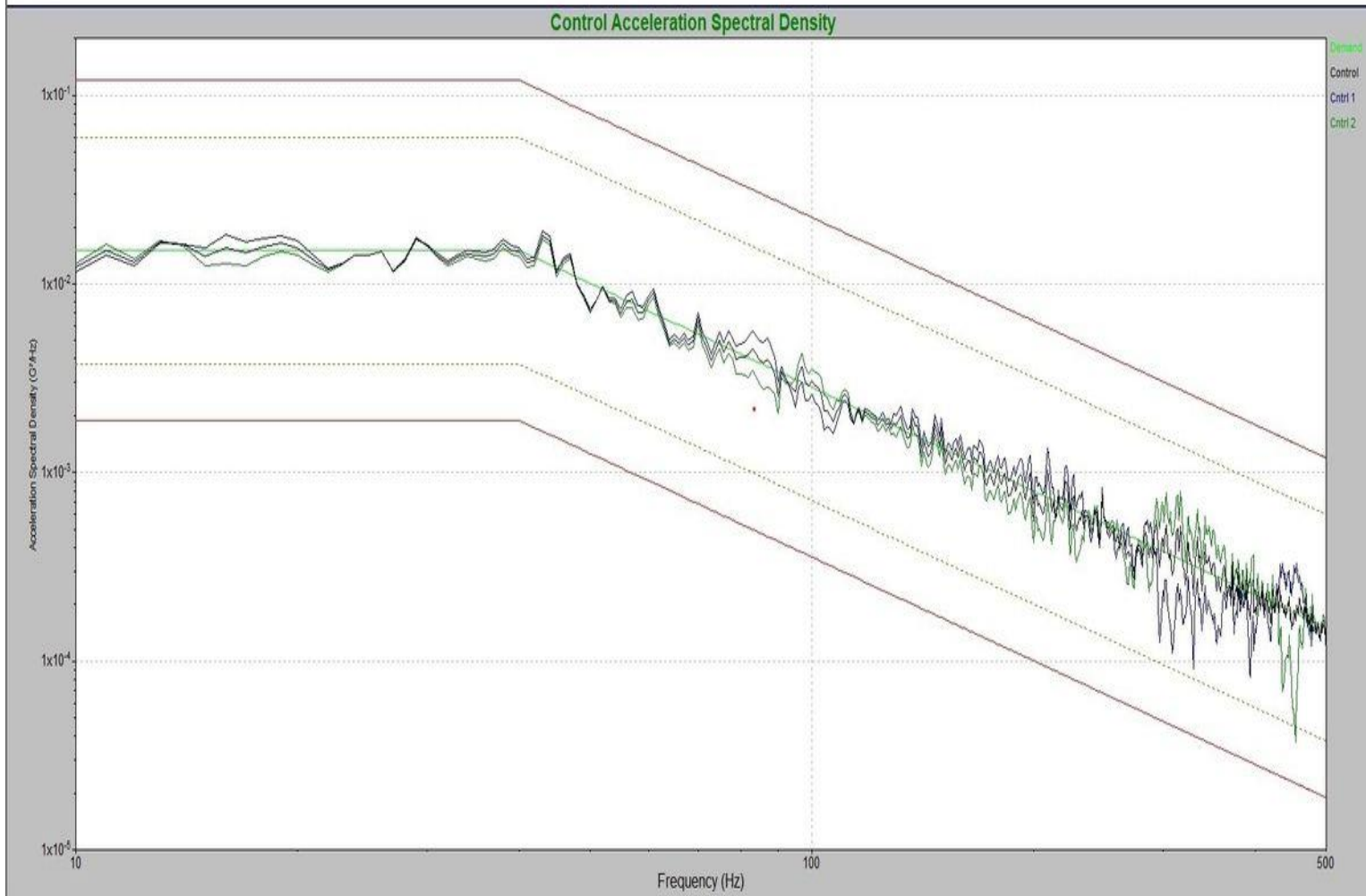
Vibration



Vibration

### 5.4.5 Test Data

NTS Longmont, CO	Level Time: 1:00:00	Demand: 1.047 G RMS	Pro V&V
Job# PR171953-00	Total Time: 1:00:16	Control: 1.037 G RMS	UUT: ExpressVoteXL
Aug 15, 2023 12:17:11	Run 1	Test axis: Vertical	S/N: XL0119010062, UVC08180003





### 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
WC059871	Accelerometer (Seismic)	PCB Piezotronics	352C34	11/08/2022	11/08/2023
WC059872	Accelerometer (Seismic)	PCB Piezotronics	352C34	11/08/2022	11/08/2023
WC059875	Computer (Vibration Controller)	Vibration Research	VR9500	05/02/2023	05/01/2024
WC070466	Meter (Hygrometer)	Fluke	971	06/14/2023	06/14/2024

#### Calibration Abbreviations

CAL: Calibration

NCR: No Calibration Required





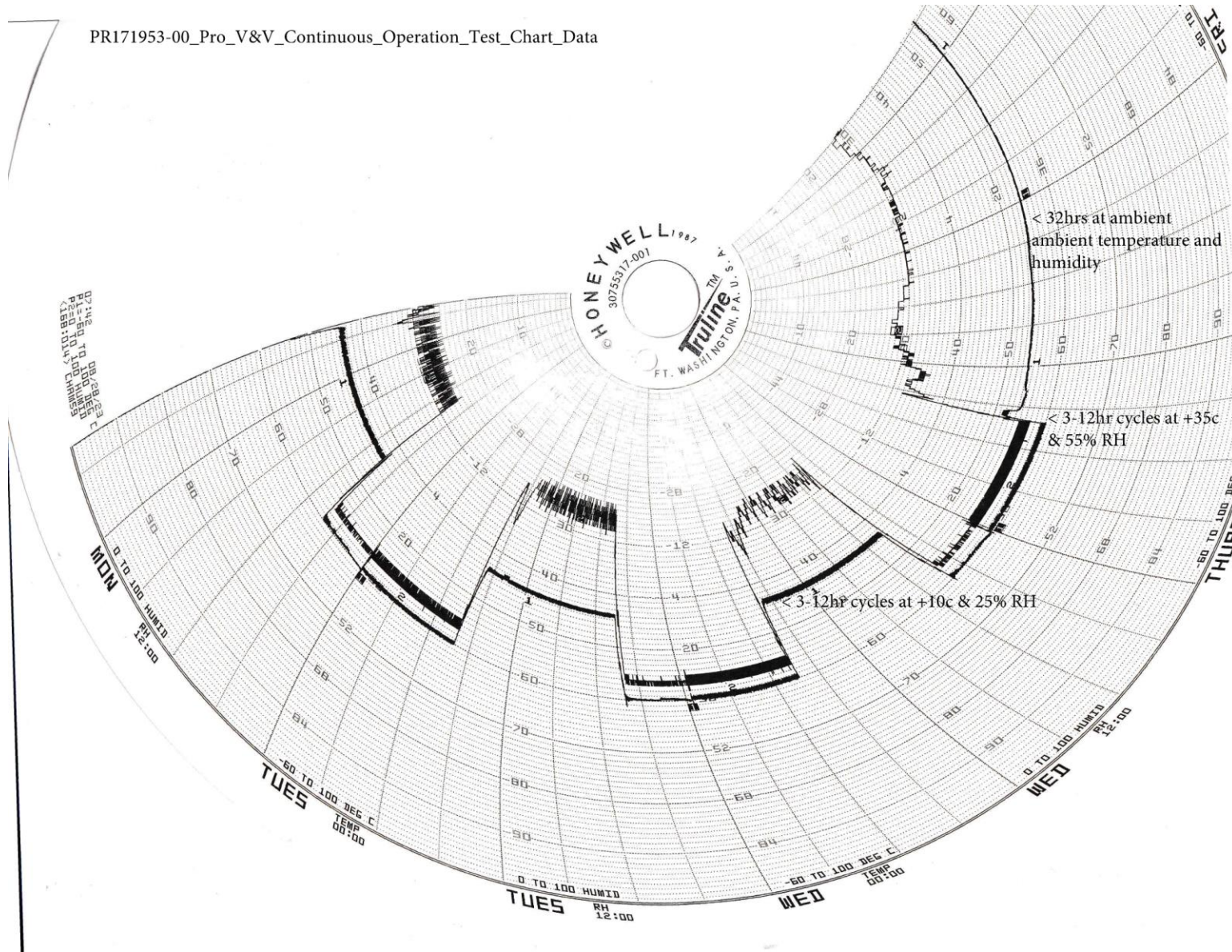
5.5.4 Test Photographs



Continuous\_Operation\_Test

5.5.5 Test Data

PR171953-00\_Pro\_V&V\_Continuous\_Operation\_Test\_Chart\_Data





**5.5.6 Test Equipment List**

**Table 5.5-1: Continuous Operation Test Equipment List**

<b>Asset Number</b>	<b>Asset Type</b>	<b>Manufacturer</b>	<b>Model</b>	<b>Calibrated</b>	<b>Due</b>
WC061559	Chamber (Temperature/Humidity)	StorageTek	Large Walk In	09/02/2022	09/02/2023
WC061560	Controller (Temperature)	Watlow	F4	09/02/2022	09/02/2023
WC061561	Recorder (Chart)	Honeywell	DR45AT	09/02/2022	09/02/2023

**Calibration Abbreviations**

CAL: Calibration

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**End of Test Report**