TEST REPORT

CTK Co., Ltd.
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Gyeonggi-do, 449-100, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

REPORT No.: CTK-2025-00639

1.	**Applicant**	
	◦ Name :	Hanwha Vision Co., Ltd
	◦ Address :	6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488 KOREA
	◦ Date of Receipt :	Jan. 20, 2024
2.	**Manufacturer**	
	◦ Name :	Hanwha Vision Co., Ltd
3.	**Use of Report :**	For submission to customer
4.	**Test sample / Model :**	NETWORK CAMERA / XNO-A8084R
5.	**Date(s) of test :**	Feb. 04, 2025 ~ Feb. 20, 2025
6.	**Test Standard (Method) used :**	NEMA TS 2-2013 2.2.7.2 Test B ~ 2.2.7.8, NEMA TS 2.2.8, NEMA TS 2.2.9
7.	**Testing Environment :**	Temperature: (25 ±10) ℃, Humidity: (50 ±25) % R.H. Pressure: (96 ±10) kPa
8.	**Test Results :**	Refer to the test results
9.	**Location of Test :**	☒ Permanent Testing Lab ☐ On Site Testing (5 Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si,)

The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This report cannot be reproduced or copied without the written consent of CTK.

Approval	Tested by	Technical Manager
	Name: KyuNam Park (Signature)	Name: HoHyun Lee (Signature)

Remark. This report is not related to KOLAS accreditation and relevant regulation.

Feb. 26, 2025

CTK Co., Ltd.

Table of Contents

1. Testing laboratory

1.1 Testing laboratory information

Lab. Name	CTK Co., Ltd.
Representative	Young Joseph Seungwon
Address	113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do Republic of Korea
Tel.	+82-31-339-9970
Fax.	+82-31-624-9501
E-Mail	all.youngin@element.com
Website	www.elementkorea.kr

1.2 Testing laboratory accreditation status

Country	Classification	Accreditation Number	Logo
International	KOLAS	TESTING NO. KT119	

2. Product description and equipment information

2.1 Product description

Product Name	Model Name	Quantity	Comment
NETWORK CAMERA	XNO-A8084R	1 EA	-

2.2 Equipment information

Testing equipment	Model Name	Manufacturer	Manufacturing Number	Calibration Date
Temperature & Humidity Chamber	ARS-1100-AE	ESPEC	1110024017	Oct. 7, 2025
VIBRATION TESTING SYSTEM	LT1010	FAMTECH	D2012335	N/A
Acceleration sensor	8703A250M5	KISTLER	5830236	Jan. 16, 2026
Acceleration sensor	8703A250M5	KISTLER	5722241	Jan. 16, 2026

2.3 Pre-test product images

2.3.1 Test sample

Top

Bottom

Front

Rear

Lest side

Right side

2.4 Testing equipment images

2.4.1 Test equipment

Temperature & Humidity Chamber

VIBRATION TESTING SYSTEM

8703A250M5

8703A250M5

3. Transient Test (NEMA TS 2-2013 2.2.7.2 Test B ~ 2.2.7.8)

3.1 Test date and environmental conditions

3.1.1 Test date: Feb. 04, 2025 ~ Feb. 05, 2025

3.1.2 Measured Environmental Conditions

Item	Temperature (℃)	Humidity (% R.H.)	Pressure (kPa)
Measurement	24.8	45.1	89.9

3.2 Test conditions and methods

3.2.1 Sample state: Operating state

3.2.2 Application step: Step E – Step F

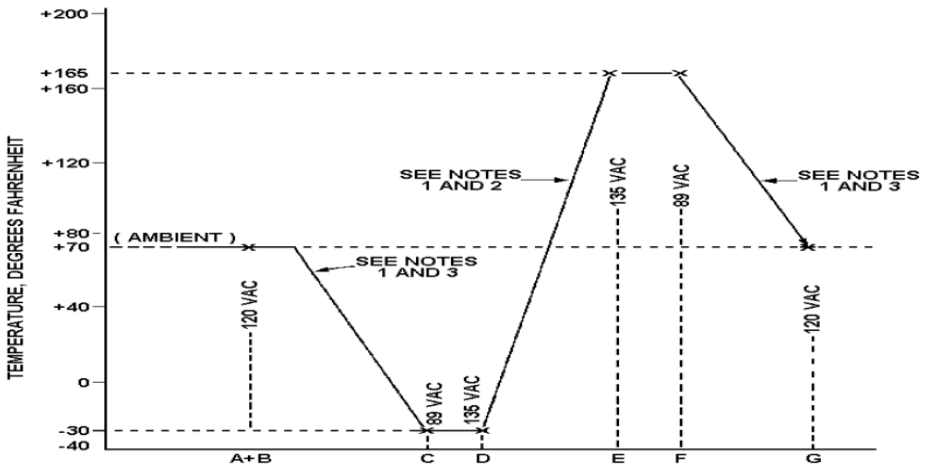
3.2.3 Applied voltage: Step E – Step F(135 Vac ~ 89 Vac)

3.2.4 Temperature / Humidity: 74 ℃ = 165 °F

3.2.5 Test Time(h): 15 h

3.2.6 Test Methods

- Evaluations Criteria :
  - Check for mechanical damage before and after testing
- Test methods
  - The sample is placed in the chamber.
  - NEMA TS 2-2013 [2.2.7.2 Test B: Transient Tests(Power Service)-13. C.] Apply power in step of application.
  - Perform the temperature/humidity test according to NEMA TS 2-2013 [2.2.7.2 Test B: Transient Tests (Power Service)-13. C.].



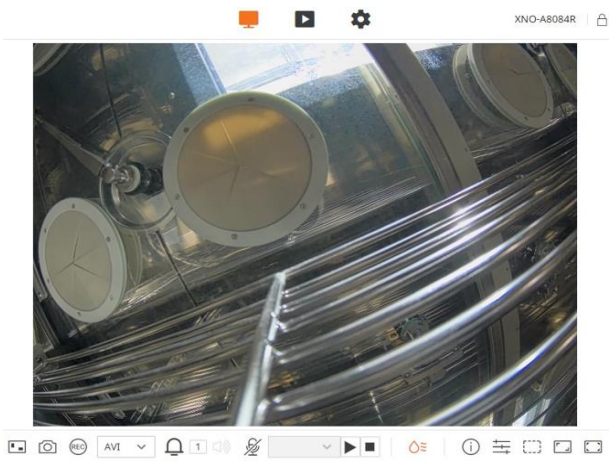
[NEMA TS 2-2013[2.2.7.2 Test B : Transient Tests(Power Service) 13. C.] Test profile]

3.3 Testing images

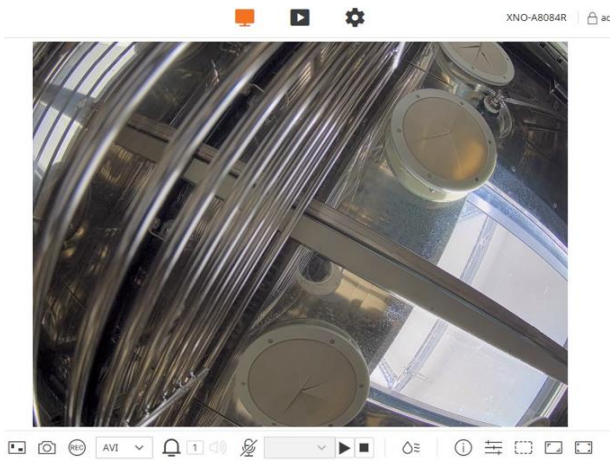
3.3.1 Evidence of test setting (2.2.7.2~Test B 2.2.7.8 Transient Test)

Transient Tests

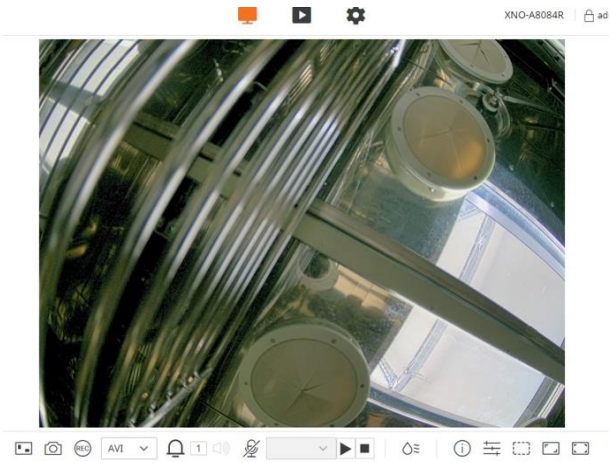
Transient Tests



220V



135V



89V

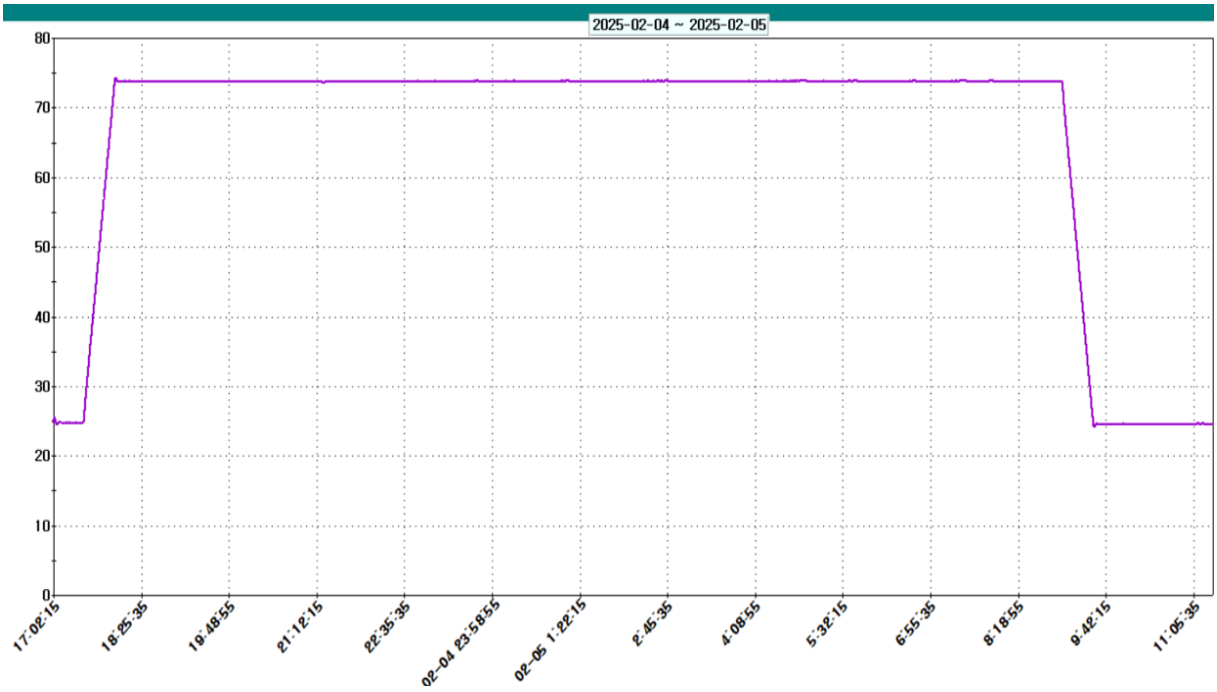
3.4 Test Result

3.4.1 Test result table

Evaluation Criteria		Test Results	Comment
Transient Tests	Before	**Normal**	
	After	**Normal**	

3.5 Test Data

3.5.1 Power Service [NEMA TS 2-2013 2.2.7.2 Test B – 13. C]



Temperature Data

4. Resonant search, Endurance Test [NEMA TS 2-2013 2.2.8]

4.1 Test date and environmental conditions

4.1.1 Test date: Feb. 04, 2025 ~ Feb. 20, 2025

4.1.2 Measured Environmental Conditions

Item	Temperature (℃)	Humidity (% R.H.)	Pressure (kPa)
Measurement	24.8	45.1	89.9

4.2 Test conditions and methods

4.2.1 Resonant search [NEMA TS 2-2013 2.2.8.3]

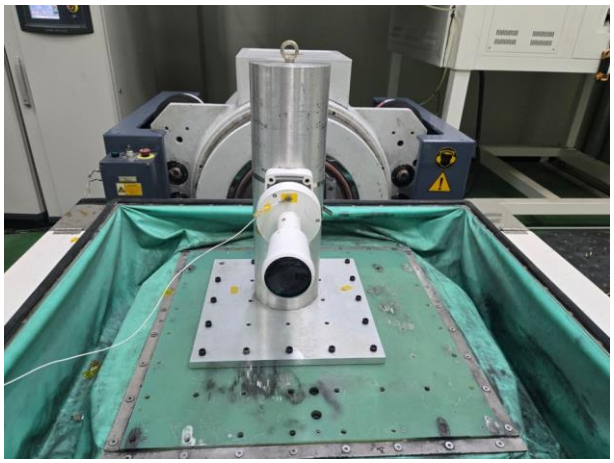
- Sample status : unpackaged / not in operation
- Applied waveform : Sine
- Frequency(Hz) : 5 ~ 30
- Double amplitude displacement (inch) : 0.015
- Sweep rate(Sweep/min) : 12.5
- Applicable axis : X, Y, Z
- Test time(h) : 12.5
- Evaluation items
  - ■ Check for mechanical damage before and after testing
- Test methods
  - ■ With the test unit securely fastened to the test table, set the test table for a double amplitude displacement of 0.015 inch.
  - ■ Cycle the test table over a search range from 5 to 30 Hz and back within a period of 12.5 minutes.
  - ■ Conduct the resonant frequency search in each of the three mutually perpendicular planes.
  - ■ Note and record the resonant frequency determined from each plane.
    - ◆ In the event of more than on resonant frequency in a given plane, record the most severe a. resonance.
    - ◆ b. If resonant frequencies appear equally severe, record each resonant frequency.
    - ◆ c. If no resonant frequency occurs for a given plane within the prescribed range, 30 Hz shall be recorded.

4.2.2 Endurance Test[NEMA TS 2-2013 2.2.8.4]

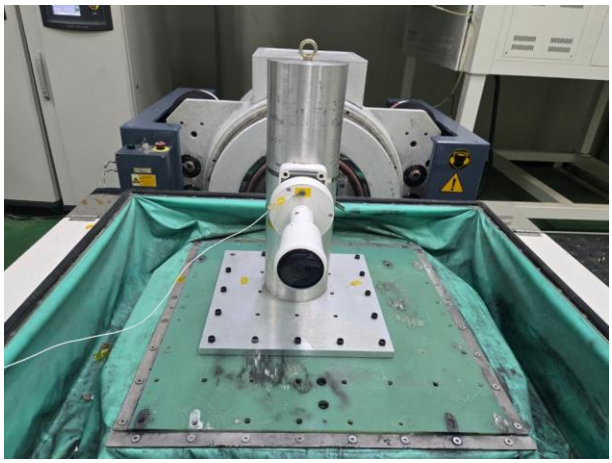
- Sample status : unpackaged / not in operation
- Applied waveform : Sine
- Frequency(Hz) : 30 or 3.2.2 Test results
- Acceleration(G) : 0.5
- Applicable axis : X, Y, Z
- Test time(h) : All 3(Each axis 1)
- Evaluation items
  - Check for mechanical damage before and after testing
- Test methods
  - Vibrate the test unit in each plane at its resonant frequency for a period of 1 hour at an amplitude resulting in 0.5 g acceleration. (test profile)
  - When more than one resonant frequency has been recorded in accordance with Section 1.2 Item 4, the test period of 1 hour shall be divided equally between the resonant frequencies.
  - The total time of the endurance test shall be limited to 3 hours, 1 hour in each of three mutually perpendicular planes.

4.3 Testing images

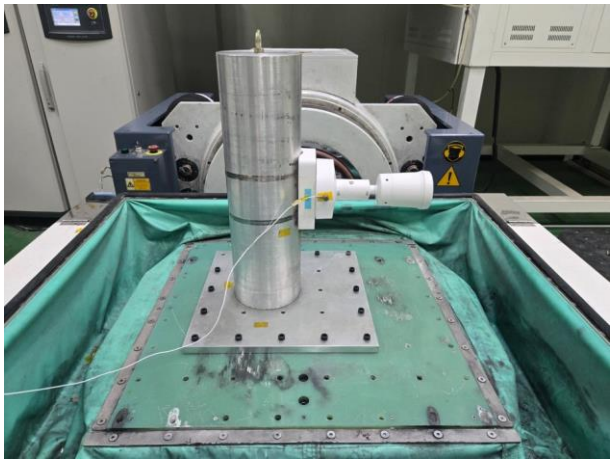
4.3.1 Evidence of test setting (NEMA TS 2-2013 2.2.8)



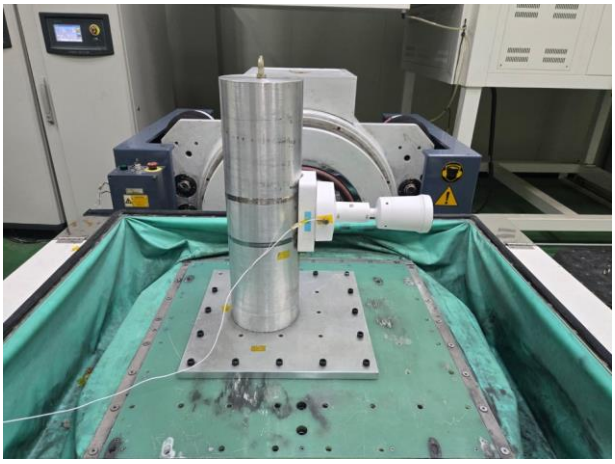
X axis_1



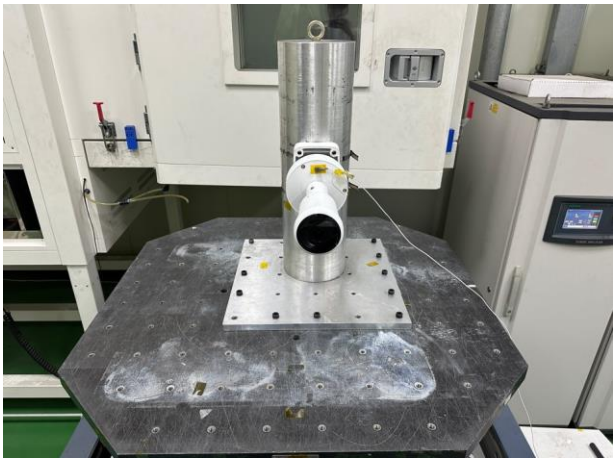
X axis_2



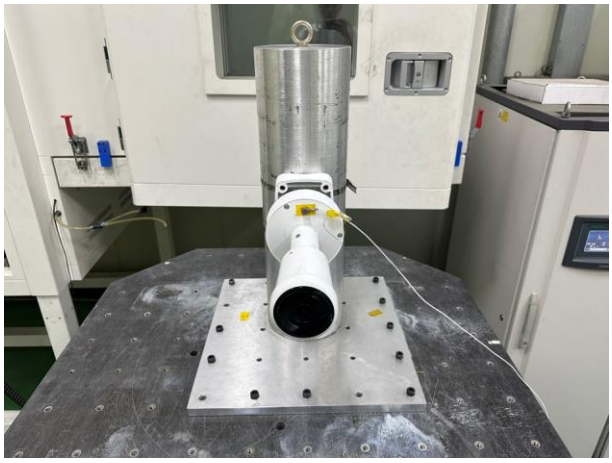
Y axis_1



Y axis_2



Z axis_1



Z axis_2

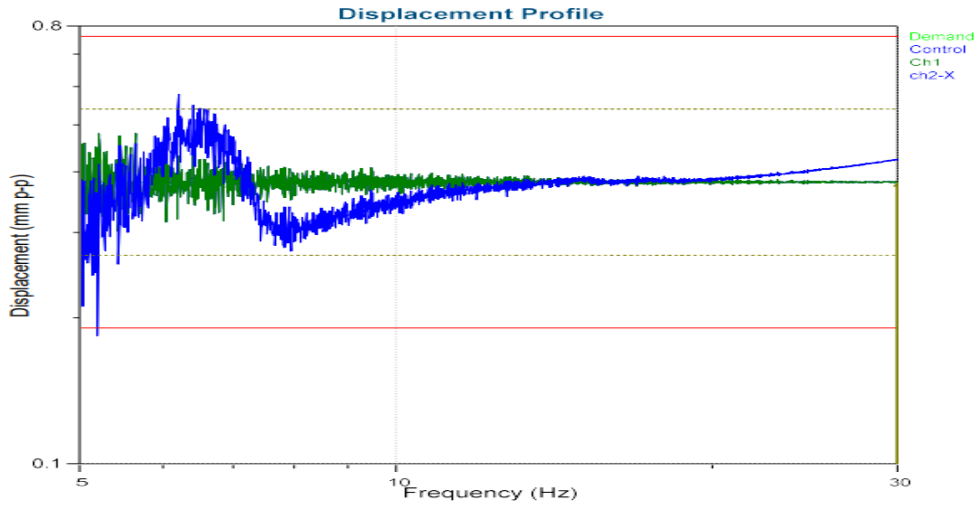
4.4 Test Result

4.4.1 Test result table

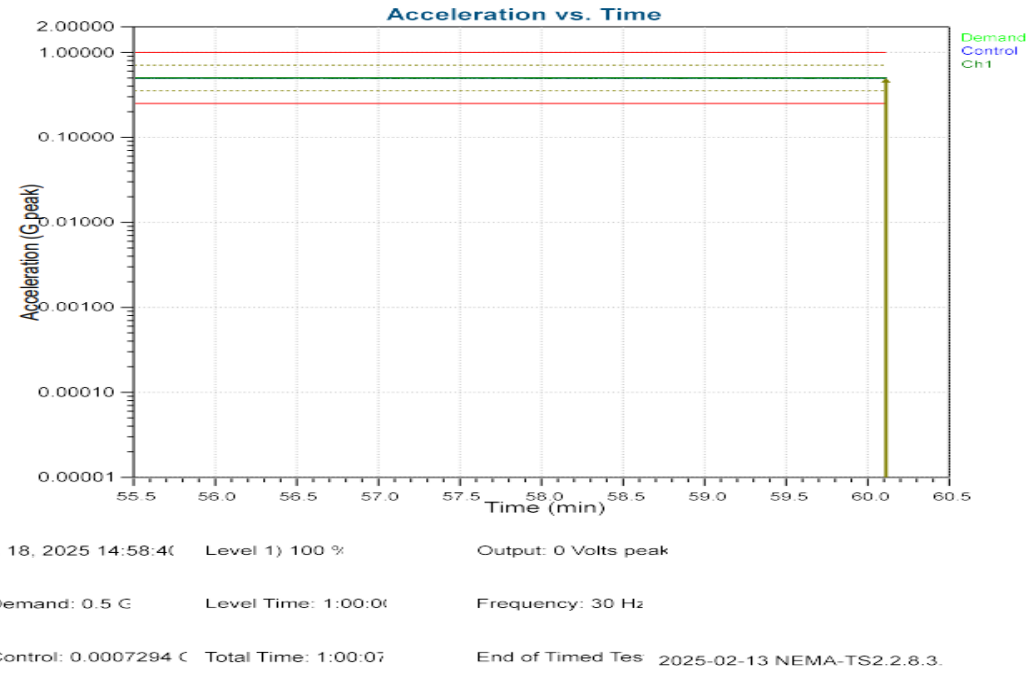
Evaluation Criteria		Test Results	Comment
Resonant search Test	Before	**Normal**	
	After	**Normal**	
Endurance Test	Before	**Normal**	
	After	**Normal**	

4.5 Test Data

4.5.1 Test Data X Axis

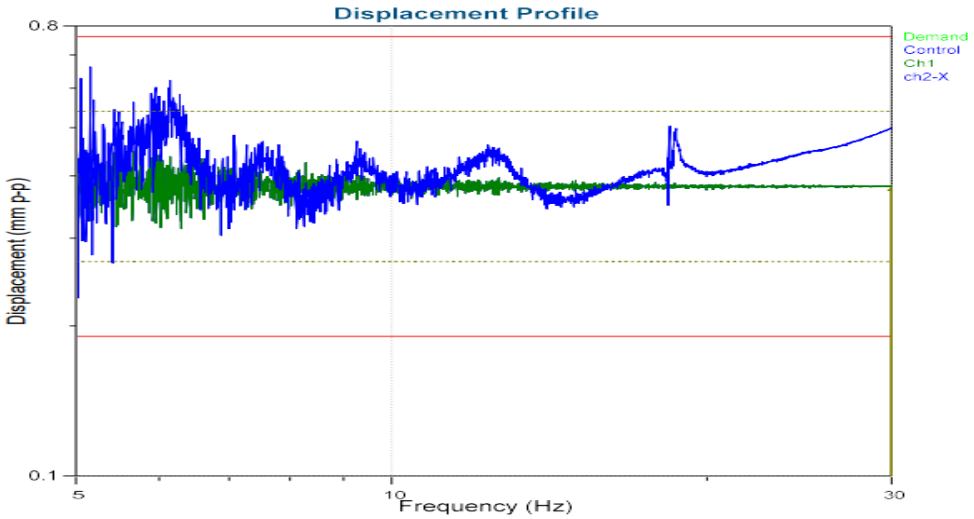


Resonant search Test (X Axis)



Endurance Test (X Axis)

4.5.2 Test Data Y Axis

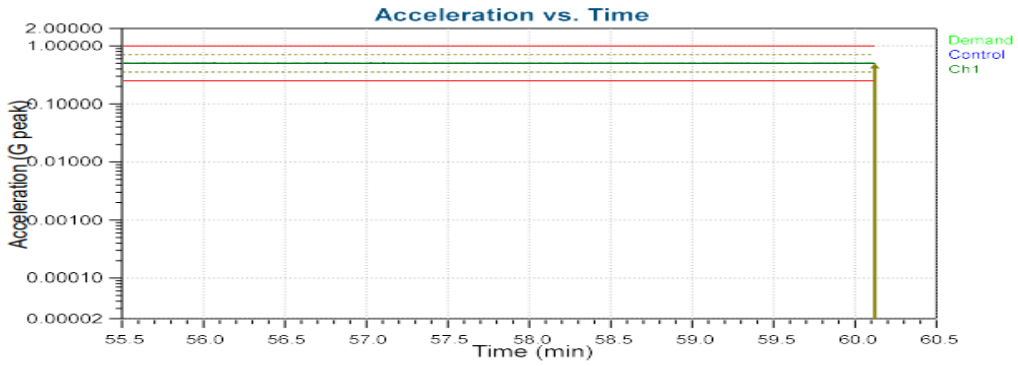


2 18, 2025 11:37:4 Level 1) 100 % Output: 0 Volts peak NEMA TS-2 2.2.8 - searcl

Demand: 0.381 mn Level Time: 0:12:3 Frequency: 30 Hz

Control: 7.72e-05 mn Total Time: 0:12:3 End of Sweep Tes

Resonant search Test (Y Axis)



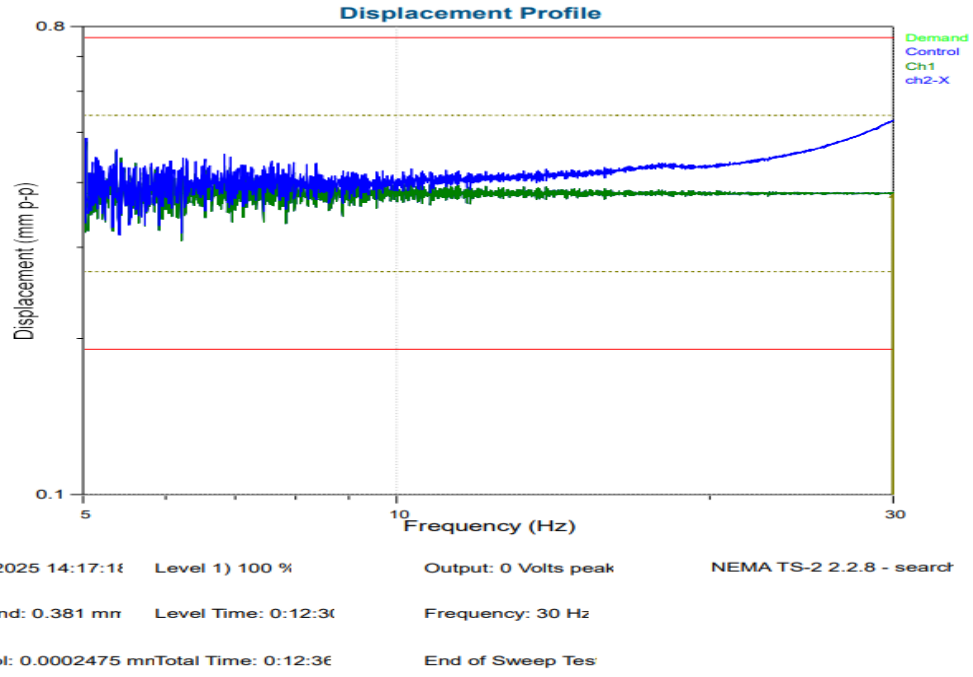
2 18, 2025 13:39:1 Level 1) 100 % Output: 0 Volts peak

Demand: 0.5 C Level Time: 1:00:0 Frequency: 30 Hz

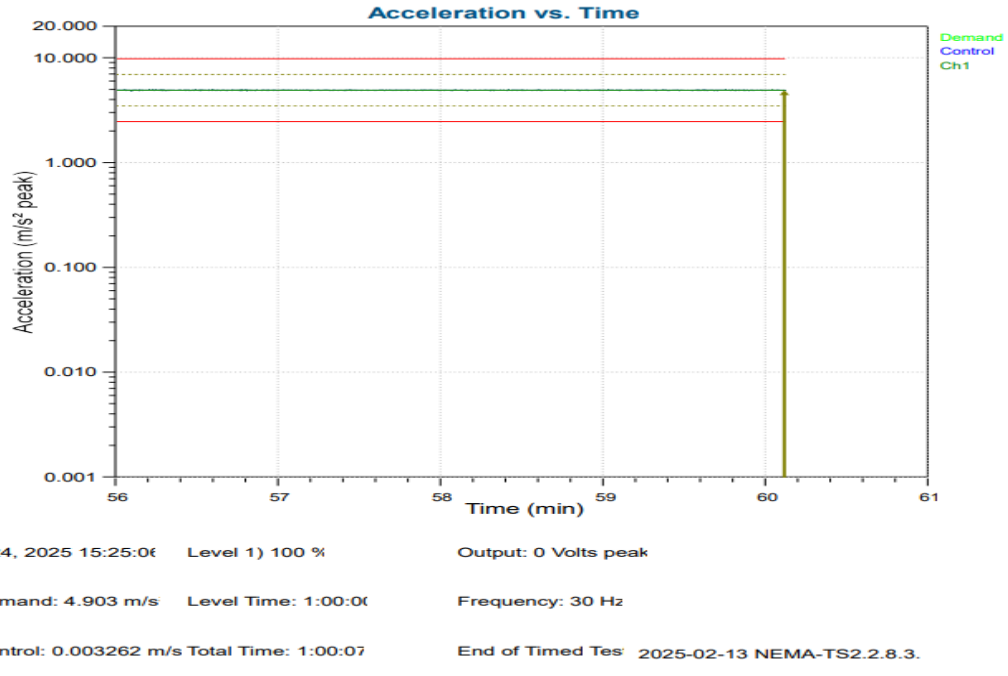
Control: 0.001309 C Total Time: 1:00:0 End of Timed Tes 2025-02-13 NEMA-TS2.2.8.3.

Endurance Test (Y Axis)

4.5.3 Test Data Z Axis



Resonant search Test (Y Axis)



Endurance Test (X Axis)

5. Shock(impact) Test [NEMA TS 2-2013 2.2.9]

5.1 Test date and environmental conditions

5.1.1 Test date: Feb. 20, 2025 ~ Feb. 20, 2025

5.1.2 Measured Environmental Conditions

Item	Temperature (℃)	Humidity (% R.H.)	Pressure (kPa)
Measurement	24.8	45.1	89.9

5.2 Test conditions and methods

5.2.1 Sample status: unpackaged / not in operation

5.2.2 Applied waveform: Half sine

5.2.3 Acceleration(G): 10 G

5.2.4 Nominal duration (ms): 11

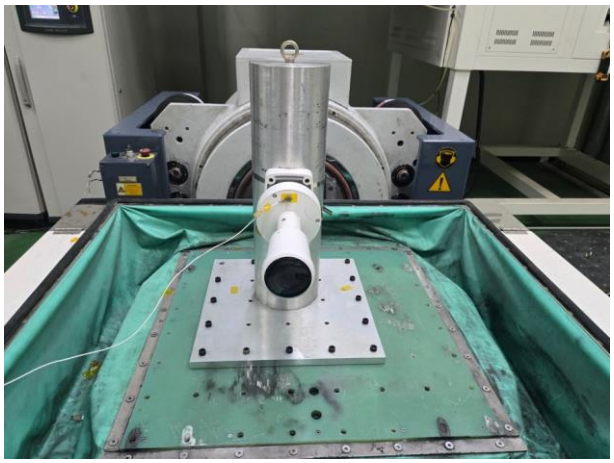
5.2.5 Applicable axis : X, Y, Z

5.2.6 Number of impacts: 1 per direction (total 6)

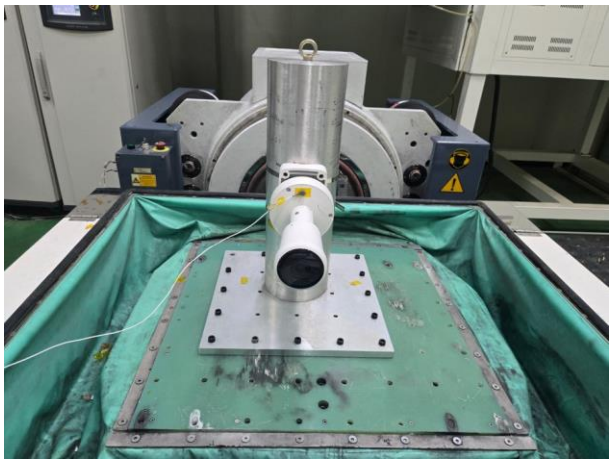
5.2.7 Evaluation items: Check for mechanical damage before and after testing

5.3 Testing images

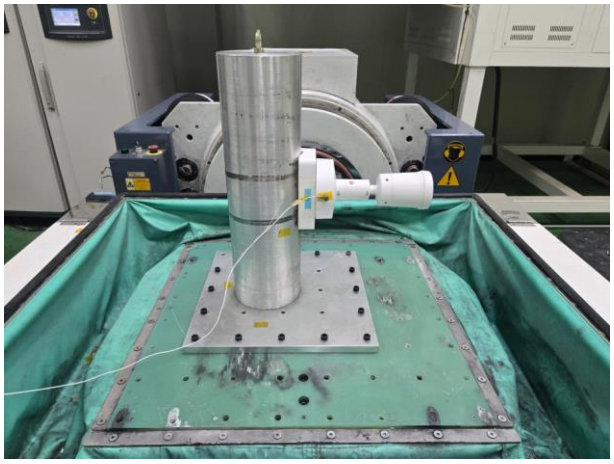
5.3.1 Evidence of test setting (NEMA TS 2-2013 2.2.9)



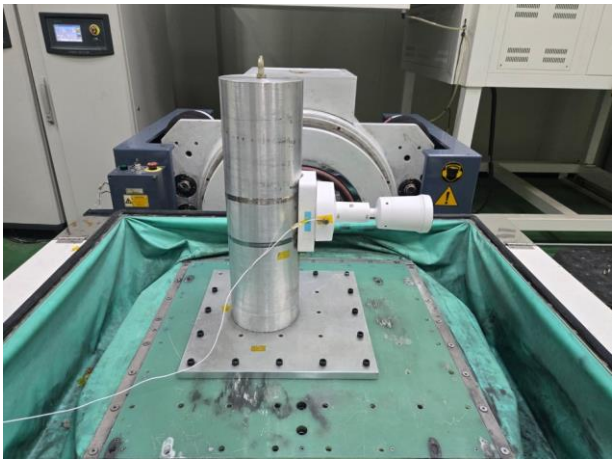
X axis_1



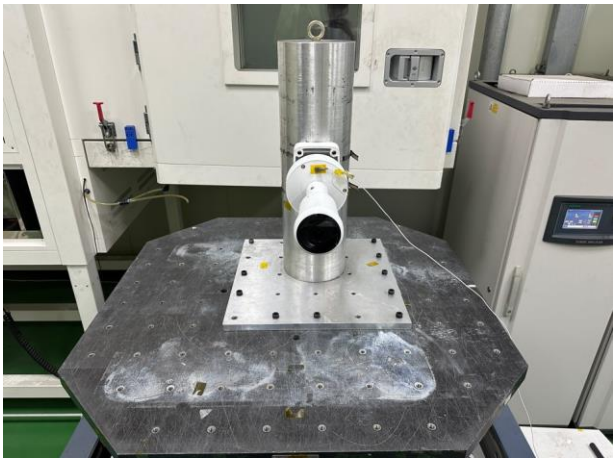
X axis_2



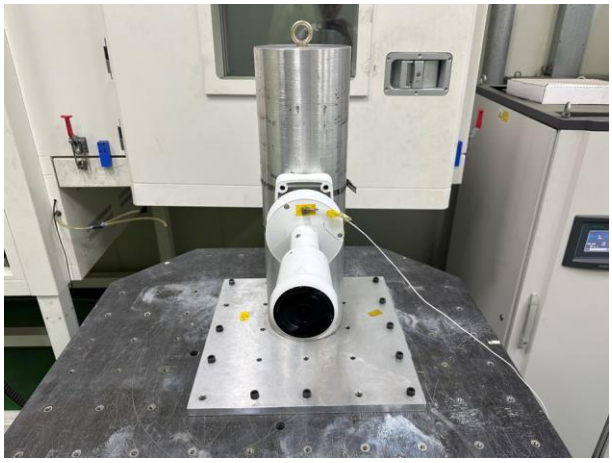
Y axis_1



Y axis_2



Z axis_1



Z axis_2

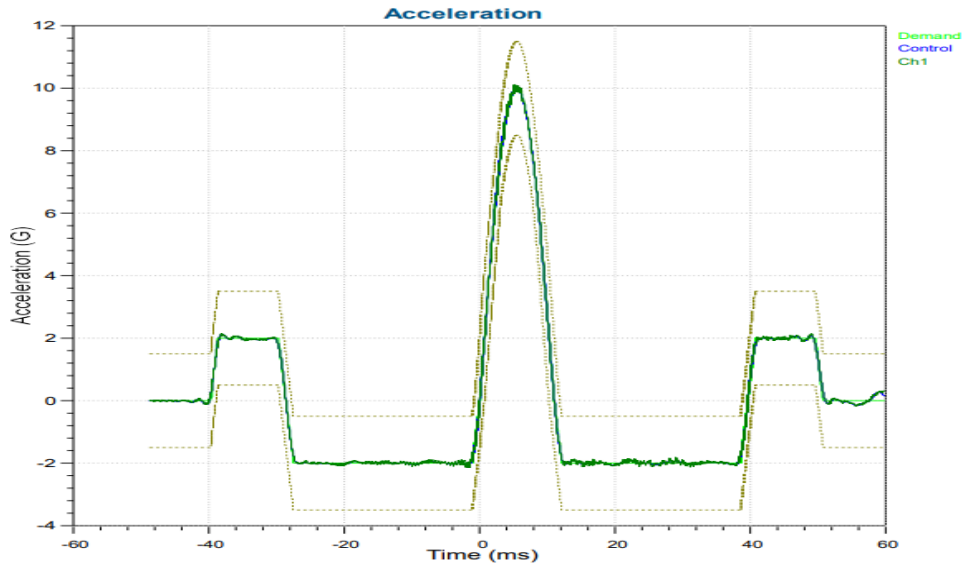
5.4 Test Result

5.4.1 Test result table

Evaluation Criteria		Test Results	Comment
Shock(impact) Test	Before	**Normal**	
	After	**Normal**	

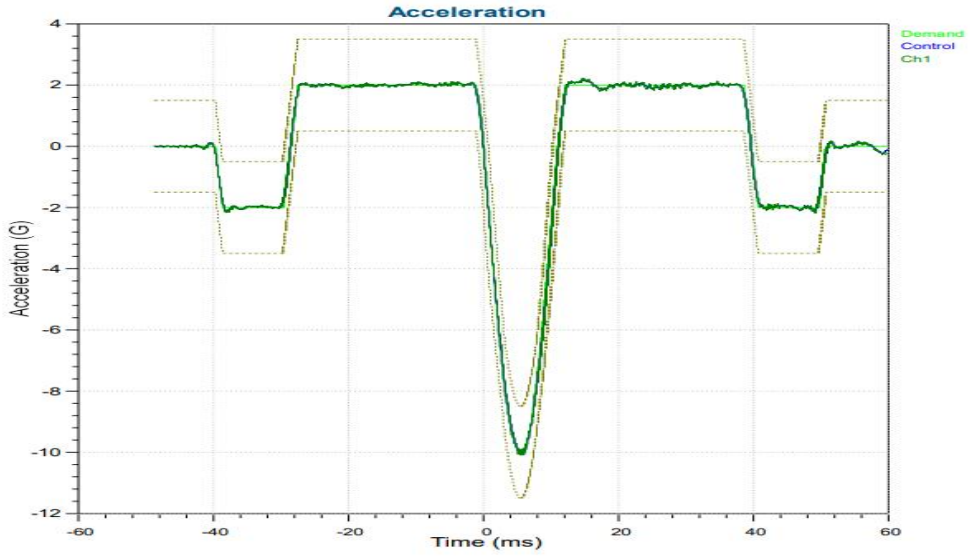
5.5 Test Data

5.5.1 Test Data X Axis



2 18, 2025 13:43:41 Level 1) 100 % Output: 0.661 Volts peak 2025-02-14 NEMA-TS 2.2.9
Demand: 10 G
Control: 10.02 G Pulse: 1 of 1 Running

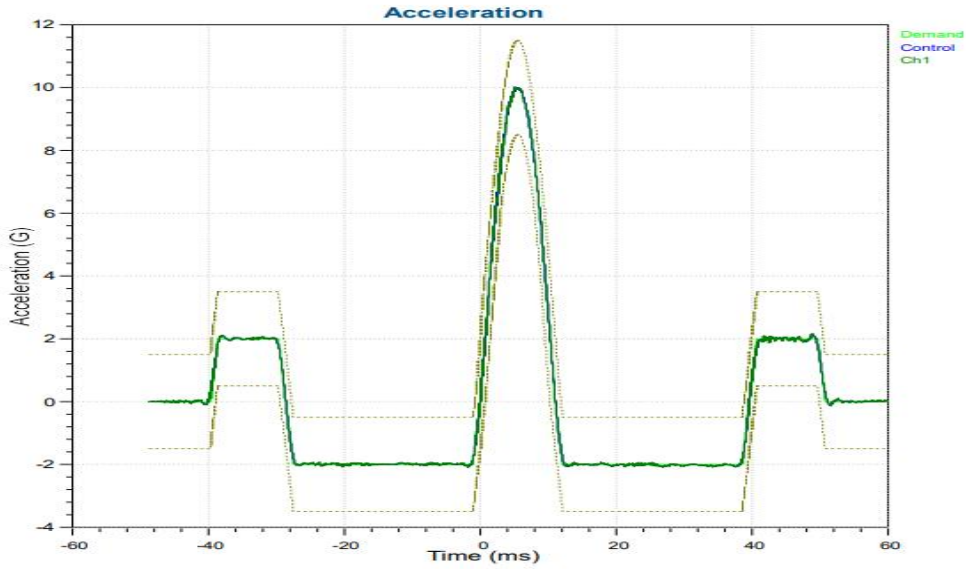
X+



2 18, 2025 13:43:46 Level 2) 100 % Output: 0.6612 Volts peak 2025-02-14 NEMA-TS 2.2.9
Demand: 10 G
Control: 10.02 G Pulse: 1 of 1 End of Test

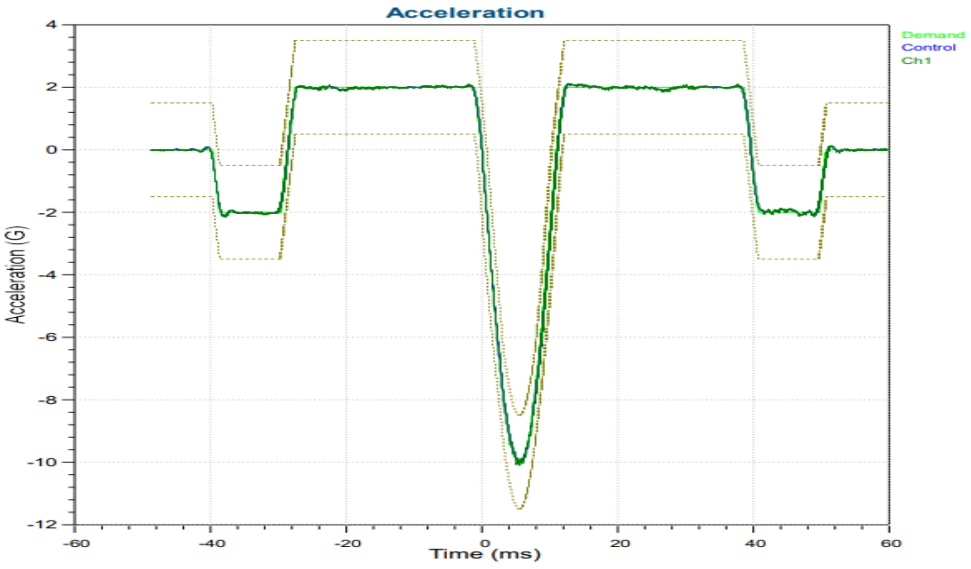
X-

5.5.2 Test Data Y Axis



2 18, 2025 11:22:19 Level 1) 100 % Output: 0.6465 Volts peak 2025-02-14 NEMA-TS 2.2.9
Demand: 10 G
Control: 9.991 G Pulse: 1 of 1 Running

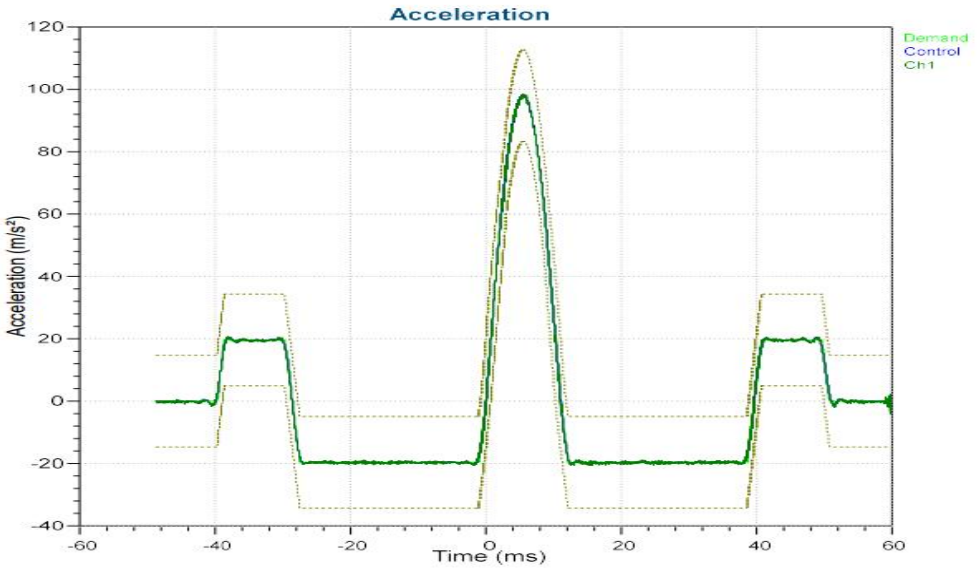
Y+



2 18, 2025 11:22:23 Level 2) 100 % Output: 0.6485 Volts peak 2025-02-14 NEMA-TS 2.2.9
Demand: 10 G
Control: 10 G Pulse: 1 of 1 End of Test

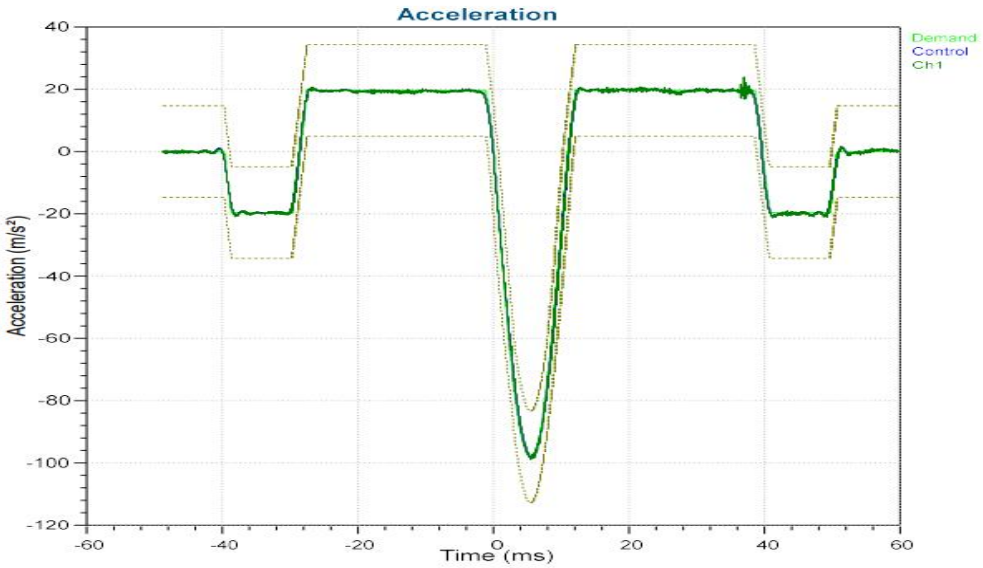
Y-

5.5.3 Test Data Z Axis



2 24, 2025 14:18:15 Level 1) 100 % Output: 0.6451 Volts peak 2025-02-14 NEMA-TS 2.2.9
Demand: 98.07 m/s²
Control: 98.14 m/s² Pulse: 1 of 1 Running

Z+



2 24, 2025 14:18:20 Level 2) 100 % Output: 0.6453 Volts peak 2025-02-14 NEMA-TS 2.2.9
Demand: 98.07 m/s²
Control: 98.12 m/s² Pulse: 1 of 1 End of Test

Z-

5.6 Post-test product images

5.6.1 Test sample

Top

Bottom

Front

Rear

Lest side

Right side

- End -