TEST REPORT

element	**CTK Co., Ltd.** 5 Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	REPORT No.: CTK-2025-02947 Page (1) / (25) pages

1.	**Applicant**	
	◦ Name :	Hanwha Vision Co., Ltd
	◦ Address :	6, Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488 KOREA
	◦ Date of Receipt :	Sep. 10, 2025
2.	**Manufacturer**	
	◦ Name :	Hanwha Vision Co., Ltd
3.	**Use of Report :**	For submission to customer
4.	**Test sample / Model :**	NETWORK CAMERA / XNV-A9085R
5.	**Date(s) of test :**	Oct. 14, 2025 ~ Oct. 21, 2025
6.	**Test Standard (Method) used :**	NEMA TS 2-2013 2.2.7.3 Test C ~ 2.2.7.8 Test H, 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, Gyeonggi-do, Republic of Korea)

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 Name: HyungUk Jeon (Signature)	Technical Manager Name: HoHyun Lee (Signature)

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

Oct. 27, 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	5 Dongbu-ro 221beon-gil, 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	XNV-A9085R	1 EA	-

2.2 Equipment information

Testing equipment	Model Name	Manufacturer	Manufacturing Number	Calibration Date
Temperature & Humidity Chamber	ARS-0680	ESPEC	4100200321	Jun. 16, 2026
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. NEMA TS 2-2013 2.2.7.3 Test C ~ 2.2.7.8 Test H

3.1 Test date and environmental conditions

3.1.1 Test date: Oct. 14, 2025 ~ Oct. 16, 2025

3.1.2 Measured Environmental Conditions

Item	Temperature (℃)	Humidity (% R.H.)	Pressure (kPa)
Measurement	24.2	46.2	96.3

3.2 Test conditions and methods

3.2.1 2.2.7.3 Test C: - 34 ℃, 89 Vac, 10 h (Check interim operation after 5 h and operation check after 10h)

3.2.2 2.2.7.4 Test D: - 34 ℃, 135 Vac, 1 h (Operating state)

3.2.3 2.2.7.5 Test E: 74 ℃, 18 %, 135 Vac, 15 h (Operating state)

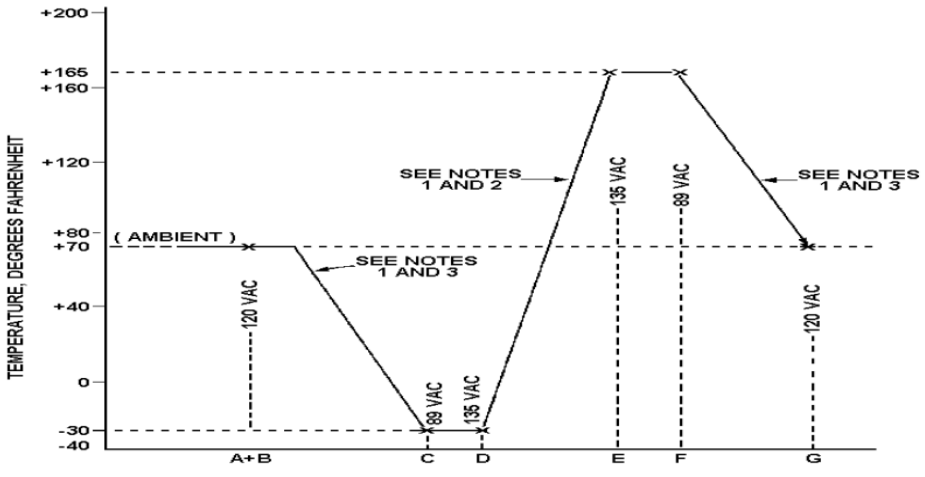
3.2.4 2.2.7.6 Test F: 74 ℃, 18 %, 89 Vac (Operation check after 2.2.7.5 Test E)

3.2.5 2.2.7.7 Test G: (21 ±6) ℃, 120 Vac (Operating state)

3.2.6 2.2.7.8 Test H: Check for mechanical damage

3.2.7 Test Methods

- Evaluations Criteria :
  - ■ Check for mechanical damage before and after testing
- Test methods



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3.3 Testing images

3.3.1 Evidence of test setting

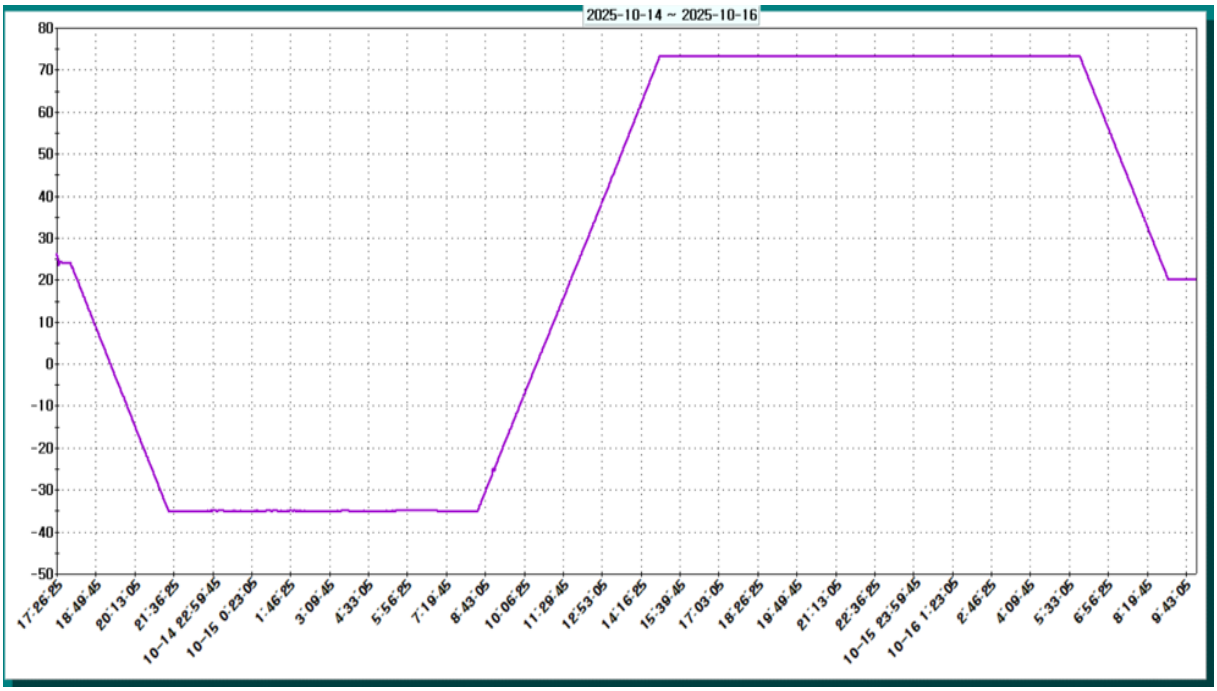
3.4 Test Result

3.4.1 Test result table

Evaluation Criteria		Test Results	Comment
2.2.7.3 Test C ~ 2.2.7.8 Test H	Before	**Normal**	-
	After	**Normal**	-

3.5 Test Data

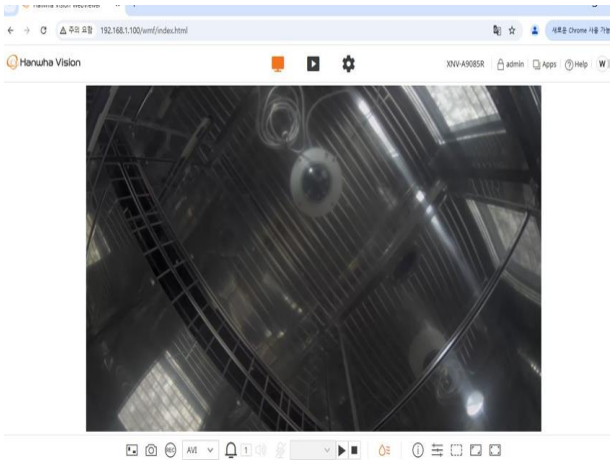
3.5.1 Test data and graph



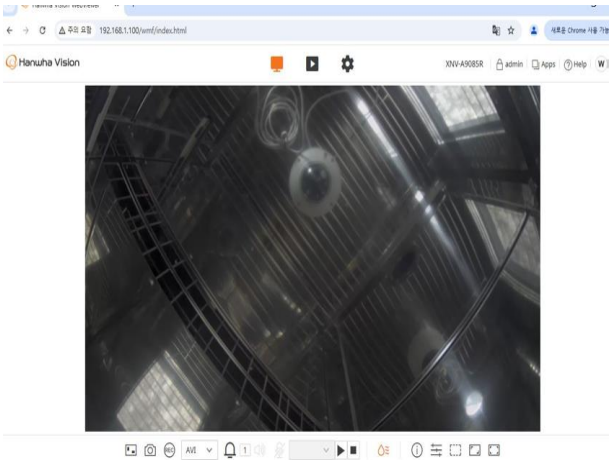
Temperature Data

3.6 Test sample operation images

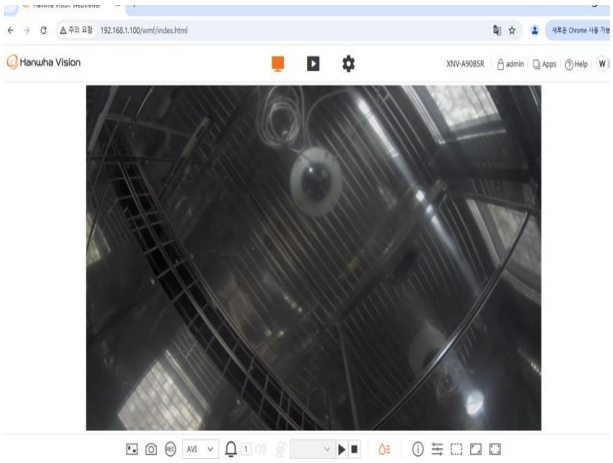
3.6.1 Test sample operation and function



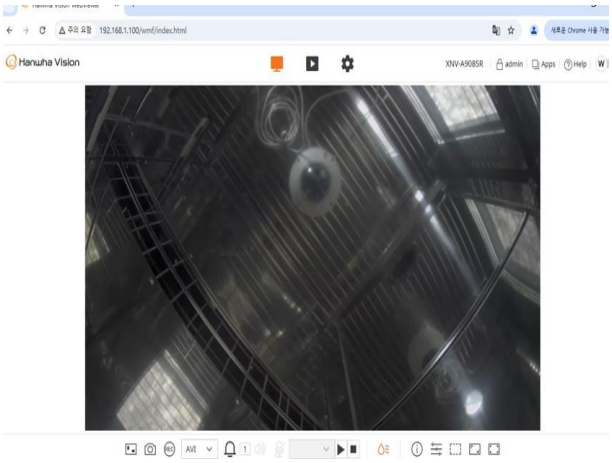
-34 ℃ 89 Vac



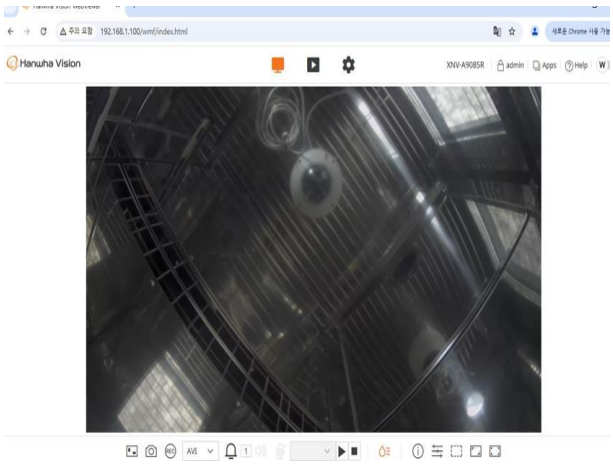
-34 ℃ 135 Vac



74 ℃ 135 Vac



74 ℃ 89 Vac



(21 ±6) ℃ 120 Vac

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

4.1 Test date and environmental conditions

4.1.1 Test date: Oct. 20, 2025 ~ Oct. 21, 2025

4.1.2 Measured Environmental Conditions

Item	Temperature (℃)	Humidity (% R.H.)	Pressure (kPa)
Measurement	24.7	45.0	89.9

4.2 Test conditions and methods

4.2.1 Resonant search [NEMA TS 2-2013 2.2.8.3]

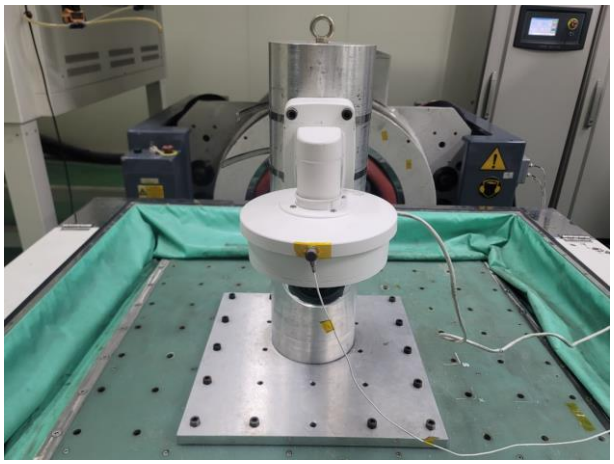
- Sample status : unpackaged / not in operation
- Applied waveform : Sine
- Frequency(Hz) : 5 ~ 30
- Double amplitude displacement (inch) : 0.015
- Sweep rate(Sweep/min) : 12.5
- Applicable axis : X, Y, Z
- Test time(h) : 12.5
- Evaluation items
  - ■ Check for mechanical damage before and after testing
- 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]

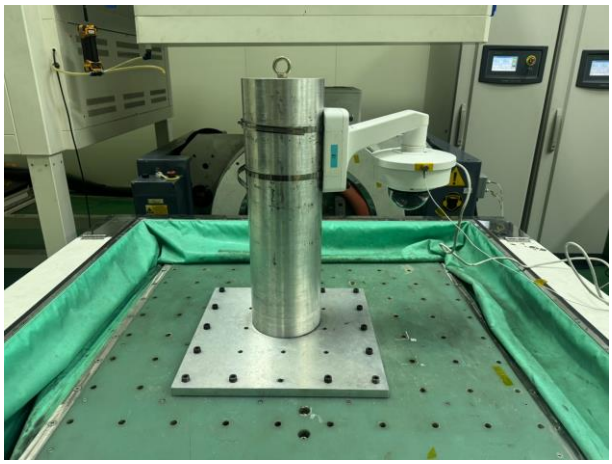
- Sample status : unpackaged / not in operation
- Applied waveform : Sine
- Frequency(Hz) : 30 or 3.2.2 Test results
- Acceleration(G) : 0.5
- Applicable axis : X, Y, Z
- Test time(h) : All 3(Each axis 1)
- Evaluation items
  - Check for mechanical damage before and after testing
- Test methods
  - Vibrate 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

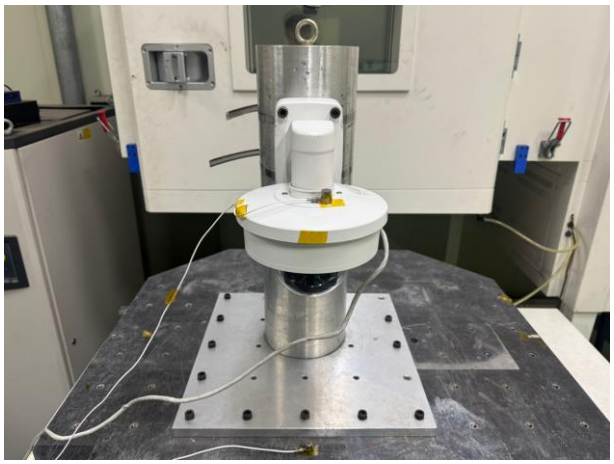
4.3.1 Evidence of test setting (NEMA TS 2-2013 2.2.8)



X axis



Y axis



Z axis

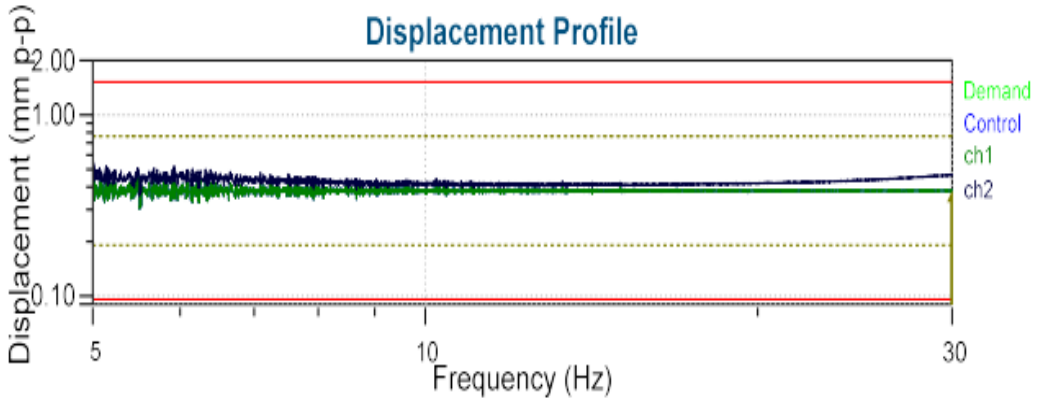
4.4 Test Result

4.4.1 Test result table

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

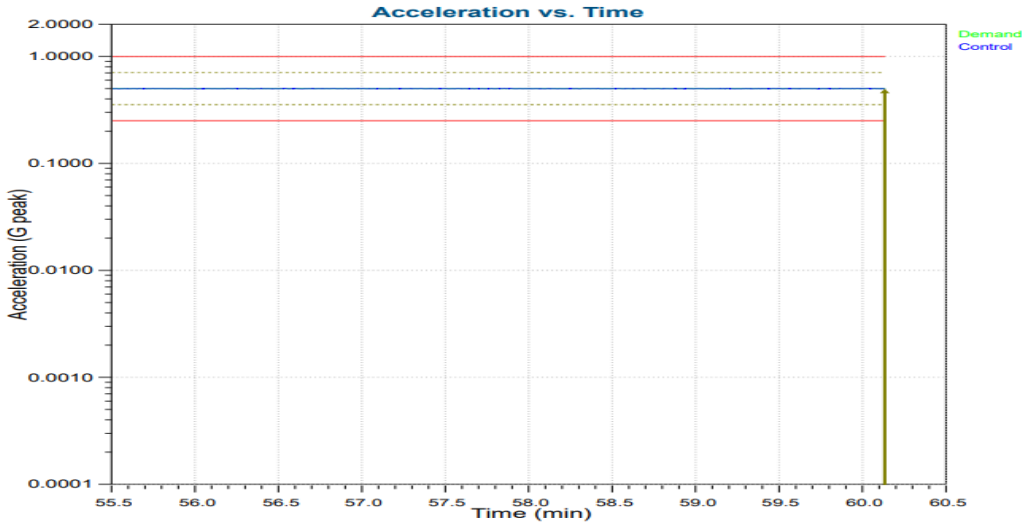
4.5 Test Data

4.5.1 Test Data X Axis



10 20, 2025 18:06:3 Level 1) 100 % Output: 0.06886 Volts pea NEMA TS-2 2.2.8 - search.
Demand: 0.381 mr Level Time: 0:12:3 Frequency: 30 H:
Control: 0.3808 mn Total Time: 0:12:3 End of Sweep Tes

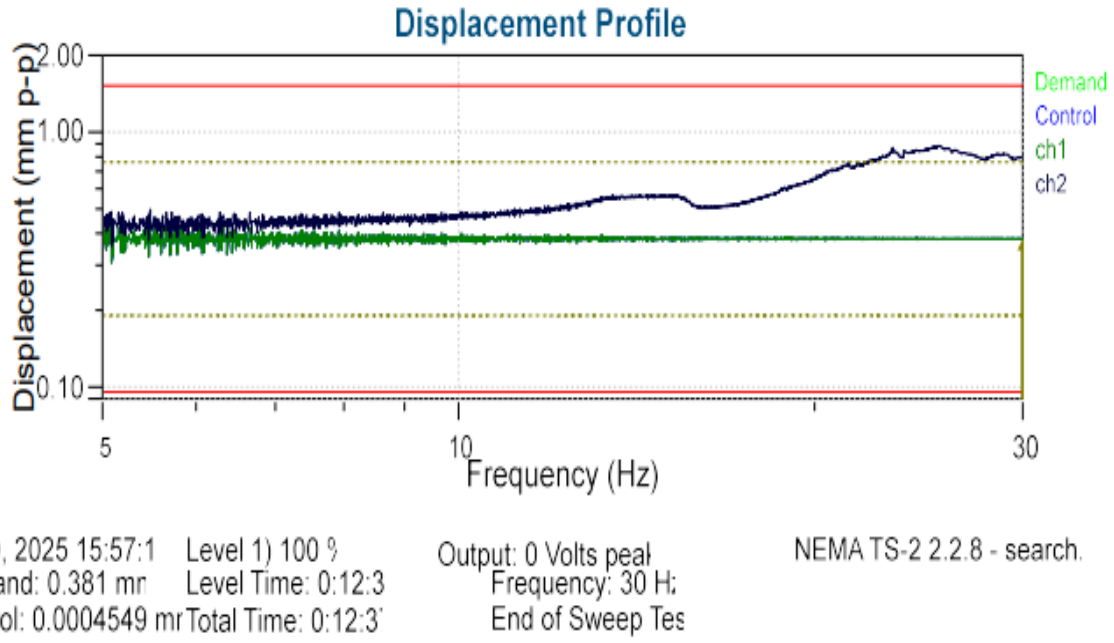
Resonant search Test



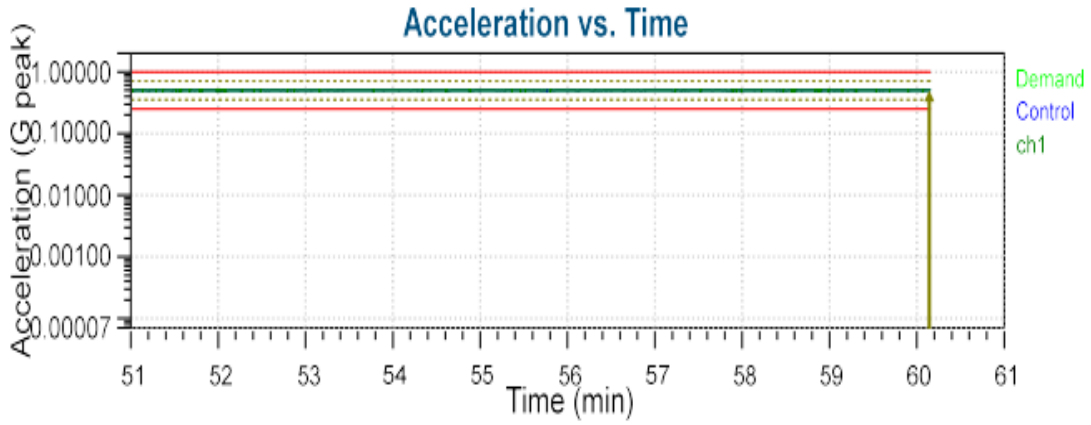
10 21, 2025 11:32:5 Level 1) 100 % Output: 0 Volts peal NEMA TS-2.8.3.4
Demand: 0.5 C Level Time: 1:00:0 Frequency: 30 H:
Control: 0.001478 C Total Time: 1:00:0 End of Timed Tes

Endurance Test

4.5.2 Test Data Y Axis

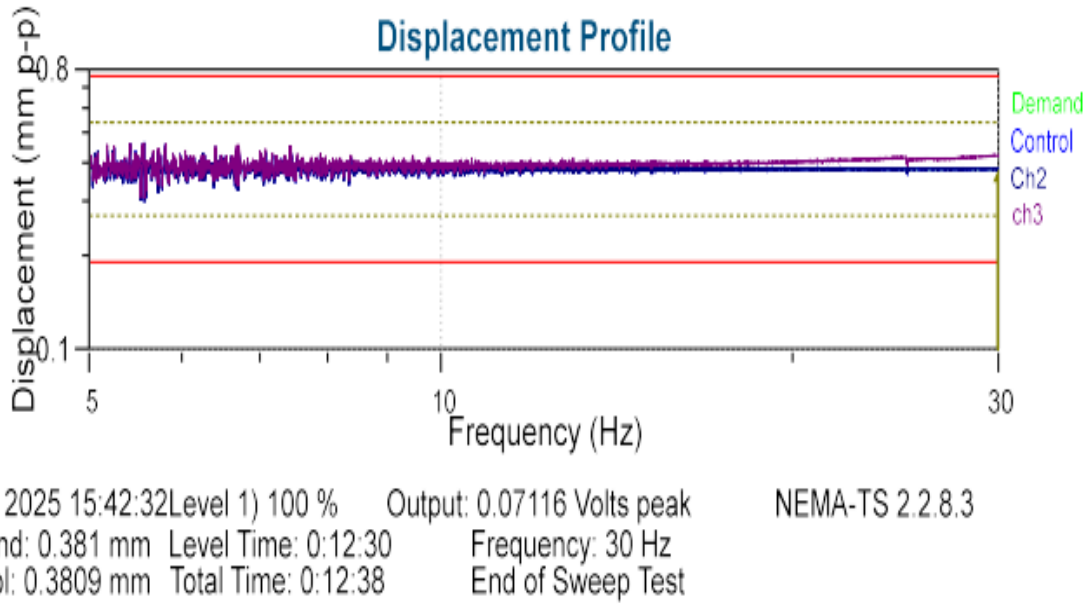


Resonant search Test

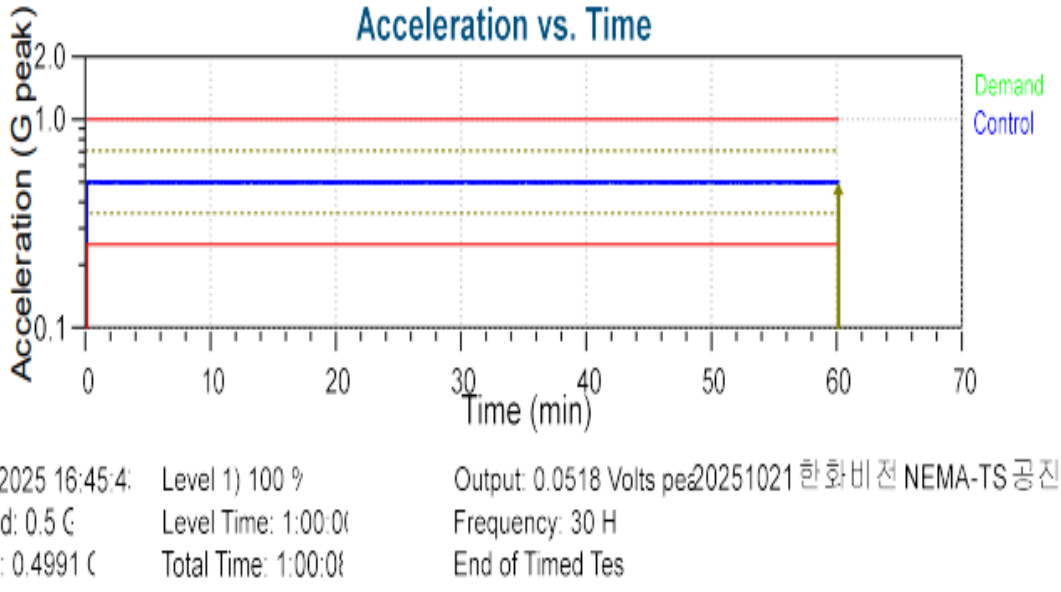


Endurance Test

4.5.3 Test Data Z Axis



Resonant search Test



Endurance Test

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

5.1 Test date and environmental conditions

5.1.1 Test date: Apr. 18, 2025 ~ Apr. 19, 2025

5.1.2 Measured Environmental Conditions

Item	Temperature (℃)	Humidity (% R.H.)	Pressure (kPa)
Measurement	24.8	45.2	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)

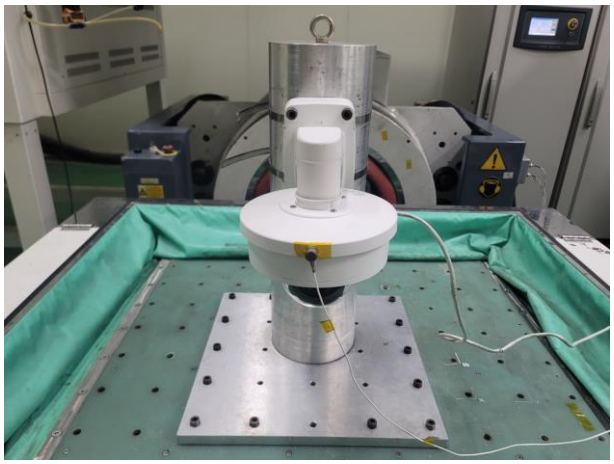
5.2.7 Evaluation items: Check for mechanical damage before and after testing

5.2.8 Test methods

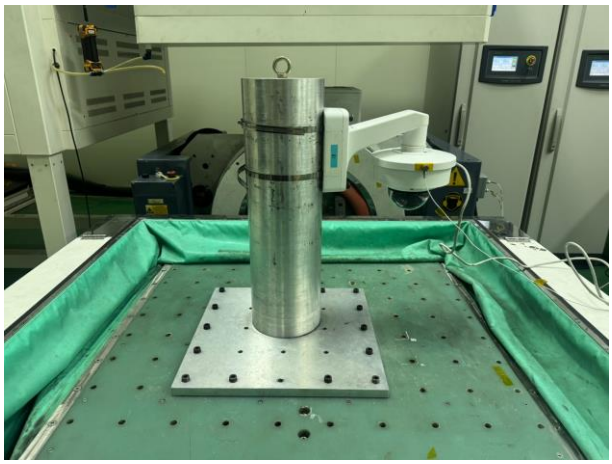
The major units of the CA shall suffer neither permanent mechanical deformation nor any damage that renders the unit inoperable, when subjected to a shock of 10g applied in each of three mutually perpendicular planes.

5.3 Testing images

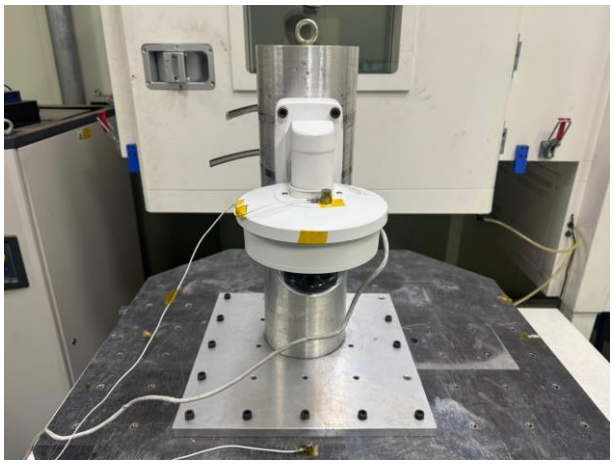
5.3.1 Evidence of test setting (NEMA TS 2-2013 2.2.9)



X axis



Y axis



Z axis

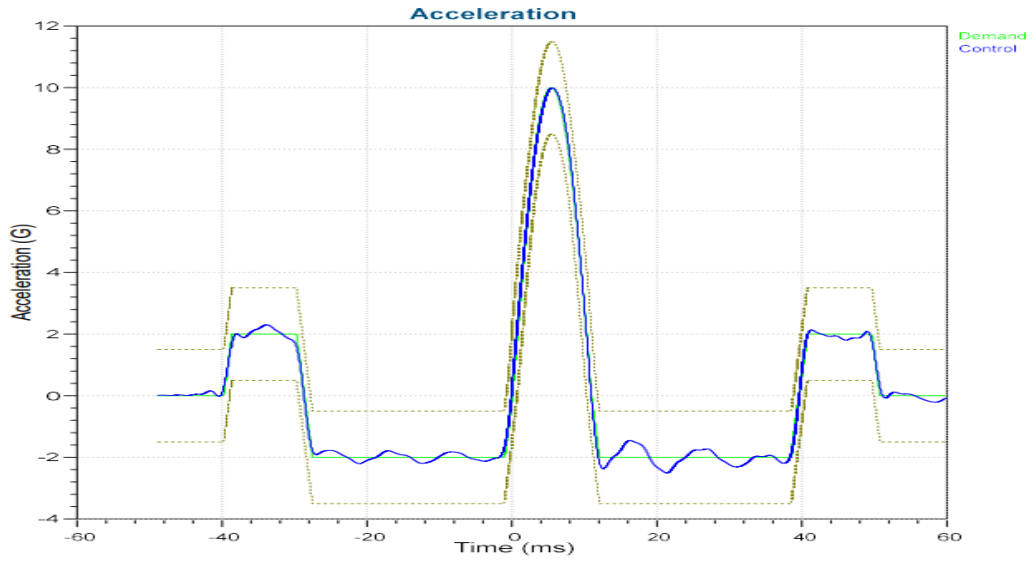
5.4 Test Result

5.4.1 Test result table

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

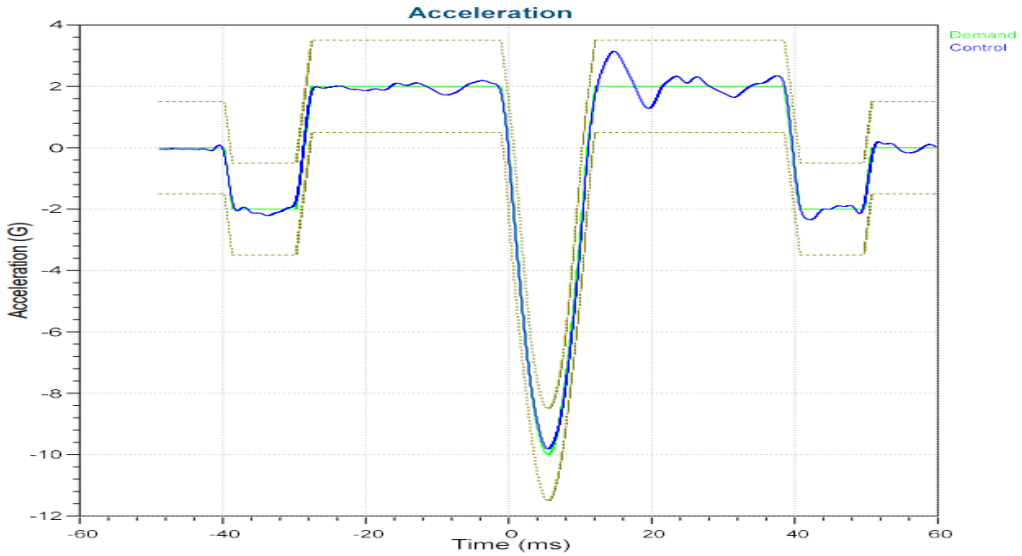
5.5 Test Data

5.5.1 Test Data X Axis



10 21, 2025 11:35:14 Level 1) 100 % Output: 0.7506 Volts peak 2025-08-18 NEMA-TS 2.1.10
Demand: 10 G
Control: 9.991 G Pulse: 1 of 1 Running

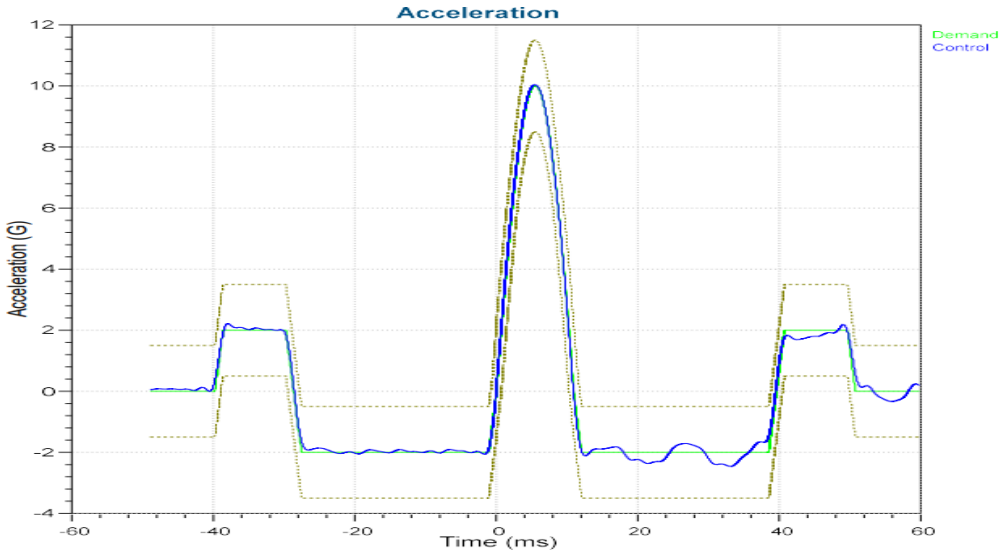
X+



10 21, 2025 11:35:17 Level 2) 100 % Output: 0.7454 Volts peak 2025-08-18 NEMA-TS 2.1.10
Demand: 10 G
Control: 9.815 G Pulse: 1 of 1 End of Test

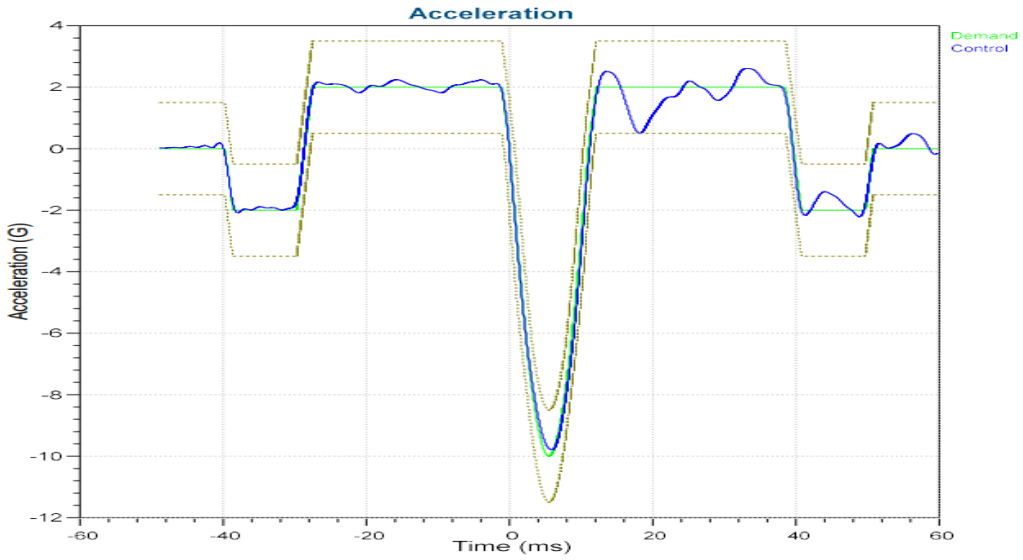
X-

5.5.2 Test Data Y Axis



10 20, 2025 17:02:21 Level 1) 100 % Output: 0.728 Volts peak 2025-08-18 NEMA-TS 2.1.10
Demand: 10 G
Control: 10.04 G Pulse: 1 of 1 Running

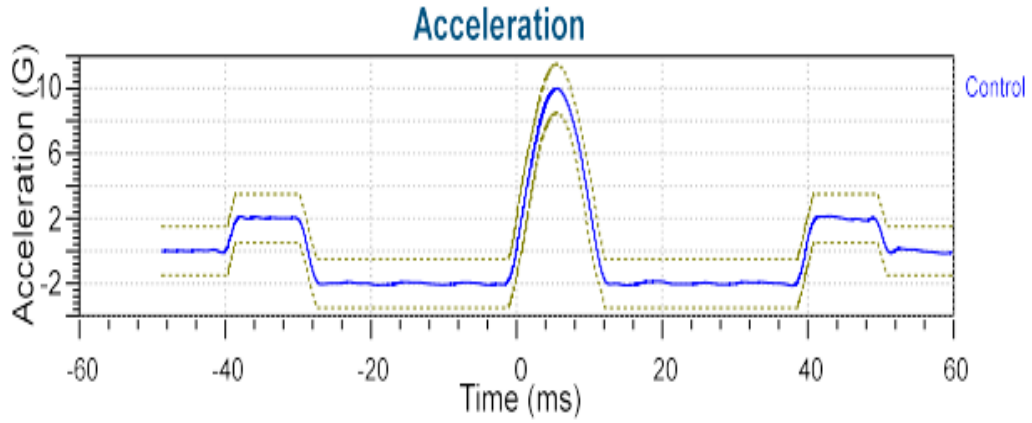
Y+



10 20, 2025 17:02:24 Level 2) 100 % Output: 0.7259 Volts peak 2025-08-18 NEMA-TS 2.1.10
Demand: 10 G
Control: 9.796 G Pulse: 1 of 1 End of Test

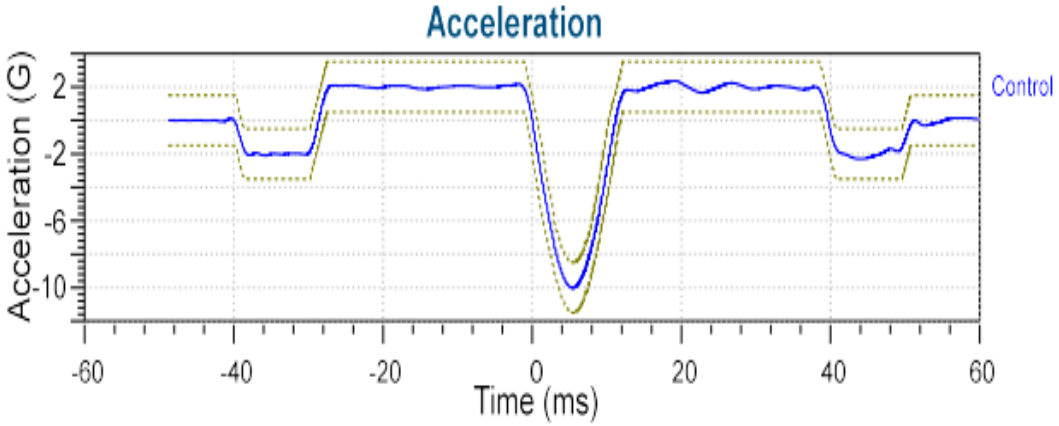
Y-

5.5.3 Test Data Z Axis



10 21, 2025 16:48:54 Level 1) 100 % Output: 0.7139 Volts peak NEMA-TS 2.2.9
Demand: 10 G
Control: 9.989 G Pulse: 1 of 1 Running

Z+



10 21, 2025 16:48:57 Level 2) 100 % Output: 0.7147 Volts peak NEMA-TS 2.2.9
Demand: 10 G
Control: 10.02 G Pulse: 1 of 1 End of Test

Z-

5.6 Post-test product images

5.6.1 Test sample

Top

Bottom

Front

Rear

Left side

Right side

- End -