TEST REPORT

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-2024-00022

1.	**Applicant**	
	◦ Name :	Hanwha Vision Co., Ltd
	◦ Address :	6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488 KOREA
	◦ Date of Receipt :	11 30, 2023
2.	**Manufacturer**	
	◦ Name :	Hanwha Vision Co., Ltd
3.	**Use of Report :**	Quality control
4.	**Test sample / Model :**	NETWORK CAMERA / PNO-A9311R PoE Injector / PT-PSE106GBR-AH-S
5.	**Date(s) of test :**	12 20, 2023 ~ 12 27, 2023
6.	**Test Standard (Method) used :**	Specifications presented by the sponsor (reference NEMA TS 2.2.7 ~ 9)
7.	**Testing Environment :**	Temperature: (25 ±10) ℃, Humidity: (50 ±25) % R.H. Pressure: (96 ±10) kPa
8.	**Test Results :**	Clause 4. 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.
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Approval	Tested by	Technical Manager
	Name: Min-Gi Moon (Signature)	Name: HoHyun Lee (Signature)

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

01 03, 2024

CTK Co., Ltd.

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1. Testing Laboratory

1.1 Testing laboratory information

Lab. Name	CTK Co., Ltd.
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	ctk@e-ctk.com
Website	e-ctk.com

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	PNO-A9311R	1 EA	-
PoE Injector	PT-PSE106GBR-AH-S	1 EA	

Manufacturer's name

Name and address of factory (ies)	1) HANWHA TECHWIN SECURITY VIETNAM CO.,LTD Lot O-2, Que Vo Industrial Zone extended area, Nam Son ward, Bac Ninh city, Bac Ninh province, Vietnam 2) D-TECH CO.,LTD. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (Suwon Industrial Complex)

Model description

Basic Model ..... :	PNO-A9311R
Series model ..... :	PNO-A9311RLP
Model differences ..... :	Use of the same external shape and materials (case, finishing material, PCB, cable, etc.), differences in SW.

2.2 Equipment information

Testing equipment	Model Name	Manufacturer	Manufacturing Number	Calibration Date
Temperature & Humidity Chamber	ARS-0390-AE	ESPEC	4120200113	2024.04.05
VIBRATION TESTING SYSTEM	LT1010	FAMTECH	D2012335	N/A
Acceleration sensor	8703A250M5	KISTLER	5830236	2024-03-27
Acceleration sensor	8703A250M5	KISTLER	5722241	2024-08-17

2.3 Pre-test product images

[PNO-A9311R]

Top

Bottom

Front

Back

[PT-PSE106GBR-AH-S]

Left side

Right side

Label

2.4 Testing equipment images

Name of the image

LT1010

8703A250M5

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3. Test conditions and methods

3.1 Test duration, Environmental conditions, and Location

3.1.1 Test Date : Nov 10, 2023 ~ Nov 14, 2023

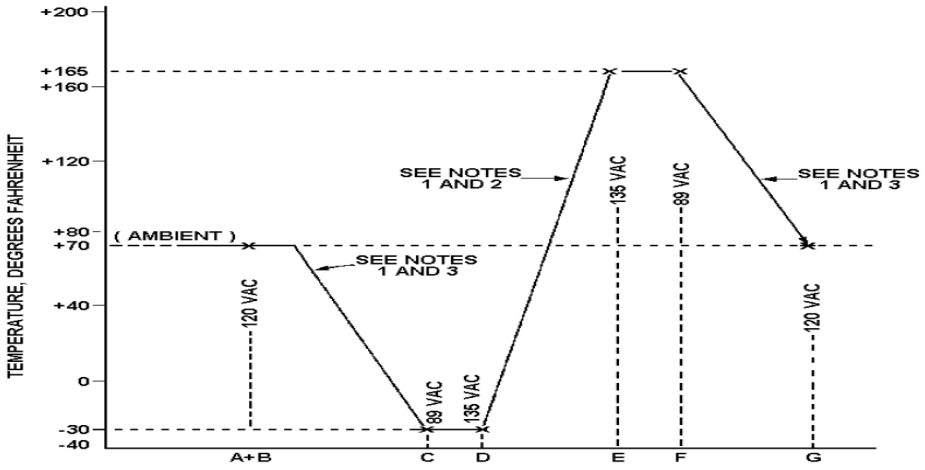
3.1.2 Measured Environmental Conditions

Item	Temperature (℃)	Humidity (% R.H.)	Pressure (kPa)
Measurement	24.5	30.2	94.3

3.2 Test conditions

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

- Sample state : Operating state
- Application step : Step E – Step F
- Applied voltage : Step E – Step F(135 Vac ~ 89 Vac)
- Temperature / Humidity : 74 ℃ = 165 °F
- Test Time(h) : 15
- 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]

3.2.2 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.

3.2.3 Endurance Test[NEMA TS 2-2013 2.2.8.4]

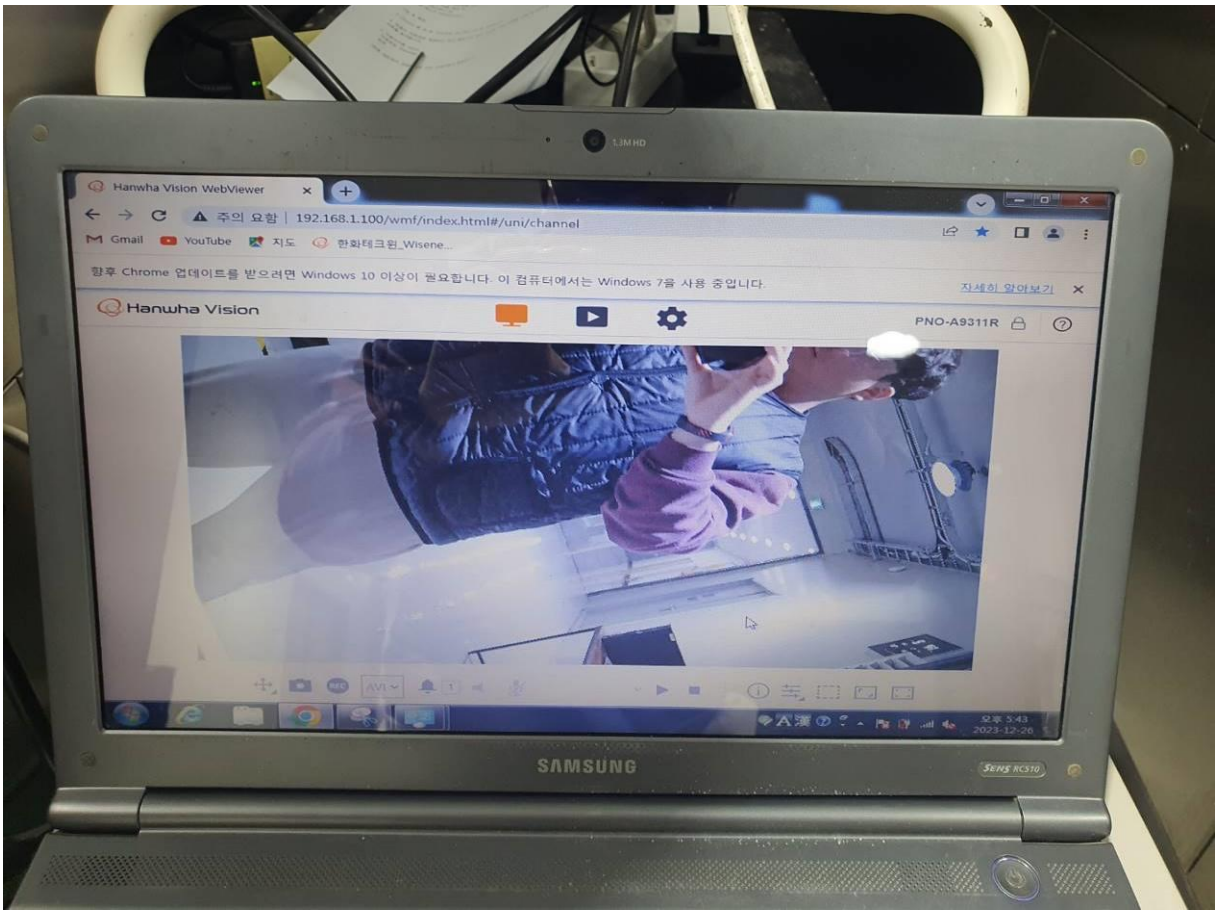
- Sample status : unpackaged / not in operation
- Applied waveform : Sine
- Frequency(Hz) : 30 or 3.2.2 Test results
- Acceleration(G) : 0.5
- Applicable axis : X, Y, Z
- Test time(h) : All 3(Each axis 1)
- Evaluation items
  - Check for mechanical damage before and after testing
- Test methods
  - Vibrate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

3.2.4 Shock(impact) Test[Refer to NEMA TS 2-2013 2.2.9]

- Sample status : unpackaged / not in operation
- Applied waveform : Half sine
- Acceleration(G) : 10
- Nominal duration (ms) : 11
- Applicable axis : X, Y, Z
- Number of impacts : 1 per direction (total 6)
- Evaluation items
  - ■ Check for mechanical damage before and after testing

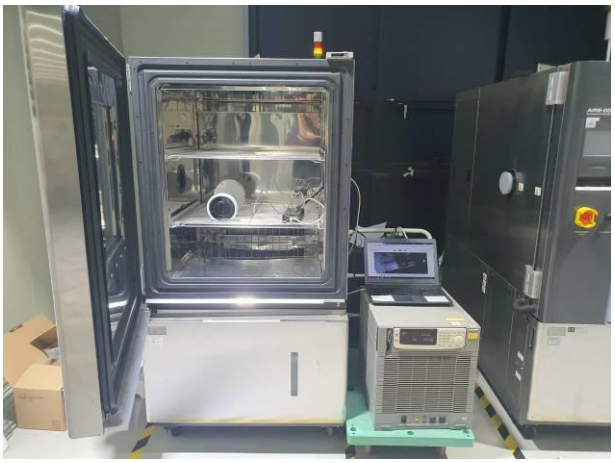
3.3 Testing Image

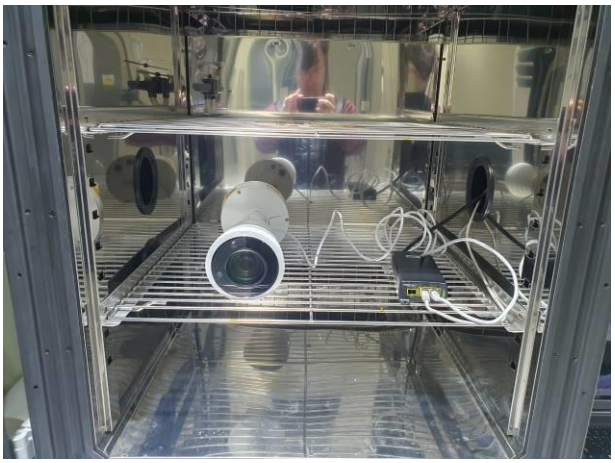
3.3.1 Verification of Normal Operation before testing



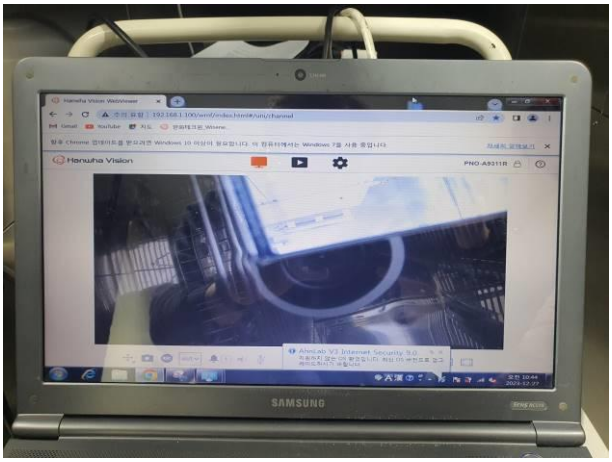
Verification of operation before testing #1

3.3.2 Test Environment Set-up Images

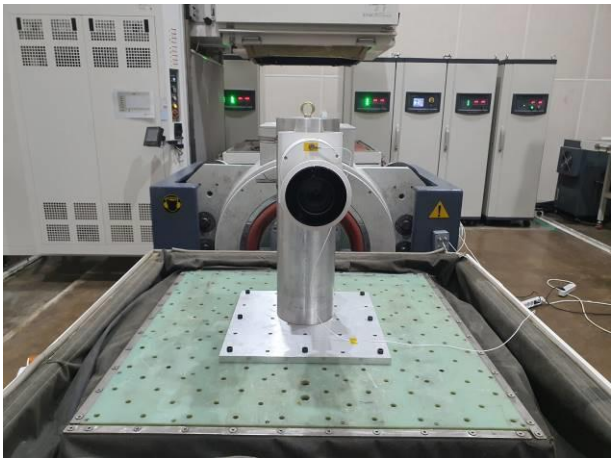




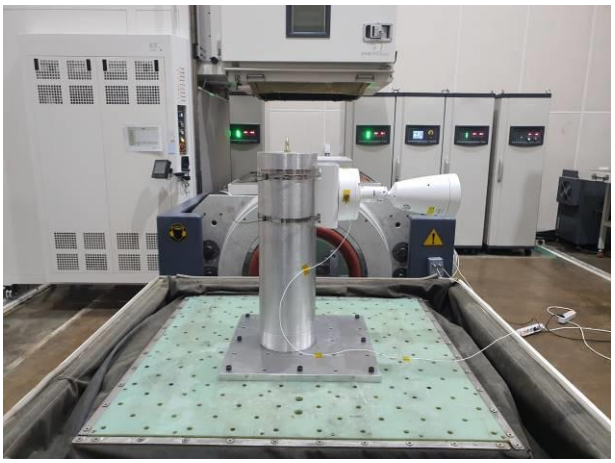
Transient Tests



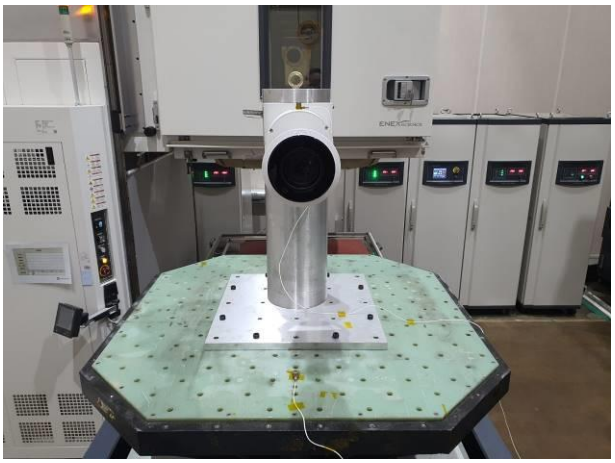
Transient Tests -
Verification of operation during testing



Resonant search - X axis,
Endurance, Test Shock(impact) Test Same configuration



Resonant search - Y axis,
Endurance, Test Shock(impact) Test Same configuration



Resonant search - Z axis,
Endurance, Test Shock(impact) Test Same configuration

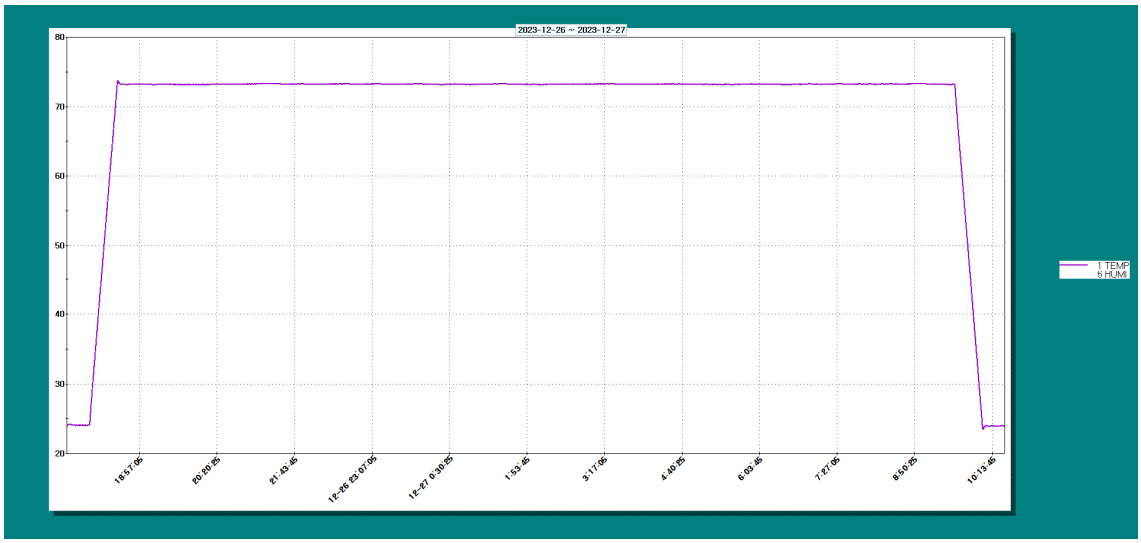
4. Test result

4.1 Test Result Table

Evaluation Criteria		Test Results			Comment
Transient Tests	Before	**Pass**			
	After	**Pass**			
Resonant search		**Axis**	**Resonance check**	**Recorded**	
		X	None	30Hz	
		Y	None	30Hz	
		Z	None	30Hz	
Endurance Test	Before	**Pass**			
	After	**Pass**			
Shock(impact) Test	Before	**Pass**			
	After	**Pass**			

4.2 Data

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



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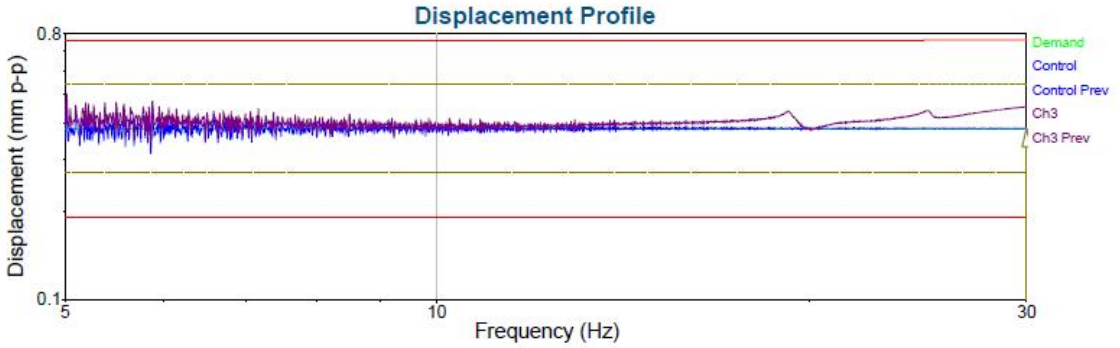
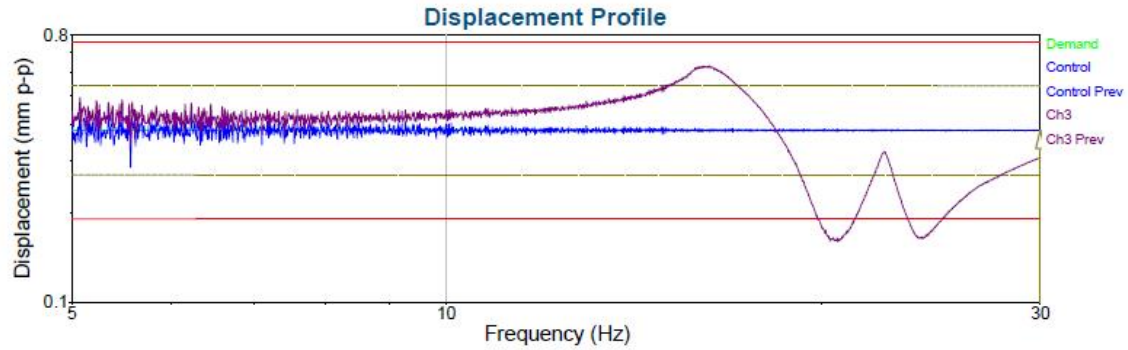
[Resonant search [NEMA TS 2-2013 2.2.8.3]



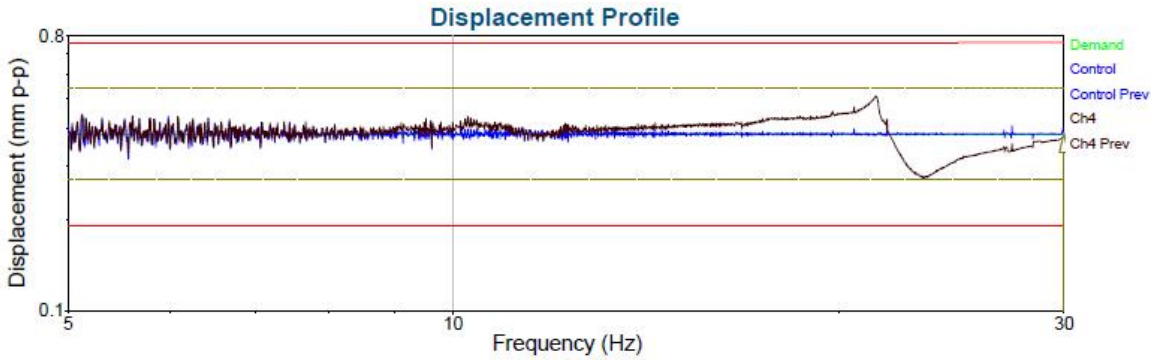
12 20, 2023 17:08:18 Level 1) 100 % Output: 0.04786 Volts peak NEMA TS-2 2.2.8
Demand: 0.381 mm Level Time: 0:12:30 Frequency: 30 Hz
Control: 0.3807 mm Total Time: 0:12:38 End of Sweep Test

X axis



12 21, 2023 09:53:38 Level 1) 100 % Output: 0.04794 Volts peak NEMA TS-2 2.2.8
Demand: 0.381 mm Level Time: 0:12:30 Frequency: 30 Hz
Control: 0.3811 mm Total Time: 0:12:36 End of Sweep Test

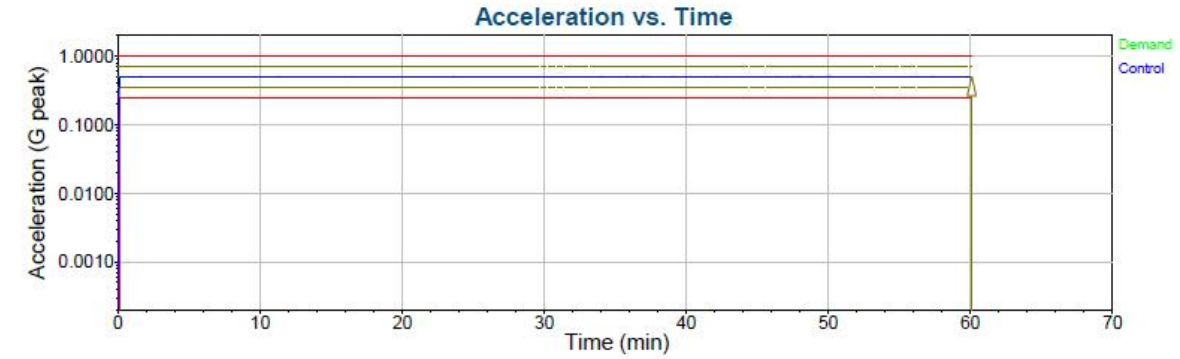
Y axis



12 21, 2023 16:50:48 Level 1) 100 % Output: 0.04776 Volts peak NEMA TS-2 2.2.8
Demand: 0.381 mm Level Time: 0:12:30 Frequency: 30 Hz
Control: 0.3814 mm Total Time: 0:12:39 End of Sweep Test

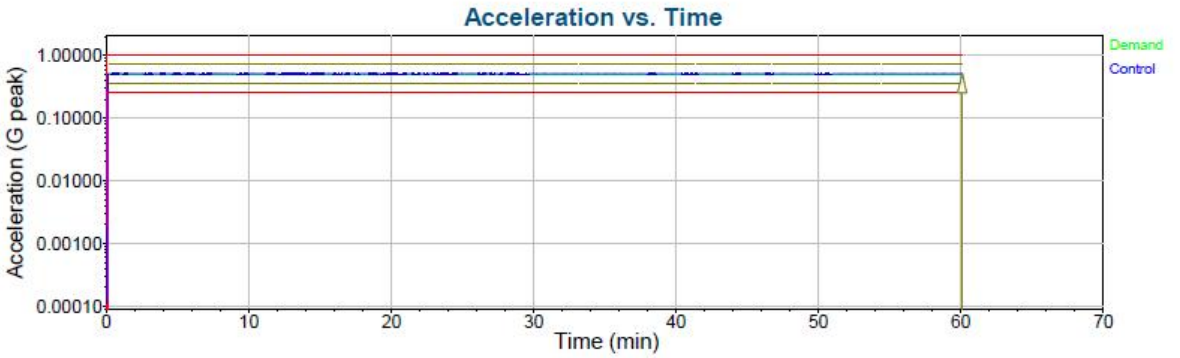
Z axis

[Endurance Test[NEMA TS 2-2013 2.2.8.4]



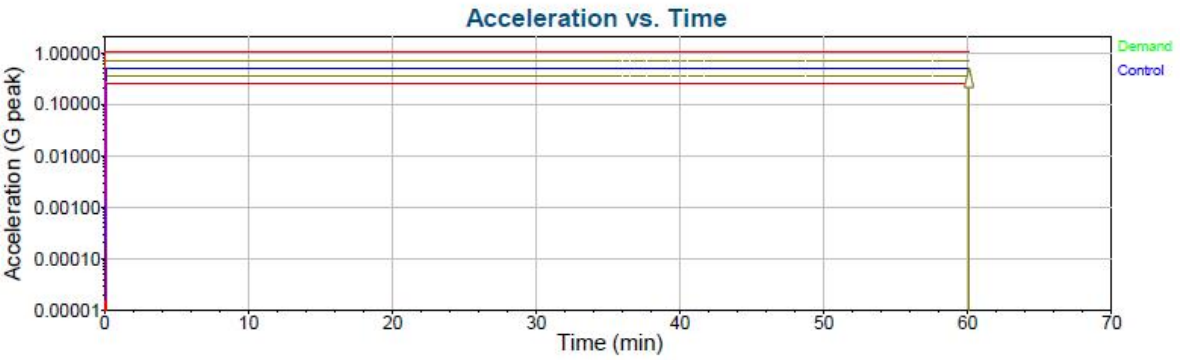
12 20, 2023 18:39:26 | Level 1) 100 % | Output: 0.03479 Volts peak | NEMA TS-2 2.2.8 내구
Demand: 0.5 G | Level Time: 1:00:00 | Frequency: 30 Hz
Control: 0.4999 G | Total Time: 1:00:07 | End of Timed Test

X axis



12 21, 2023 10:53:51 | Level 1) 100 % | Output: 0.03454 Volts peak | NEMA TS-2 2.2.8 내구
Demand: 0.5 G | Level Time: 1:00:00 | Frequency: 30 Hz
Control: 0.5002 G | Total Time: 1:00:06 | End of Timed Test

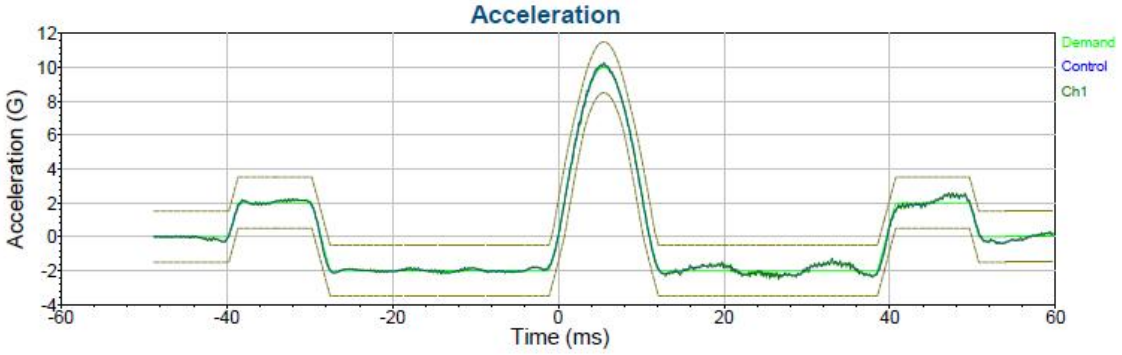
Y axis



12 22, 2023 11:25:12 | Level 1) 100 % | Output: 0.03499 Volts peak | NEMA TS-2 2.2.8 내구
Demand: 0.5 G | Level Time: 1:00:00 | Frequency: 30 Hz
Control: 0.4994 G | Total Time: 1:00:06 | End of Timed Test

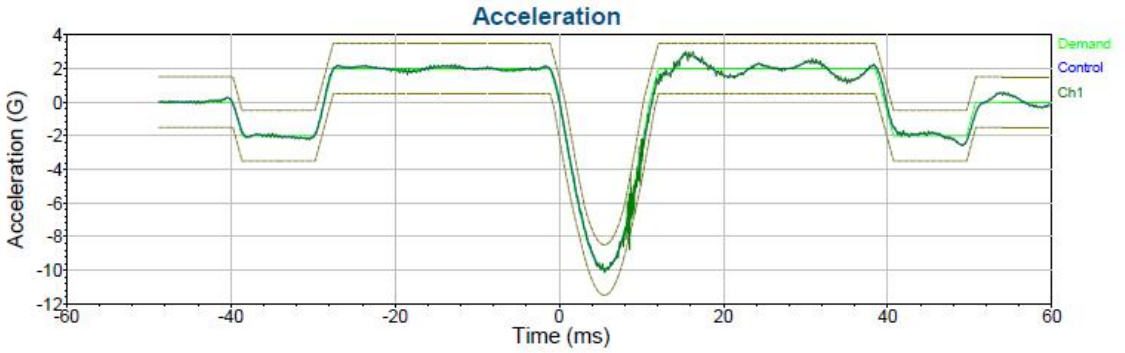
Z axis

[Shock(impact) Test[Refer to NEMA TS 2-2013 2.2.9]



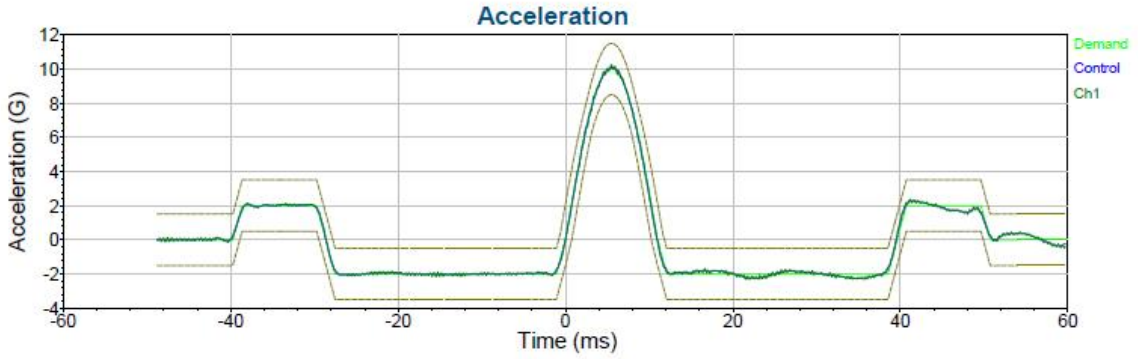
12 21, 2023 09:35:11 Level 1) 100 % Output: 0.5165 Volts peak 10G 11ms 1회
Demand: 10 G
Control: 10.15 G Pulse: 1 of 1 Running

+X axis



12 21, 2023 09:35:17 Level 2) 100 % Output: 0.5114 Volts peak 10G 11ms 1회
Demand: 10 G
Control: 9.939 G Pulse: 1 of 1 End of Test

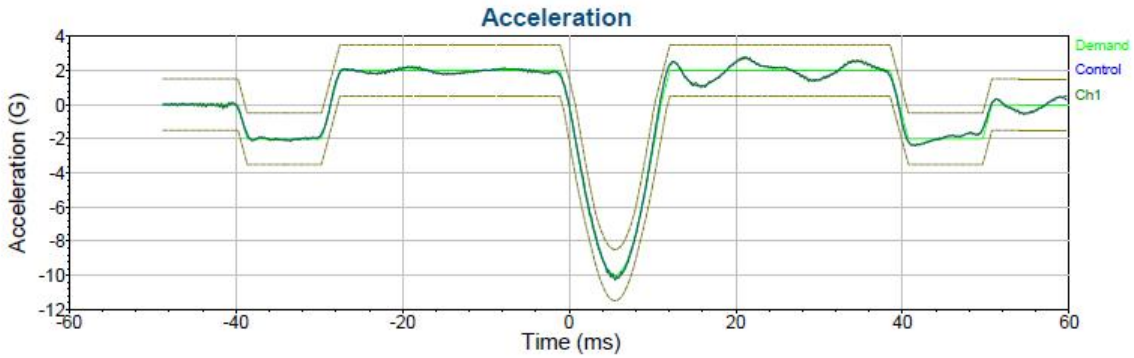
-X axis



12 21, 2023 10:58:40 Level 1) 100 % Output: 0.5172 Volts peak 10G 11ms 1회
Demand: 10 G
Control: 10.1 G Pulse: 1 of 1 Running

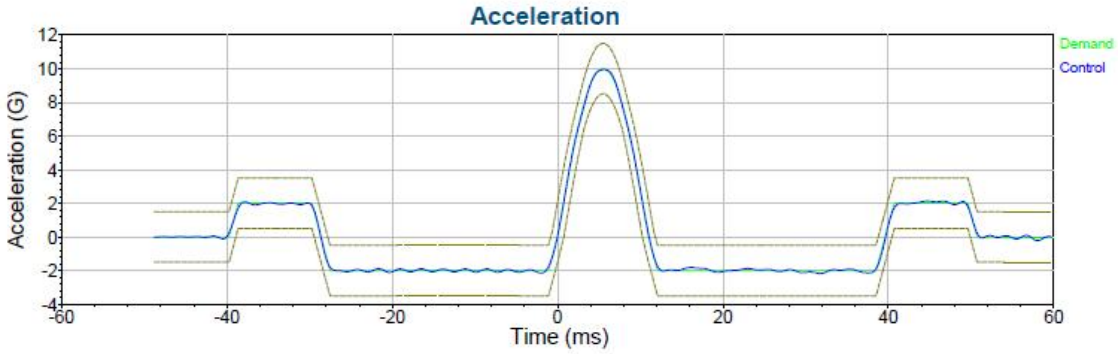
+Y axis

[Shock(impact) Test[Refer to NEMA TS 2-2013 2.2.9]



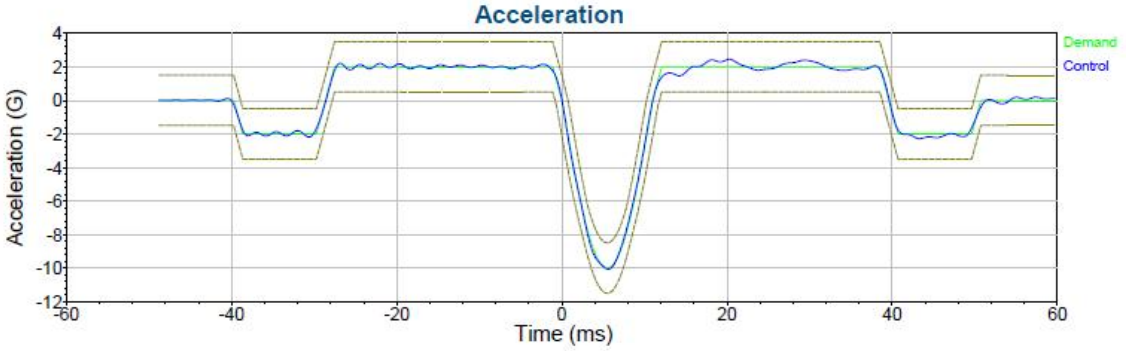
12 21, 2023 10:58:46 Level 2) 100 % Output: 0.5192 Volts peak 10G 11ms 1회
Demand: 10 G
Control: 10.15 G Pulse: 1 of 1 End of Test

-Y axis



12 22, 2023 11:37:09 Level 1) 100 % Output: 0.514 Volts peak 10G 11ms 1회
Demand: 10 G
Control: 9.935 G Pulse: 1 of 1 Running

+Z axis

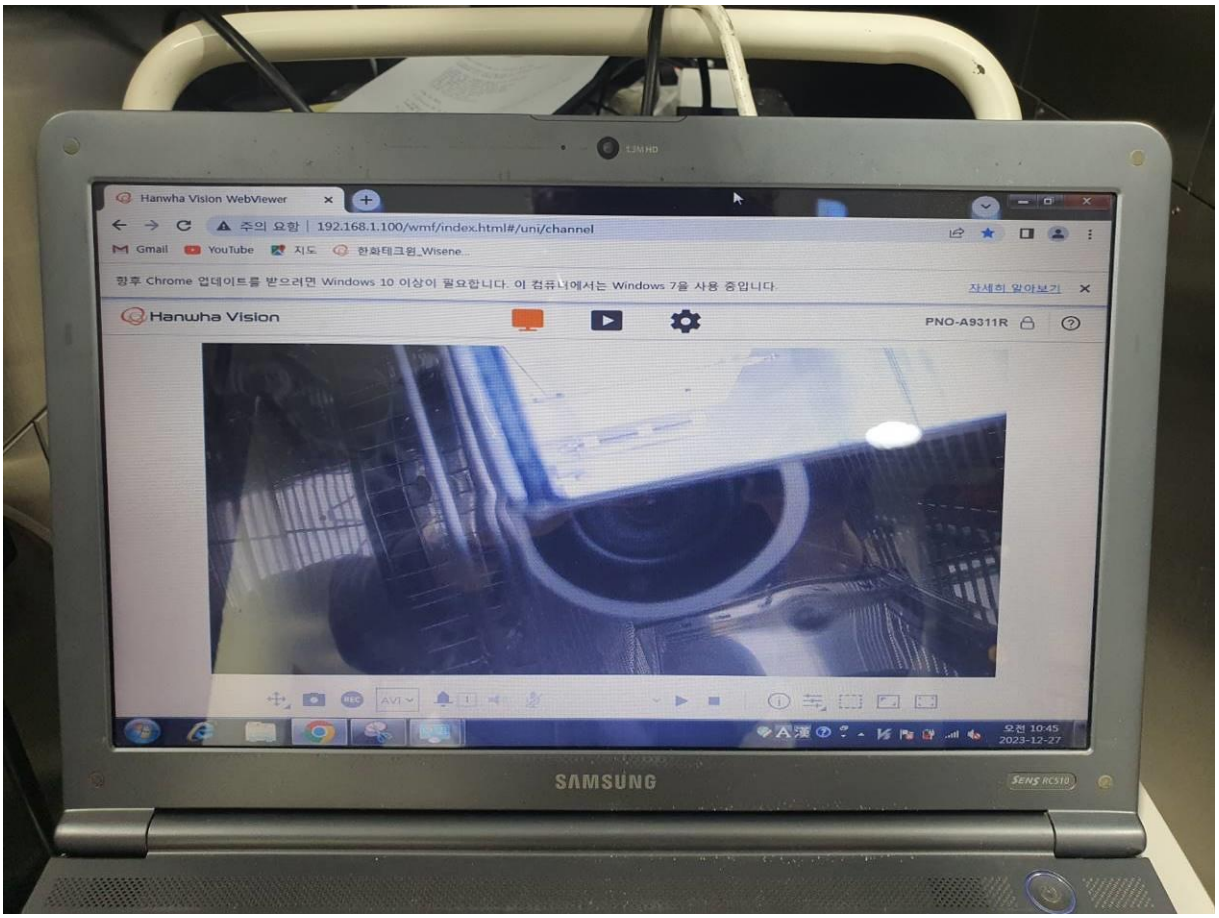


12 22, 2023 11:37:15 Level 2) 100 % Output: 0.5094 Volts peak 10G 11ms 1회
Demand: 10 G
Control: 10.06 G Pulse: 1 of 1 End of Test

-Z axis

4.3 Post-Test Product Images

4.3.1 Verification of Normal Operation after testing



Verification of Normal Operation after testing #1

- End -