

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-2024-00228
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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 / TNM-C4950TD
PoE Injector / PT-PSE106GBR-AH-S

5. Date(s) of test :

01 16, 2024 ~ 01 19, 2024

6. Test Standard (Method) used :

Specifications presented by the sponsor
(reference NEMA TS 2.2.7 ~ 9)

7. Testing Environment :

Temperature: (25 ±10) °C, 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,
144, Dongbu-ro, 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 23, 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	TNM-C4950TD	1 EA	-
PoE Injector	PT-PSE106GBR-AH-S	1 EA	

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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)
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Model description

Basic Model	TNM-C4950TD
Series model	TNM-C4940TD, TNM-C4960TD, TNM-C4940TDR, TNM-C4942TDR
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	GT1000M	FAMTECH	D1803072	N/A
VIBRATION TESTING SYSTEM	GT1000M	FAMTECH	D1803072-1	N/A
Acceleration sensor	8703A250M5	KISTLER	5830236	2024-03-27
Acceleration sensor	8703A250M5	KISTLER	5722241	2024-08-17

2.3 Pre-test product images

[TNM-C4950TD]



Top



Bottom



Front



Back



Left side



Right side



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[PT-PSE106GBR-AH-S]



Top



Bottom



Front



Back



Left side



Right side

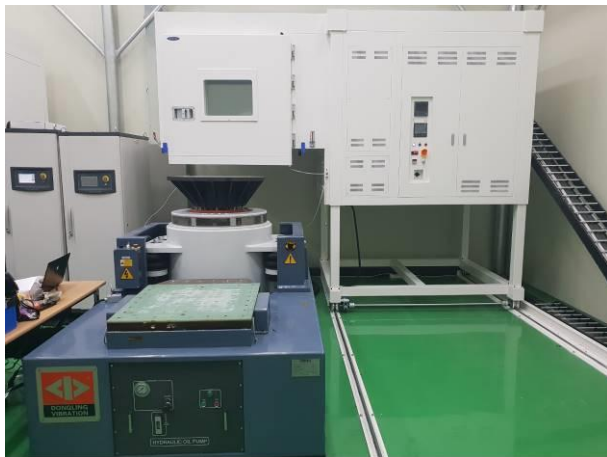
2.4 Testing equipment images



ARS-0390-AE



GT1000M



GT1000M



8703A250M5



8703A250M5

3. Test conditions and methods

3.1 Test duration, Environmental conditions, and Location

3.1.1 Test Date : 01 16, 2024 ~ 01 19, 2024

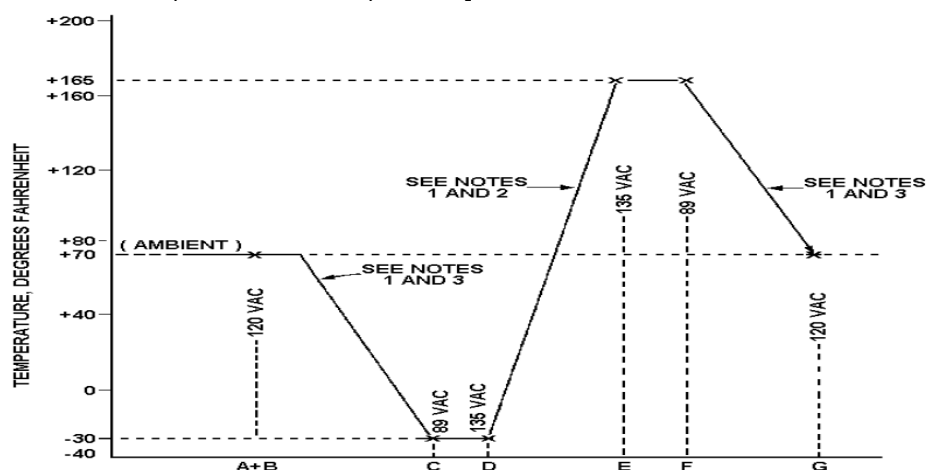
3.1.2 Measured Environmental Conditions

Item	Temperature (°C)	Humidity (% R.H.)	Pressure (kPa)
Measurement	25.7	31.4	91.1

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 °C = 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]

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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 one 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.

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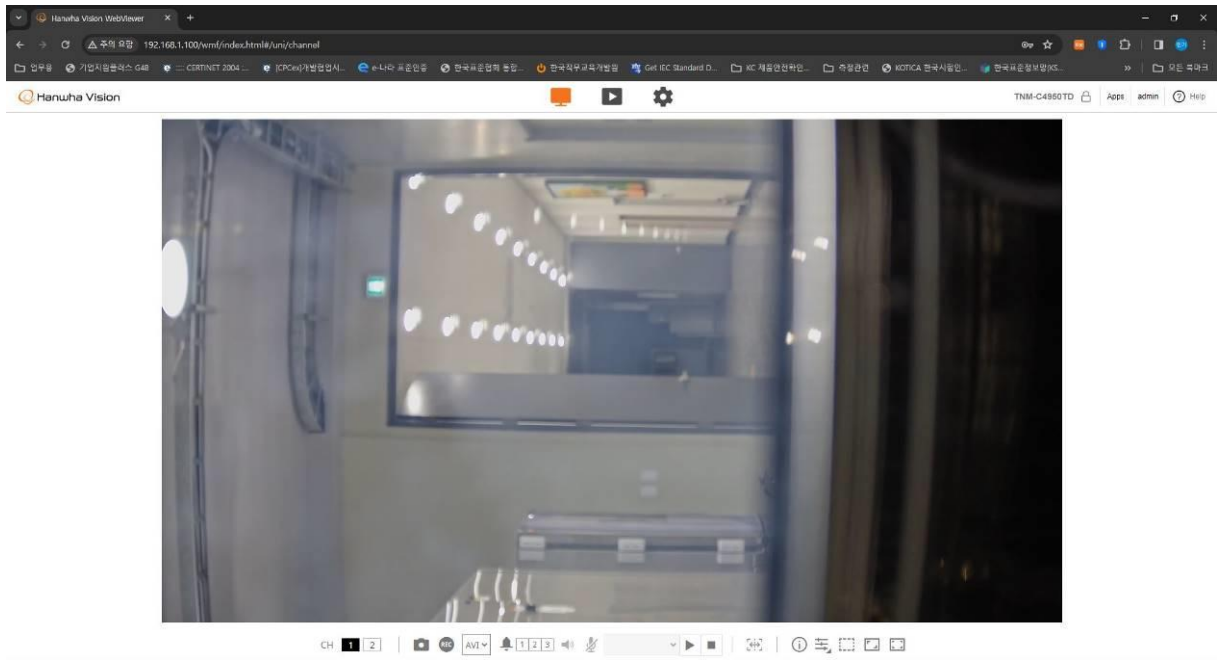
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3.2.4 Shock(impact) Test[Refer to NEMA TS 2-2013 2.2.9]

- 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

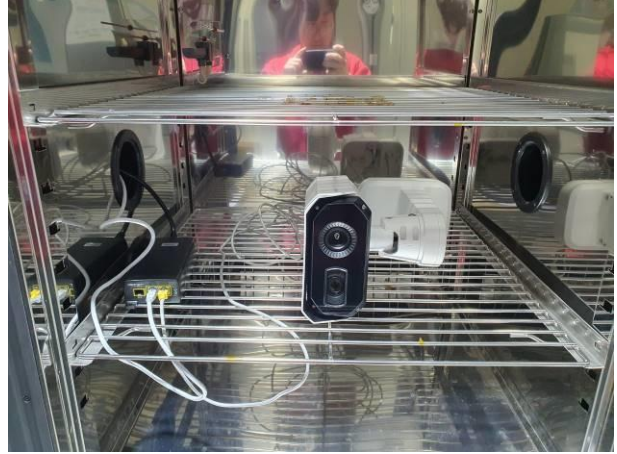
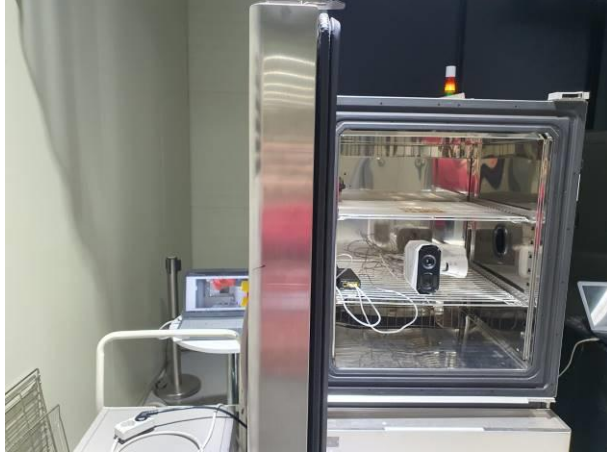
3.3 Testing Image

3.3.1 Verification of Normal Operation before testing

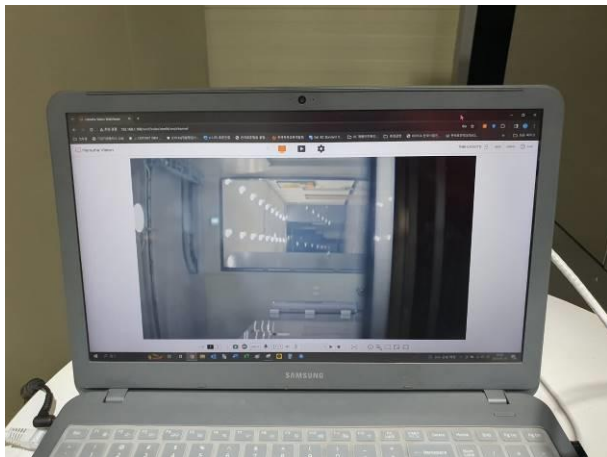


Verification of operation before testing

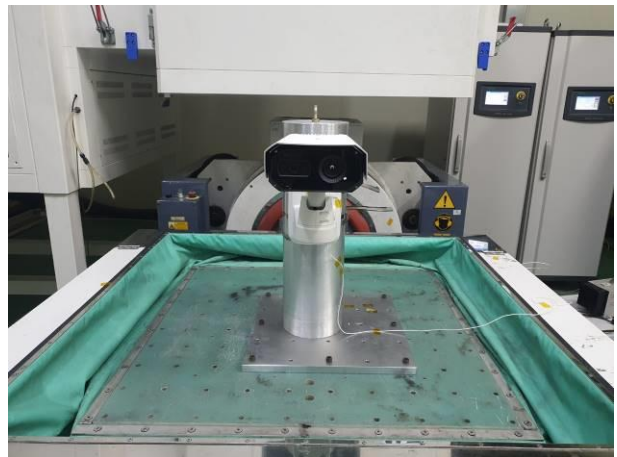
3.3.2 Test Environment Set-up Images



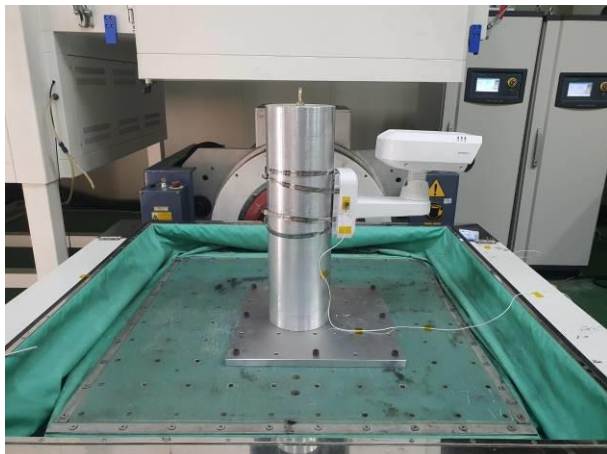
Transient Tests



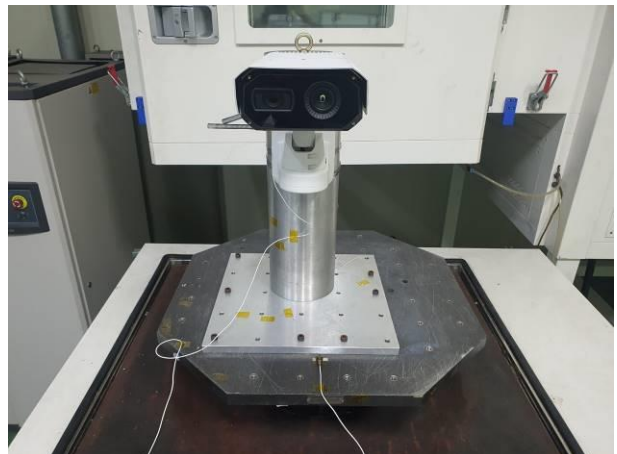
Transient Tests -
Verification of operation during testing



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

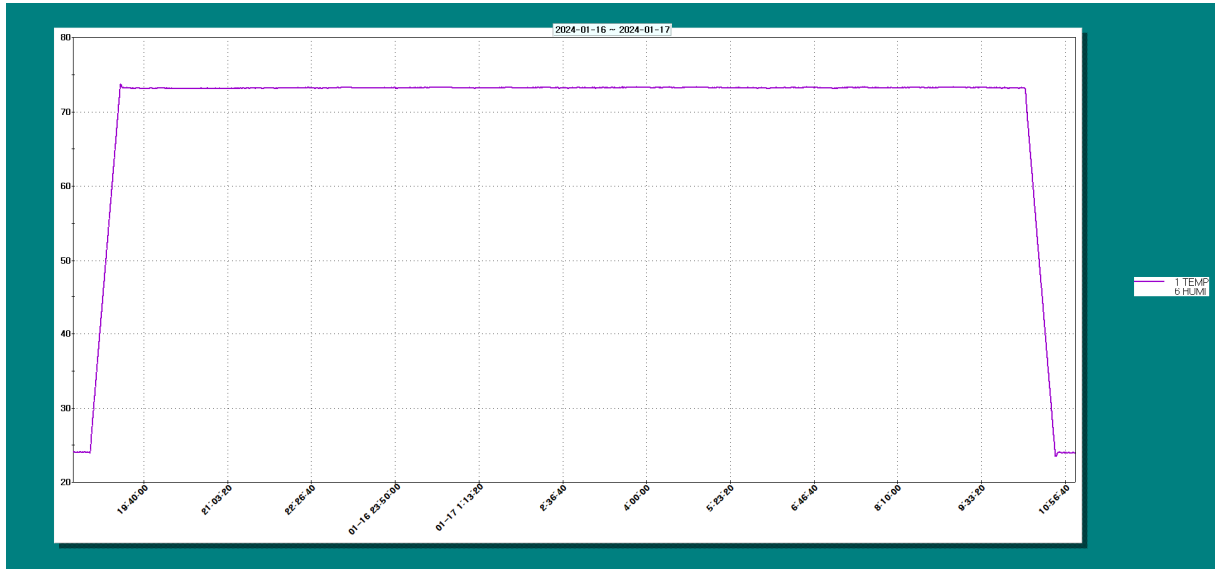
4. Test result

4.1 Test Result Table

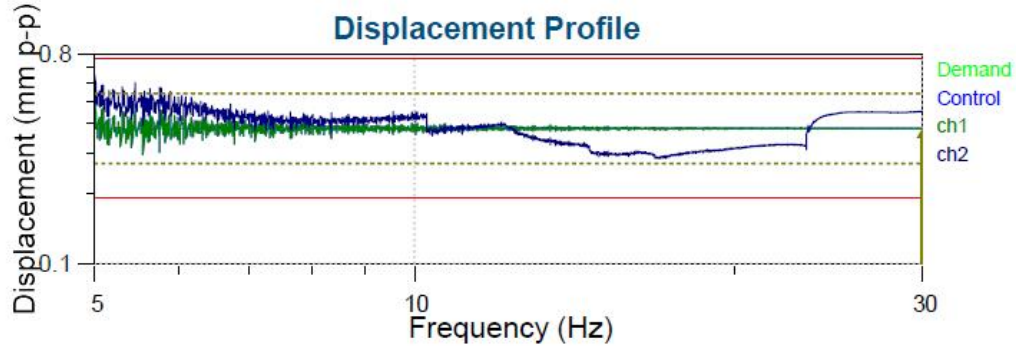
Evaluation Criteria		Test Results			Comment
Transient Tests	Before	Pass			
	After	Pass			
Resonant search		Axis	Resonance check	Recorded	
		X	None	30 Hz	
		Y	None	30 Hz	
		Z	None	30 Hz	
Endurance Test	Before	Pass			
	After	Pass			
Shock(impact) Test	Before	Pass			
	After	Pass			

4.2 Data

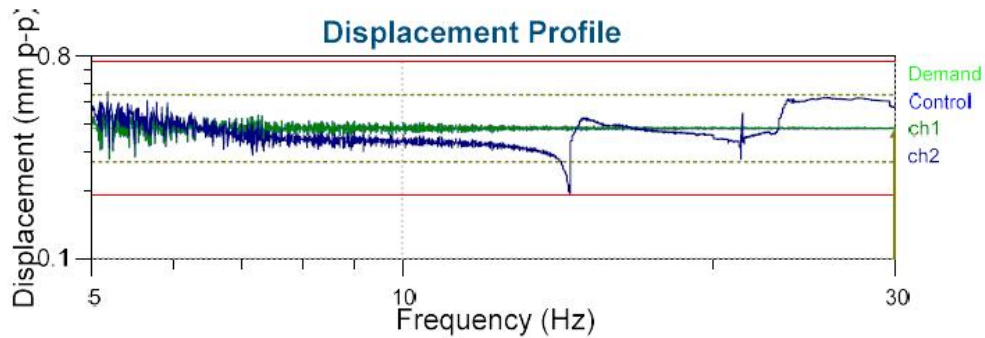
[Transient Tests(Power Service)[NEMA TS 2-2013 2.2.7.2 Test B – 13. C]]



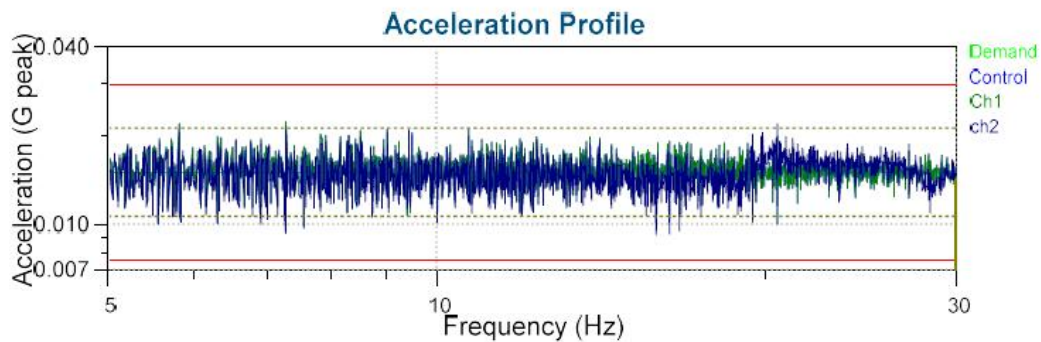
[Resonant search [NEMA TS 2-2013 2.2.8.3]



1 17, 2024 19:44:3: Level 1) 100 % Output: 0.06952 Volts per NEMA TS-2 2.2.8 - search
Demand: 0.381 mrr Level Time: 0:12:30 Frequency: 30 H
Control: 0.3811 mrr Total Time: 0:12:40 End of Sweep Test
X axis

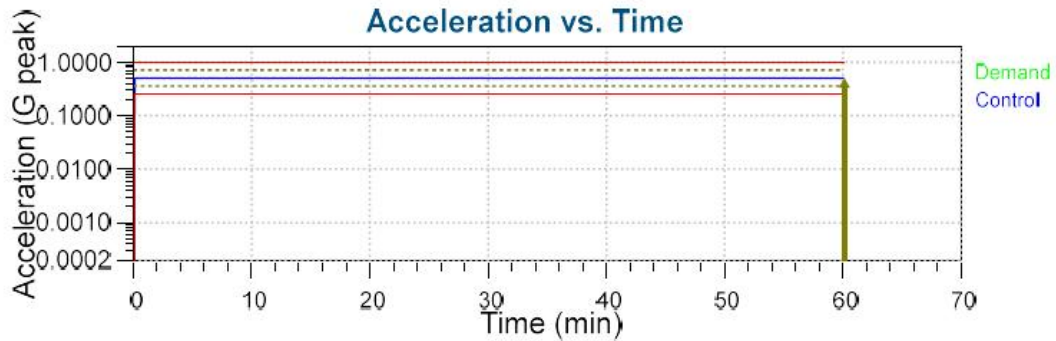


1 18, 2024 10:00:0: Level 1) 100 % Output: 0.06949 Volts per NEMA TS-2 2.2.8 - search
Demand: 0.381 mrr Level Time: 0:12:30 Frequency: 30 H
Control: 0.3817 mrr Total Time: 0:12:40 End of Sweep Test
Y axis



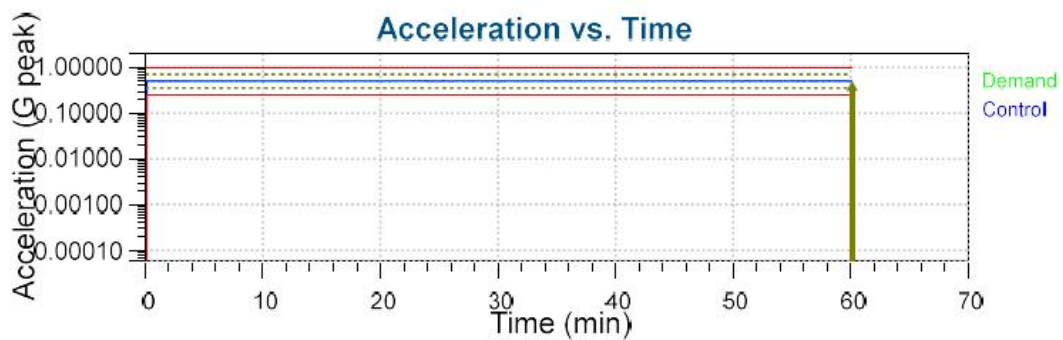
1 19, 2024 15:31:1: Level 1) 100 % Output: 0.001678 Volts per NEMA TS-2 2.2.8 - search
Demand: 0.015 C Level Time: 0:12:30 Frequency: 30 Hz
Control: 0.01459 C Total Time: 0:12:36 End of Sweep Test
Z axis

[Endurance Test[NEMA TS 2-2013 2.2.8.4]



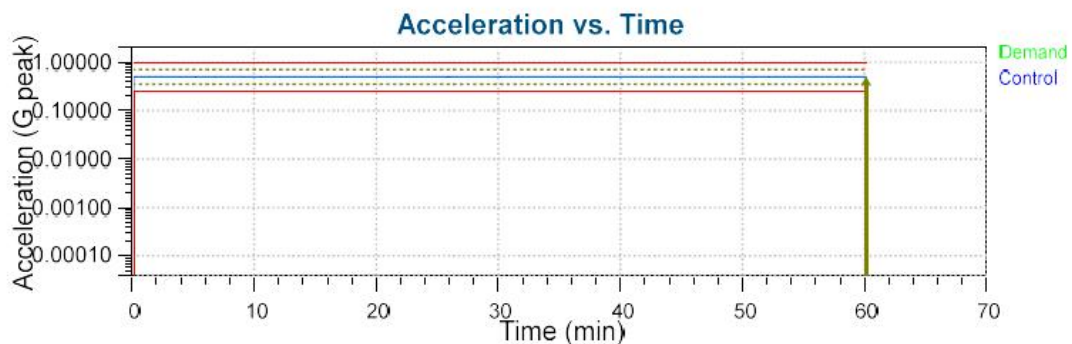
1 17, 2024 20:49:16 Level 1) 100 % at 30 H Output: 0.05011 Volts peak NEMA TS-2 2.2.8 -
Demand: 0.5 G Level Time: 1:00:00 Frequency: 30 H
Control: 0.5003 G Total Time: 1:00:00 End of Timed Test

X axis



1 18, 2024 11:03:57 Level 1) 100 % at 30 H Output: 0.05011 Volts peak NEMA TS-2 2.2.8 -
Demand: 0.5 G Level Time: 1:00:00 Frequency: 30 H
Control: 0.5006 G Total Time: 1:00:00 End of Timed Test

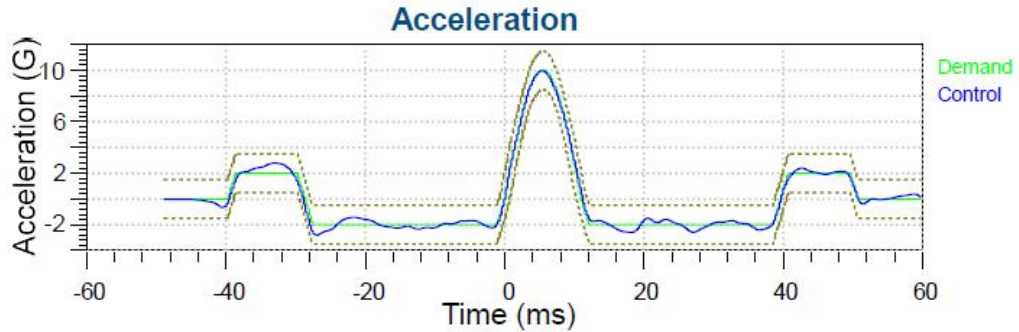
Y axis



1 19, 2024 16:33:16 Level 1) 100 % at 30 H Output: 0.04713 Volts peak NEMA TS-2 2.2.8 -
Demand: 0.5 G Level Time: 1:00:00 Frequency: 30 Hz
Control: 0.4988 G Total Time: 1:00:00 End of Timed Test

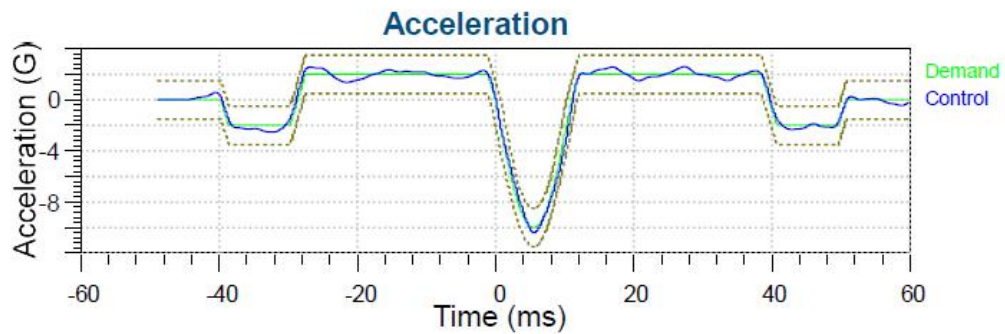
Z axis

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



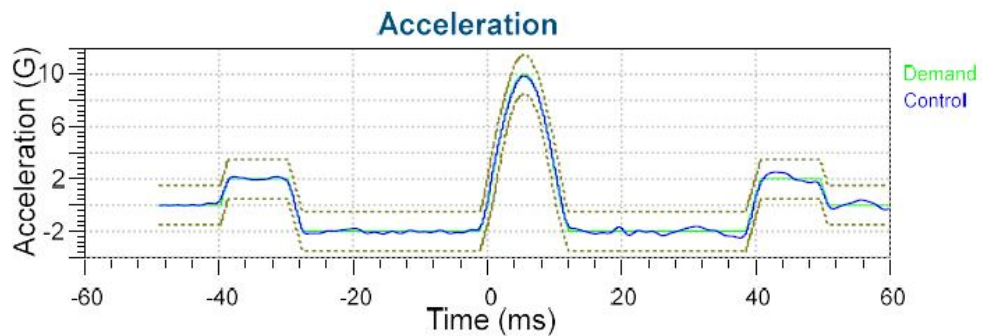
1 17, 2024 19:48:1 Level 1) 100 % Output: 0.7423 Volts pe NEMA TS-2 2.2
Demand: 10
Control: 9.964 Pulse: 1 of Runnin

+X axis



1 17, 2024 19:48:1 Level 2) 100 % Output: 0.7497 Volts pe NEMA TS-2 2.2
Demand: 10
Control: 10.4 Pulse: 1 of End of Tes

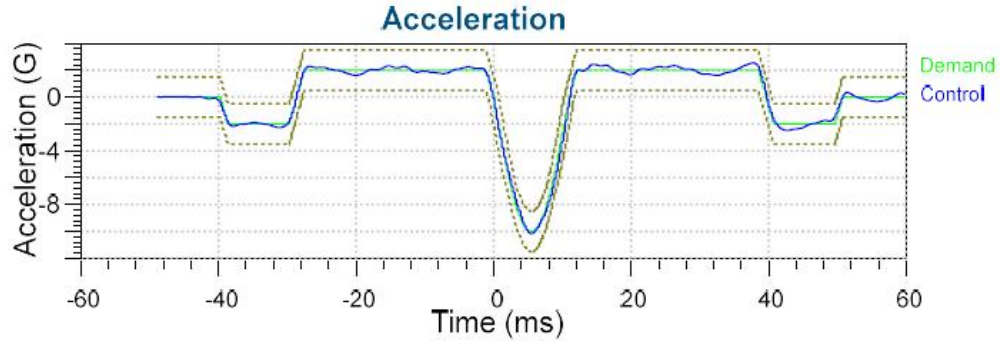
-X axis



1 18, 2024 10:01:1 Level 1) 100 % Output: 0.7504 Volts pe NEMA TS-2 2.2
Demand: 10
Control: 9.864 Pulse: 1 of Runnin

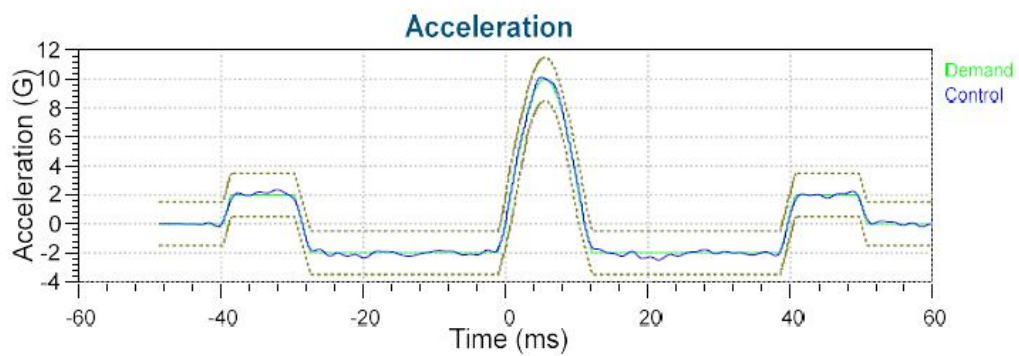
+Y axis

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



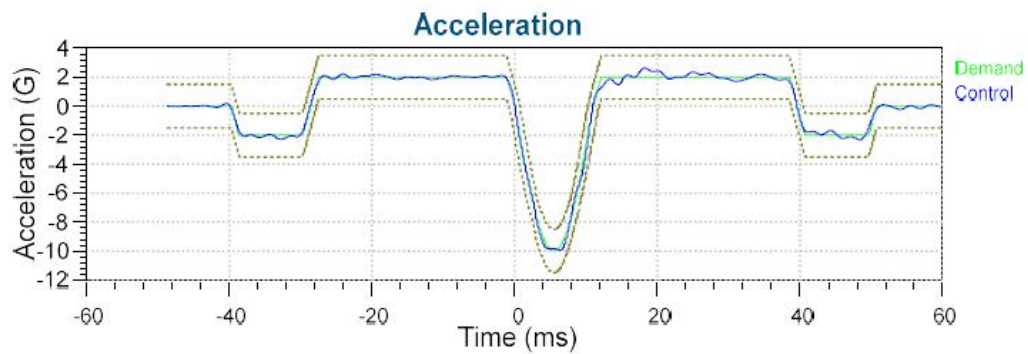
1 18, 2024 10:02:1 Level 2) 100 % Output: 0.7512 Volts peak NEMA TS-2 2.2
Demand: 10
Control: 10.16 Pulse: 1 of End of Test

-Y axis



1 19, 2024 15:32:1 Level 1) 100 % Output: 0.6942 Volts peak NEMA TS-2 2.2.5
Demand: 10 G
Control: 10.13 G Pulse: 1 of 1 Running

+Z axis

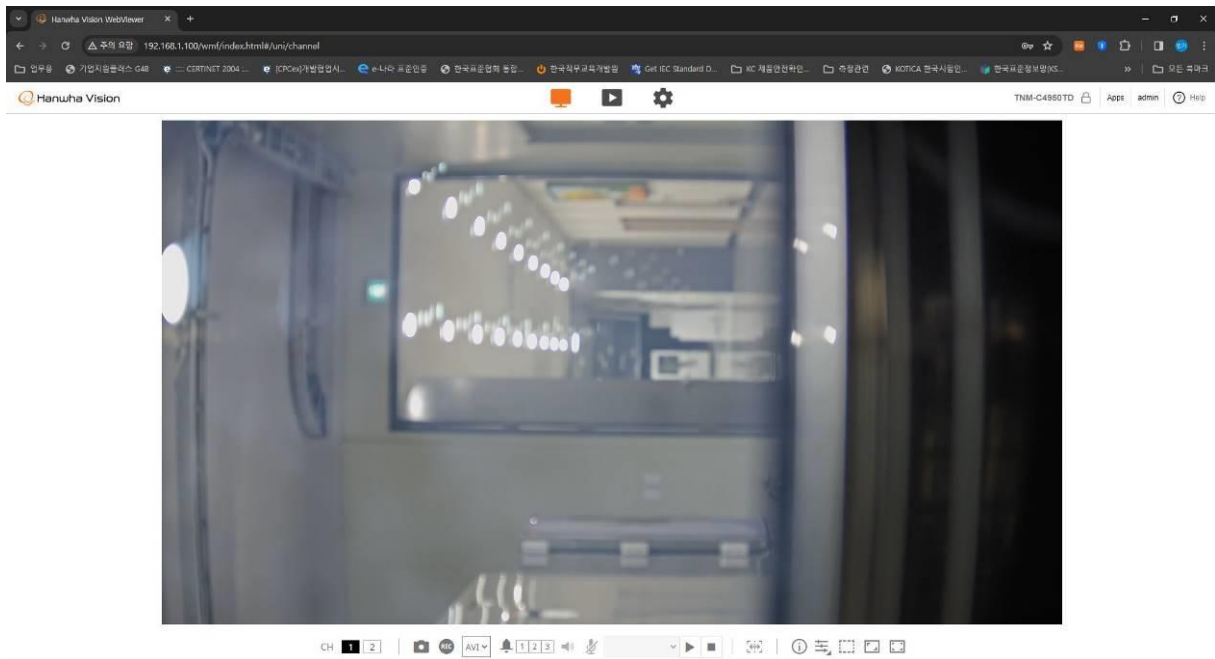


1 19, 2024 15:32:2 Level 2) 100 % Output: 0.6911 Volts peak NEMA TS-2 2.2.5
Demand: 10 G
Control: 9.946 G Pulse: 1 of 1 End of Test

-Z axis

4.3 Post-Test Product Images

4.3.1 Verification of Normal Operation after testing



Verification of Normal Operation after testing

- End -