

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-2024-00229
Page (1) / (20) 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 : 11 30, 2023

2. Manufacturer

- Name : Hanwha Vision Co., Ltd

3. Use of Report :

Quality control

4. Test sample / Model :

NETWORK CAMERA / PNM-9084RQZ1
PoE Injector / PT-PSE109GBRO-AH

5. Date(s) of test :

01 17, 2024 ~ 01 31, 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.
This report cannot be reproduced or copied without the written consent of CTK

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.

02 06, 2024

CTK Co., Ltd.

Table of contents

1. Testing Laboratory _____	3
1.1 Testing laboratory information	3
1.2 Testing laboratory accreditation status	3
2. Product description and Equipment information _____	3
2.1 Product description	3
2.2 Equipment information	4
2.3 Pre-test product images	5
2.4 Testing equipment images	7
3. Test conditions and methods _____	8
3.1 Test duration, Environmental conditions, and Location ..	8
3.2 Test conditions	8
3.3 Testing Image	11
4. Test result _____	13
4.1 Test Result Table	13
4.2 Data	14
4.3 Post-Test Product Images	20

 CTK Co., Ltd. The Prime Leader of Global Regulatory Compliance	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-2024-00229 Page (3) / (20) pages	
--	---	---	--

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	PNM-9084RQZ1	1 EA	-
PoE Injector	PT-PSE109GBRO-AH	1 EA	

 CTK Co., Ltd. The Prime Leader of Global Regulatory Certification	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-2024-00229 Page (4) / (20) pages	
---	---	--	--

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 :	PNM-9084RQZ1
Series model :	PNM-9084RQZ, PNM-9085RQZ, PNM-9085RQZ1
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

[PNM-9084RQZ1]



Top



Bottom



Front



Back



Left side



Right side

[PT-PSE106GBR-AH-S]



Top



Bottom



Front



Back



Left side



Right side

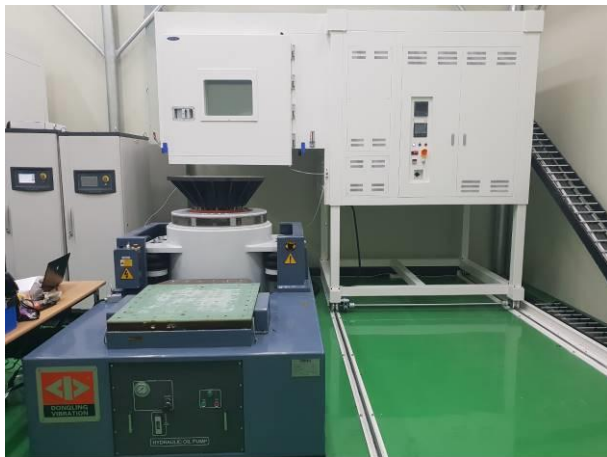
2.4 Testing equipment images



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 17, 2024 ~ 01 31, 2024

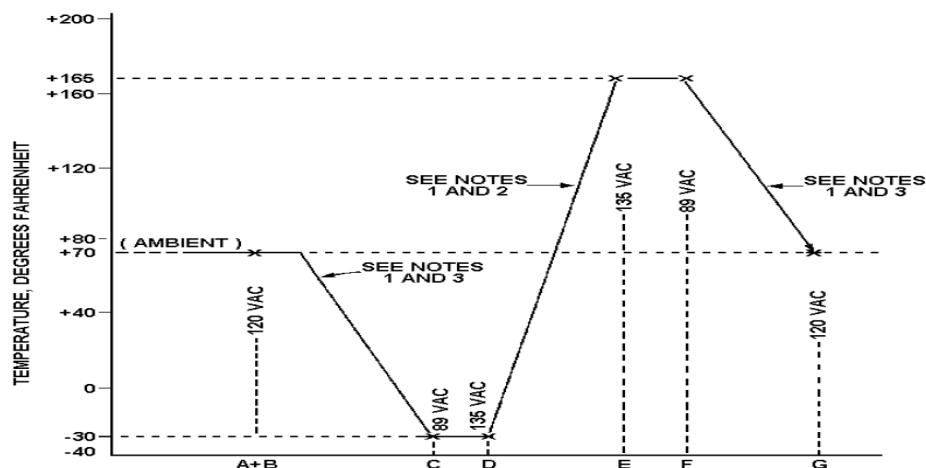
3.1.2 Measured Environmental Conditions

Item	Temperature (°C)	Humidity (% R.H.)	Pressure (kPa)
Measurement	24.3	31.4	91.2

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]

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.

**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

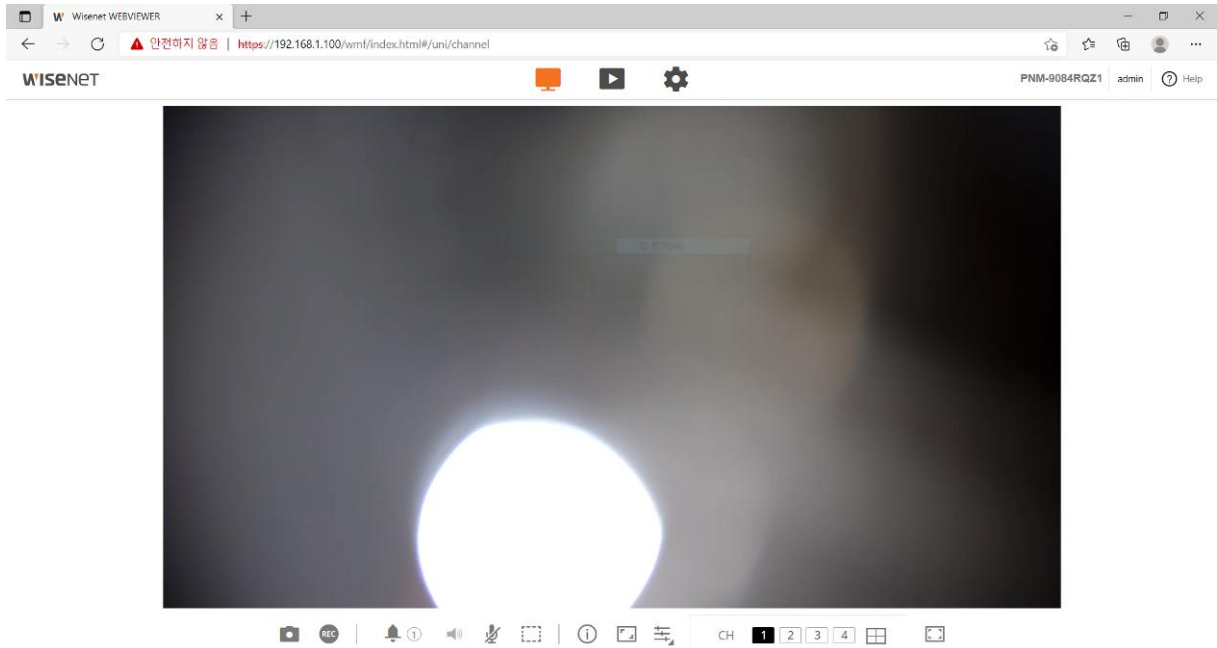
REPORT No.:
CTK-2024-00229
Page (10) / (20) pages

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

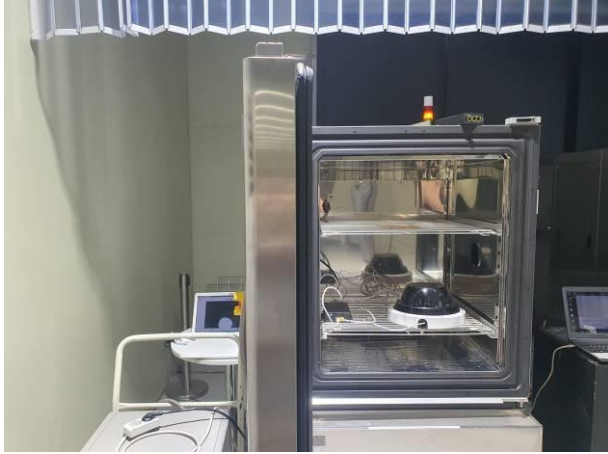
3.3 Testing Image

3.3.1 Verification of Normal Operation before testing

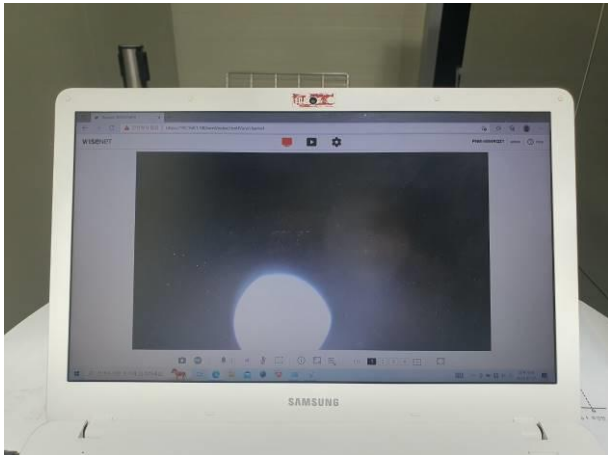


Verification of operation before testing

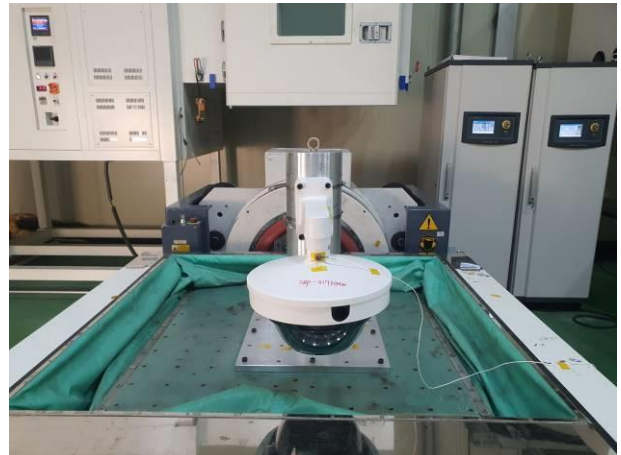
3.3.2 Test Environment Set-up Images



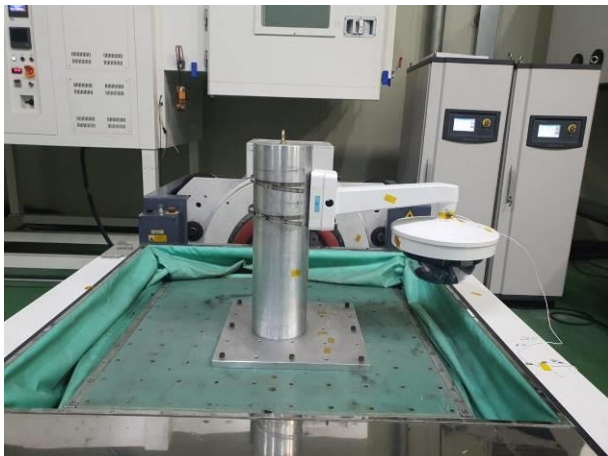
Transient Tests



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

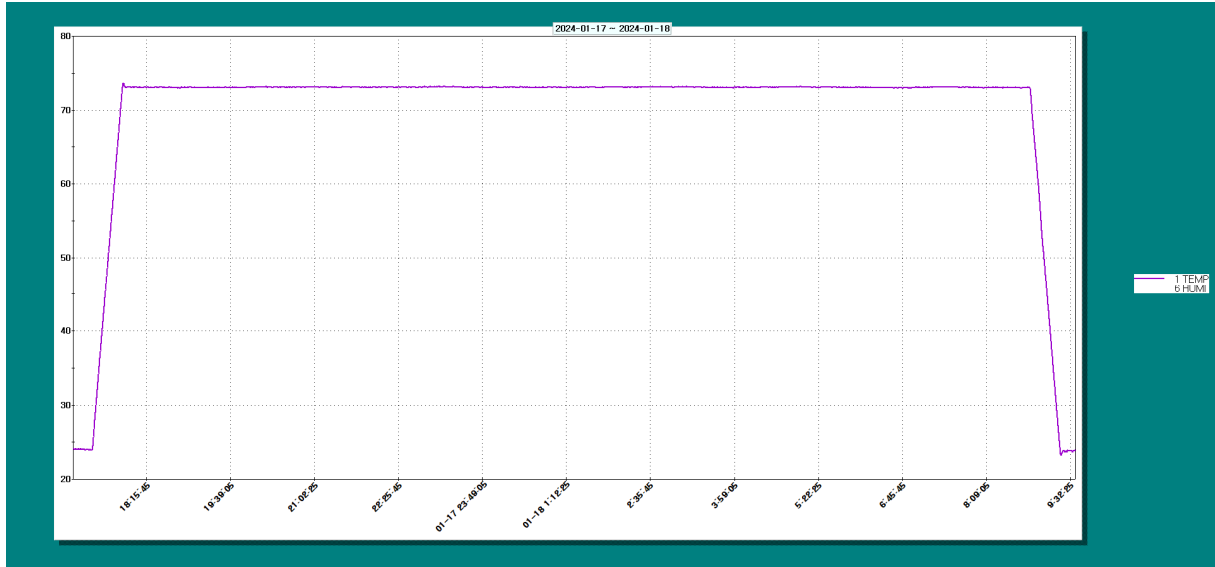
4. Test result

4.1 Test Result Table

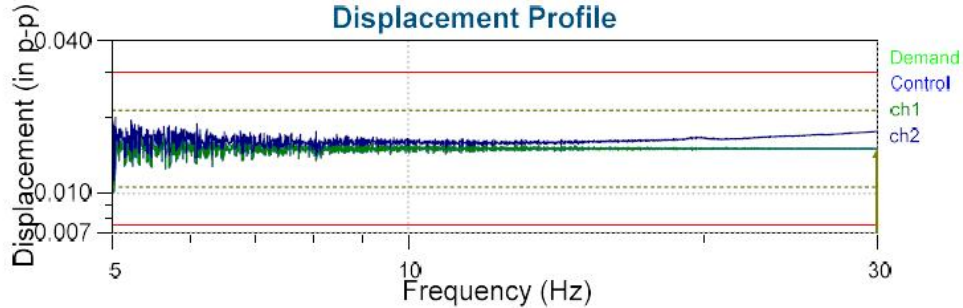
Evaluation Criteria		Test Results			Comment
Transient Tests	Before	Pass			
	After	Pass			
Resonant search		Axis	Resonance check	Recorded	
		X	None	30 Hz	
		Y	1 Point	15.05 Hz	
		Z	2 Point	12.19 / 12.83 Hz	
Endurance Test	Before	Pass			
	After	Pass			
Shock(impact) Test	Before	Pass			
	After	Pass			

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]

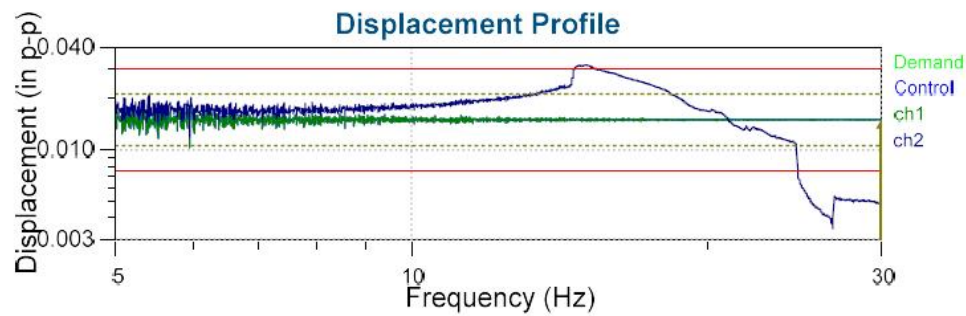


1 31, 2024 15:58:2 Level 1) 100 % Output: 0.07026 Volts p-p NEMA TS-2 2.2.8 - search

Demand: 0.015 ir Level Time: 0:12:30 Frequency: 30 Hz

Control: 0.01501 ir Total Time: 0:12:37 End of Sweep Test

X axis

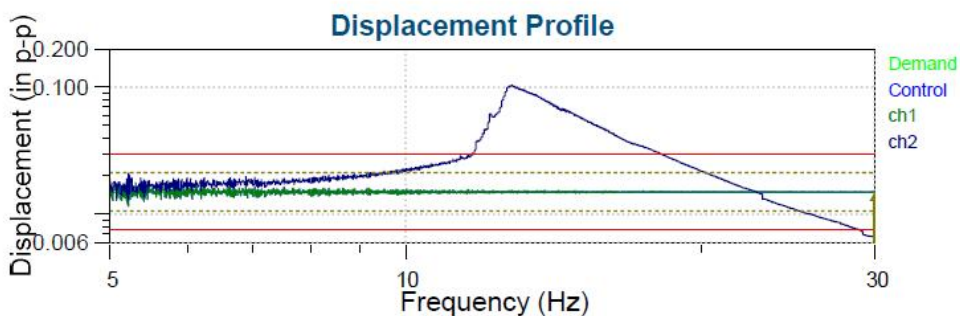


1 31, 2024 17:35:1 Level 1) 100 % Output: 0.06886 Volts p-p NEMA TS-2 2.2.8 - search

Demand: 0.015 ir Level Time: 0:12:30 Frequency: 30 Hz

Control: 0.01501 ir Total Time: 0:12:37 End of Sweep Test

Y axis



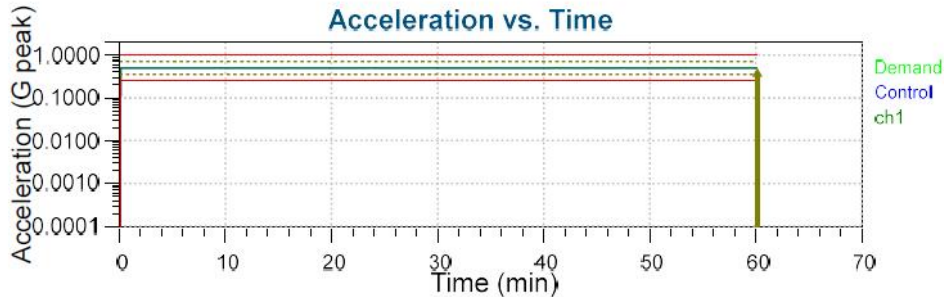
1 30, 2024 16:47:1 Level 1) 100 % Output: 0.06498 Volts p-p NEMA TS-2 2.2.8 - search

Demand: 0.015 ir Level Time: 0:12:30 Frequency: 30 Hz

Control: 0.015 ir Total Time: 0:12:35 End of Sweep Test

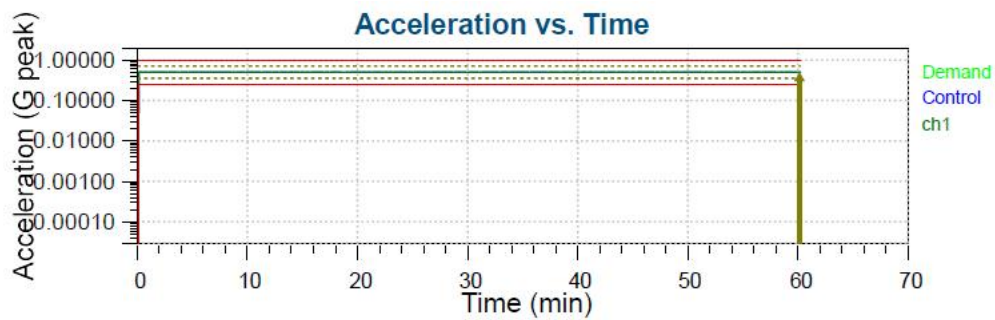
Z axis

[Endurance Test[NEMA TS 2-2013 2.2.8.4]



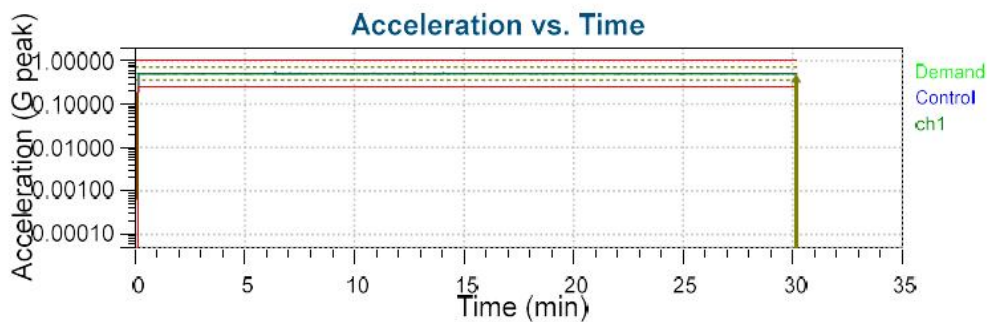
1 31, 2024 17:07:11 Level 1) 100 % at 30 H Output: 0.05063 Volts peak NEMA TS-2 2.2.8 -
Demand: 0.5 G Level Time: 1:00:00 Frequency: 30 H
Control: 0.5004 G Total Time: 1:00:00 End of Timed Test

X axis



1 31, 2024 18:36:00 Level 1) 100 % at 15.05 H Output: 0.1011 Volts peak NEMA TS-2 2.2.8 -
Demand: 0.5 G Level Time: 1:00:00 Frequency: 15.05 H
Control: 0.5028 G Total Time: 1:00:00 End of Timed Test

Y axis – 15.05 Hz



1 30, 2024 17:22:30 Level 1) 100 % at 12.19 H Output: 0.1154 Volts peak NEMA TS-2 2.2.8 -
Demand: 0.5 G Level Time: 0:30:00 Frequency: 12.19 H
Control: 0.5003 G Total Time: 0:30:00 End of Timed Test

Z axis – 12.19 Hz



CTK Co., Ltd.

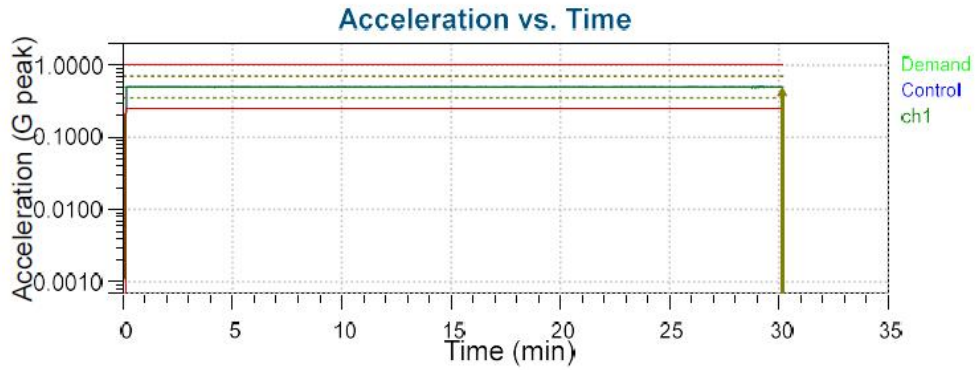
5 Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si,
Gyeonggi-do, Republic of Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

REPORT No.:

CTK-2024-00229

Page (17) / (20) pages

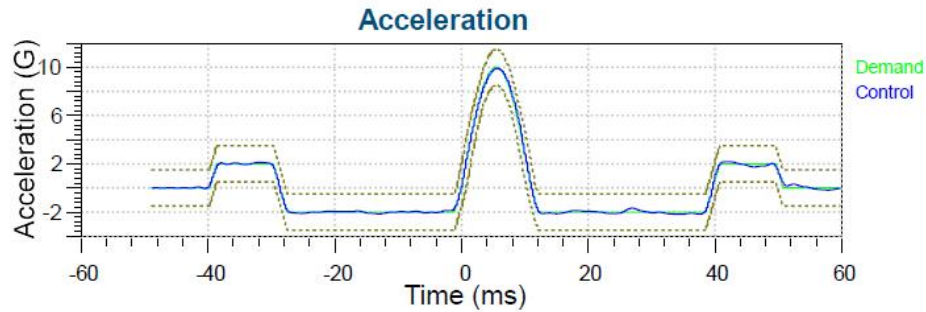
[Endurance Test[NEMA TS 2-2013 2.2.8.4]



1 31, 2024 14:44:5: Level 1) 100 % at 12.83 H Output: 0.1202 Volts pea NEMA TS-2 2.2.8 -
Demand: 0.5 C Level Time: 0:30:00 Frequency: 12.83 H
Control: 0.5008 C Total Time: 0:30:05 End of Timed Tes

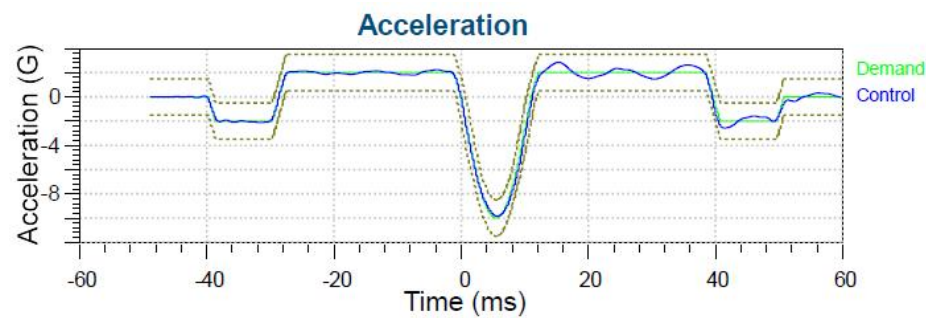
Z axis – 12.83 Hz

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



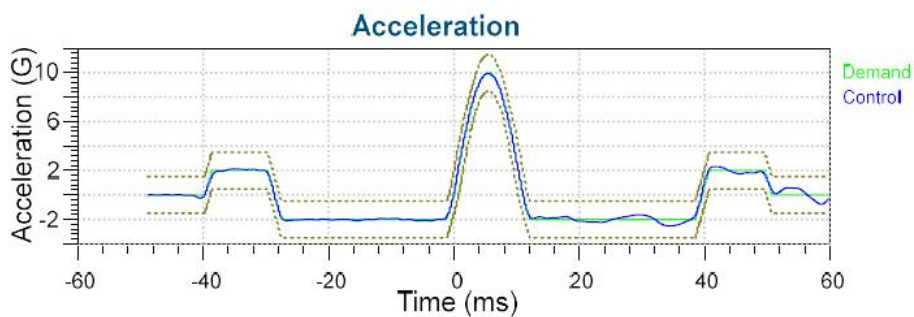
1 31, 2024 17:16:: Level 1) 100 % Output: 0.7602 Volts pe NEMA TS-2 2.2
Demand: 10
Control: 9.9 Pulse: 1 of Runnin

+X axis



1 31, 2024 17:16:: Level 2) 100 % Output: 0.7602 Volts pe NEMA TS-2 2.2
Demand: 10
Control: 9.844 Pulse: 1 of End of Tes

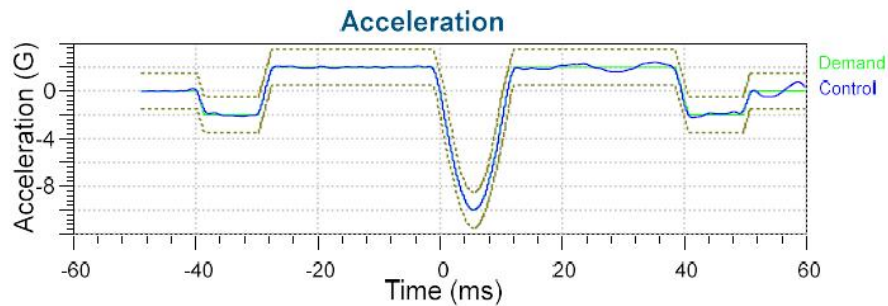
-X axis



1 31, 2024 18:40:: Level 1) 100 % Output: 0.7322 Volts pe NEMA TS-2 2.2
Demand: 10
Control: 9.935 Pulse: 1 of Runnin

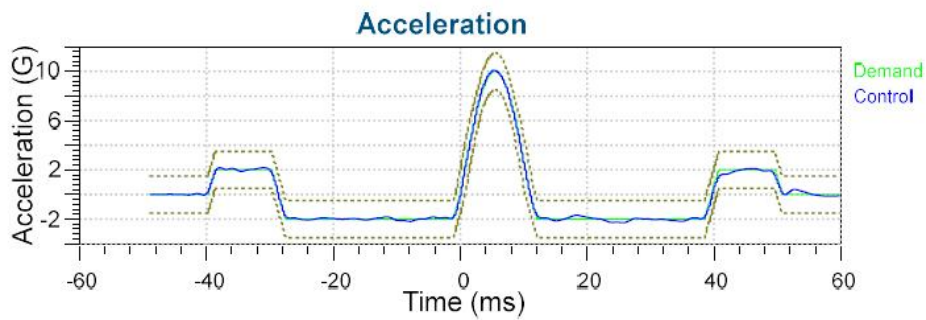
+Y axis

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



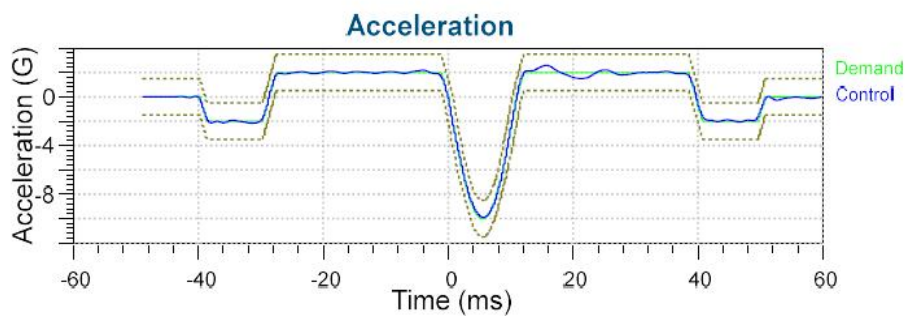
1 31, 2024 18:41:11 Level 2) 100 % Output: 0.7256 Volts pe NEMA TS-2 2.2
Demand: 10
Control: 9.972 Pulse: 1 of End of Test

-Y axis



1 31, 2024 14:47:11 Level 1) 100 % Output: 0.6886 Volts pe NEMA TS-2 2.2
Demand: 10
Control: 10.08 Pulse: 1 of Running

+Z axis

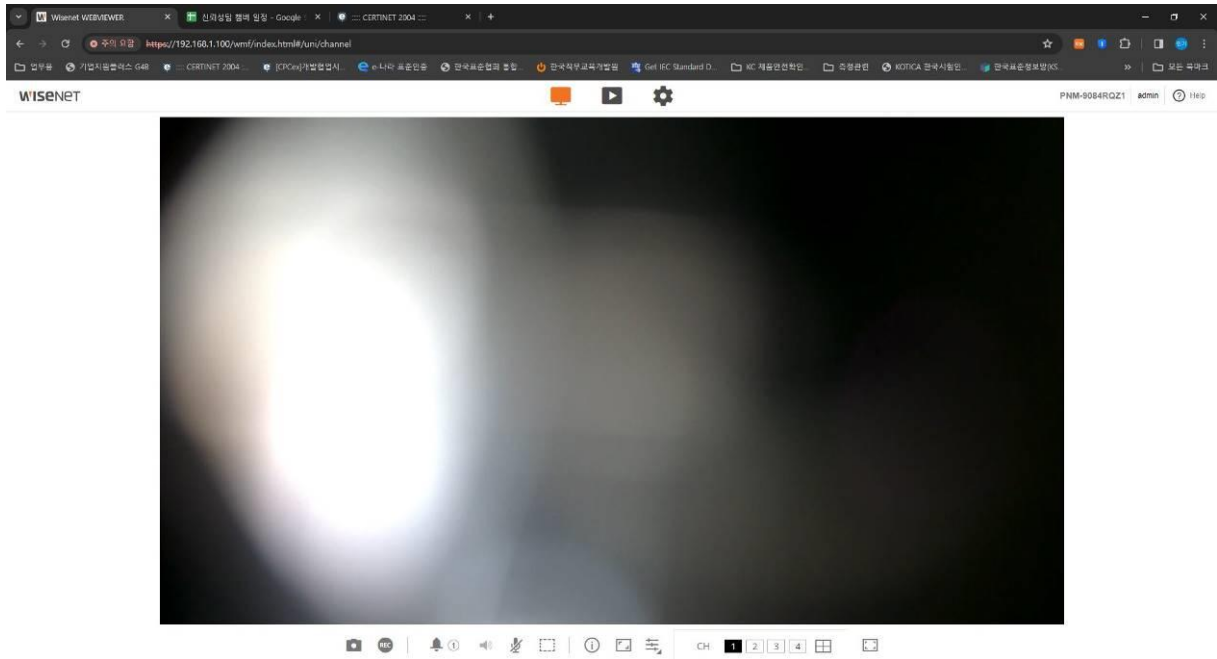


1 31, 2024 14:47:11 Level 2) 100 % Output: 0.6865 Volts pe NEMA TS-2 2.2
Demand: 10
Control: 9.895 Pulse: 1 of End of Test

-Z axis

4.3 Post-Test Product Images

4.3.1 Verification of Normal Operation after testing



Verification of Normal Operation after testing

- End -