

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-2025-02945
Page (1) / (37) 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. 02, 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 :

Sep. 16, 2025~ Oct. 21, 2025

6. Test Standard (Method) used :

EN 60068-2-1, EN 60068-2-2, EN 60068-2-14, EN 60068-2-6, EN 60068-2-27, EN 60068-2-78, IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-14, IEC 60068-2-6, IEC 60068-2-27, IEC 60068-2-78

7. Testing Environment :

Temperature: (25 ±10) °C, 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	Technical Manager
	Name: HyungUk Jeon (Signature)	Name: HoHyun Lee (Signature)

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

Oct. 27, 2025

CTK Co., Ltd.



**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-2025-02945
Page (2) / (37) pages

Table of Contents

1. Testing laboratory	4
1.1 Testing laboratory information	4
1.2 Testing laboratory accreditation status	4
2. Product description and equipment information	5
2.1 Product description	5
2.2 Equipment information	5
2.3 Pre-test product images	6
2.4 Testing equipment images	7
3. Cold Test (EN 60068-2-1, IEC 60068-2-1)	8
3.1 Test date and environmental conditions	8
3.2 Test conditions and methods	8
3.3 Testing images	9
3.4 Test Result	10
3.5 Test Data	11
4. Dry heat Test (EN 60068-2-2, IEC 60068-2-2)	12
4.1 Test date and environmental conditions	12
4.2 Test conditions and methods	12
4.3 Testing images	13
4.4 Test result	14
4.5 Test Data	15
5. Change of temperature Test (EN 60068-2-14, IEC 60068-2-14)	16
5.1 Test date and environmental conditions	16
5.2 Test conditions and methods	16
5.3 Testing images	17
5.4 Test result	18
5.5 Test Data	19

**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-2025-02945
Page (3) / (37) pages

6. Vibration Test (EN 60068-2-6, IEC 60068-2-6)	20
6.1 Test date and environmental conditions	20
6.2 Test conditions and methods	20
6.3 Testing images	21
6.4 Test result	22
6.5 Test Data	23
6.6 Post-test operation and function	26
7. Shock Test (EN 60068-2-27, IEC 60068-2-27)	27
7.1 Test date and environmental conditions	27
7.2 Test conditions and methods	27
7.3 Testing images	28
7.4 Test result	29
7.5 Test Data	30
8. Damp heat Test (EN 60068-2-78, IEC 60068-2-78)	33
8.1 Test date and environmental conditions	33
8.2 Test conditions and methods	33
8.3 Testing image	34
8.4 Test result	35
8.5 Test Data	36
8.6 Post-test product images	37

**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-2025-02945
Page (4) / (37) pages

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	

**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-2025-02945
Page (5) / (37) pages

2. Product description and equipment information

2.1 Product description

Product Name	Model Name	Quantity	Comment
NETWORK CAMERA	XNV-A9085R	1 EA	–

2.2 Model description

Basic Model	XNV-A9085R
Series model	XNV-A8085R
Model differences	Use of the same external shape and materials (case, finishing material, PCB, cable, etc.), differences in SW.

2.3 Equipment information

Testing equipment	Model Name	Manufacturer	Manufacturing Number	Calibration Date
Temperature & Humidity Chamber	C4-340	Weissttechnik	54260023190010	Feb. 6, 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



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-2025-02945
Page (6) / (37) pages

2.4 Pre-test product images

2.4.1 Test sample



Top



Bottom



Front



Rear



Left side



Right side



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-2025-02945
Page (7) / (37) pages

2.5 Testing equipment images

2.5.1 Test equipment



Temperature & Humidity Chamber



VIBRATION TESTING SYSTEM



8703A250M5



8703A250M5

**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-2025-02945
Page (8) / (37) pages

3. Cold Test (EN 60068-2-1, IEC 60068-2-1)

3.1 Test date and environmental conditions

3.1.1 Test date: Sep. 23, 2025 ~ Sep. 24, 2025

3.1.2 Measured Environmental Conditions

Item	Temperature (°C)	Humidity (% R.H.)	Pressure (kPa)
Measurement	23.6	54.2	96.2

3.2 Test conditions and methods

3.2.1 Sample status: Non-operation

3.2.2 Test temperature: -33 °C

3.2.3 Test time: 16 h

3.2.4 Evaluation Criteria: Verification of Appearance Before and After Testing, and
Confirmation of Proper Product Functionality



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-2025-02945
Page (9) / (37) pages

3.3 Testing images

3.3.1 Evidence of test setting



**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-2025-02945
Page (10) / (37) pages

3.4 Test Result**3.4.1 Test Result table**

Evaluations Criteria	Test result		Comment
Sample	Visual Inspection	Normal	-
	Operation and Function	Normal	-



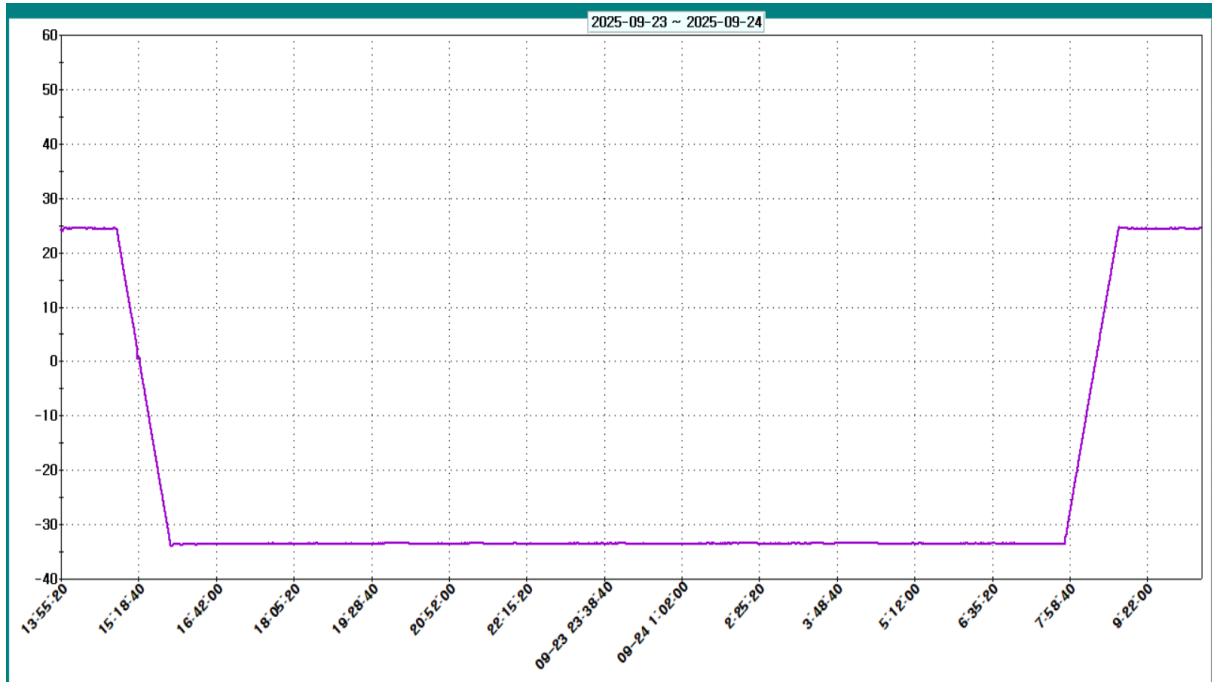
CTK Co., Ltd.

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-2025-02945
Page (11) / (37) pages

3.5 Test Data

3.5.1 Test data and graph



**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-2025-02945
Page (12) / (37) pages

4. Dry heat Test (EN 60068-2-2, IEC 60068-2-2)

4.1 Test date and environmental conditions

4.1.1 Test date: Sep. 24, 2025 ~Sep. 28, 2025

4.1.2 Measured Environmental Conditions

Item	Temperature (°C)	Humidity (% R.H.)	Pressure (kPa)
Measurement	23.3	54.6	95.9

4.2 Test conditions and methods

4.2.1 Sample status: Non-operation

4.2.2 Test temperature: 60 °C

4.2.3 Test time: 96 h

4.2.4 Evaluation Criteria: Verification of Appearance Before and After Testing, and Confirmation of Proper Product Functionality.



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-2025-02945
Page (13) / (37) pages

4.3 Testing images

4.3.1 Evidence of test setting



**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-2025-02945
Page (14) / (37) pages

4.4 Test result**4.4.1 Test results table**

Evaluations Criteria	Test result		Comment
Sample	Visual Inspection	Normal	-
	Operation and Function	Normal	-



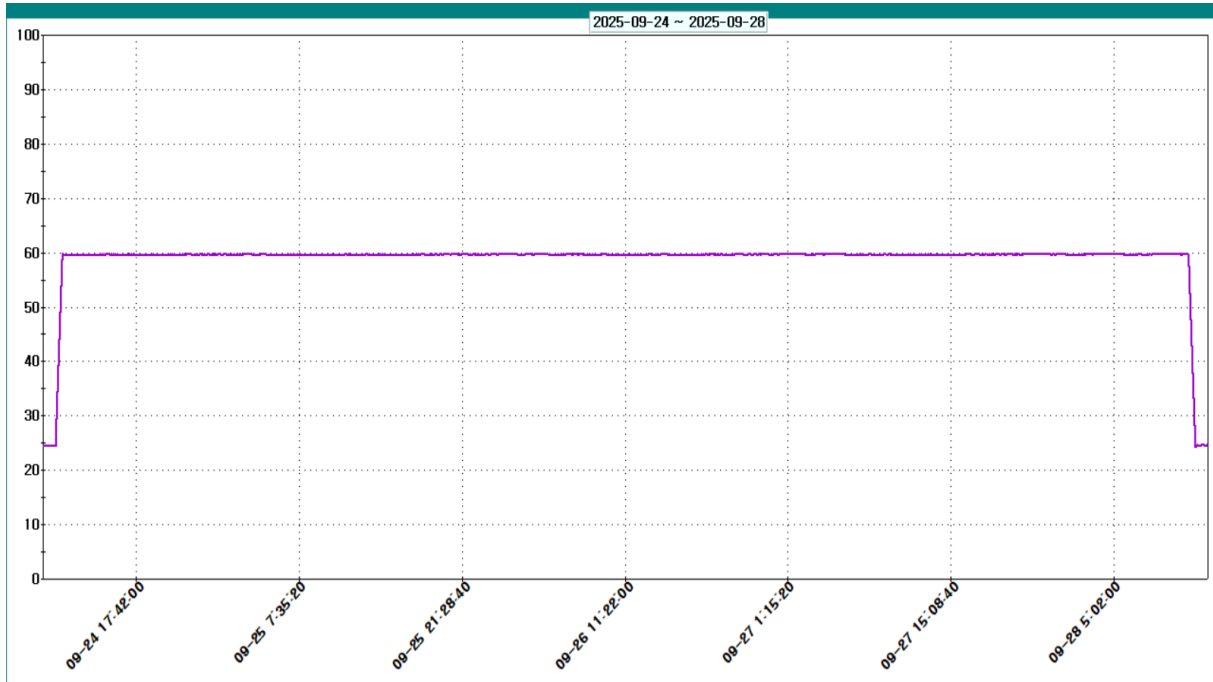
CTK Co., Ltd.

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-2025-02945
Page (15) / (37) pages

4.5 Test Data

4.5.1 Test data and graph



Temperature Data

**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-2025-02945
Page (16) / (37) pages

5. Change of temperature Test (EN 60068-2-14, IEC 60068-2-14)

5.1 Test date and environmental conditions

5.1.1 Test date: Sep. 26, 2025 ~ Sep. 27, 2025

5.1.2 Measured Environmental Conditions

Item	Temperature (°C)	Humidity (% R.H.)	Pressure (kPa)
Measurement	23.2	53.7	96.1

5.2 Test conditions and methods

5.2.1 Sample status: operation

5.2.2 Test temperature: -33 °C, 55 °C

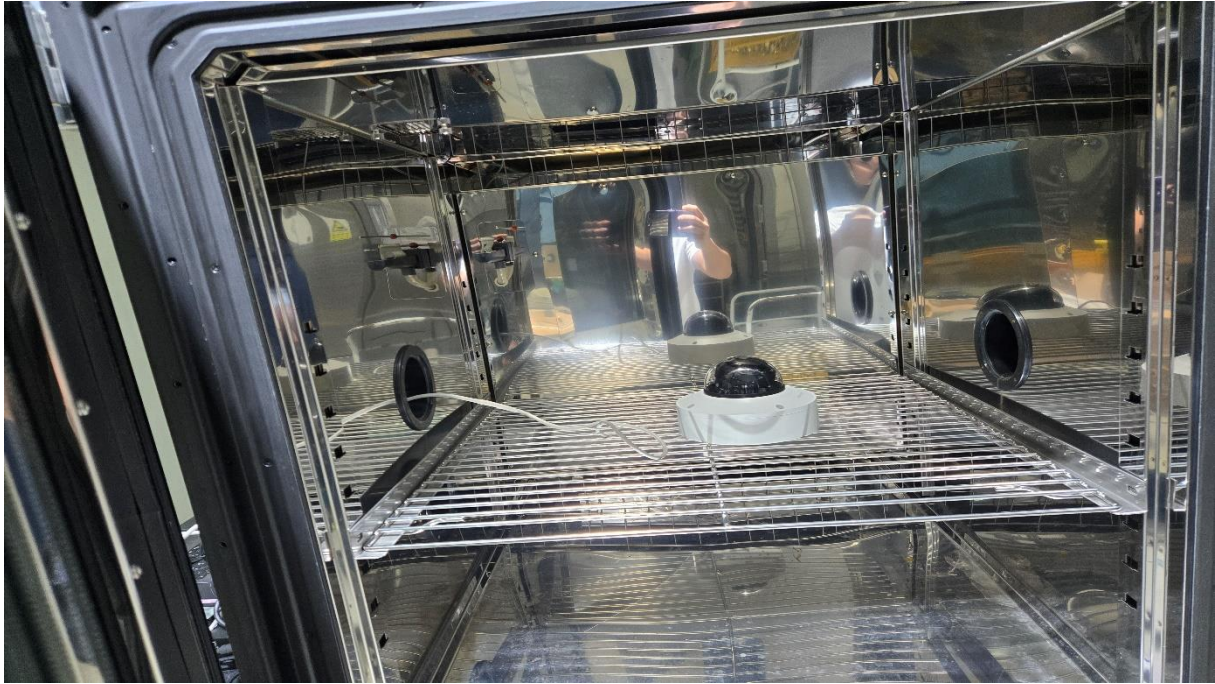
5.2.3 Evaluation Criteria: Verification of Appearance Before and After Testing, and Confirmation of Proper Product Functionality.

5.2.4 Test method

Temp↵	Temperature change rate(°C/min)↵	t ₁ (idle time)↵	Cycles↵
High↵	5 °C/min↵	3 h↵	3↵
Low↵	1 °C/min↵	3 h↵	3↵

5.3 Testing images

5.3.1 Evidence of test setting



**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-2025-02945
Page (18) / (37) pages

5.4 Test result

5.4.1 Test results table

Evaluations Criteria	Test result		Comment
Sample	Visual Inspection	Normal	-
	Operation and Function	Normal	-



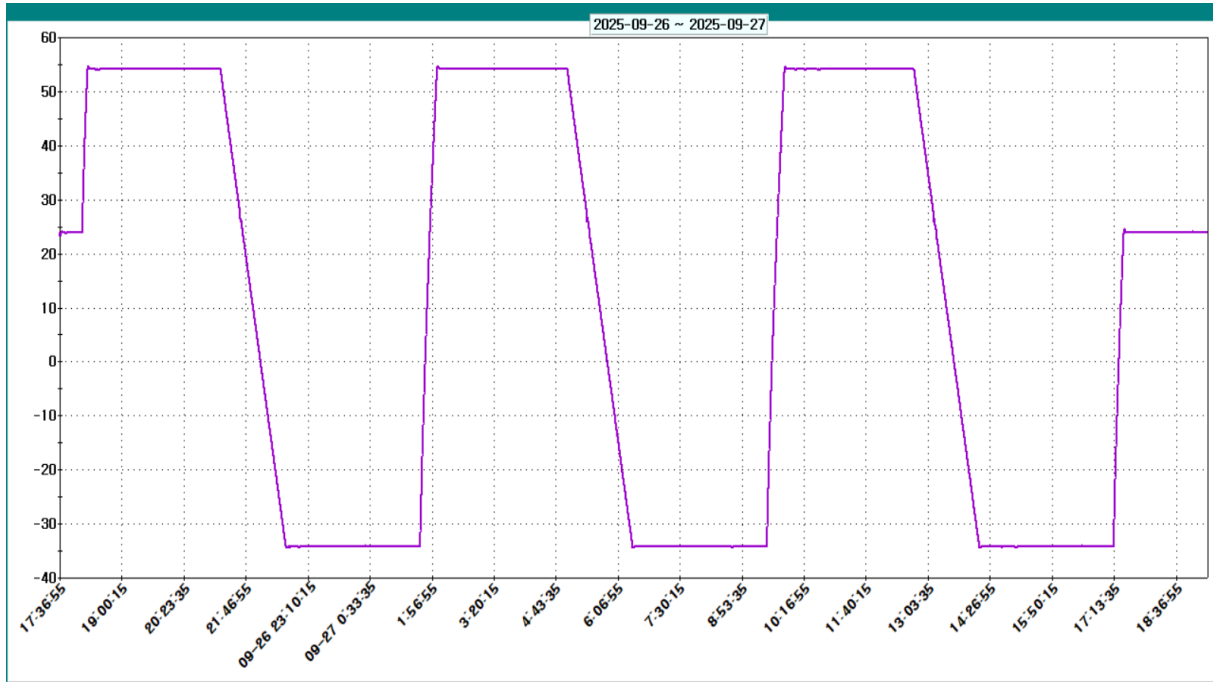
CTK Co., Ltd.

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-2025-02945
Page (19) / (37) pages

5.5 Test Data

5.5.1 Test data and graph



**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-2025-02945
Page (20) / (37) pages

6. Vibration Test (EN 60068-2-6, IEC 60068-2-6)

6.1 Test date and environmental conditions

6.1.1 Test date: Oct. 20, 2025

6.1.2 Measured Environmental Conditions

Item	Temperature (°C)	Humidity (% R.H.)	Pressure (kPa)
Measurement	23.4	45.1	97.8

6.2 Test conditions and methods

6.2.1 Vibration Test (EN 60068-2-6)

- Sample status: operation
- Frequency(Hz): 5 Hz ~ 200 Hz
- Acceleration(G): 1 G
- Sweep rate: 1 oct/min
- Test Axis: X, Y, Z
- Test time(h): Total 30 min (10 min. per each axis)



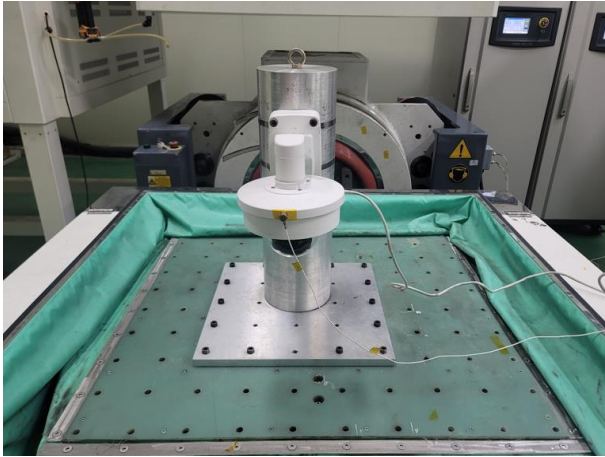
CTK Co., Ltd.

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

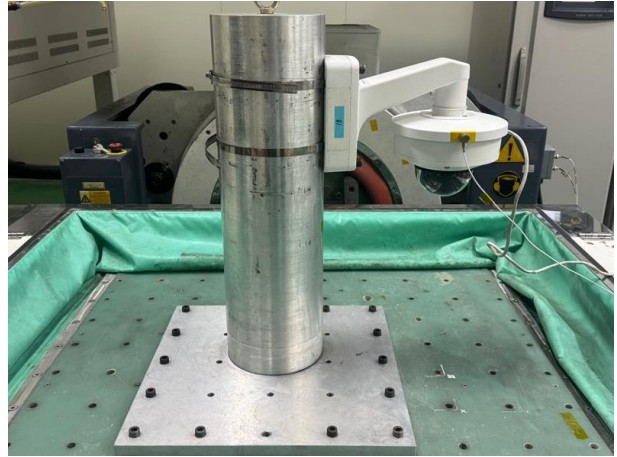
REPORT No.:
CTK-2025-02945
Page (21) / (37) pages

6.3 Testing images

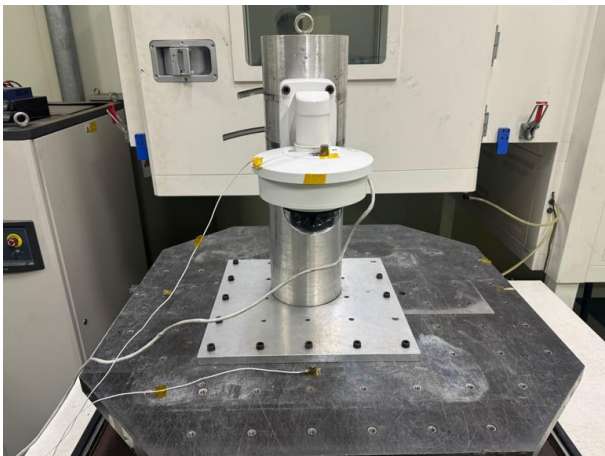
6.3.1 Evidence of test setting



X axis



Y axis



Z axis

**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-2025-02945
Page (22) / (37) pages

6.4 Test result**6.4.1 Test results table**

Evaluations Criteria	Test result		Comment
Vibration Test	Before	Normal	-
	After	Normal	-



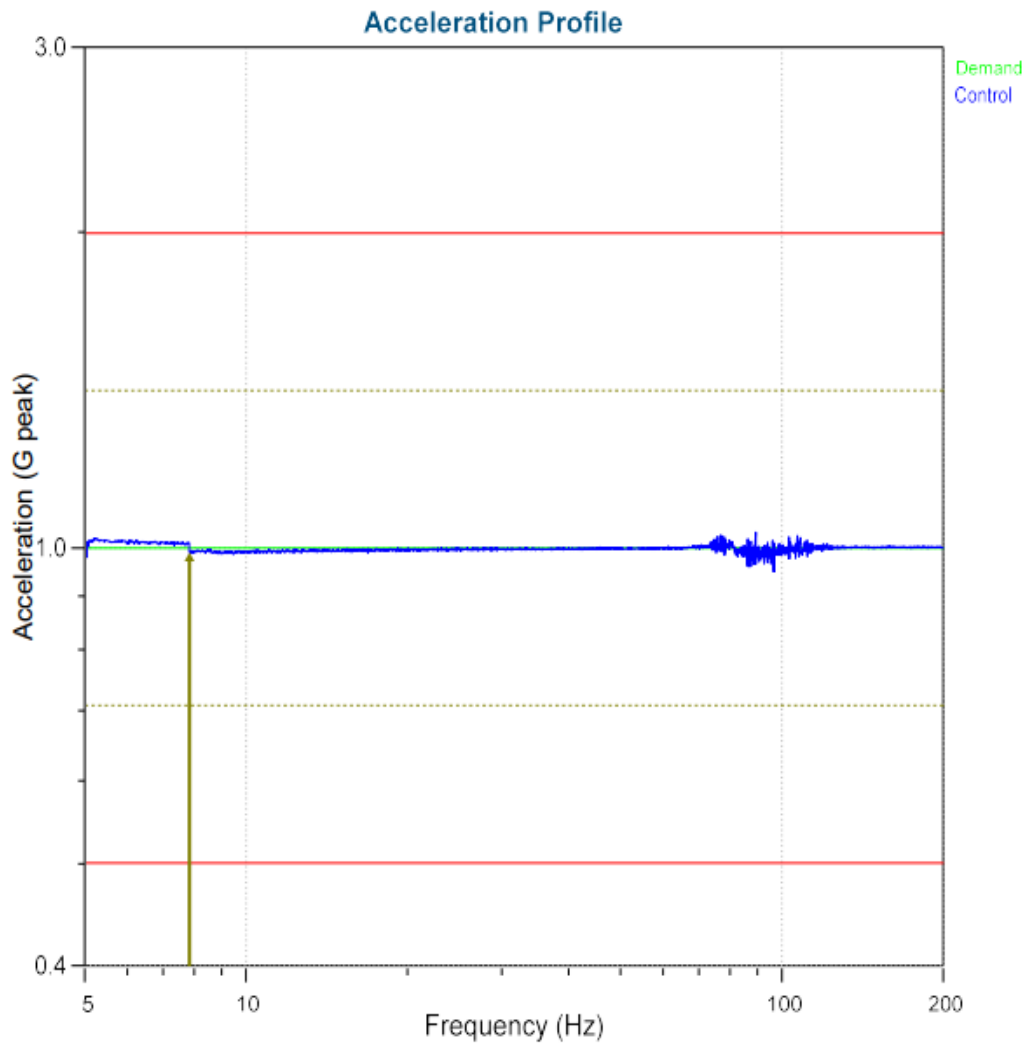
CTK Co., Ltd.

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-2025-02945
Page (23) / (37) pages

6.5 Test Data

6.5.1 Test data and graph (Vibration Test X Axis)



10 20, 2025 17:15:3 Level 1) 100 %

Output: 0 Volts peak

2025-05-07 한화비전 60068

Demand: 1 G

Level Time: 0:10:0

Frequency: 7.841 Hz

Control: 0.0008072 (Total Time: 0:10:1

End of Timed Test

X Axis

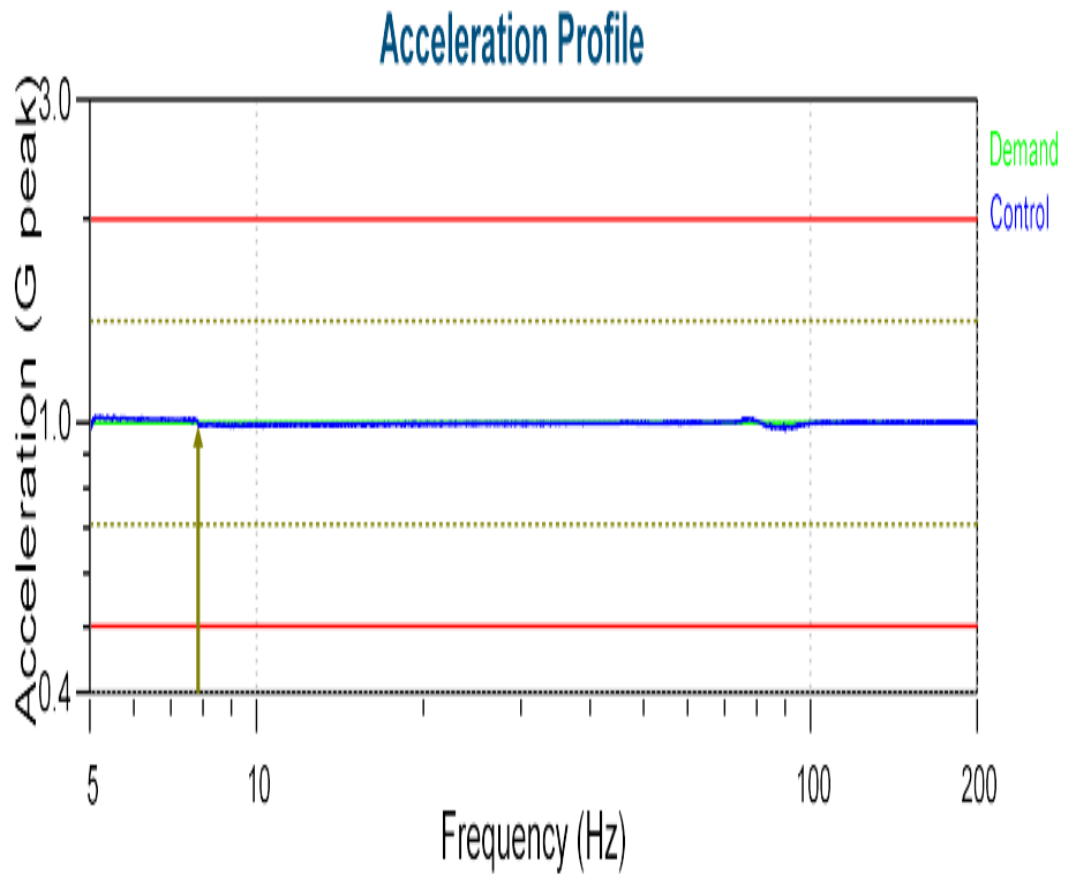


CTK Co., Ltd.

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-2025-02945
Page (24) / (37) pages

6.5.2 Test data and graph (Vibration Test Y Axis)



10 20, 2025 15:32:1 Level 1) 100 %

Output: 0 Volts peal

2025-05-07 한화비전 60068

Demand: 1 C Level Time: 0:10:0

Frequency: 7.841 H

Control: 0.001495 C Total Time: 0:10:1

End of Timed Tes

Y Axis

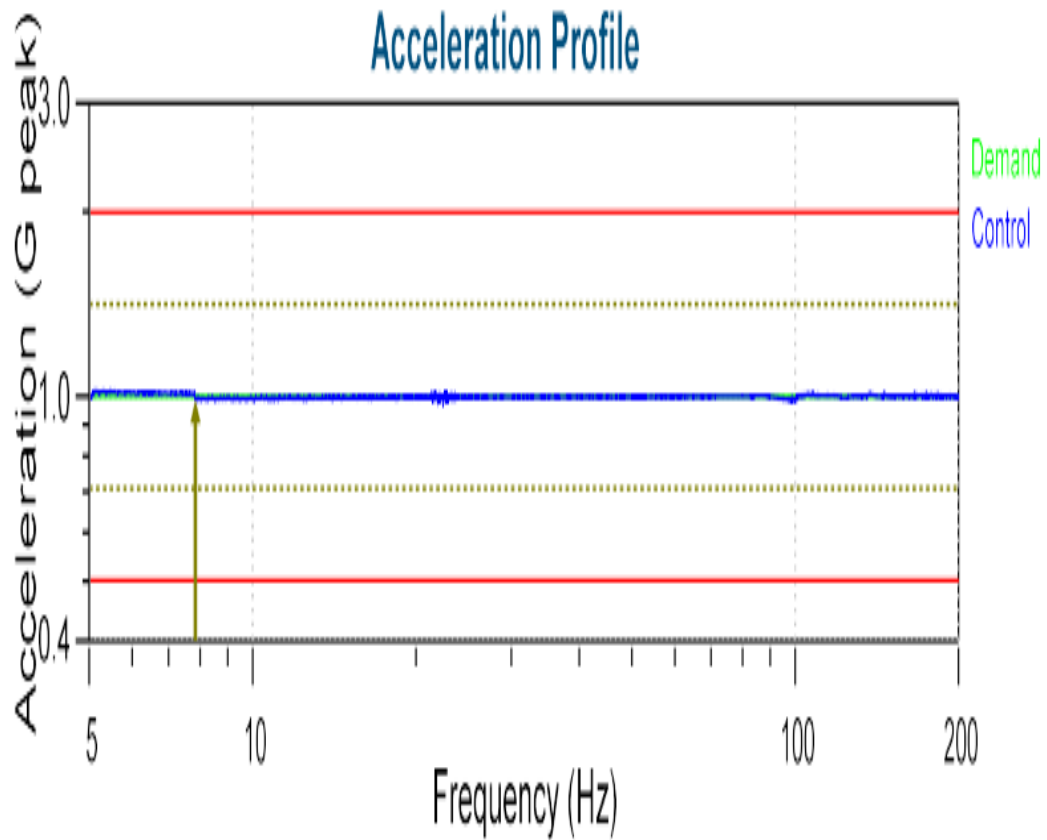


CTK Co., Ltd.

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-2025-02945
Page (25) / (37) pages

6.5.3 Test data and graph (Vibration Test Z Axis)



10 21, 2025 14:39:30 Level 1) 100 % Output: 0.3843 Volts peak 60068-2-6
Demand: 1 G Level Time: 0:10:00 Frequency: 7.846 Hz
Control: 0.9892 G Total Time: 0:10:12 End of Timed Test

Z Axis



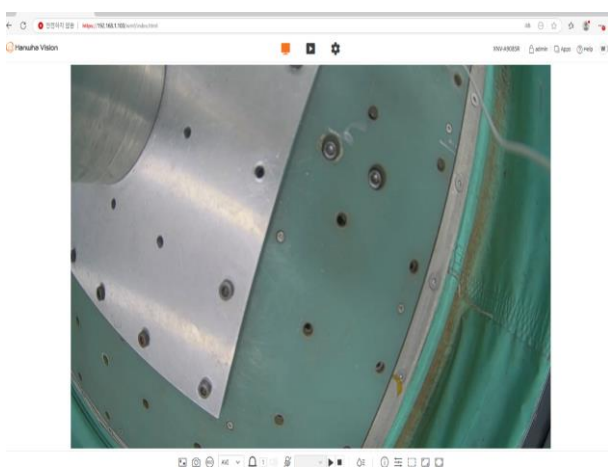
CTK Co., Ltd.

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

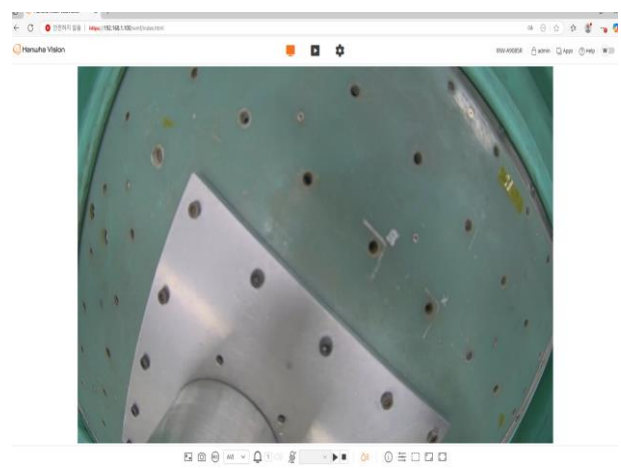
REPORT No.:
CTK-2025-02945
Page (26) / (37) pages

6.6 Post-test operation and function

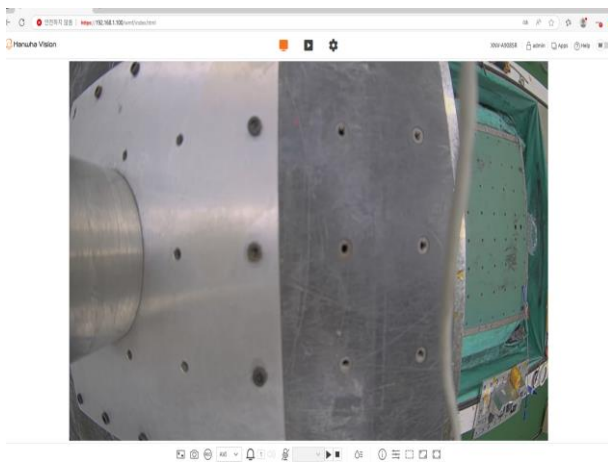
6.6.1 Test sample operation and function



X axis



Y axis



Z axis

**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-2025-02945
Page (27) / (37) pages

7. Shock Test (EN 60068-2-27, IEC 60068-2-27)

7.1 Test date and environmental conditions

7.1.1 Test date: Oct. 20, 2025

7.1.2 Measured Environmental Conditions

Item	Temperature (°C)	Humidity (% R.H.)	Pressure (kPa)
Measurement	23.4	45.1	97.8

7.2 Test conditions and methods

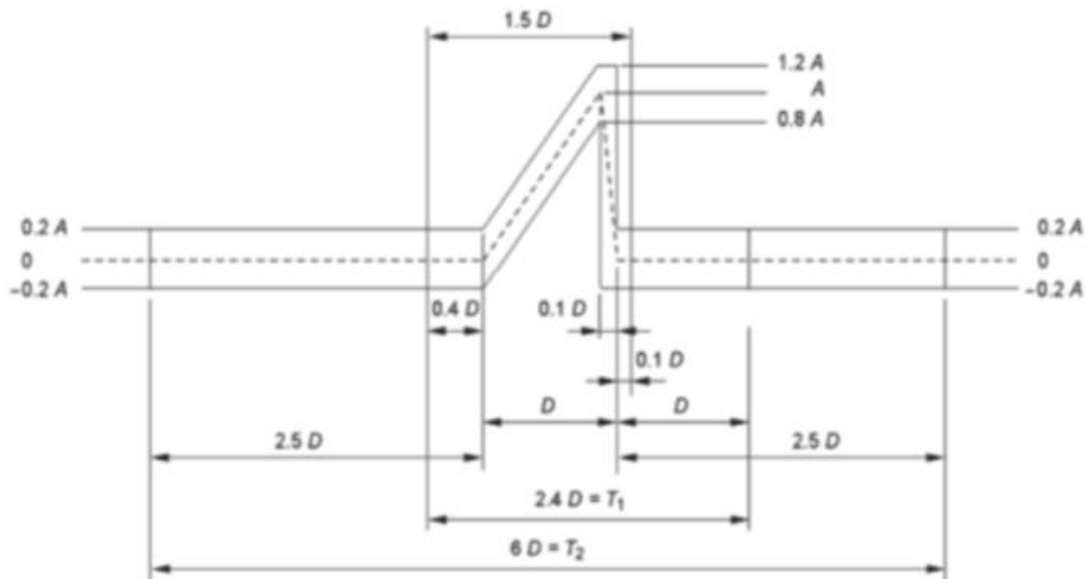
7.2.1 Sample status: Non-operation

7.2.2 Acceleration(m/s^2): 150 m/s^2

7.2.3 Number of impacts: 10 per direction (total 60)

7.2.4 Test Axis: X, Y, Z

7.2.5 Profile





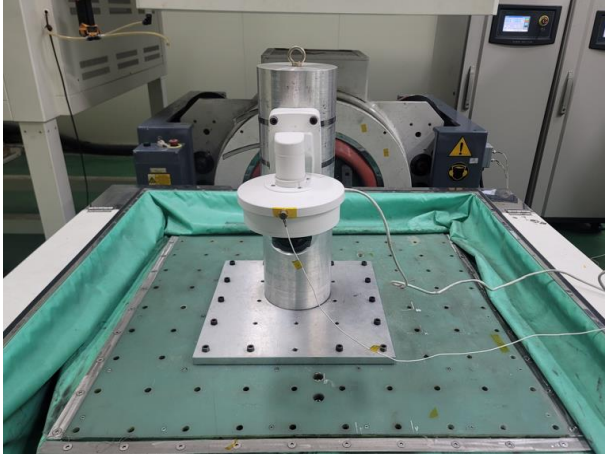
CTK Co., Ltd.

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

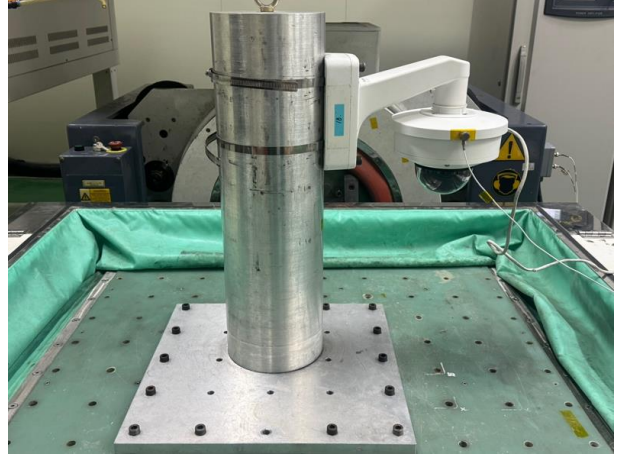
REPORT No.:
CTK-2025-02945
Page (28) / (37) pages

7.3 Testing images

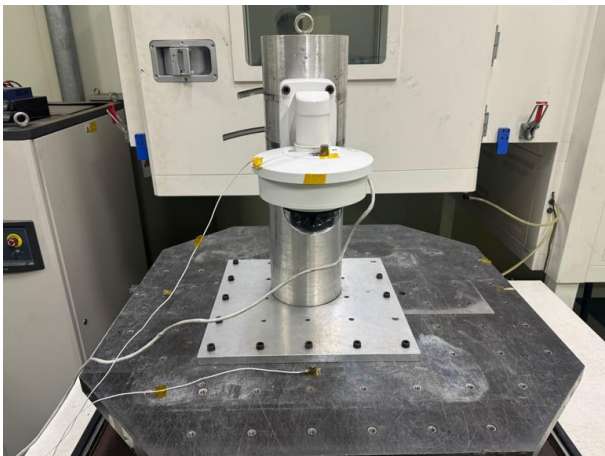
7.3.1 Evidence of test setting



X axis



Y axis



Z axis

**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-2025-02945
Page (29) / (37) pages

7.4 Test result

7.4.1 Test results table

Evaluations Criteria	Test result		비고
	Visual Inspection	Normal	
Sample	Visual Inspection	Normal	-
	Operation and Function	Normal	-



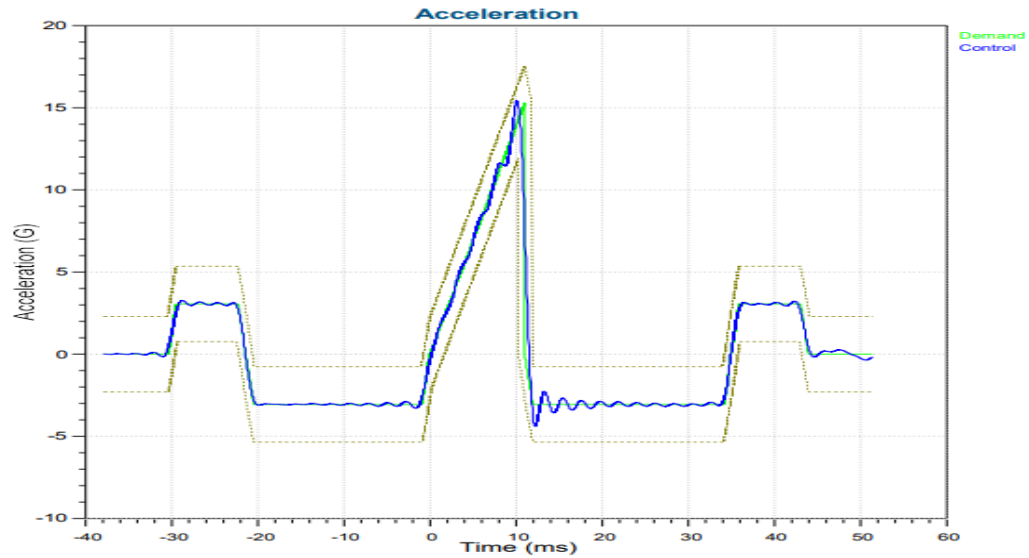
CTK Co., Ltd.

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

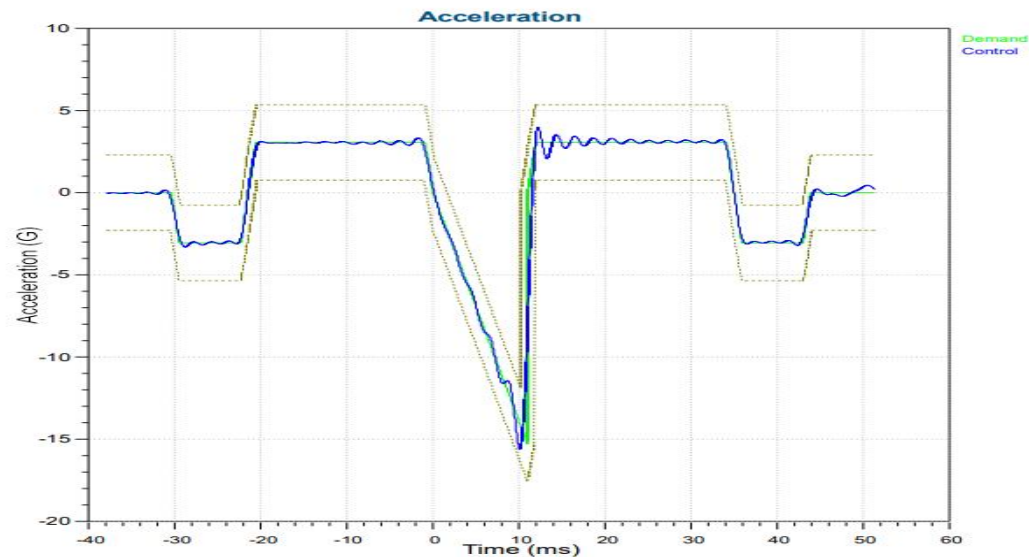
REPORT No.:
CTK-2025-02945
Page (30) / (37) pages

7.5 Test Data

7.5.1 Test data and graph (Shock Test X Axis)



X+



X-

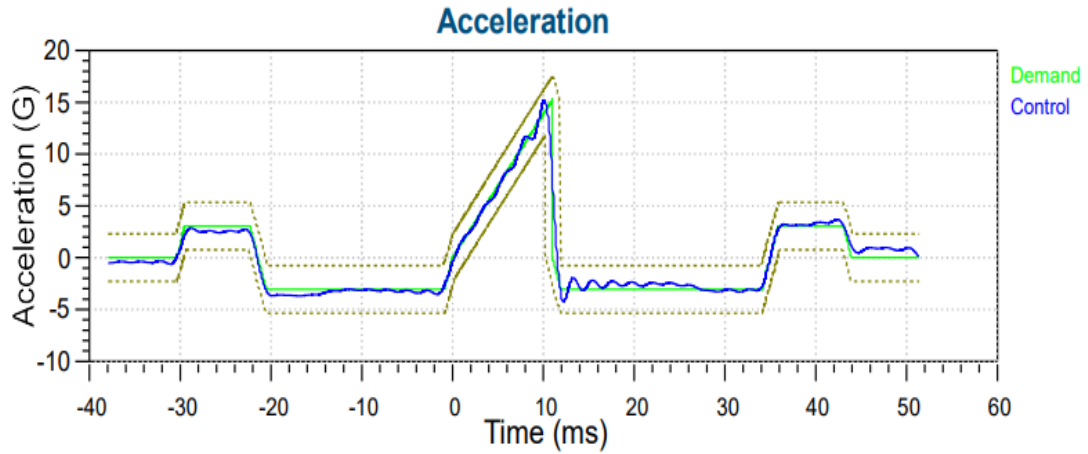


CTK Co., Ltd.

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-2025-02945
Page (31) / (37) pages

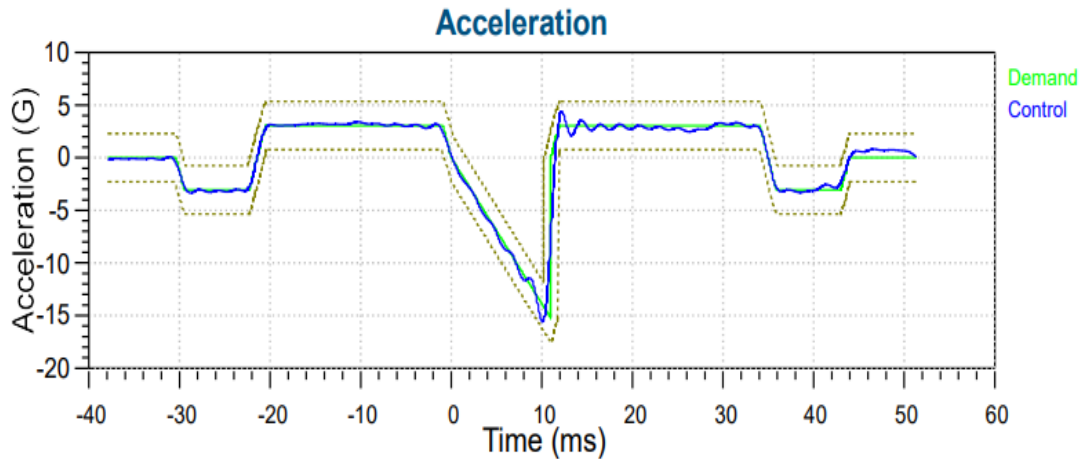
7.5.2 Test data and graph (Shock Test Y Axis)



10 20, 2025 15:35:3 Level 1) 100 %
Demand: 15.3 G
Control: 15.2 G Pulse: 10 of 10

Output: 1.258 Volts peak 한화비전 60068-2
Running

Y+



10 20, 2025 15:36:0 Level 2) 100 %
Demand: 15.3 G
Control: 15.6 G Pulse: 10 of 10

Output: 1.314 Volts peak 한화비전 60068-2
End of Test

Y-

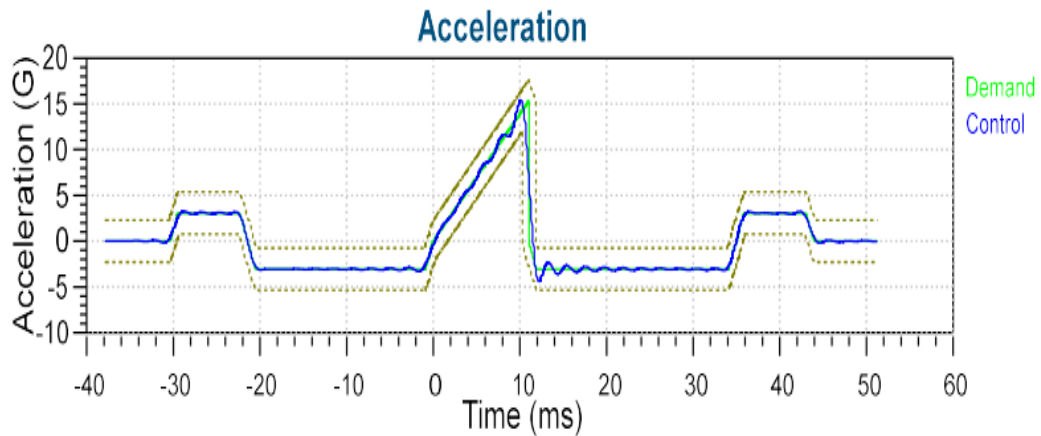


CTK Co., Ltd.

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-2025-02945
Page (32) / (37) pages

7.5.3 Test data and graph (Shock Test Z Axis)

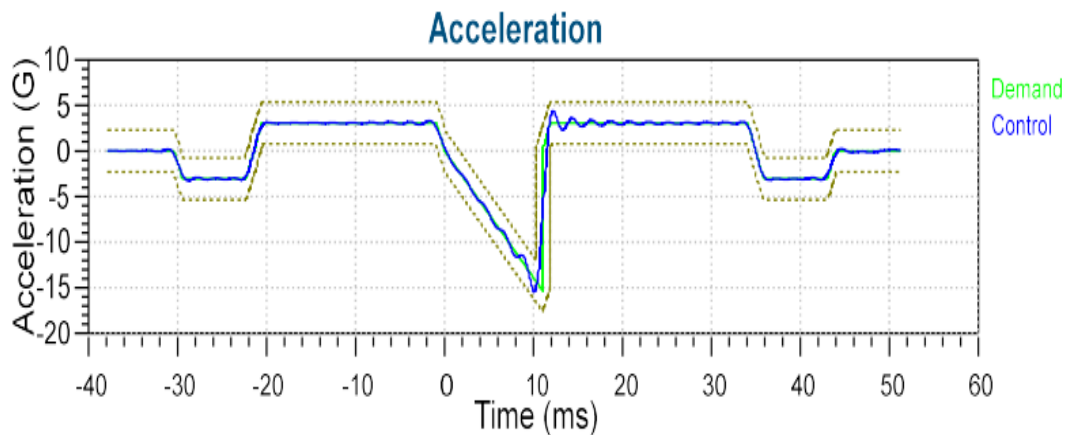


10 21, 2025 14:56:11 Level 1) 100 % Output: 1.359 Volts peak 60068-2-27

Demand: 15.3 G

Control: 15.44 G Pulse: 10 of 10 Running

Z+



10 21, 2025 14:56:41 Level 2) 100 % Output: 1.419 Volts peak 60068-2-27

Demand: 15.3 G

Control: 15.44 G Pulse: 10 of 10 End of Test

Z-

**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-2025-02945
Page (33) / (37) pages

8. Damp heat Test (EN 60068-2-78, IEC 60068-2-78)

8.1 Test date and environmental conditions

8.1.1 Test date: Sep. 16, 2025 ~ Sep. 26, 2025

8.1.2 Measured Environmental Conditions

Item	Temperature (°C)	Humidity (% R.H.)	Pressure (kPa)
Measurement	23.3	54.6	95.9

8.2 Test conditions and methods

8.2.1 Sample status: operation

8.2.2 Test temperature: 40 ± 2 °C

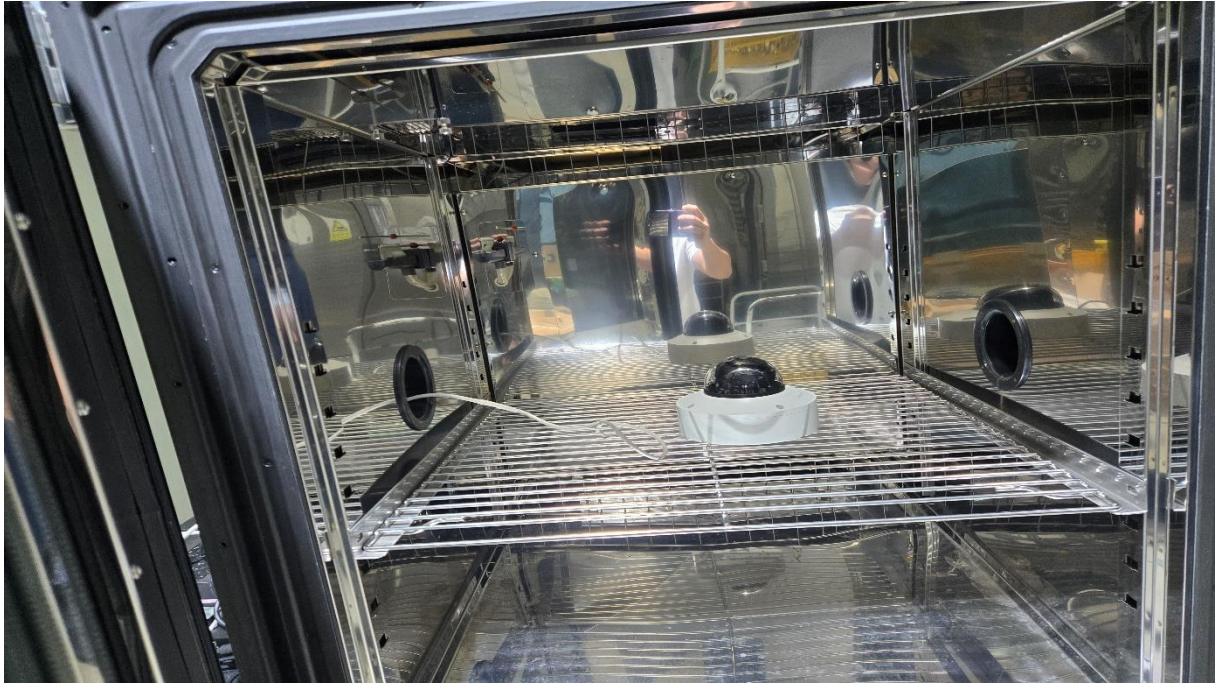
8.2.3 Test Humidity: 93 ± 3 % R.H.

8.2.4 Test time: 240 h

8.2.5 Evaluation Criteria: Verification of Appearance Before and After Testing, and Confirmation of Proper Product Functionality.

8.3 Testing image

8.3.1 Evidence of test setting



**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-2025-02945
Page (35) / (37) pages

8.4 Test result**8.4.1 Test results table**

Evaluations Criteria	Test result		비고
Sample	Visual Inspection	Normal	-
	Operation and Function	Normal	-



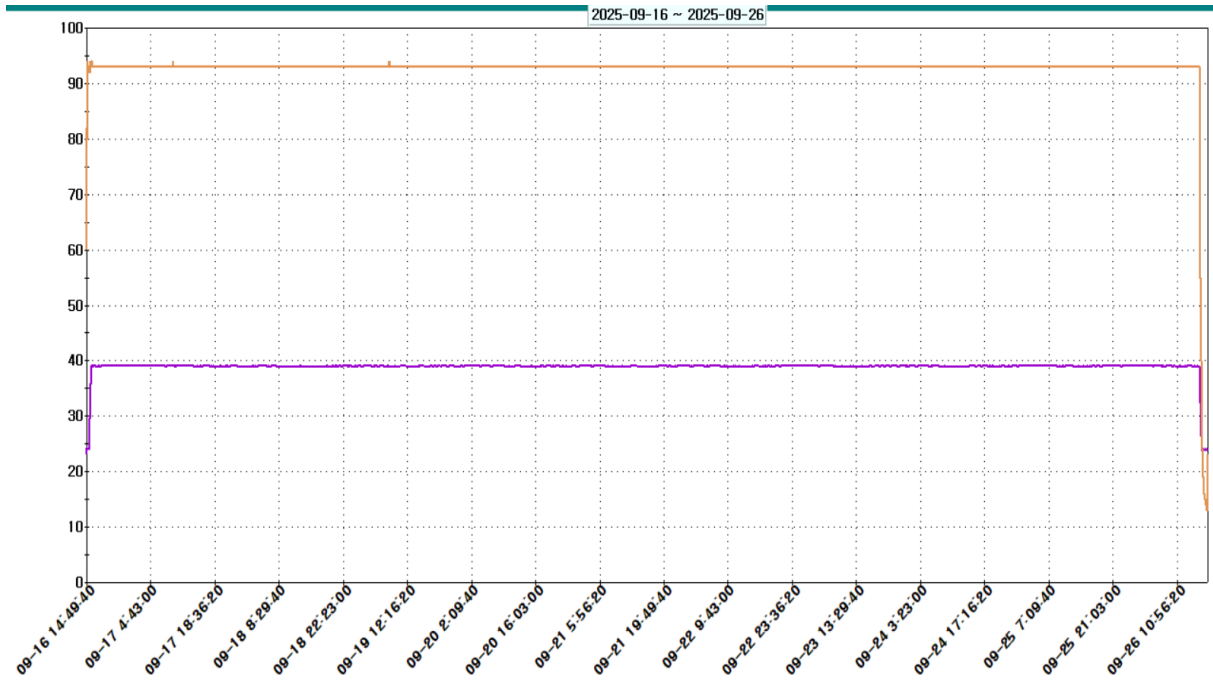
CTK Co., Ltd.

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-2025-02945
Page (36) / (37) pages

8.5 Test Data

8.5.1 Test data and graph



Temperature Data

8.6 Post-test product images

8.6.1 Test sample



Top



Bottom



Front



Rear



Left side



Right side



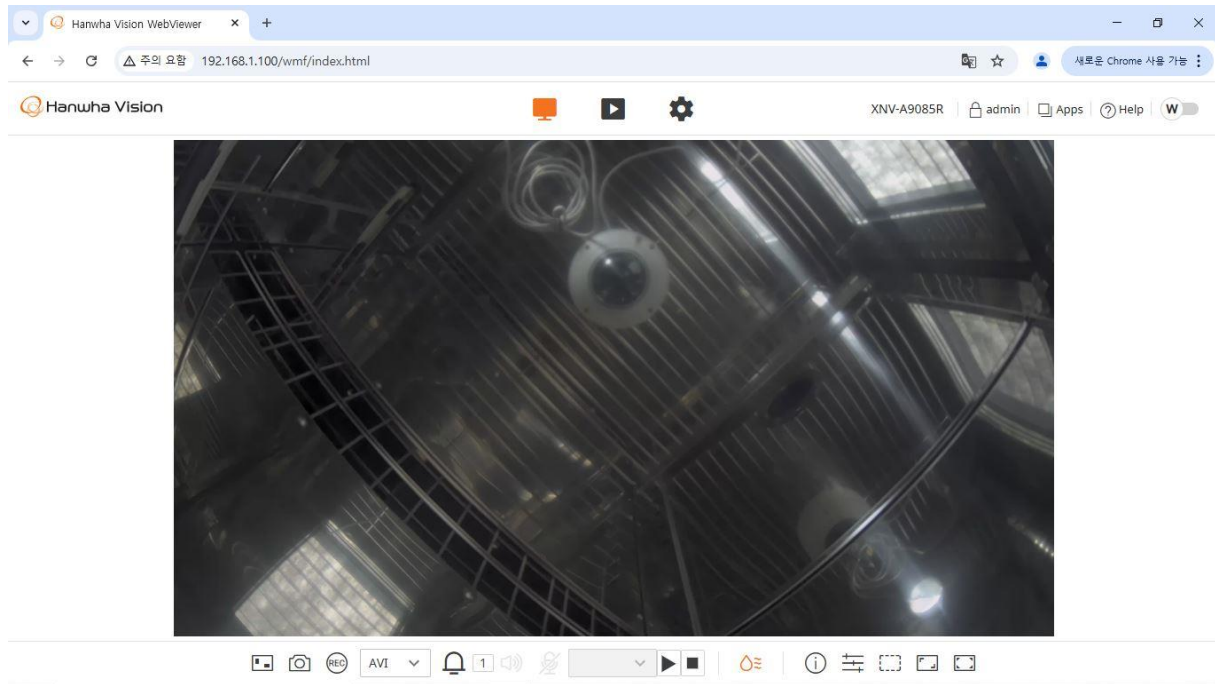
CTK Co., Ltd.

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-2025-02945
Page (38) / (37) pages

8.1 Post-test operation and function

8.1.1 Test sample operation and function



- End -