

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-2025-01003

Page (1) / (26) 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 : Mar. 04, 2025

2. Manufacturer

- Name : HANWHA VISION VIETNAM COMPANY LIMITED
- Address : Lot O-2, Que Vo Industrial Zone extended area, Nam Son ward,
Bac Ninh city, Bac Ninh province, Vietnam

3. Use of Report :

Quality control

4. Test sample / Model :

NETWORK CAMERA / PNM-C19183RVTP

5. Date(s) of test :

Mar. 05, 2025~ Mar. 12, 2025

6. Test Standard (Method) used :

NEMA 250-2014

Enclosures for Electrical Equipment (1000 Volts Maximum)

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.

Apr. 11, 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-2025-01003
Page (2) / (26) pages

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 Manufacturer information	4
2.3 Equipment information	5
2.4 Pre-test product images	6
2.5 Testing equipment images	7
3. Test Information	8
3.1 Test item particulars and Possible test case verdicts	8
3.2 General remarks and factory information	9
3.3 Type 4X Test information	10
3.4 NEMA 250-2014 Test list	12
3.5 Attachment 1 - Construction Diagram and installation method	15
3.6 Attachment 2 - Parts List	19
4. Hose Down Test (Clause 5.7)	22
4.1 Test date and environmental conditions	22
4.2 Test Conditions and methods	22
4.3 Attachment 3 - Photographs	23
4.4 Test result	24
4.5 Post-test product images	25


	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-2025-01003 Page (3) / (26) 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	

2. Product description and equipment information

2.1 Product description

Product Name	Model Name	Quantity	Comment
NETWORK CAMERA	PNM-C19183RVTP	1 EA	—



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-2025-01003

Page (4) / (26) pages

2.2 Manufacturer information

Test item description : NETWORK CAMERA

Trade Mark :



Manufacturer : Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam

Model/Type reference : PNM-C19183RVTP

Ratings : Electrical
PoE 55 V \Rightarrow 42 W, PoE 55 V \Rightarrow 0.77 A

Dimension:

Ø251.4 by 789.39 mm, Ø 200 by 628 mm, Ø120 by 376.8 mm, Ø7*6 by 131.88 mm, Ø25 by 78.5 mm

List of Attachments (including a total number of pages in each attachment):

Attachment 1: 15-18 pages (Construction Diagram including installation method)

Attachment 2: 19-21 pages (Parts List)

Attachment 3: 23-26 pages (photographs)

Summary of testing:

Tests performed (name of test and test clause):
Clause 5.7(Hose Down Test)

Testing location:

CTK Co., Ltd.
5 Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si,
Gyeonggi-do, Republic of Korea

Copy of marking plate: The artwork above may be only a draft.

기기명칭: NETWORK CAMERA

모델명: PNM-C19183RVTP

정격전압: PoE(55V \Rightarrow) 42W

M/C: PNM-C19183RVTP/KDO

2025.04 S/N: Serial No.

MAC ADDRESS: XX-XX-XX-XX-XX-XX

인증번호: R-R-HWVS-PNMC19183RVTP

상호: 한화비전(주)

제조사/제조국가: 한화비전(주)/한국

IP66 / IP67



NETWORK CAMERA, PNM-C19183RVTP

PoE(55V \Rightarrow) 0.77A

M/C: PNM-C19183RVTP/KEX Fac.ID:D

2025.04 S/N: Serial No.

MAC ADDRESS: XX-XX-XX-XX-XX-XX

CAN ICES-3(A)/NMB-3(A)

Manufacture for Hanwha Vision Co., Ltd.

MADE IN KOREA



**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-2025-01003
Page (5) / (26) pages

2.3 Equipment information

Testing equipment	Model Name	Manufacturer	Manufacturing Number	Next Cal. Date
25.4mm Nozzle	S3-IP18	CTK	S3-IP18	-
Temperature & Humidity Chamber	TH-GA-408	JEIO TECH	X110169	Aug.23,2025
Area flow meter	Z-6504	FLOWTECH	229400	Jan.16,2026
Steel measuring meter	5.5 m	KOMELON	225851	Jan.16,2026
Stop Watch	NONE	Casio	612Q01R-1	Jan.15,2027
Digital Vernier Calipers	100 mm	MITUTOYO	A17179462	-



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-2025-01003
Page (6) / (26) 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-2025-01003
Page (7) / (26) pages

2.5 Testing equipment images

2.5.1 Test equipment



25.4mm Nozzle



Temperature & Humidity Chamber



Area flow meter



Steel measuring meter



Stop Watch



Digital Vernier Calipers

**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-2025-01003
Page (8) / (26) pages

3. Test Information

3.1 Test item particulars and Possible test case verdicts

Test item particulars	Network Camera
Classification of installation and use	Outdoor (Watertight/Corrosion Resistant)
Possible test case verdicts:	
- test case does not apply to the test object	N/A
- test object does meet the requirement.....	P (Pass)
- test object does not meet the requirement	F (Fail)
- test case does not evaluate to the test object:	N/E

**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-2025-01003
Page (9) / (26) pages

3.2 General remarks and factory information

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.

"(See appended table)" refers to a table appended to the report.

Throughout this report a ☐ comma / ☒ point is used as the decimal separator.

Clause numbers between brackets refer to clauses in NEMA 250-2014

Name and address of factory (ies):

1. 1. HANWHA VISION VIETNAM COMPANY LIMITED

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)



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-2025-01003

Page (10) / (26) pages

3.3 Type 4X Test information

Type 4X

Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); that provides an increased level of protection against corrosion; and that will be undamaged by the external formation of ice on the enclosure.

Table 2-1
Comparison of Specific Applications of Enclosures for Indoor Nonhazardous (Unclassified) Locations

Provides a Degree of Protection against the Following Conditions	Type of Enclosure									
	1	2	4	4X	5	6	6P	12	12K	13
Access to hazardous parts	X	X	X	X	X	X	X	X	X	X
Ingress of solid foreign objects (falling dirt)	X	X	X	X	X	X	X	X	X	X
Ingress of water (dripping and light splashing)	...	X	X	X	X	X	X	X	X	X
Ingress of solid foreign objects (circulating dust, lint, fibers, and flyings **)	X	X	...	X	X	X	X	X
Ingress of solid foreign objects (settling airborne dust, lint, fibers, and flyings **)	X	X	X	X	X	X	X	X
Ingress of water (hosedown and splashing water)	X	X	...	X	X	...	...	...
Oil and coolant seepage	X	X	X
Oil or coolant spraying and splashing	X
Corrosive agents	X	...	...	X	...	...	...
Ingress of water (occasional temporary submersion)	X	X	...	...	...
Ingress of water (occasional prolonged submersion)	X	...	...	...

** These fibers and flyings are not considered Class III type ignitable fibers or combustible flyings. For Class III type ignitable fibers or flyings see the *National Electrical Code*®, Article 500.5(D).

Table 2-2
Comparison of Specific Applications of Enclosures for Indoor & Outdoor Nonhazardous (Unclassified) Locations

Provides a Degree of Protection Against the Following Conditions	Type of Enclosure									
	3	3X	3R	3RX	3S	3SX	4	4X	6	6P
Access to hazardous parts	X	X	X	X	X	X	X	X	X	X
Ingress of solid foreign objects (falling dirt)	X	X	X	X	X	X	X	X	X	X
Ingress of water (dripping and light splashing)	X	X	X	X	X	X	X	X	X	X
Ingress of water (rain, snow, and sleet **)	X	X	X	X	X	X	X	X	X	X
Sleet ***	...	...	...	...	X	X	...	...	...	...
Ingress of solid foreign objects (windblown dust, lint, fibers, and flyings****)	X	X	...	...	X	X	X	X	X	X
Ingress of water (hosedown and splashing water)	...	...	...	...	...	...	X	X	X	X
Corrosive agents	...	X	...	X	...	X	...	X	...	X
Ingress of water (occasional temporary submersion)	...	...	...	...	...	...	...	...	X	X
Ingress of water (occasional prolonged submersion)	...	...	...	...	...	...	...	...	...	X

** External operating mechanisms are not required to be operable when the enclosure is ice covered.

*** External operating mechanisms are operable when the enclosure is ice covered. See subsection 5.6.

**** These fibers and flyings are not considered Class III type ignitable fibers or combustible flyings. For Class III type ignitable fibers or flyings see the *National Electrical Code*®, Article 500.5(D).

**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-2025-01003
Page (11) / (26) pages

Table 5-1A
Degrees of Protection Against Access to Hazardous Parts

Enclosure Type	Test Conditions	Degree of Protection		Corresponding IP First Characteristic Numeral
		Brief Description	Definition	
4X	5.7	Protected against access to hazardous parts with a wire	An access probe of 1.0 mm shall not penetrate	6

Table 5-1B
Degrees of Protection Against Solid Foreign Objects

Enclosure Type	Test Conditions	Degree of Protection		Corresponding IP First Characteristic Numeral
		Brief Description	Definition	
4X	<u>Non-vented</u> 5.7	Windblown dust protected	No ingress of dust	6
	<u>Vented</u> 5.5.1 Dust Blast Method			

Table 5-1C
Degrees of Protection against Water

Enclosure Type	Test Conditions	Degree of Protection		Corresponding IP Second Characteristic Numeral
		Brief Description	Definition	
4X	5.7	Protected against hose directed water	Water projected against the enclosure in any direction shall not enter	6 No Ingress Allowed*

Table 5-1D
Additional Protection

Enclosure Type	Test Conditions	Additional Protection		Corresponding IP Second Characteristic Numeral
		Brief Description	Definition	
4X	5.6 5.9 5.10	Special corrosion protection and undamaged by the external formation of ice	Enclosure provides increased corrosion protection and is not damaged by ice that forms on the outside	None

**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-2025-01003
Page (12) / (26) pages

3.4 NEMA 250-2014 Test list

NEMA 250-2014			
Clause	Requirement + Test	Result – Remark	Verdict
3	CONSTRUCTION		
3.1	General		P
3.2	Units of Measurement		P
3.3	Materials-General	Enclosures are made of metal or polymeric materials	P
3.4	Materials-Polymeric	More than 650 mm ² (1 in ²) in area Polymeric Materials used is declared as Min. V-2 Used to UL certified material. (See the attachment 2)	N/E
3.5	Corrosion Protection	Stainless steel and/or aluminium are declared as the materials used (See the attachment 2)	N/E
3.6	Openings	No openings in Product	N/A
3.7	Mounting	Mounting means are external to the equipment cavity (See the attachment 1)	P
3.8	Conduit Connection	No conduit connection (See the attachment 1)	N/A
3.9	Hubs and Fittings	No Hubs and Fittings	N/A
3.10	Knockouts	No Knockouts	N/A
3.11	External Operating Mechanisms	No External Operating Mechanisms	N/A
3.12	Access to Interior	Needs tool to open unit	P
3.13	Closing Hardware	No closing Hardware	N/A

**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-2025-01003
Page (13) / (26) pages

NEMA 250-2014

Clause	Requirement + Test	Result – Remark	Verdict
3.14	Gaskets	Gaskets made of a silicone Sponge Rubber (no Elastomeric or Thermoplastic used) (See clause 5.14 and the attachment 2)	P
3.15	Observation Windows	No Observation Window	N/A

4	MARKING		
4.1	Type Designations	“Type 4X” Marking is declared to be on the product before on the market	P
4.2	Supplemental Markings	Supplemental Marking (watertight/corrosion resistant) is declared to be used when it is on the market. The required marking shall be added on the product)	P
4.3	Location of Markings	See the Attachment 3	P
4.4	Enclosure Orientation	No Particular Mounting Orientation	N/A
4.5	Conduit Hubs and Closure Plates	No Conduit Hubs and Closure Plates	N/A
4.6	Equipment Openings	No Openings on Unit	N/A
4.7	Drainage Openings	No Drain Openings	N/A

5	DESIGN TESTS		
5.1	General	See Table 5-1A to 5-1D and 5.1.5 in the General product information	P
5.2	Tests For Protection Against Access to Hazardous Parts	Rated 4X	N/A
5.3	Tests for Protection Against Ingress of Water (Dripping and Light Splashing)	Rated 4X	N/A

**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

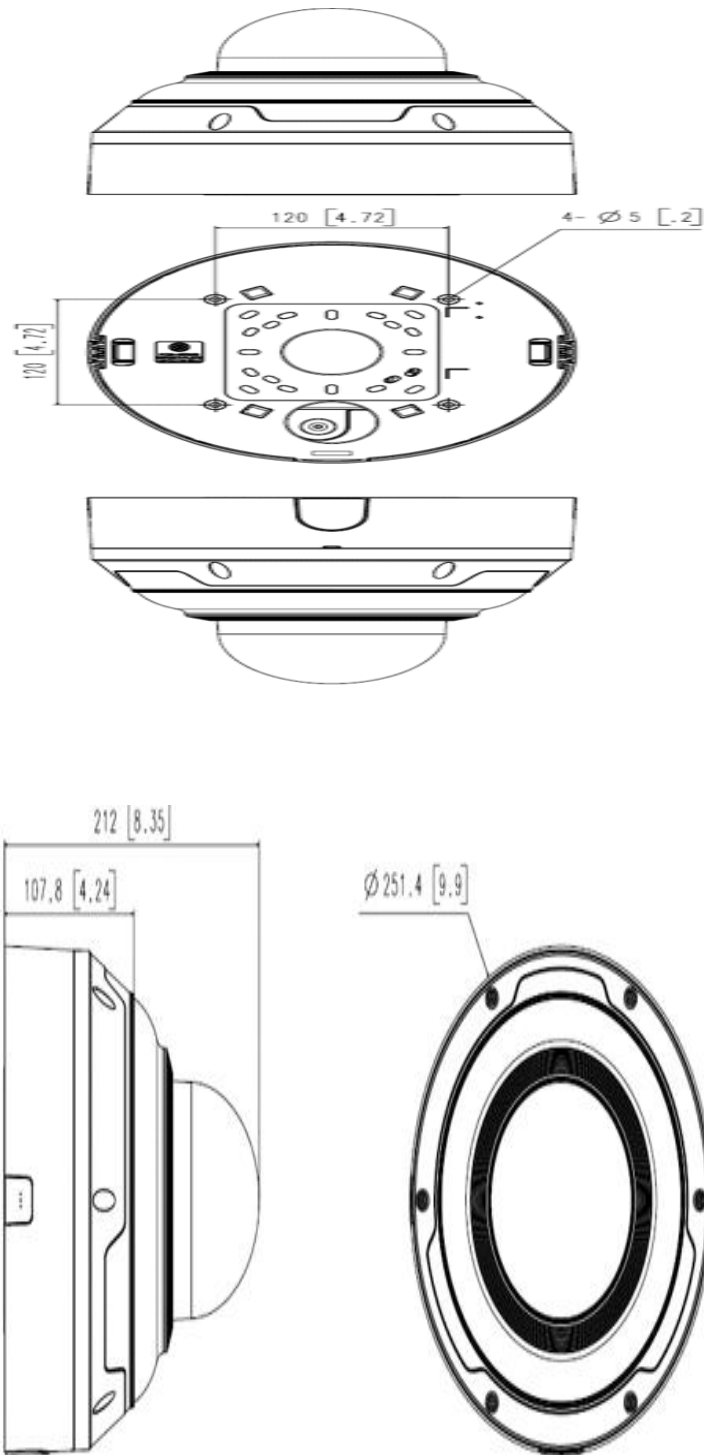
REPORT No. :
CTK-2025-01003
Page (14) / (26) pages

NEMA 250-2014

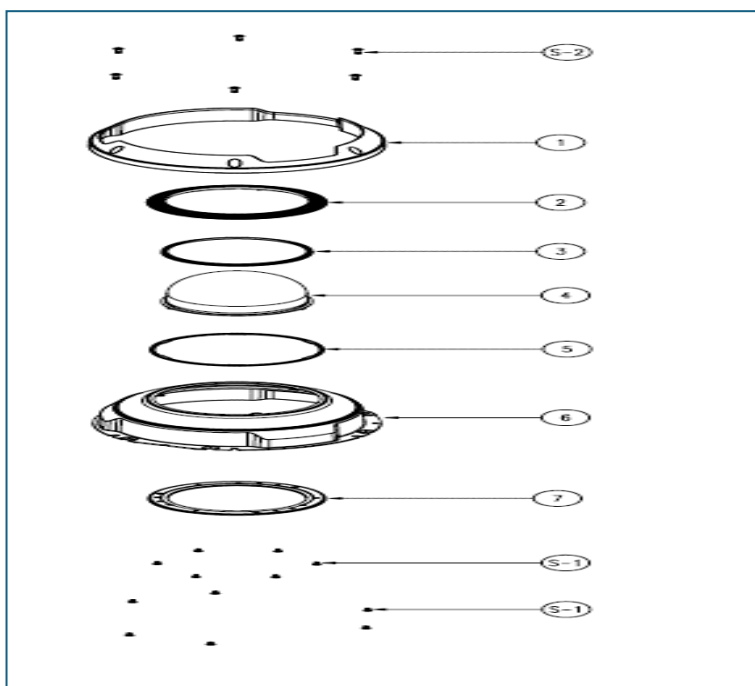
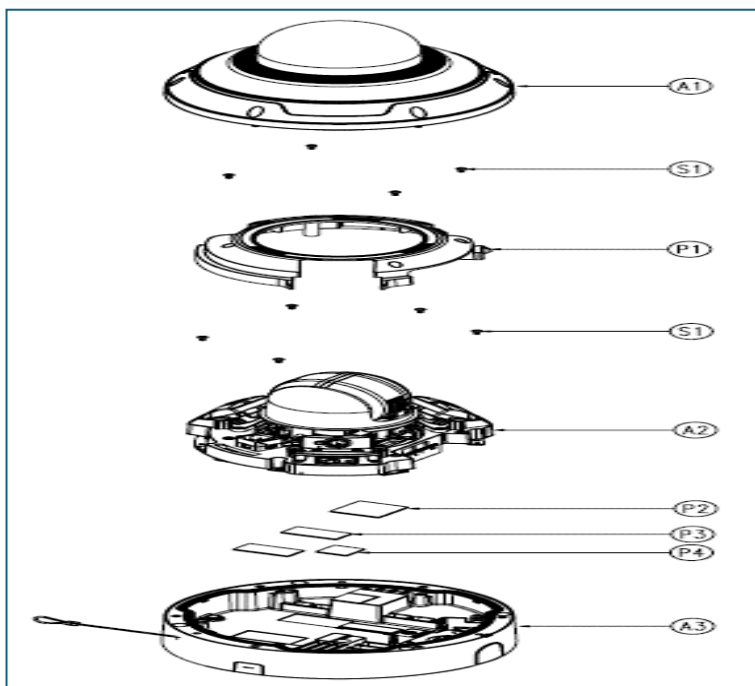
Clause	Requirement + Test	Result – Remark	Verdict
5.4	Tests for Protection Against Ingress of Water (Rain)	Rated 4X	N/A
5.5	Tests for Protection Against Ingress of Solid Foreign Objects (Setting Airborne Dust, Lint, Fibers, And Flings)	Non-vented (See clause 5.7)	N/A
5.6	External Icing Test	No external cavities to trap water when mounted in the normal position.	N/A
5.7	Tests for Protection Against Ingress of Water (Hosedown)	No entry of water See the test information	P
5.8	Indoor Corrosion Protection (Rust-Resistance Test (24-Hour Salt Spray Test))	See clause 3.5	N/E
5.9	Outdoor Corrosion Protection	See clause 3.5	N/E
5.10	Corrosion Protection-Type 3X, 3RX, 3SX, 4X Or 6P Enclosures	See clause 3.5	N/E
5.11	Test for Protection Against Ingress of Water (Temporary Submersion)	Rated 4X	N/A
5.12	Test for Protection Against Ingress of Water (Prolonged Submersion)	Rated 4X	N/A
5.13	Oil Exclusion Test	Rated 4X	N/A
5.14	GASKET MATERIAL TESTS	The product itself(including gaskets) was conditioned at 70 °C for 168 hrs according to 5.14.3(Alternate Evaluation) before performing relevant required tests.	P
5.15	Test for Sharpness of Edges	No sharp edges	P

3.5 Attachment 1 - Construction Diagram and installation method

3.5.1 Construction Diagram



3.5.2 Installation method(1)



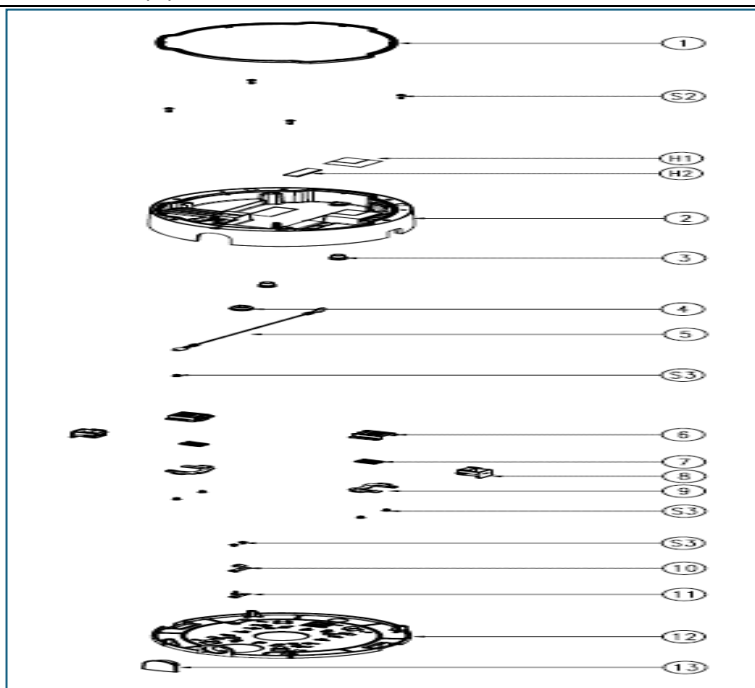


CTK Co., Ltd.

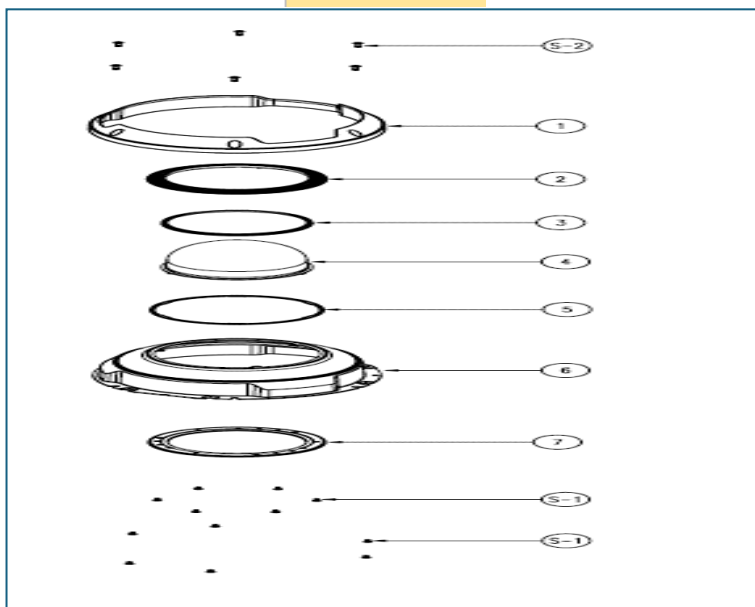
5 Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si,
Gyeonggi-do, Republic of Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

REPORT No.:
CTK-2025-01003
Page (17) / (26) pages

3.5.3 Installation method(2)



A1



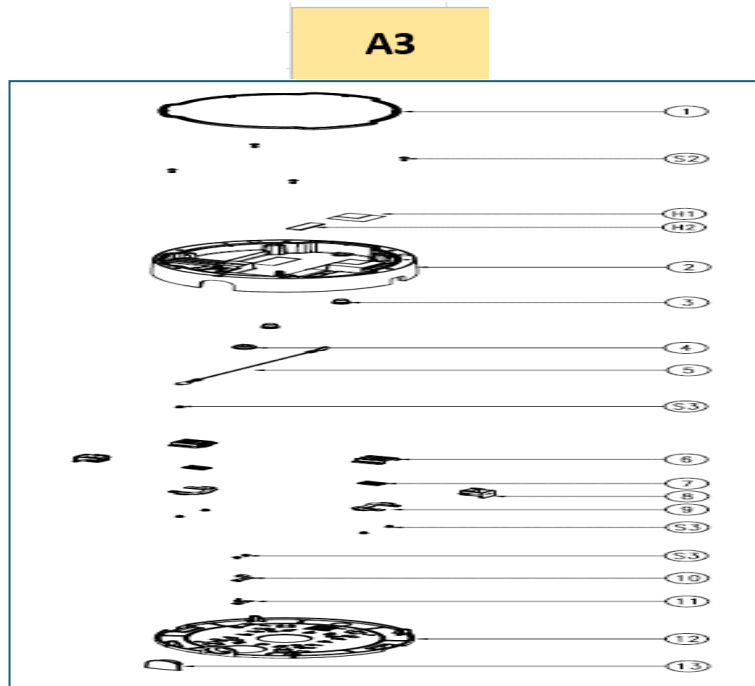


CTK Co., Ltd.

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-2025-01003
Page (18) / (26) pages

3.5.4 Installation method(3)





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-2025-01003
Page (19) / (26) pages

3.6 Attachment 2 - Parts List

3.6.1 Parts List (1)

No.	품명	재질			최소살두께(mm)
		대분류	소분류	메이커(모델명)	
A1-1	CASE-TOP-PNM-C19183R	AL			2.0
A1-2	BRACKET-TOP-DOME-PNM-C19183R	AL			1.5
A1-4	COVER-DOME-PTZ	Plastic	PC	MITSUBISHI(S-2000VUR), F1	2.0
A1-6	ASSY,COVER-DOME-MULTI-B-PNM-C19183R	Plastic	PC	MITSUBISHI(S-2000VUR), F1	2.0
				COVESTRO(MAKROLON 2407), F1	2.0
A3-2	CASE-BOTTOM-PNM-C19183R	AL			2.0
A3-8	HOLDER-SWITCH-BTM;PNM-C32083RQZ	Plastic	PC	LOTTE (HN-1068), F1	1.8
A3-12	MOUNT-PLATE-PNM-C19183R	AL			2.5
A3-13	COVER-BOT-XNV-6081Z	Plastic	PC	LOTTE (HN-1068), F1	2.0

Component - Plastics

E41179

MITSUBISHI ENGINEERING-PLASTICS CORP

ENVIRONMENT & QUALITY ASSURANCE DEPT, DIV 1, SHIODOME SUMITOMO-BLDG 25TH FL., 1-9-2 HIGASHI-SHINBASHI, MINATO-KU TOKYO 105-0021 JP

S-2000V+(f1), S-2001V+(f1), S-2003V+(f1)

Polycarbonate (PC), unreinforced, furnished as pellets

Color	Min Thk (mm)	Flame Class	HMM	HAI	RTI Elec	RTI Imp	RTI Str
ALL	0.38	V-2	-	-	80	80	80
	1.5	V-2	3	0	125	115	125
	3.0	V-2	3	0	125	115	125

Comparative Tracking Index (CTI): 2

Dielectric Strength (kV/mm): 20

High-Voltage Arc Tracking Rate (HVTR): 0

Dimensional Stability (%): 0

Inclined Plane Tracking (IPT): -

Volume Resistivity (10⁴ ohm-cm): 7

High Volt, Low Current Arc Resis (D495): 5

(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.


+ - Suffix optional, exceptions: The following cannot be used as optional suffixes: "T" for grade 2030, "A" for 1501, 1502, 1511, 1521 & 2502, "N" for NXG5050, NXG5030, NXG5501, & CGF-(v)(u), "S1" for F20-54.

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 1992-10-01

Last Revised: 2004-03-23

Underwriters Laboratories Inc®



IEC and ISO Test Methods

Test Name	Test Method	Units	Thickness Tested (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	0.38	V-2 (ALL)
			1.5	V-2 (ALL)
			3.0	V-2 (ALL)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	C	-	-
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	C	-	-
IEC Comparative Tracking Index	IEC 60412	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	C	-	-
ISO Heat Deflection (1.80 MPa)	ISO 75-2	C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m ²	-	-
ISO Izod Impact	ISO 180	kJ/m ²	-	-
ISO Charpy Impact	ISO 179-2	kJ/m ²	-	-

Underwriters Laboratories Inc®



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-2025-01003
Page (20) / (26) pages

3.6.2 Parts List (2)

UL인증

LOTTE CHEMICAL

Grade

HN-1068

Component - Plastics

Guide Information

LOTTE CHEMICAL CORPORATION

56 Gosan-ro, Ulsan-si Gyeonggi-do 16073 KR

HN-1068(+)(f1)

Polycarbonate (PC) "INFINO", furnished as pellets

Color	Min. Thk (mm)	Flame Class	HWI	HA	RTI Elec	RTI Imp	RTI Str
ALL	1.5	V-0	3	3	130	130	130
	3.0	V-0	-	-	130	130	130

Comparative Tracking Index (CTI): 3.
Dielectric Strength (kV/mm): 31.8
High-Voltage Arc Tracking Rate (HVTR): -
Dimensional Stability (%): -
Inclined Plane Tracking (IPT) kV: -
Volume Resistivity (10¹² ohm-cm): 17
Surface Resistivity (10¹² ohms/square): -
High Volt, Low Current Arc Resis (D495): -
(+) - May be replaced by one, two, or three numbers and/or letter(s)
(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.
ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 1998-08-24
Last Revised: 2019-08-27

© 2020 UL LLC

UL US

IEC and ISO Test Methods

Test Name	Test Method	Units	Thk (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	1.5	V-0 (ALL)
			3.0	V-0 (ALL)
Glow-Wire Flammability (GWFI)	IEC 60695-2-12	°C	1.5	960
			3.0	960
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	°C	1.5	825
			3.0	825
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	°C	-	130
ISO Heat Deflection (1.80 MPa)	ISO 75-2	°C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m ²	-	-
ISO Izod Impact	ISO 180	kJ/m ²	-	-
ISO Charpy Impact	ISO 179-1	kJ/m ²	-	-

UL

Component - Plastics

File Number: E41613

Covestro Deutschland AG [PC Resins]

Chempark

Gebäude B207

Leverkusen, 51368 Germany

Makrolon: RW2407 + (z) (f1), RW2407 + RE (f1)

Polycarbonate (PC), pellets

(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.
(z) - Material designation and color code may be followed by up to three letters and/or three numbers (does not include grades which are separately recognized with above material designation and suffix)
+ - Material designations may be followed by a six digit numerical code denoting color.

Flammability	Value	Test Method
Flame Rating		UL 94
2.7 mm, WT	HB	
3.0 mm, WT	HB	
6.0 mm, WT	HB	
0.75 mm, WT	V-2	
1.5 mm, WT	V-2	
1.5 to 2.6 mm, WT	V-2	
Flammability Classification		IEC 60695-11-10, -20
3.0 mm, WT	HB40	
6.0 mm, WT	HB40	
2.7 mm, WT	HB75	
0.75 mm, WT	V-2	
1.5 mm, WT	V-2	
1.5 to 2.6 mm, WT	V-2	
Glow Wire Flammability Index		IEC 60695-2-12
0.75 mm	850 °C	
3.0 mm	960 °C	
Glow Wire Ignition Temperature		IEC 60695-2-13
0.75 mm	900 °C	
1.5 mm	900 °C	
3.0 mm	930 °C	
Hot-wire Ignition (HWI)		UL 746A
0.75 mm	PLC 3	
1.5 mm	PLC 2	
1.5 to 2.6 mm	PLC 2	
2.7 mm	PLC 2	
3.0 mm	PLC 2	
6.0 mm	PLC 1	

Page 1 of 2

UL LLC ©2025. All rights reserved. | www.ul.com

Form Number: E41613-101325083

Report Date: 11/23/2012

Last Revised: 2/13/2023 3:04:30 AM

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.



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-2025-01003
Page (21) / (26) pages

3.6.3 Parts List (3)

Component - Plastics

File Number: E41613



Electrical	Value	Test Method
High Amp Arc Ignition (HAI)		UL 746A
0.75 mm	PLC 1	
1.5 mm	PLC 1	
1.5 to 2.6 mm	PLC 1	
2.7 mm	PLC 1	
3.0 mm	PLC 0	
6.0 mm	PLC 0	
Comparative Tracking Index (CTI)	PLC 2	UL 746A
Thermal	Value	Test Method
RTI Elec		UL 746B
0.75 mm	125 °C	
1.5 mm	125 °C	
1.5 to 2.6 mm	125 °C	
2.7 mm	125 °C	
3.0 mm	125 °C	
6.0 mm	125 °C	
RTI Imp		UL 746B
0.75 mm	115 °C	
1.5 mm	115 °C	
1.5 to 2.6 mm	115 °C	
2.7 mm	115 °C	
3.0 mm	115 °C	
6.0 mm	115 °C	
RTI Str		UL 746B
0.75 mm	125 °C	
1.5 mm	125 °C	
1.5 to 2.6 mm	125 °C	
2.7 mm	125 °C	
3.0 mm	125 °C	
6.0 mm	125 °C	
Physical	Value	Test Method
Outdoor Suitability	II	UL 746C

Notice of Disclaimer

By accessing this Yellow Card data information sheet and the database from which this information was generated (the "Yellow Card"), the user acknowledges and accepts the terms and conditions upon which this Yellow Card is made available. This Yellow Card, the database from which it was generated, and all related materials, support, and services, are made available by UL for use only by permission and "as is", without any representation or warranty of any kind, express or implied, including but not limited to any implied warranties of merchantability, fitness for a particular purpose or that the products identified in this Yellow Card will satisfy the user's requirements. UL cannot and does not warrant that the data contained in this Yellow Card is current, accurate, or complete. The user must independently confirm the conformance of any product to the applicable standards or requirements with the manufacturer of that product. Permission to access this Yellow Card may be withdrawn at any time by UL in its sole discretion. The identification of products and companies on this Yellow Card does not in any way imply endorsement of those products or companies by UL. UL does not assume and expressly disclaims liability to any person for any loss or damage (including lost profits, lost savings, or any indirect, special, incidental, consequential or punitive damages whether or not UL has been advised of the possibility of such damages) arising out of, or in connection with, the use of this Yellow Card regardless of the cause or causes of such loss or damage.

Page 2 of 2

UL LLC ©2025. All rights reserved. | www.ul.com

Form Number: E41613-101525083

Report Date: 11/23/2012

Last Revised: 2/13/2023 3:04:30 AM

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

**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-2025-01003
Page (22) / (26) pages

4. Hose Down Test (Clause 5.7)

4.1 Test date and environmental conditions

4.1.1 Test date: Feb. 18, 2025~ Feb. 25, 2025

4.1.2 Measured Environmental Conditions

Item	Temperature (°C)	Humidity (% R.H.)	Pressure (kPa)
Measurement	16.5	40.2	98.1

4.2 Test Conditions and methods

4.2.1 Description of Test

The enclosure and its external mechanisms were subjected to a stream of water from a hose that has a 25.4 mm (1 in) inside diameter nozzle and delivers at least 240 L (65 gal) per minute. The nozzle was held from 3.0 to 3.5 m (10 to 12 feet) from the enclosure, and the spray of water was directed at all points of potential water entry such as seams, joints, external operating mechanisms, and such. The nozzle was moved along each test point one time at a uniform rate of 6 mm/sec (1/4 in/sec).

4.2.2 Sample Dimension

Ø251.4 by 789.39 mm, Ø 200 by 628 mm, Ø120 by 376.8 mm

Ø7*6 by 131.88 mm, Ø25 by 78.5 mm

Test Duration = 334.09 secs

4.2.3 Acceptance conditions

The enclosure shall be considered to have met the requirements if at the conclusion of the test no water has entered the enclosure



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-2025-01003
Page (23) / (26) pages

4.3 Attachment 3 - Photographs

4.3.1 Hose down test



**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-2025-01003
Page (24) / (26) pages

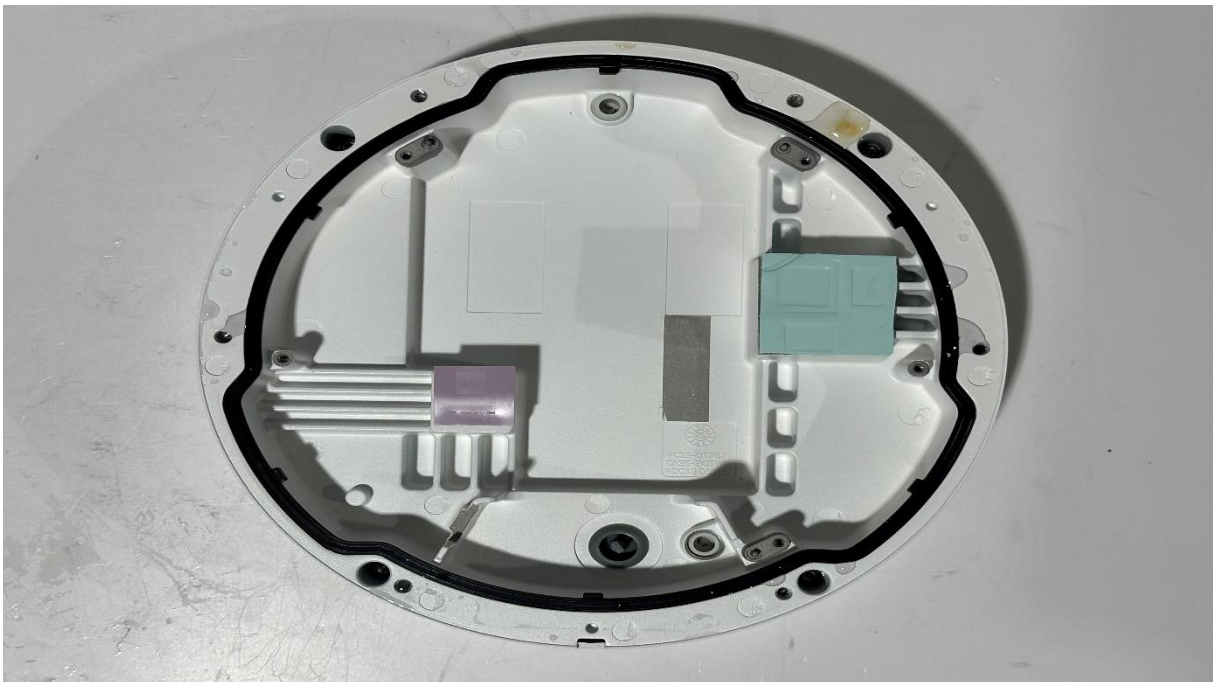
4.4 Test result**4.4.1 Test result table**

Sample No (Model)	Water Flow	Presence of water inside	Result
PNM-C19183RVTP	240 LPM	No	Normal

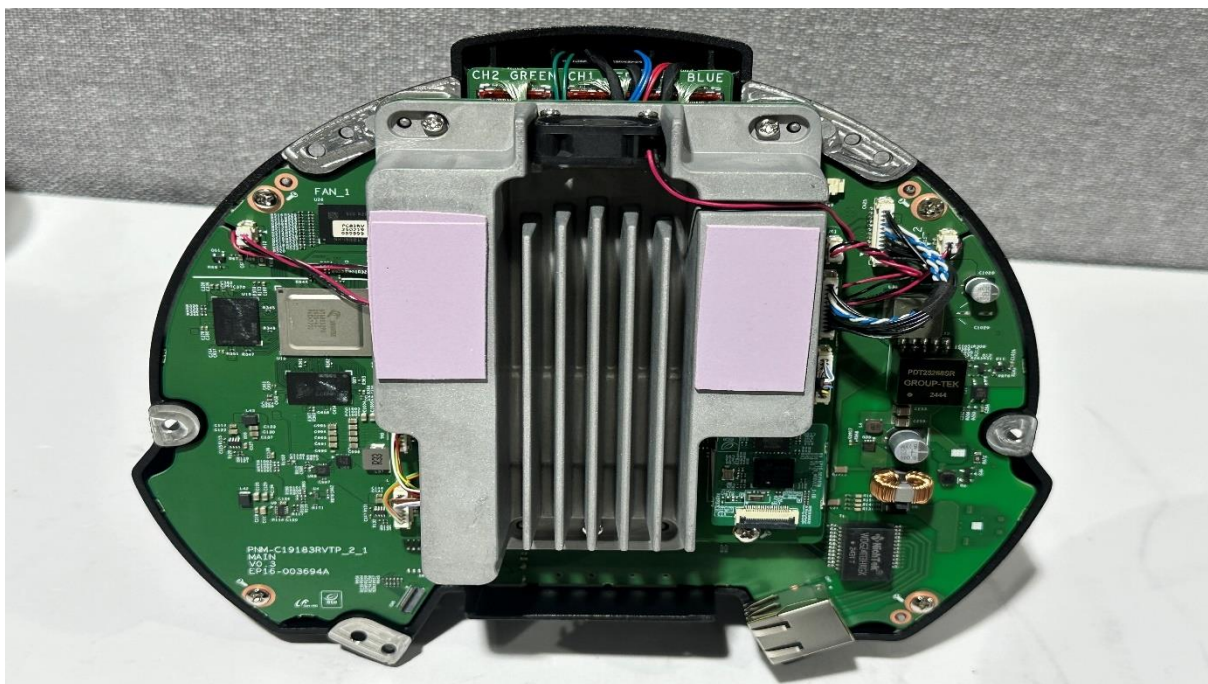
※ Refer to the product photos after the completion of testing in section 4.5.

4.5 Post-test product images

4.5.1 Test sample image (1)



4.5.2 Test sample image (2)



- End -