TEST REPORT

CTK Co., Ltd.
(Ho-dong), 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, 449-100, Korea
Tel: +82-31-339-9970
Fax: +82-31-624-9501

REPORT No.: CTK-2025-00980

1.	**Applicant**	
	◦ Name :	Hanwha Vision Co., Ltd
	◦ Address :	6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488 KOREA
	◦ Date of Receipt :	Feb. 19, 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 / PNO-A9092R
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) ℃, 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.
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Approval	Tested by Name: HyungUk Jeon (Signature)	Technical Manager Name: HoHyun Lee (Signature)

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

Jun 25, 2025

CTK Co., Ltd.

Table of Contents

1. Testing laboratory

1.1 Testing laboratory information

Lab. Name	CTK Co., Ltd.
Address	113, Yejik-ro, Cheoin-gu, Yongin-si, Gyeonggi-do Republic of Korea
Tel.	031-339-9970
Fax.	031-624-9501
E-Mail	all.yongin@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	PNO-A9092R	1 EA	-

2.2 Manufacturer information

Test item description ..... :	NETWORK CAMERA
Trade Mark ..... :	Hanwha Vision
Manufacturer ..... :	Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
Model/Type reference ..... :	PNO-A9092R
Ratings ..... :	Electrical PNO-A9092R DC 12V ⎓ 16.5W / PoE 53 V ⎓ 19.2 W DC 12V ⎓ 1.38 A / PoE 53 V ⎓ 0.36 A PNO-A9082R DC 12V ⎓ 16.5W / PoE 53 V ⎓ 19.2 W DC 12V ⎓ 1.38 A / PoE 53 V ⎓ 0.36 A PNO-A7082R DC 12V ⎓ 12.7W / PoE 53 V ⎓ 15.0 W DC 12V ⎓ 1.06 A / PoE 53 V ⎓ 0.28 A Dimension: Ø160 by 502.4 mm, Ø90 by 282.6 mm, Ø25*2 by 157 mm, Ø7*4 by 87.92 mm,120 mm,48 mm,48 mm,60 mm

List of Attachments (including a total number of pages in each attachment):
Attachment 1: 16-17 pages (Construction Diagram including installation method)
Attachment 2: 18-21 pages (Parts List)
Attachment 3: 23-27 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

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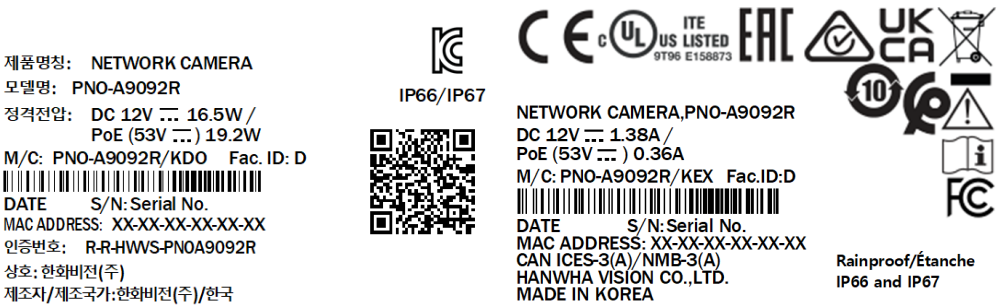
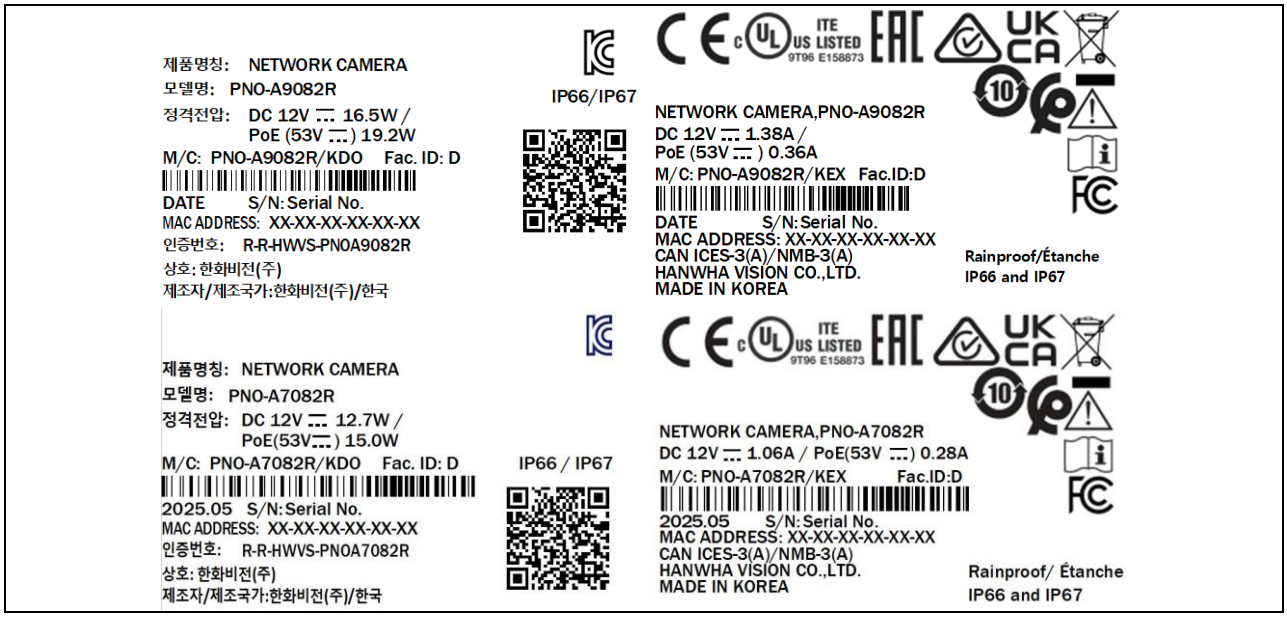



제품명칭: NETWORK CAMERA
모델명: PNO-A9082R
정격전압: DC 12V ⎓ 16.5W /
PoE (53V ⎓) 19.2W
M/C: PNO-A9082R/KDO Fac. ID: D
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
인증번호: R-R-HWS-PNOA9082R
상호: 한화비전(주)
제조자/제조국가:한화비전(주)/한국
IP66/IP67
NETWORK CAMERA,PNO-A9082R
DC 12V ⎓ 1.38A /
PoE (53V ⎓) 0.36A
M/C: PNO-A9082R/KEX Fac.ID:D
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
HANWHA VISION CO.,LTD.
MADE IN KOREA
Rainproof/Étanche
IP66 and IP67
제품명칭: NETWORK CAMERA
모델명: PNO-A7082R
정격전압: DC 12V ⎓ 12.7W /
PoE(53V ⎓) 15.0W
M/C: PNO-A7082R/KDO Fac. ID: D
2025.05 S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
인증번호: R-R-HWS-PNOA7082R
상호: 한화비전(주)
제조자/제조국가:한화비전(주)/한국
IP66 / IP67
NETWORK CAMERA,PNO-A7082R
DC 12V ⎓ 1.06A / PoE(53V ⎓) 0.28A
M/C: PNO-A7082R/KEX Fac.ID:D
2025.05 S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
HANWHA VISION CO.,LTD.
MADE IN KOREA
Rainproof/ Étanche
IP66 and IP67

2.3 Equipment information

Testing equipment	Model Name	Manufacturer	Manufacturing Number	Effective Calibration 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
Stop Watch	NONE	Casio	612Q01R-1	Jan.15,2027
Digital Vernier Calipers	100 mm	MITUTOYO	A17179462	-

2.4 Pre-test product images

Top

Bottom

Front

Rear

Lest side

Right side

2.5 Testing equipment images

25.4mm Nozzle

Temperature & Humidity Chamber

Area flow meter

Stop Watch

Stop Watch

Digital Vernier Calipers

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

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. 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)

Basic Model	PNO-A9092R
Series Model	PNO-A9082R, PNO-A7082R
Model differences	Use of the same external shape and materials (case, finishing material, PCB, cable, etc.), differences in SW

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).

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	Non-vented 5.7 Vented 5.5.1 Dust Blast Method	Windblown dust protected	No ingress of dust	6

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

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

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

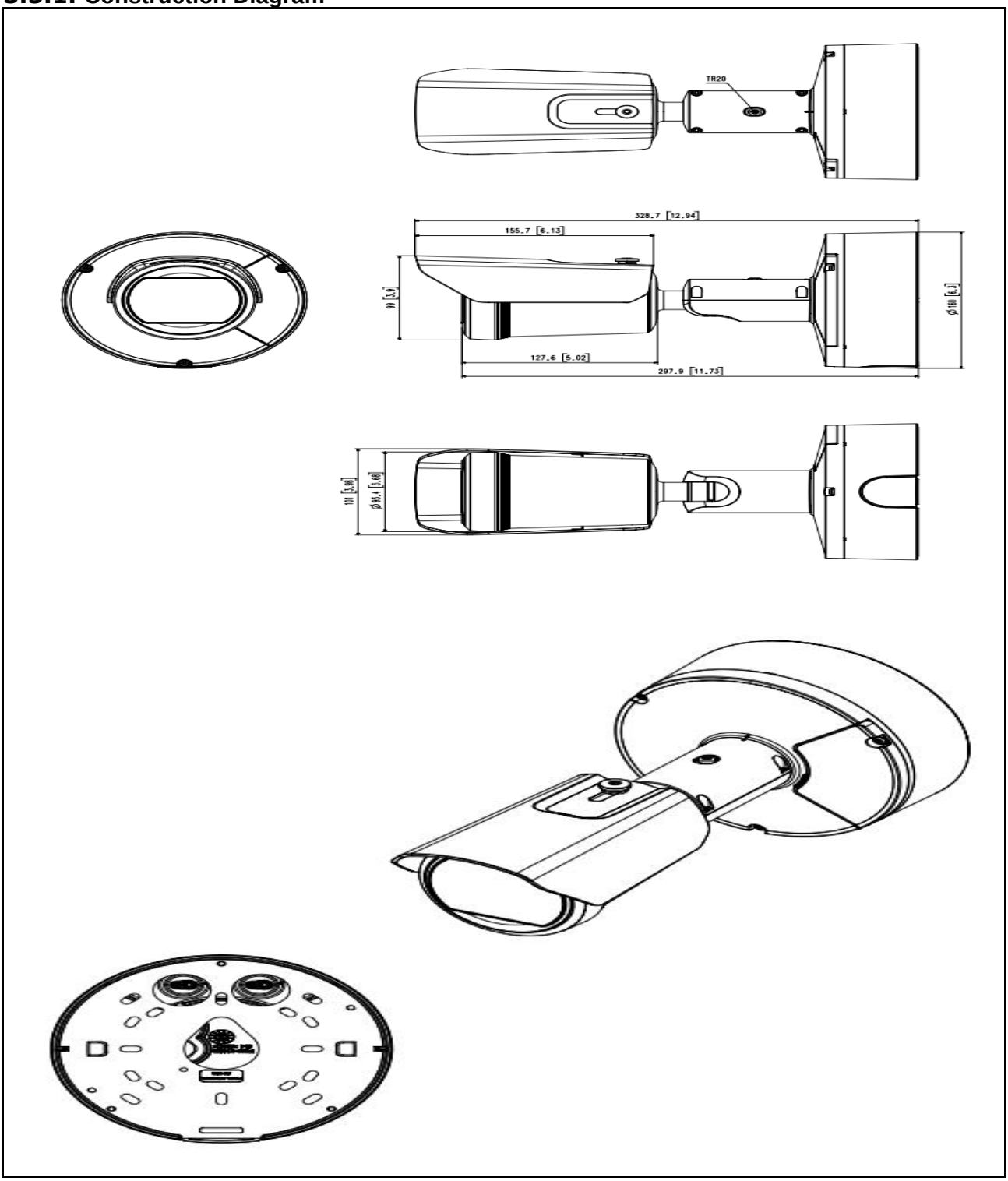
4	**MARKING**		
4.1	Type Designations	“Type 4X” Marking is declared to be on the product before on the market	P
4.2	Supplemental Markings	Supplemental Marking (watertight/ corrosion resistant) is declared to be used when it is on the market. The required marking shall be added on the product)	P
4.3	Location 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

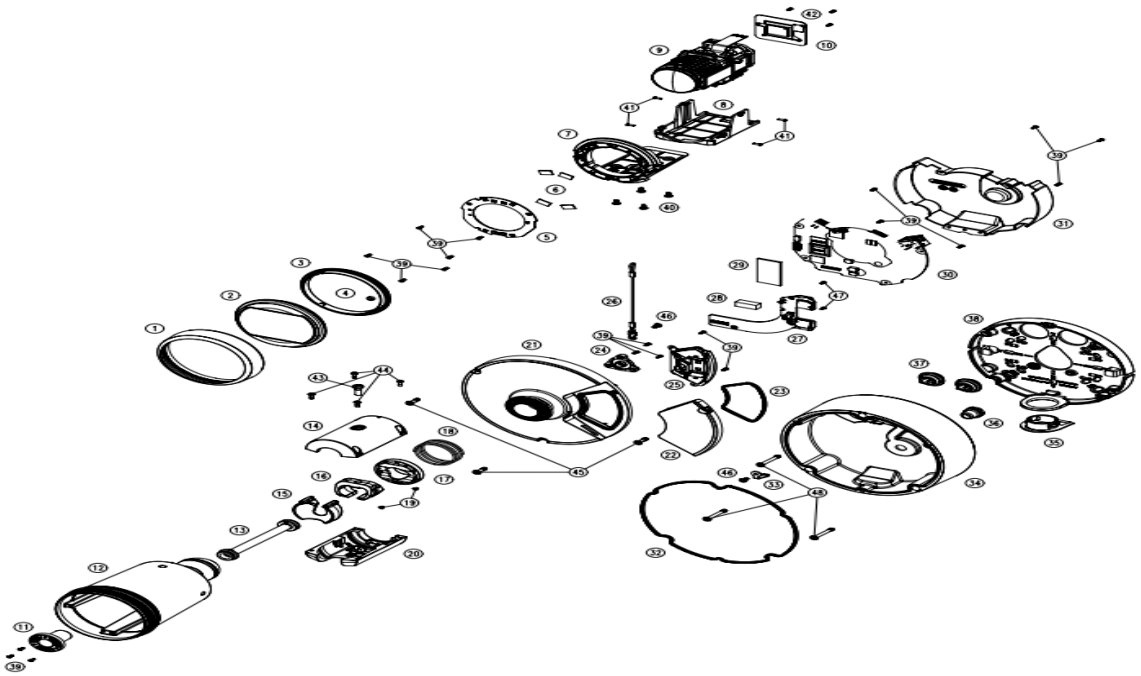
NEMA 250-2014			
Clause	**Requirement + Test**	**Result – Remark**	**Verdict**
5.4	Tests for Protection Against Ingress of Water (Rain)	Rated 4X	N/A
5.5	Tests for Protection Against Ingress of Solid Foreign Objects (Setting Airborne Dust, Lint, Fibers, And Flings)	Non-vented (See clause 5.7)	N/A
5.6	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 ℃ 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



3.5.1. installation method



No.	Part Name	Part Code	Q'ty
1	COVER-FRONT-XN09083R;AL	FC15-008336A	1
2	ASSY,FRONT-WINDOW-PNO-A9092R	AM07-017492A	1
3	GASKET-WINDOW;O-VMQ-60-BK,PNO-A9092R	HP07-001973A	1
4	GASKET-CDS SENSOR_XNO-C9083R;EPDM	HP07-001640A	1
5	ASSY,PCB-PNO-A9092R IR LED	AM06-011594A	1
6	PAD-THERMAL, 12X8;GP-11(350),1.0	FC28-002128A	4
7	SINK,HEAT-LED;ADC12,PNO-A9092R,BLK	EP07-002098A	1
8	HOLDER-LENS;PNO-A9092R,BLK,PC V0	FC29-017645A	1
9	LENS SET-C72568-400+15MM-51MM+8M;VCL	EP14-001292	1
10	ASSY,PCB-PNO-A9092R SENSOR	AM06-011494A	1
11	COVER-BUSHING-MD-XNO-C9083R;PC,MOLD	FC15-008257A	1
12	CASE-BODY-XN09083R	FC29-014149A	1
13	TUBE,ETC-CABLE-105_XNO-C9083R;-,-,RUBBER	HP13-001217B	1
14	CASE-TOP BRACKET_XNO-C9083R;ADC12,WHITE	FC29-014039A	1
15	LOCKER-FRONT-BRKT_C3012TRA;DI3,ADC12	FC28-003367E	1
16	PUSHER-BRACKET_TNO-C30X;ADC12,WHITE	FC29-014038C	1
17	LOCKER-REAR_TNO-C30X;ADC12,ANODIZING	FC28-003369B	1
18	SPRING,COM-BRACKET_XNO-C9083R;SWPB	FC38-001279A	1
19	STOPPER,PIN-XNO-9083R;SUS	FC29-014053A	2
20	CASE-BOTTOM BRACKET_XNO-C9083R;ADC12,WHI	FC29-014048A	1
21	CASE-TOP-BACKBOX;ADC12,WHT,PNO-A9092R	FC29-017646A	1
22	DOOR-BACKBOX;ADC12,PNO-A9092R,WHT	FC28-004051A	1
23	GASKET-DOOR;O-VMQ-30-BK,PNO-A9092R	HP07-001991A	1
24	COVER-BUSHING_XNO-C9083R;ADC12	FC15-008240A	1
25	HOLDER-PCB SD;PNO-A9092R,BLK,PC V0	FC29-017647A	1
26	WIRE,METALIC-SAFETY_XNO-9082R;SUS304	RM01-005528A	1
27	ASSY,PCB-PNO-A9082R SD	AM06-011590A	1
28	SPACER-CUSHION;EVA T7.0,PNO-A9092R	FC18-007804A	1
29	PAD-THERMAL-45X22XT2;K=7W/M-K	FC28-003406A	1
30	ASSY,PCB-PND-A9082RV MAIN_WN9	AM06-011670A	1
31	COVER-PCB MAIN;PC V0,PNO-A9092R,BLK	FC15-011184A	1
32	GASKET-CASE-BBOX-XN09083R;SILICON	HP07-001652A	1
33	BRACKET-WIRE-XNO-9082R;SUS304,1.2	FC09-011881A	1
34	CASE-BOTTOM-BBOX-PNO-A9311IR;ADC12,WHITE,	FC29-011419C	1
35	COVER-BOT-XNV-6081Z;PC	FC15-006682B	1
36	VENT-GORE-PMF100586-WHT;MEMBRANE,SCREW 1	HP06-001351	1
37	BUSHING-CABLE 2 HOLE;SILICONE,GRAY	MC06-001189A	2
38	BRACKET-MOUNT-XN0908R;ADC12	FC09-012685A	1
39	SCREW-MACHINE;6001-001708,BH,+,M2,L5,ZP	Z60010552201A	20
40	SCREW,TAPTITE-M3_L6_BLK;1,L6,-,-	FC18-006373A	4
41	SCREW-TAPTITE;PH,+,M2,L6,BLK,B-TYPE	Z60030196101A	4
42	SCREW-TAPTITE ; CH,+,M2,L5,WHT,B-TYPE	Z60030122201A	3
43	SCREW-SEMS-TORX20_M5XL15;0.8,15,FLAT,M5,	FC18-006234A	1
44	SCREW-SPECIAL ; BH,TRIO,M3,L4.5+3.5,SUS,	FC18-001418C	4
45	SCREW-SPECIAL;PH,TR20,M4,L7+5,SUS,FP	FC18-004000A	3
46	SCREW-MACHINE;6001-001476,BH,+,M3,L6,Ni	Z60010535101A	2
47	SCREW-TAPTITE;PL,+,M2,L4,WHT,B-TYPE	Z60030198101A	2
48	SCREW-MACHINE-BUILT-IN_TORX20;0.7,28,NO,	FC18-004930A	3

3.6 Attachment 2 – Parts List

UL Product iQ®

Model EXL1434T (GG)(f1)(N1)(BK47)
File Number: E121562

Yellow Card™

COMPANY
SABIC INNOVATIVE PLASTICS US L L C
AMERICAS - RESIN
1 PLASTICS AVE
PITTSFIELD, MA 01201-3662 United States

MODEL INFO
Lexan: EXL1434T (GG)(f1)(N1)(BK47)
PC/Siloxane, UV Stabilized, furnished as pellets
(N1) -- Natural Color represents color code NABA005T
(GG) -- Denotes a global grade formulation previously in File E161759.
(f1) -- Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.
NOTE -- Material designation may be followed by a color nomenclature consisting of either an alpha/numeric or numeric/alpha combination.
(BK47) -- Black Color represents color code 7N1A6522T

FLAMMABILITY PROPERTIES	VALUE	TEST METHOD
Flammability		ANSI/UL 94
0.8 mm, Color: BK	HB	
1.5 mm, Color: NC, BK	HB	
2.5 mm, Color: NC, BK	HB	
3.0 mm, Color: NC, BK	V-2	

ISO/IEC FLAMMABILITY PROPERTIES	VALUE	TEST METHOD
Flammability		IEC 60695-11-10
0.8 mm, Color: BK	HB75	
1.5 mm, Color: NC, BK	HB75	
2.5 mm, Color: NC, BK	HB75	
3.0 mm, Color: NC, BK	V-2	
Glow Wire Ignition Temperature (GWIT)		IEC 60695-2-13
0.8 mm	850 °C	
1.5 mm	850 °C	
2.5 mm	850 °C	
3.0 mm	850 °C	
Glow Wire Flammability Index (GWFI)		IEC 60695-2-12
0.8 mm	825 °C	
1.5 mm	825 °C	
2.5 mm	825 °C	
3.0 mm	960 °C	

THERMAL PROPERTIES	VALUE	TEST METHOD
Relative Thermal Index - Electrical Strength		UL 746B
0.8 mm	80 °C	
1.5 mm	130 °C	
2.5 mm	130 °C	
3.0 mm	130 °C	
Relative Thermal Index - Mechanical Impact		UL 746B
0.8 mm	80 °C	
1.5 mm	120 °C	
2.5 mm	120 °C	
3.0 mm	120 °C	
Relative Thermal Index - Mechanical Strength		UL 746B
0.8 mm	80 °C	
1.5 mm	130 °C	
2.5 mm	130 °C	
3.0 mm	130 °C	

PHYSICAL PROPERTIES	VALUE	TEST METHOD
UV Exposure & Water Immersion	f1	UL 746C

Report Date: 2003-11-11
Revision Date: 2024-02-14

Component - Plastics
File Number: E115797

LOTTE CHEMICAL CORPORATION
56 GOSAN-RO
UIWANG-SI, GYEONGGI-DO 16073 Republic of Korea

INFINO: HN-1068(+)(f1)
Polycarbonate (PC), pellets
(+) - 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.

Flammability	Value	Test Method
Flame Rating		UL 94
1.5 mm, ALL	V-0	IEC 60695-11-10, -20
3.0 mm, ALL	V-0	
Glow Wire Flammability Index		IEC 60695-2-12
1.5 mm	960 °C	
3.0 mm	960 °C	
Glow Wire Ignition Temperature		IEC 60695-2-13
1.5 mm	825 °C	
3.0 mm	825 °C	
Electrical	**Value**	**Test Method**
Hot-wire Ignition (HWI) (1.5 mm)	PLC 3	UL 746
High Amp Arc Ignition (HAI) (1.5 mm)	PLC 3	UL 746
Comparative Tracking Index (CTI)	PLC 3	UL 746
Dielectric Strength	32 kV/mm	ASTM D149 IEC 60243-1
Volume Resistivity	1.0E+17 ohms·cm	ASTM D257 IEC 60093
Thermal	**Value**	**Test Method**
RTI Elec		UL 746
1.5 mm	130 °C	
3.0 mm	130 °C	
RTI Imp		UL 746
1.5 mm	130 °C	
3.0 mm	130 °C	
RTI Str		UL 746
1.5 mm	130 °C	
3.0 mm	130 °C	
Ball Pressure Test (130°C, 3.00 mm)	Pass	IEC 60695-10-2
Physical	**Value**	**Test Method**
Outdoor Suitability	f1	UL 746C

Component – Plastics
File Number: E245526

TEIJIN POLYCARBONATE CHINA LTD
Zhapu Development Rd
888 Yashan W Rd
Jiaxing, Zhejiang 314201 China

Panlite: L-1250U(#)(f1), L-1250V(#)(f1), L-1250Z(#)(f1)
Polycarbonate (PC), pellets, powder
(#) - Suffix optional
(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.

Flammability	Value	Test Method
Flame Rating		UL 94
1.5 mm, ALL	HB	
3.0 mm, ALL	HB	
6.0 mm, ALL	HB	
0.40 mm, ALL	V-2	
0.75 mm, ALL	V-2	
0.8 mm, ALL	V-2	
Flammability Classification		IEC 60695-11-10, -20
3.0 mm, ALL	HB40	
6.0 mm, ALL	HB40	
1.5 mm, ALL	HB75	
0.40 mm, ALL	V-2	
0.75 mm, ALL	V-2	
0.8 mm, ALL	V-2	
Electrical	**Value**	**Test Method**
Hot-wire Ignition (HWI)		UL 746A
0.40 mm	PLC 4	
0.75 mm	PLC 4	
0.8 mm	PLC 4	
1.5 mm	PLC 4	
3.0 mm	PLC 1	
6.0 mm	PLC 1	
High Amp Arc Ignition (HAI)		UL 746A
0.40 mm	PLC 3	
0.75 mm	PLC 3	
0.8 mm	PLC 3	
1.5 mm	PLC 0	
3.0 mm	PLC 0	
6.0 mm	PLC 0	
Comparative Tracking Index (CTI)	PLC 2	UL 746A
Dielectric Strength	24 kV/mm	ASTM D149
High Voltage Arc Tracking Rate (HVTR)	PLC 4	UL 746A
Volume Resistivity	1.0E+16 ohms-cm	ASTM D257
Volume Resistivity	1.0E+16 ohms-cm	IEC 60093
Arc Resistance	PLC 5	ASTM D495

Form Number: E245526-101512723
Report Date: 8/20/2021
Last Revised: 8/20/2021 6:33:05 AM

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Component - Plastics
File Number: E245526

Thermal	Value	Test Method
RTI Elec		UL 746B
0.40 mm	80.0 °C	
0.75 mm	125 °C	
0.8 mm	125 °C	
1.5 mm	125 °C	
3.0 mm	125 °C	
6.0 mm	125 °C	
RTI Imp		UL 746B
0.40 mm	80.0 °C	
0.75 mm	115 °C	
0.8 mm	115 °C	
1.5 mm	115 °C	
3.0 mm	115 °C	
6.0 mm	115 °C	
RTI Str		UL 746B
0.40 mm	80.0 °C	
0.75 mm	125 °C	
0.8 mm	125 °C	
1.5 mm	125 °C	
3.0 mm	125 °C	
6.0 mm	125 °C	
Physical	**Value**	**Test Method**
Dimensional Change	0.0 %	ASTM D1042
Dimensional Change	0.0 %	ISO 2796
Outdoor Suitability	f1	UL 746C

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Form Number: E245526-101512723
Report Date: 8/20/2021
Last Revised: 8/20/2021 6:33:05 AM

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UL Certification

LOTTE CHEMICAL

INFINO	Grade	UH-1068

Component - Plastics E115797
Guide Information: View Certificate of Compliance

LOTTE CHEMICAL CORPORATION
56 Gosan-ro, Uiwang-si Gyeonggi-do 16073 KR

UH-1064U(f1)
Polycarbonate (PC) "INFINO", furnished as pellets

Color	Min. Thk (mm)	Flame Class	HWI	HAI	RTI Elec (°C)	RTI Imp (°C)	RTI Str (°C)
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): -
High-Voltage Arc Tracking Rate (HVTR): -
Dimensional Change (%): -
Inclined Plane Tracking (IPT) kV: -
Volume Resistivity (10^x ohm-cm): -
Surface Resistivity (10^x ohms/square): -
High Volt, Low Current Arc Resis (D495): -

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

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Report Date: 1998-08-24
Last Revised: 2023-03-21

c UL us ALSO CERTIFIED TO IEC REQUIREMENTS

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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/m²	-	-
ISO Izod Impact	ISO 180	kJ/m²	-	-
ISO Charpy Impact	ISO 179-1	kJ/m²	-	-

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 (℃)	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

Ø160 by 502.4 mm, Ø90 by 282.6 mm, Ø25*2 by 157 mm, Ø7*4 by 87.92 mm, 120 mm,48 mm, 48 mm, 60 mm
Test Duration = 217.65 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

4.3 Attachment 3 – Photographs

4.3.1 Hose down test

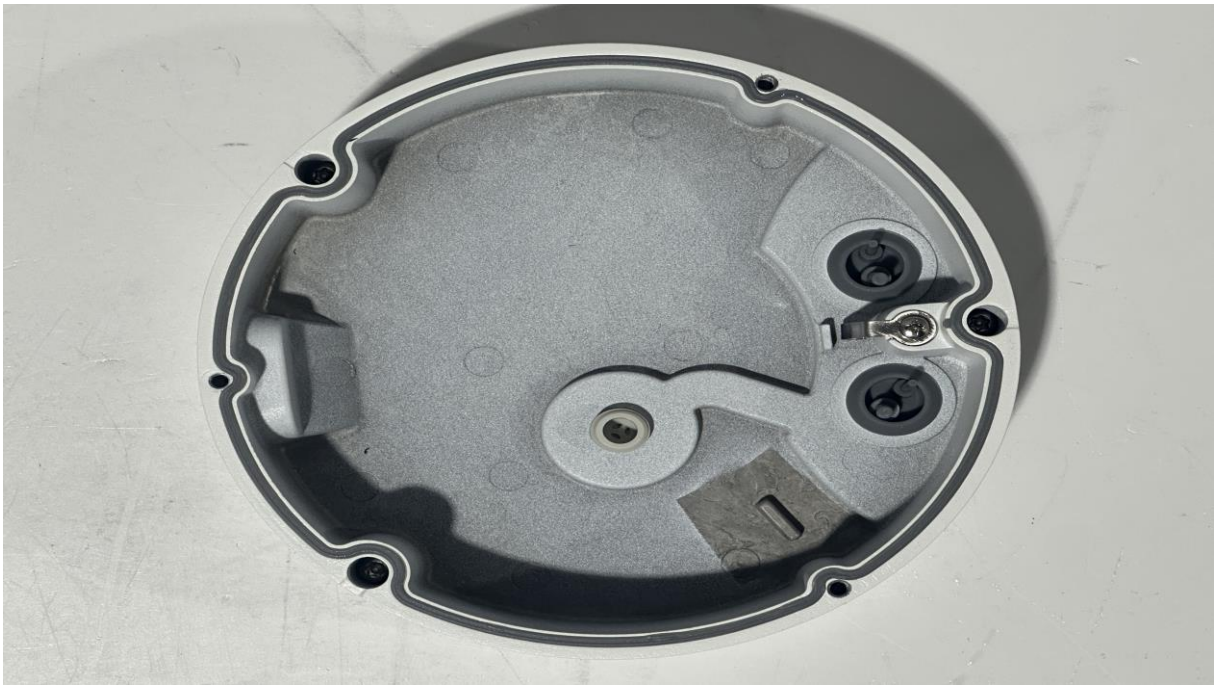
5. Test result

5.1 Test result table

Sample No (Model)	Water Flow	Presence of water inside	Result
PNO-A9092R	240 LPM	No	Nomal

※ Refer to the product photos after the completion of testing in section 5.2.

5.2 Post-test product images



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