

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-2021-02998

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1. Applicant

- Name : Hanwha Vision Co., Ltd
- Address : 6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, 13488 KOREA
- Date of Receipt : July. 24, 2021

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 / QNO-6082R

5. Date(s) of test :

July. 26, 2021

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.
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Affirmation	Tested by	Technical Manager
	HyungUk Jeon (Signature)	HoHyun Lee (Signature)

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

Dec 18, 2024

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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.	+82-31-339-9970
Fax.	+82-31-624-9501
E-Mail	all.yougin@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	QNO-6082R	1 EA	—

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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 : QNO-6082R

Ratings : Electrical
QNO-6082R DC 12 V 0.55 A PoE(48 V) 0.16 A

QNO-6083R DC 12 V 0.55 A PoE(48 V) 0.16 A

QNO-6084R DC 12 V 0.75 A PoE(48 V) 0.23 A

QNO-7082R DC 12 V 0.80 A PoE(48 V) 0.24 A

Dimension:

50 mm, 50 mm, 30 mm, 30 mm, Ø 60 mm by 188.4 mm, Ø 75 mm
by 235.5 mm, 45 mm, 45 mm, 20 mm, 20 mm

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

Attachment 1: 15-17 pages (Construction Diagram including installation method)

Attachment 2: 18-20 pages (Parts List)

Attachment 3: 22-25 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.

NETWORK CAMERA, QNO-6082R
DC 12V --- 0.55A / PoE(48V ---) 0.16A
M/C: QNO-6082R/KAN Fac. ID: D
제조년월 S/N: [제조번호]
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
HANWHA TECHWIN CO., LTD. MADE IN KOREA



NETWORK CAMERA, QNO-6083R
DC 12V --- 0.55A / PoE(48V ---) 0.16A
M/C: QNO-6083R/KCH Fac. ID: D
제조년월 S/N: [제조번호]
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
HANWHA TECHWIN CO., LTD. MADE IN KOREA



NETWORK CAMERA
QNO-6084R
DC 12V --- 0.75A /
PoE (48V ---) 0.23A
M/C: QNO-6084R/KRU Fac. ID: D
2021.07 S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
HANWHA TECHWIN CO., LTD. MADE IN KOREA



NETWORK CAMERA, QNO-7082R
DC12V --- 0.8A / PoE(48V ---) 0.24A
M/C: QNO-7082R/VUS Fac. ID: V
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
HANWHA TECHWIN CO., LTD.
Engineered in Korea Made in Vietnam



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2.3 Equipment information

Testing equipment	Model Name	Manufacturer	Manufacturing Number	Calibration Date
25.4mm Nozzle	S3-IP18	CTK	S3-IP18	-
Stop Watch	NONE	CASIO		2021-03-19
Steel Measuring Tape	KMC-74N	KOMELON	190727	2021-06-23
Water flow meter	Z-6504	Nuri tech	04	2021-07-08
Digital Vernier Calipers	150 mm	150 mm	A17179462	2020-09-19



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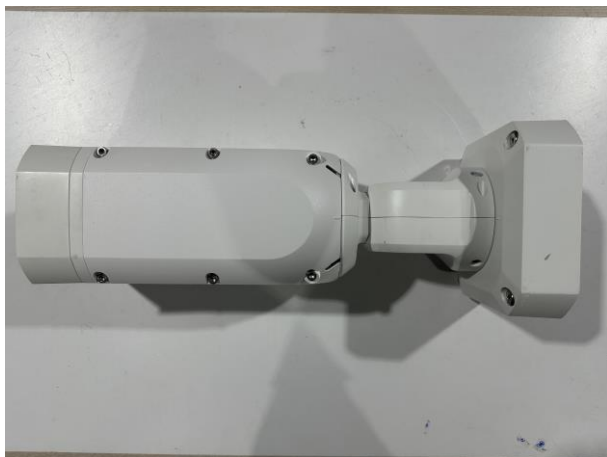
2.4 Pre-test product images



Top



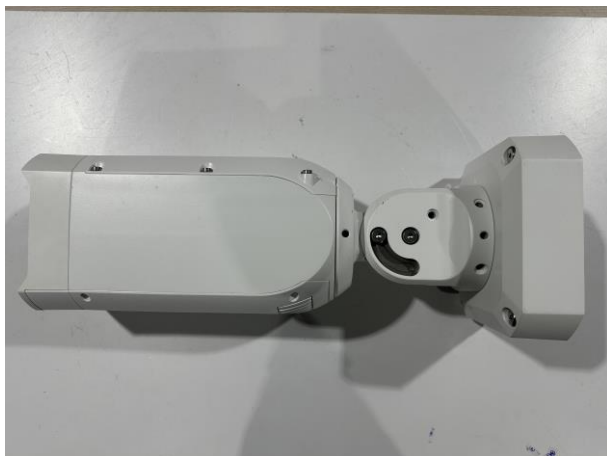
Bottom



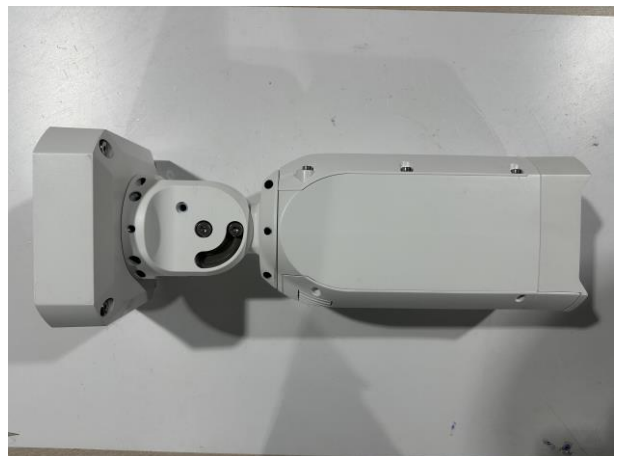
Front



Rear



Left side



Right side



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2.5 Testing equipment images



25.4mm Nozzle



Stop Watch



Steel Measuring Tape



Water flow meter



Digital Vernier Calipers

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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:
<p>"(See Enclosure #)" refers to additional information appended to the report.</p> <p>"(See appended table)" refers to a table appended to the report.</p> <p>Throughout this report a <input type="checkbox"/> comma / <input checked="" type="checkbox"/> point is used as the decimal separator.</p> <p>Clause numbers between brackets refer to clauses in NEMA 250-2014</p>

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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	QNO-6082R
Series Model	QNO-6083R, QNO-6084R, QNO-7082R
Model differences	The model differences are only for function not related to the quality of enclosure integrity



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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).

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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

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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


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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

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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

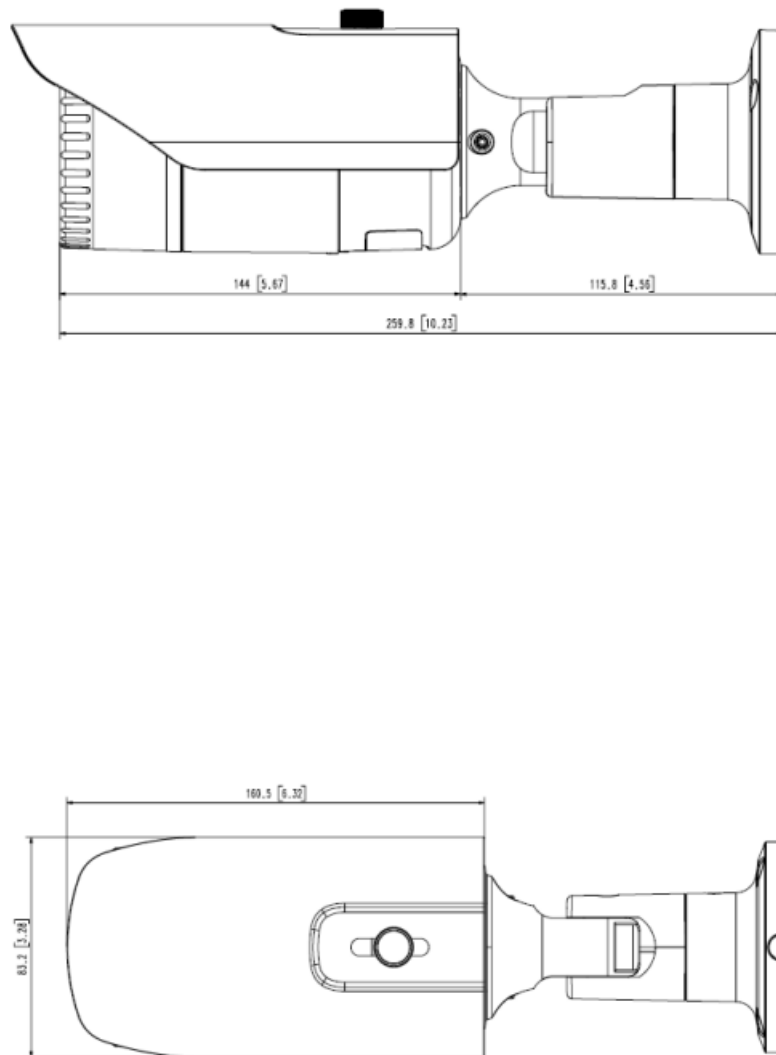


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3.5 Attachment 1 – Construction Diagram and installation method

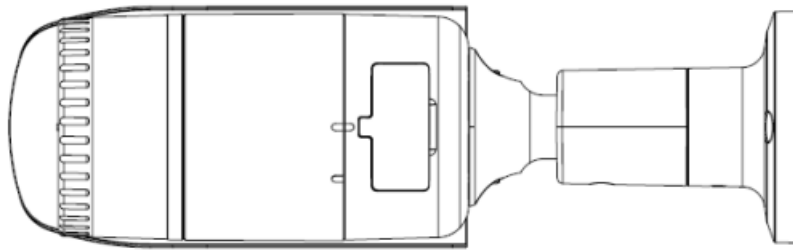




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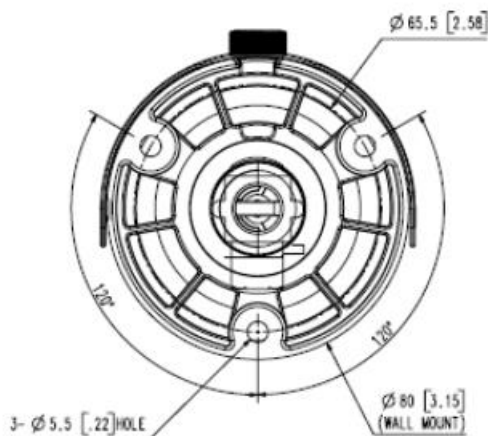




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3.6 Attachment 2 – Parts List

No	Part No.	Part name	Raw material
1	FC15-004521D	COVER-FRONT_HCO6070R_WISENET	Al(ADC12)
2	FC10-001001A	RUBBER,RING-ORING SCO-5083R	Silicon rubber
3	AM07-014119D	ASSY-SUB-WINDOW	PC
4	HP07-000319A	GASKET-BODY GASKET	Silicon rubber
5	FC29-008869B	CASE-REAR-HALLWAY	Al(ADC12)
6	FC28-002484A	KNOB-BUTTON	Silicon rubber
7	FC15-005572A	COVER-COVER BUTTON	Al(ADC12)
8	Z6001055101A	SCREW-MACHINE,M2,L4	Steel
9	FC28-002480B	DOOR-BUTTON_UL-F1-QNO-7082R	PC + Urethane
10	Z9642204001	MACHINE SCREW,M2xL4,	Steel
11	MC06-000085A	BUSHING-BUSHING CABLE	Silicon rubber
12	FC29-004667C	BAFFLE-GUIDE-PANNING-UL-F1	PC
13	Z6004041101A	SETSCREW_SRN_M6P1L6	Steel
14	FC18-005798A	SCREW-MACHINE,L32,DOUBLE SEMS,	Steel
15	FC39-000192C	BODY-TILT LEFT	Al(ADC12)
16	FC39-001235B	BODY-PAN	Al(ADC12)
17	FC39-000193C	BODY-TILT RIGHT	Al(ADC12)
18	AM07-012974B	SETSCREW_SRN_M6P1L10	Steel
19	FC39-003191A	BODY-MOUNT_SNO-L6083R	Al(ADC12)
20	EP02-004165A	CABLE-QNO-7080R	Cable



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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

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Form Number: E115797-103587012

Report Date: 1995-05-24

Last Revised: 2019-08-27

AND/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. AND/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.

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

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Component - Plastics

File Number: E115797

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



INFINO: QC-122(+)(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
1.6 mm, ALL	V-2	IEC 60695-11-10, -20
3.2 mm, ALL	V-2	
Glow Wire Flammability Index		IEC 60695-2-12
1.6 mm	850 °C	
3.2 mm	850 °C	
Glow Wire Ignition Temperature		IEC 60695-2-13
1.6 mm	900 °C	
3.2 mm	875 °C	
Electrical	Value	Test Method
Hot-wire Ignition (HWI)		UL 746
1.6 mm	PLC 3	
3.2 mm	PLC 2	
High Amp Arc Ignition (HAI)		UL 746
1.6 mm	PLC 0	
3.2 mm	PLC 0	
Comparative Tracking Index (CTI)	PLC 0	UL 746
High Voltage Arc Tracking Rate (HVTR)	PLC 2	UL 746
Volume Resistivity	1.0E+16 ohms-cm	ASTM D257 IEC 60093
Arc Resistance	PLC 5	ASTM D485
Thermal	Value	Test Method
RTI Elec		UL 746
1.6 mm	130 °C	
3.2 mm	130 °C	
RTI Imp		UL 746
1.6 mm	125 °C	
3.2 mm	130 °C	
RTI Str		UL 746
1.6 mm	125 °C	
3.2 mm	130 °C	
Physical	Value	Test Method
Outdoor Suitability	f1	UL 746C

**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

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4. Hose Down Test (Clause 5.7)

4.1 Test date and environmental conditions

4.1.1 Test date: July. 26, 2021

4.1.2 Measured Environmental Conditions

Item	Temperature (°C)	Humidity (% R.H.)	Pressure (kPa)
Measurement	25.7	44.5	90.1

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

50 mm, 50 mm, 30 mm, 30 mm, Ø 60 mm by 188.4 mm, Ø 75 mm by 235.5 mm, 45 mm, 45 mm, 20 mm, 20 mm

Test Duration = 119 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.


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

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4.3 Attachment 3 – Photographs

4.3.1 Hose down test



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5. Test result

5.1 Test result table

Sample No (Model)	Water Flow	Presence of water inside	Result
QNO-6082R	240 LPM	No	Pass

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

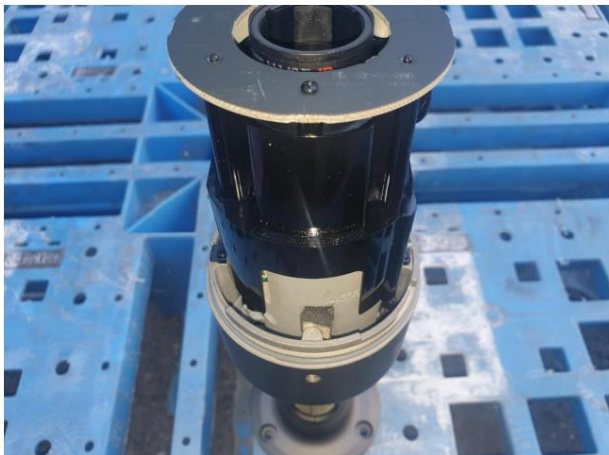
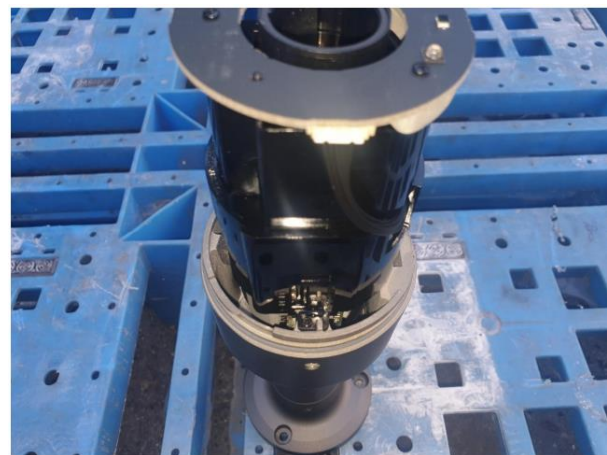
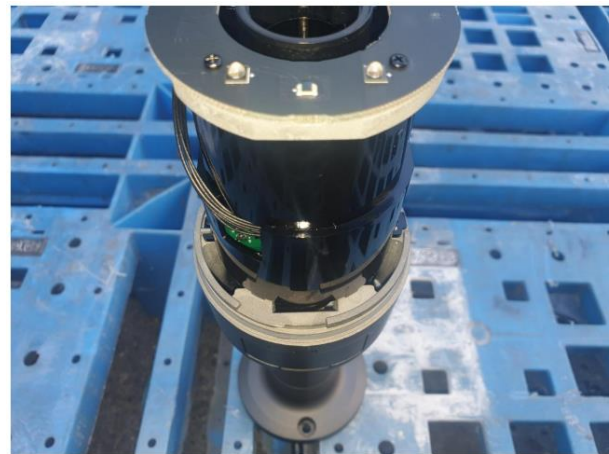
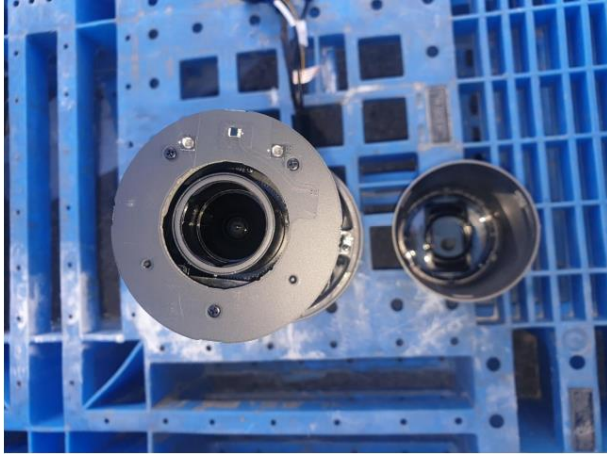


CTK Co., Ltd.

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

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5.2 Test sample image

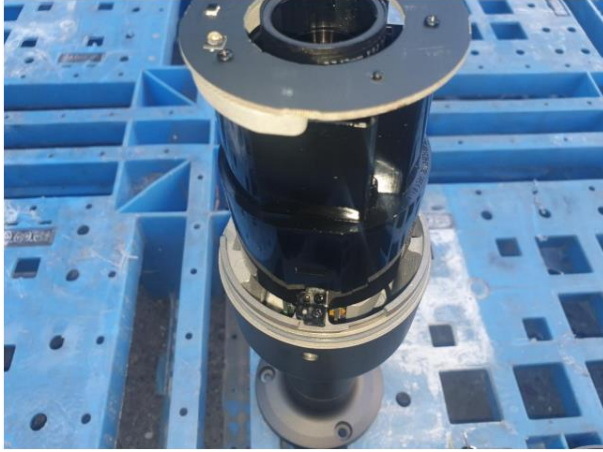




CTK Co., Ltd.

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

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