UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Listing
CCN:	AZOT, AZOT7 (Audio/video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	NETWORK CAMERA
Model:	XNO-A9084R, XNO-A8084R, XNO-A6084R, TNO-A9084ER
Rating:	PoE (48 Vdc), 0.23 A (For model, XNO-A9084R, TNO-A9084ER) PoE (48 Vdc), 0.2 A (For model, XNO-A8084R) PoE (48 Vdc), 0.21 A (for model XNO-A6084R)
Applicant Name and Address:	HANWHA VISION CO LTD 6, PANGYO-RO 319BEON-GIL, BUNDANG-GU SEONGNAM-SI GYEONGGI-DO 13488 KOREA

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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Prepared By: Lawrence Lee / Project Handler Reviewed By: SeulKi Park / Reviewer

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Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

A. Authorization - The Authorization page may include additional Factory Identification Code markings.

B. Generic Inspection Instructions -

i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.

ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.

iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

NETWORK CAMERA is designed for outdoor or indoor use, wall or ceiling use with mounting brackets.

It is commercial equipment supplied by UL listed PoE (Power over Ethernet) input and installed by service personnel.

Model Differences

XNO-A9084R is basic model.

XNO-A8084R and XNO-A6084R are identical to basic model except for ratings and lens module.

TNO-A9084ER is identical to basic model except for battery and the enclosure color.

Test Item Particulars

Product group	end product
Classification of use by	Instructed person
Supply Connection	not mains connected: ES1
Supply tolerance	None
Supply connection – type	mating connector
Considered current rating of protective device	N/A
Equipment mobility	wall/ceiling-mounted
Over voltage category (OVC)	OVC I
Class of equipment	Class III
Special installation location	Outdoor location
Pollution degree (PD)	PD 2
Manufacturer's specified Tma (°C)	60 Outdoor: minimum - 40
IP protection class	IP 66 and IP 67
Power systems	not AC mains
Altitude during operation (m)	2000 m or less
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	1.63

Technical Considerations

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 60 °C
- The product is intended for use on the following power systems : No direct connection
- Considered current rating of protective device as part of the building installation (A) : N/A
- Mains supply tolerance (%) or absolute mains supply : No direct connection
- The Risk Group of a lamp or lamp system (including LEDs) is : Exempt
- The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- The product was investigated to the following additional standard : IEC 62471:2006, IEC 60529:1989+A1:1999+A2:2013
- The outdoor equipment/enclosure was evaluated for use in an ambient range of : -40 °C to 60 °C

Additional Information

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- Maximum Normal Load: Continuous operation (Operate the camera through networked equipment with IR LED ON)

CN01925460
- Correction of clause F.3.3.5, table data error (Steady force test, Impact test, Stress relief test).

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- Maximum Normal Load: Continuous operation (Operate the camera through networked equipment with IR LED ON.)
- Add model name and rating; XNO-A6084R, PoE (48 Vdc), 0.21 A.
- [CCL] Chage Enclosure - Lens cover dome (Plastic) type L-1250Z(#)(f1) made by TEIJIN POLYCARBONATE CHINA LTD.
- [CCL] Chage Enclosure - IR LED cover (Plastic) type QC-1220UR (f1).
- [CCL] Alternate Enclosure - IR LED cover (Plastic) – Alternate type EXL1434T(GG)(f1)(N1)(BK47) made by SABIC JAPAN L L C.
- [CCL] Alternate Enclosure - Lens Top (Plastic) – Alternate type UH-1068(f1) made by LOTTE CHEMICAL CORPORATION.
- [CCL] Alternate Enclosure - Lens Case (Plastic) – Alternate type EXL9334U(f1) made by SABIC JAPAN L L C.
- [CCL] Add Lens module (IRIS) and (ZOOM/FOCUS Motor) for XNO-A6084R.
- [CCL] Add gasket - Window front -Alternate; type O-VMQ-60-GR made by NAMYANG VINA.
- [CCL] Correct typo error Gasket - Window front type; O-VMQ-60-BK.

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- Add model name; TNO-A9082ER.
- [CCL] Add Non-rechargeable Lithium Battery (BAT1) for TNO-A9082ER tyep BR1632A*(i) manufacturered by Panasonic Energy Co., Ltd.
- [CCL] Add Lithium Battery Protection Circuit (BAT1) for TNO-A9082ER.
- Maximum Normal Load: Continuous operation (Operate the camera through networked equipment with IR LED ON)

Additional Standards

The product fulfills the requirements of: N/A

Markings and Instructions	
Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee's Company's name, Trade Name, File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	Input Ratings (voltage, current)
Outdoor enclosure type	"Rainproof", IP66 and IP67
Hard Copy	A. IMPORTANT or ATTENTION or similar wording B. Please check 'Manuals' from out website, before connecting to the supply. C. Company website URL (https://www.~~) or QR cord.
(Website) Manual - 1	This product is intended to be supplied by a UL Listed Power Supply Unit marked "Class 2" or "LPS" or "PS2" and rated from PoE (48Vdc), 0.23A. (XNO-A9084R, TNO-A9082ER). This product is intended to be supplied by a UL Listed Power Supply Unit marked "Class 2" or "LPS" or "PS2" and rated from PoE (48Vdc), 0.2A. (XNO-A8084R). This product is intended to be supplied by a UL Listed Power Supply Unit marked "Class 2" or "LPS" or "PS2" and rated from PoE (48Vdc), 0.21A. (XNO-A6084R).
(Website) Manual - 2	The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802.3af shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL 60950-1 or PS2 as defined in UL 62368-1.
Special Instructions to UL Representative N/A	

BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	**Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.**					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
N/A	N/A	N/A	N/A	N/A	N/A	N/A
BD1.2	**Earthing Continuity Test Exemptions – This test is not required for the following models:**					
	All models					
BD1.3	**Electric Strength Test Exemptions – This test is not required for the following models:**					
	All models					
BD1.4	**Electric Strength Test Component Exemptions – The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test.**					
	All models					

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics
N/A	N/A	N/A	N/A	N/A	N/A

4.1.2	TABLE: List of critical components					Pass
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
Enclosure - Lens cover dome (Plastic)	TEIJIN POLYCARBONATE CHINA LTD	L-1250Z(#)(f1)	PC, HB, 115 deg. C. Min. 1.5 mm thickness	QMFZ2	UL (E245526)	
Enclosure - IR LED cover (Plastic)	LOTTE CHEMICAL CORPORATION	QC-1220UR (f1)	PC, V-2, 125 deg. C. Min. 1.6 mm thickness	QMFZ2	UL (E115797)	
Enclosure - IR LED cover (Plastic) - Alternate	SABIC JAPAN L L C	EXL1434T(GG)(f1)(N1)(BK47)	PC, HB, 120 deg. C. Min. 1.6 mm thickness	QMFZ2	UL (E207780)	
Enclosure - Lens Top (Plastic)	LOTTE CHEMICAL CORPORATION	HN-1068(f1)	PC, V-0, 130 deg. C. Min. 1.5 mm thickness	QMFZ2	UL (E115797)	
Enclosure - Lens Top (Plastic) - Alternate	LOTTE CHEMICAL CORPORATION	UH-1068(f1)	PC, V-0, 130 deg. C. Min. 1.5 mm thickness	QMFZ2	UL (E115797)	
Enclosure - Lens Case (Plastic)	LOTTE CHEMICAL CORPORATION	HN-1068(f1)	PC, V-0, 130 deg. C. Min. 1.5 mm thickness	QMFZ2	UL (E115797)	
Enclosure - Lens Case (Plastic) - Alternate	SABIC JAPAN L L C	EXL9334U(f1)	PC, V-0, 80 deg. C. Min. 1.5 mm thickness	QMFZ2	UL (E207780)	
Enclosure - Lens Case (Metal)	Interchangeable	Interchangeable	Aluminum Min. 2.0 mm thickness, See enclosure for more dimension	-	Tested in equipment	
Enclosure - Top nearby Main board (Metal)	Interchangeable	Interchangeable	Aluminum Min. 3.0 mm thickness, See enclosure for more dimension	-	Tested in equipment	
Enclosure - Bottom nearby Main board (Metal)	Interchangeable	Interchangeable	Aluminum Min. 2.5 mm thickness, See	-	Tested in equipment	

			enclosure for more dimension			
Mounting bracket (Metal)	Interchangeable	Interchangeable	Aluminum Min. 2.5 mm thickness, See enclosure for more dimension	-	Tested in equipment	
Internal plastic	LOTTE CHEMICAL CORPORATION	HN-1068(f1)	PC, V-0, 130 deg. C. Min. 1.0 mm thickness	QMFZ2	UL (E115797)	
Internal plastic - Alternate	Interchangeable	Interchangeable	Min. 1.0 mm thickness, rated Min HB	QMFZ2	UL	
Opto-coupler (LS1)	LITE-ON TECHNOLOGY CORP	LTV-217 (Type: LTV-217-G)	Isolation Voltage: 3750. Max. Operation Temperature: 110 deg. C	FPQU2	UL (E113898)	
Opto-coupler (LS1) - Alternate	COSMO ELECTRONICS CORP	KPC357NT	Isolation Voltage: 3750. Max. Operation Temperature: 115 deg. C	FPQU2	UL (E169586)	
Transformer(T1)	SHENZHEN GROUP-TEK ELECTRONICS TECHNOLOGY CO., LTD	PDT25289SR	77 uH, 130 deg. C, See enclosure for more detail.	-	Tested in equipment	
Heater (R4 to R25) (total 22 ea)	Interchangeable	Interchangeable	2.2 ohm, 0.85 W total	-	-	
Rechargeable battery (BAT1) for XNO-A9084R, XNO-A8084R, XNO-A6084R	SEIKO INSTRUMENTS INC MICRO-ENERGY DIV	ML414H	Lithium, Rechargeable, Max Charging voltage: 3.1 Vdc, Max Charging current: 300 mA	BBCV2	UL (MH15628)	
Lithium Battery Protection Circuit (BAT1) for XNO-A9084R, XNO-	Interchangeable	Interchangeable	Diode (D26, 80 V, 100 mA) and Resistor (R176, 3.3 Kohm) in series	-	Tested in equipment	

A8084R, XNO-A6084R						
Non-rechargeable Lithium Battery (BAT1) for TNO-A9082ER	Panasonic Energy Co., Ltd.	BR1632A*(i)	Lithium / Poly-carbonmonofluoride (Coin), Non-rechargeable, 3.0 Vdc, Abnormal Charging Current 4 mA.	BBCV2	UL (MH12210)	
Lithium Battery Protection Circuit (BAT1) for TNO-A9082ER	Interchangeable	Interchangeable	Blocking component (U27) and Resistor (R176, 100 ohm) in seies	-	Tested in equipment	
Heatsink	Interchangeable	Interchangeable	Aluminum (Silver) Approx. overall size of ϕ82.3 mm, Min. 9.5 mm thickness, See enclosure for more dimension	-	Tested in equipment	
Lens module for XNO-A9084R	DongGuan YuTong Optical Technology Co ., Ltd.	YTW30033A01DB.IR-PIRIS-JZ-8MP+H151+IR1021	2.6 V – 3.5 V	-	Tested in equipment	
Lens module for XNO-A8084R	DongGuan YuTong Optical Technology Co ., Ltd.	YT0W2Z53DB.IR-PIRIS-JZ-5MP+H82+IR1021	2.4 V – 3.5 V	-	Tested in equipment	
Lens module (IRIS) for XNO-A6084R	New Asia Optical Industry Co.,Ltd	N71DNDB-FP5	4.0 V ± 10 %	-	Tested in equipment	
Lens module (ZOOM/FOCUS Motor) for XNO-A6084R	Tokyo Micro Inc.	8S-501L99	5.0 V±0.5V	-	Tested in equipment	
Thermal pad	KOMOTECH	KGP-1(a)	Min. 2.0 mm thickness, rated V-0, 150 deg. C	QMFZ2	UL (E245303)	

Gasket - USB C DOOR	NAMYANG VINA	O-VMQ-30-GR	Gasket Test was conducted under E158873-A6034	-	Tested in equipment	
Gasket - Body - RUBBER	NAMYANG VINA	O-VMQ-30-GR	Gasket Test was conducted under E158873-A6034	-	Tested in equipment	
Gasket - Internal Cable	Y&K	O-VMQ-30-BK	Gasket Test was conducted under E158873-A6034	-	Tested in equipment	
Gasket - Window front	NAMYANG VINA	O-VMQ-60-BK	Gasket Test was conducted under E158873-A6034	-	Tested in equipment	
Gasket - Window front -Alternate	NAMYANG VINA	O-VMQ-60-GR	Gasket Test was conducted under E158873-A6034	-	Tested in equipment	
PWB	HANNSTAR BOARD CORP	ML-4	Min. V-0, 130 deg. C	ZPMV2	UL (E89382)	
PWB -Alternate	Interchangeable	Interchangeable	Min. V-0, 130 deg. C	ZPMV2	UL	
Outdoor Label	Interchangeable	Interchangeable	Suitable for use on each type of surface to which applied, rated for maximum and minimum surface temperature specified, or Min. - 40 deg. C to Max. 60 deg. C if not specified.	PGDQ2 or PGJI2	UL	
IR LED (LD1, LD2, LD5, LD8) - Total 4 ea	Cybright IR LED Technology Co.,Ltd	XB-IR3838S2-D30	VF = 2.3 Vdc, IF = 1 500 mA Max	-	Tested in equipment	
IR LED (LD3, LD4, LD6, LD7) - Total 4 ea	LITE-ON TECHNOLOGY CORP	LTE-R38386L-YE5-SS	VF = 2.5 Vdc, IF = 1 000 mA Max	-	Tested in equipment	

Enclosures

Type	Supplement Id	Description
Photographs	03-01	External View - 1
Photographs	03-02	External View - 2
Photographs	03-04	External View - 3
Photographs	03-05	Internal View - 1
Photographs	03-06	Internal View - 2
Photographs	03-07	IR LED board - Top
Photographs	03-08	IR LED board - Bottom
Photographs	03-09	Network board - Top
Photographs	03-10	Network board - Bottom
Photographs	03-11	Sensor board - Top
Photographs	03-12	Lens View
Photographs	03-13	Network board for TNO-A9084ER
Diagrams	04-01	Enclosure drawings
Diagrams	04-02	Heatsink drawings
Manuals	06-01	Manual
Miscellaneous	07-01	Transformer (T1) Specification
Miscellaneous	07-02	Label