



Issued Date: July 16, 2020  
Revised Date: July 22, 2020

CLIENT: MS. Yunhuan Chen  
ZHEJIANG DAHUA VISION TECHNOLOGY CO LTD  
NO.1199 BIN'AN RD. BINJIANG DISTRICT  
HANGZHOU  
ZHEJIANG 310053 CHINA

PROJECT: 4789476687, E234884

SUBJECT: NEMA (Type 4X) - enclosure construction investigation and testing

Dear MS. Yunhuan Chen,

We have completed our investigation, and this letter will serve as our report. For the file record, our investigation only covers the applicable requirements needed to establish a Type 4X rating for representative sample IP Camera, Model DH-IPC-HDBW5442HP-ZE were manufactured by ZHEJIANG DAHUA VISION TECHNOLOGY CO LTD, and cover Models DH-IPC-HDBW5242HP-ZE-MF; DH-IPC-HDBW5242HN-ZE-MF; IPC-HDBW5242HP-ZE-MF; IPC-HDBW5242HN-ZE-MF; DH-IPC-HDBW5242H-ZE-MF; IPC-HDBW5242H-ZE-MF; IPC-HDBW5242H-ZE-MF-2718; IPC-HDBW5242H-ZE-MF-2718-DC12AC24V; N25DV6Z; DH-IPC-HDBW5242HP-Z6E-MF; DH-IPC-HDBW5242HN-Z6E-MF; IPC-HDBW5242HP-Z6E-MF; IPC-HDBW5242HN-Z6E-MF; DH-IPC-HDBW5242H-Z6E-MF; IPC-HDBW5242H-Z6E-MF; IPC-HDBW5242H-Z6E-MF-0848-DC12AC24V; IPC-HDBW5242H-Z6E-MF-0848; N25DV6Z; DH-IPC-HDBW5442HP-ZE; DH-IPC-HDBW5442HN-ZE; IPC-HDBW5442HP-ZE; IPC-HDBW5442HN-ZE; DH-IPC-HDBW5442H-ZE; IPC-HDBW5442H-ZE; IPC-HDBW5442H-ZE-2712-DC12AC24V; IPC-HDBW5442H-ZE-2712; N45DV6Z; DH-IPC-HDBW5442HP-Z4E; DH-IPC-HDBW5442HN-Z4E; IPC-HDBW5442HP-Z4E; IPC-HDBW5442HN-Z4E; DH-IPC-HDBW5442H-Z4E; IPC-HDBW5442H-Z4E; IPC-HDBW5442H-Z4E-0832-DC12AC24V; IPC-HDBW5442H-Z4E-0832; N45DV6Z; DH-IPC-HDBW5242HP-ZHE-MF; DH-IPC-HDBW5242HN-ZHE-MF; IPC-HDBW5242HP-ZHE-MF; IPC-HDBW5242HN-ZHE-MF; DH-IPC-HDBW5242H-ZHE-MF; IPC-HDBW5242H-ZHE-MF; IPC-HDBW5242H-ZHE-MF-2718-DC12AC24V; IPC-HDBW5242H-ZHE-MF-2718; IPC-HDBW5242H-ZEH-MF-2718-DC12AC24V; IPC-HDBW5242H-ZEH-MF-2718; N25DV7Z; DH-IPC-HDBW5442HP-ZHE; DH-IPC-HDBW5442HN-ZHE; IPC-HDBW5442HP-ZHE; IPC-HDBW5442HN-ZHE; DH-IPC-HDBW5442H-ZHE; IPC-HDBW5442H-ZHE-2712-DC12AC24V; IPC-HDBW5442H-ZHE-2712; IPC-HDBW5442H-ZEH-2712-DC12AC24V; IPC-HDBW5442H-ZEH-2712; N45DV7Z; NK7DV6Z; DH-IPC-HDBW71242H-Z; IPC-HDBW71242H-Z; DH-IPC-HDBW71242HP-Z; DH-IPC-HDBW71242HN-Z; IPC-HDBW71242HP-Z; IPC-HDBW71242HN-Z; IPC-HDBW71242H-ZE-2712-DC12AC24V; IPC-HDBW71242H-Z-2712-DC12AC24V; IPC-HDBW71242H-ZE-2712; IPC-HDBW71242H-Z-2712; DH-IPC-HDBW71242HP-Z-2712-DC12AC24V; DH-IPC-HDBW71242HN-Z-2712-DC12AC24V; IPC-HDBW71242HN-Z-2712-DC12AC24V; DH-IPC-HDBW7442HP-Z; DH-IPC-HDBW7442HN-Z; IPC-HDBW7442HP-Z; IPC-HDBW7442HN-Z; DH-IPC-HDBW7442H-Z; IPC-HDBW7442H-Z; IPC-HDBW7241H-Z-27135-DC12AC24V; DH-IPC-HDBW7442HP-Z4; DH-IPC-HDBW7442HN-Z4; IPC-HDBW7442HP-Z4; IPC-HDBW7442HN-Z4; DH-IPC-HDBW7442H-Z4; IPC-HDBW7442H-Z4; DH-IPC-HDBW7241HP-Z; DH-IPC-HDBW7241HN-Z; IPC-HDBW7241HP-Z; IPC-HDBW7241HN-Z; DH-

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IPC-HDBW7241H-Z; IPC-HDBW7241H-Z; IPC-HDBW7442H-Z-2712-DC12AC24V; IPC-HDBW7442H-ZE-2712-DC12AC24V; DH-IPC-HDBW7442HP-ZFR; DH-IPC-HDBW7442HN-ZFR; IPC-HDBW7442HP-ZFR; IPC-HDBW7442HN-ZFR; DH-IPC-HDBW7442H-ZFR; IPC-HDBW7442H-ZFR; IPC-HDBW7442H-ZEFR-2712-DC12AC24V; DH-IPC-HDBW7442HP-Z4FR; DH-IPC-HDBW7442HN-Z4FR; IPC-HDBW7442HP-Z4FR; IPC-HDBW7442HN-Z4FR; DH-IPC-HDBW7442H-Z4FR; IPC-HDBW7442H-Z4FR; DH-IPC-HDBW7241HP-Z5; DH-IPC-HDBW7241HN-Z5; IPC-HDBW7241HP-Z5; IPC-HDBW7241HN-Z5; DH-IPC-HDBW7241H-Z5; IPC-HDBW7241H-Z5; IPC-HDBW7241H-Z5-0735-DC12AC24V; IPC-HDBW7241H-Z5E-0735-DC12AC24V; DH-IPC-HDBW7842HP-Z; DH-IPC-HDBW7842HN-Z; IPC-HDBW7842HP-Z; IPC-HDBW7842HN-Z; DH-IPC-HDBW7842H-Z; IPC-HDBW7842H-Z; IPC-HDBW7842H-Z-2712-DC12AC24V; IPC-HDBW7842H-ZE-2712-DC12AC24V; DH-IPC-HDBW5842HP-ZHE; DH-IPC-HDBW5842HN-ZHE; IPC-HDBW5842HP-ZHE; IPC-HDBW5842HN-ZHE; DH-IPC-HDBW5842H-ZHE; IPC-HDBW5842H-ZHE; N85DV7Z; IPC-HDBW5842H-ZEH-2712F-DC12AC24V; IPC-HDBW5842H-ZEH-2712-DC12AC24V; IPC-HDBW5842H-ZEH-2712; IPC-HDBW7442H-Z-2712F-DC12AC24V; IPC-HDBW7442H-ZE-2712F-DC12AC24V; IPC-HDBW7442H-ZEH-2712; IPC-HDBW7442H-Z-2712; IPC-HDBW7442H-Z4-0832-DC12AC24V; IPC-HDBW7442H-Z4E-0832-DC12AC24V; IPC-HDBW7442H-Z4EH-0832-DC12AC24V; IPC-HDBW7442H-Z4-0832; IPC-HDBW7842H-Z-2712F-DC12AC24V; IPC-HDBW7842H-ZE-2712F-DC12AC24V; IPC-HDBW7842H-ZEH-2712; IPC-HDBW7842H-Z-2712; IPC-HDBW7442H-ZFR-2712F-DC12AC24V; IPC-HDBW7442H-ZFR-2712-DC12AC24V; IPC-HDBW7442H-ZFR-2712; IPC-HDBW7442H-Z4FR-0832-DC12AC24V; IPC-HDBW7442H-Z4FR-0832; IPC-HDBW7842H-Z4-0832-DC12AC24V; IPC-HDBW7842H-Z4EH-0832-DC12AC24V; IPC-HDBW7842H-Z4HE-0832-DC12AC24V; IPC-HDBW7842H-Z4E-0832; IPC-HDBW5842H-Z4E-0832-DC12AC24V; IPC-HDBW5842H-Z4EH-0832-DC12AC24V; IPC-HDBW5842H-Z4HE-0832-DC12AC24V; IPC-HDBW5842H-Z4E-0832; N87DV6Z; DH-IPC-HDBW7ABC2HD-EFGX-IJKL-MNOP; IPC-HDBW7ABC2HD-EFGX-IJKL-MNOP; DH-IPC-HDBW5ABC2HD-EFGX-IJKL-MNOP; IPC-HDBW5ABC2HD-EFGX-IJKL-MNOP (A, B, C, D, E, F, G, I, J, K, L, M, N, O, P, X can be 0-9, A-Z or blank); DH-IPC-HDBW5242HP-ZE-MF-RW; DH-IPC-HDBW5242HP-ZHE-MF-RW; DH-IPC-HDBW5242HP-Z6E-MF-RW; DH-IPC-HDBW5442HP-ZE-RW; DH-IPC-HDBW5442HP-ZHE-RW; DH-IPC-HDBW5442HP-Z4E-RW; DH-IPC-HDBW5242HN-ZE-MF-RW; DH-IPC-HDBW5242HN-ZHE-MF-RW; DH-IPC-HDBW5242HN-Z6E-MF-RW; DH-IPC-HDBW5442HN-ZE-RW; DH-IPC-HDBW5442HN-ZHE-RW; DH-IPC-HDBW5442HN-Z4E-RW; DH-IPC-HDBW7842HP-Z-RW; DH-IPC-HDBW7842HN-Z-RW; DH-IPC-HDBW7442HP-Z-RW; DH-IPC-HDBW7442HN-Z-RW; DH-IPC-HDBW7442HP-Z4-RW; DH-IPC-HDBW7442HN-Z4-RW; DH-IPC-HDBW7442HP-ZFR-RW; DH-IPC-HDBW7442HN-ZFR-RW; DH-IPC-HDBW7442HP-Z4FR-RW; DH-IPC-HDBW7442HN-Z4FR-RW; DH-IPC-HDBW71242HP-Z-RW; DH-IPC-HDBW71242HN-Z-RW; DH-IPC-HDBW7842HP-Z4-RW; DH-IPC-HDBW7842HN-Z4-RW; DH-IPC-HDBW5842HP-Z4HE-RW; DH-IPC-HDBW5842HN-Z4HE-RW; DH-IPC-HDBW5842HP-ZHE-RW; DH-IPC-HDBW5842HN-ZHE-RW; DH-IPC-HDBW71242HP-Z4-RW; DH-IPC-HDBW71242HN-Z4-RW; \*\*\*IPC-HDBW\*\*\*H\*-Z\*\*\*\*\*; ” \* ” can be ” A-Z ” , ” 0-9 ” , ” - ” , or blank. DH-IPC-HDBW5242HP-Z-MF-SL; DH-IPC-HDBW5242HP-ZH-MF-SL; DH-IPC-HDBW5242HP-Z6-MF-SL; DH-IPC-HDBW5442HP-Z-SL; DH-IPC-HDBW5442HP-ZH-SL; DH-IPC-HDBW5442HP-Z4-SL; DH-IPC-HDBW5242HN-Z-MF-SL; DH-IPC-HDBW5242HN-ZH-MF-SL; DH-IPC-HDBW5242HN-Z6-MF-SL; DH-IPC-HDBW5442HN-Z-SL; DH-IPC-HDBW5442HN-ZH-SL; DH-IPC-HDBW5442HN-Z4-SL; IPC-HDBW5242HP-Z-MF-SL; IPC-HDBW5242HP-ZH-MF-SL; IPC-HDBW5242HP-Z6-MF-SL; IPC-HDBW5442HP-Z-SL; IPC-HDBW5442HP-ZH-SL; IPC-HDBW5442HP-Z4-SL; IPC-HDBW5242HN-Z-MF-SL; IPC-HDBW5242HN-ZH-MF-SL; IPC-HDBW5242HN-Z6-MF-SL; IPC-HDBW5442HN-Z-SL; IPC-HDBW5442HN-ZH-SL; IPC-HDBW5442HN-Z4-SL; IPC-HDBW5242H-Z-MF-2718-DC12DC24V-



RW; IPC-HDBW5242H-ZH-MF-2718-DC12DC24V-RW; IPC-HDBW5242H-Z-MF-0848-DC12DC24V-RW; IPC-HDBW5442H-Z-2712-DC12DC24V-RW; IPC-HDBW5442H-ZH-2712-DC12DC24V-RW; IPC-HDBW5442H-Z-0832-DC12DC24V-RW; IPC-HDBW5242H-Z-MF-2718-DC12DC24V; IPC-HDBW5242H-ZH-MF-2718-DC12DC24V; IPC-HDBW5242H-Z-MF-0848-DC12DC24V; IPC-HDBW5442H-Z-2712-DC12DC24V; IPC-HDBW5442H-ZH-2712-DC12DC24V; IPC-HDBW5442H-Z-0832-DC12DC24V; DH-IPC-HDBW7842HP-Z4; DH-IPC-HDBW7842HN-Z4; IPC-HDBW7842HP-Z4; IPC-HDBW7842HN-Z4; DH-IPC-HDBW7842H-Z4; IPC-HDBW7842H-Z4; DH-IPC-HDBW5842HP-Z4HE; DH-IPC-HDBW5842HN-Z4HE; IPC-HDBW5842HP-Z4HE; IPC-HDBW5842HN-Z4HE; DH-IPC-HDBW5842H-Z4HE; IPC-HDBW5842H-Z4HE; DH-IPC-HDBW71242HP-Z4; DH-IPC-HDBW71242HN-Z4; IPC-HDBW71242HP-Z4; IPC-HDBW71242HN-Z4 in accordance with UL 50E ENCLOSURES FOR ELECTRICAL EQUIPMENT, ENVIRONMENTAL CONSIDERATIONS - Edition 2 - Revised Date 2015/10/16 and the standard for Enclosure for Electrical Equipment, ENVIRONMENTAL CONSIDERATIONS, CSA C22.2 No. 94.2-15, Second Edition, 2015/10/16. At the conclusion of our investigation, we found the results were acceptable. We have attached the datasheets with this letter.



**CRITICAL COMPONENTS**

<b>Object/ Part or Description</b>	<b>Manufacturer/ Trademark</b>	<b>Type/ Model</b>	<b>Technical Data</b>	<b>Product Category CCN</b>	<b>Evaluating and Comments</b>
Lens Cover (Transparent)	MITSUBISHI ENGINEERING-PLASTICS CORP	S-3000 (&6) (f1), S-3001 (&6) (f1), S-3003 (&6) (f1)	V-2 min, 1.5 mm min, 115 degree C min.	QMFZ2	This material is considered to comply UL50E requirements by testing with end products.
Gasket for Transparent cover above Lens, top metal enclosure and bottom metal enclosure	Wynca Tinyo Silicone Co.,Ltd	TY856	Silicone rubber	QMFZ2	This material is considered to comply UL50E requirements by testing with end products.
White Bushing for cable	WACKER CHEMIE AG	R 401	Silicone Rubber, HB, 150 degree C	QMFZ2	This material is considered to comply UL50E requirements by testing with end products.
Metal enclosure (Top and bottom)	--	ADC12	Aluminum, Minimum 2.0 mm thickness	--	This material is considered to comply UL50E, 7.2 Corrosion protection requirements by testing with end products.
Coating on the metal enclosure	--	--	Anodizing and coating Thickness: 0.1mm	--	This material is considered to comply UL50E, 7.2 Corrosion protection requirements by testing with end products.
Enclosure screw	Interchangeable	Interchangeable	Stainless steel (SUS304)	--	This material is considered to comply UL50E, 7.2 Corrosion protection requirements by testing with end products.



## TESTS

The following tests were performed with their results (comply/does not comply) given below.

Model Tested	Test	Ratings	Results *
DH-IPC- HDBW5442HP-ZE	HOSEDOWN TEST	Type 4X	Comply
DH-IPC- HDBW5442HP-ZE	ADDITIONAL CORROSION PROTECTION FOR TYPE 4X AND 6P - SEC. 8.9	Type 4X	Comply
DH-IPC- HDBW5442HP-ZE	GASKET TEST - TENSILE STRENGTH AND ELONGATION:	Type 4X	Comply
DH-IPC- HDBW5442HP-ZE	COMPRESSION TEST PART I - COMPRESSION AT ROOM TEMPERATURE	Type 4X	Comply
DH-IPC- HDBW5442HP-ZE	COMPRESSION TEST PART II - COMPRESSION AFTER AGING IN AN AIR OVEN	Type 4X	Comply
DH-IPC- HDBW5442HP-ZE	COMPRESSION TEST PART III - COMPRESSION AFTER COLD IMPACT	Type 4X	Comply
DH-IPC- HDBW5442HP-ZE	CRUSHING RESISTANCE TEST	Type 4X	Comply
DH-IPC- HDBW5442HP-ZE	BALL IMPACT TEST	Type 4X	Comply

\* Refer to the Datasheets attached for detailed test results.

### Model Difference:

Models are identical to each other except model names.

### Marking requirement:

1. The device shall be marked properly to indicate the environmental conditions for which they are suitable, such as "Type 4X Enclosure", or equivalent.
2. The additional marked with the supplemental marking may be provide, such as "Raintight", "watertight", "Corrosion Resistant" or equivalent.



**Report Summary:**

This report was revised at 2020-07-22 due to correct the typo error for the thickness of metal enclosure and coating thickness.

The issuance of this report in no way implies Listing, Classification or Recognition by UL and does not authorize the use of UL Listing, Classification or Recognition Marks or any other reference to UL on or in connection with the product or system. This test report and data are intended solely for your internal use. This test data or UL's name or marks in connection with any product, packaging, advertising, promotion or marketing without UL's prior written permission.

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This concludes our work under the subject project number.

Any information and documentation involving UL Mark services are provided on behalf of Underwriters Laboratories Inc. (UL) or any authorized licensee of UL.

Please contact us if you have any further questions or comments concerning the above.

Sincerely,

A handwritten signature in black ink that reads "Scholl Zhang".

Scholl Zhang  
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3013ASUZ  
Scholl.Zhang@ul.com