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Project 4789377474.2

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REPORT

on

LIGHT-EMITTING-DIODE SURFACE-MOUNTED LUMINAIRES

NERI SPA
LONGIANO FC, ITALY

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DESCRIPTION

PRODUCT COVERED:	USL, CNL - LED Surface-mounted Luminaire, pole.																
MODELS COVERED /NOMENCLATURE:	Series "Nebula S", models: - Nebula S ST; - Nebula S PR; - Nebula S A; - Nebula S RGBW;																
ENVIRONMENTAL RATING:	Suitable for Wet locations																
GENERAL CONSTRUCTION:	This product complies with the applicable Standards for USL and/or CNL luminaires as explained under the "Technical Considerations" section noted below, the Section General pages (if provided), the UL 1598 FUII (Follow-Up Inspection Instructions), and the Description within this report.																
TECHNICAL CONSIDERATIONS (NOT FOR FIELD REPRESENTATIVE'S USE):	USL indicates product complies with the Standard for Luminaires, UL 1598 and the United States country specific requirements contained within the Standard, along with the relevant parts of the UL Standard for Light Emitting Diode (LED) Equipment for Use in Lighting Products, UL 8750.	CNL indicates product complies with the Standard for Luminaires, CSA C22.2 No. 250.0 and the Canadian country-specific requirements contained within the Standard, along with the relevant parts of the Canadian Standard for Light Emitting Diode (LED) Equipment for Lighting Applications, CSA C22.2 No. 250.13.															
ELECTRICAL RATINGS:	<table border="1"> <thead> <tr> <th>Model</th><th>Maximum Ratings</th><th>LED type</th></tr> </thead> <tbody> <tr> <td>Nebula S ST</td><td>28 W, 120-277 Vac, 50/60Hz</td><td>3 x XHP50.2</td></tr> <tr> <td>Nebula S PR</td><td>28 W, 120-277 Vac, 50/60Hz</td><td>1 x CMA2550</td></tr> <tr> <td>Nebula S A</td><td>23 W, 120-277 Vac, 50/60Hz</td><td>12 x XB-D</td></tr> <tr> <td>Nebula S RGBW</td><td>28 W, 120-277 Vac, 50/60Hz</td><td>3 x XML color</td></tr> </tbody> </table>		Model	Maximum Ratings	LED type	Nebula S ST	28 W, 120-277 Vac, 50/60Hz	3 x XHP50.2	Nebula S PR	28 W, 120-277 Vac, 50/60Hz	1 x CMA2550	Nebula S A	23 W, 120-277 Vac, 50/60Hz	12 x XB-D	Nebula S RGBW	28 W, 120-277 Vac, 50/60Hz	3 x XML color
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MARKINGS:	In accordance with the FUII's, the UL 1598 Standard and the following. SUITABLE FOR WET LOCATIONS (Verbatim)																
INSTRUCTIONS:	In accordance with the Standard. Shall also indicate the proper dimming method to regulate the luminous flux during the installation, which shall be demanded to qualified personnel only.																

Photo #	CONSTRUCTION FEATURE:	TECHNICAL DATA and/or DESCRIPITON
1, 2, 3	Luminaire Body	<p>The general design, shape and arrangement shall be as shown and as described. All dimensions are nominal, within engineering tolerances, except where specifically indicated as a minimum or a maximum.</p> <p>Made of aluminum, composed by three main parts: First part: Back cover, shaped as shown in Ill.1, intended as fixing and supporting means; Second part: Middle tube, shaped as shown in Ill.2, intended as enclosure and luminaire body's main part; screwed to the First part. Third part: Top termination, shaped as shown in Ill.3, intended as luminaire body's closure and screen/diffuser support; screwed to the Second part.</p>
2	Body termination (optional)	Any shape and material, intended as aesthetic termination of Luminaire Body, located outside the Luminaire body screwed to his Third part (see Ills. 5 and 6 for an examples of possible shapes).
3	Diffuser	Tempered flat glass, Shaped as shown in Ill.7, min. 6 mm thick. Fixed to the Third part of Luminaire Body by Silicon Adhesive. Any color or finishing
2	Component Mounting Plate	<p>Galvanized steel, minimum 1 mm thick., shaped as shown in Ill.8. Fixed to Luminaire Body's Back cover by screws, intended as fixing plate for components.</p> <p>Alternate: Same as above except with different length and holes disposition, depending by the light source installed.</p>
	Plastic Reflector (optional)	<p>Made of R/C (QMFZ/CN) Polycarbonate, by SABIC INNOVATIVE PLASTICS B V (E466937), model 123R, Rated HB, max 120°C.</p> <p>Any shape, located into the Luminaire Body between the light source and the glass Diffuser.</p>
	Grounding/Bonding	In accordance with the Standard.
	Labels	PGDQ2/CN or PGJI2/CN suitable for surface, environment.
	CONSTRUCTION FEATURE:	TECHNICAL DATA and/or DESCRIPITON (CONT'D)
	Coupler joint (optional mechanical accessory)	Made of metal, shaped as shown in Ill.9, for fixing of Luminaire body to the mounting surface and/or mechanical assembly of two of them.
	Gaskets	Made of silicon rubber, shaped as shown in Ill.10, located between each external mechanical coupling.

Photo #	COMPONENTS	TECHNICAL DATA and/or DESCRIPITON
	Supply connector (optionally provided)	Components described as R/C (by CCN identifier) or Listed must be UL Certified for the USA. Unless otherwise specified, components described as /CN must be UL Certified for Canada or CSA Certified. Listed (CYJV/CN) E355693, manufactured by TECHNO SRL, model THB.387.A5A.L + THB.387.B5A.L, rated 10A, 400V, located on the external extremity of Supply Cord.
	Supply Cord	Any Listed (ZJCZ/CN), type SJTW, min 3 or 4 or 5x18AWG, rated min 300 V, 60°C.
	DMX signal cable (optional)	Any Listed (ZJCZ/CN), type SJTW, 3xAWG18, rated min 300 V, 60°C.
	Strain Relief	Liquid tight Cord grip - Listed (QCRV/CN), by BIMED TEKNIK ALETIER SAN TIC A S (E199260), model BS-15. Trade size PG13.5. One or two provided. Alternate: Liquid tight Cord grip - Listed (QCRV/CN), by U I LAPP GMBH (E79903). Model ST-pg13.5.
	Internal Wiring (Primary circuit)	Any Listed (ZJCZ/CN) cord type min. SPT-2 or R/C (AVLV2/CN), rated min. 18 AWG, 300 V, 90°C.
	Internal Wiring (Secondary circuit)	Any located in a Class 2 circuit rated min. 24 AWG, 60V, 105°C, located between LED driver output and LED source.
	Terminal Block (for internal connection in primary circuit)	R/C (XCFR2/CN) manufactured by Wago Kontakttechnik GmbH, (E45172) model 261 or 264, rated 300V, 15A, and min. 60°C; snap fitted into Component mounting plate and secured to main body by screws. Alternate: R/C (XCFR2/CN), manufactured by ADELS-CONTACT ELEKTROTECHNISCHE FABRIK GMBH & CO. KG (E63492), model LK 980-01, rated 600 V, 15 A, 105°C Alternate: any Listed (ZMVV/CN), rated min 300V, 10 A, min. 90°C
	Terminals (secondary circuit)	Any located in a Class 2 circuit, rated min 60V, 2 A, min. 90°C

	COMPONENTS	TECHNICAL DATA and/or DESCRIPITON (CONT'D)
	Surge Protector (Optionally provided)	<p>R/C (VZCA2/CN), manufactured by LITTLEFUSE INC (E320116), model LSP10277P, type 4CA, rated 277 Vac, MCOV 320 Vac, 85°C. Secured to Component mounting plate.</p> <p>Alternate: Same as above except for: model LSP10120P, type 4CA, rated 120 Vac, MCOV 150 Vac, 85°C.</p> <p>Alternate: R/C (VZCA2/CN), manufactured by INVENTRONICS (HANGZHOU) INC (E467129), model PU-20KS10KHT, type 5, rated 277 Vac, MCOV 320 Vac, 85°C.</p>
	LED Driver (for models Nebula S ST, Nebula S PR and Nebula S A)	<p>R/C (FKSZ2/CN) by EFORE SPA (E330583), model RTLD040-900A-SA(-xx), Class 2 type, damp, with leads. Rated Input 120-277 Vac, 50/60 Hz, 0.4 A; Output 25-56 Vdc, constant current 0.15-0.9 A (set at 700 mA).</p> <p>Alternate: Same as above except: model RTLD040-900A-Dx-xx, with connectors.</p> <p>Alternate: R/C (FKSZ2/CN) by EFORE SPA (E330583), model RTLD040-1400A-SA(-xx), Class 2 type, damp, with leads. Rated Input 120-277 Vac, 50/60 Hz, 0.4 A; Output 20-43 Vdc, constant current 0.2-1.4 A (set at 700 mA).</p> <p>Alternate: Same as above except: model RTLD040-1400A-Dx-xx, with connectors.</p>
	LED Module (for model Nebula S ST)	<p>Located in a Class 2 circuit, composed by a circular PWB metal clad, approx. 88 mm diam., equipped with three LED chips by CREE INC model XHP50, each rated max 1.5 A, Vf 12 Vdc, series connected and driven at 700 mA</p> <p>Alternate: Any located in a Class 2 circuit with same characteristics</p>
	LED Module (for model Nebula S A)	<p>Located in a Class 2 circuit, composed by a circular PWB metal clad, approx. 88 mm diam., equipped with twelve LED chips by CREE INC model XB-D, each rated max 1 A, Vf 2.3 Vdc, series connected and driven at 700 mA</p> <p>Alternate: Any located in a Class 2 circuit with same characteristics</p>

	COMPONENTS	TECHNICAL DATA and/or DESCRIPITON (CONT'D)
	LED Module (for model Nebula S PR)	<p>R/C (OOQL2/CN) by CREE INC (E349212), model CMA2550, COB, rated max 3300 mA, Vf 34 Vdc, driven at 700 mA, Located in a Class 2 circuit.</p> <p>Alternate: R/C (OOQL2/CN) by LUMILEDS MALAYSIA SDN BHD (E352519), model L2C5-30801211x19xx, COB, rated max 3300 mA, Vf 34 Vdc, driven at 700 mA, Located in a Class 2 circuit.</p> <p>Alternate: R/C (OOQL2/CN) by CITIZEN ELECTRONICS CO LTD (E358566), model CLU03J-1210C9, COB, rated max 1800 mA, Vf 36 Vdc, driven at max 700 mA, Located in a Class 2 circuit.</p> <p>Alternate: Any located in a Class 2 circuit with same characteristics</p>
	LED holder (for model Nebula S PR)	<p>R/C (ECBT2/CN) by TYCO ELECTRONICS CORP (E28476), model Z50, rated 300 Vdc, 5 A, 105 °C, located in a Class 2 circuit.</p> <p>Alternate: Any located in a Class 2 circuit with same characteristics</p>
	LED Driver (for model Nebula S RGBW)	<p>R/C (FKSZ2/CN) by ELDOLED (E333135), model POWERdrive 561/S, Class 2 type, damp. Rated Input 100-277 Vac, 50/60 Hz, 0.7 A; Output 4 channels each 2.5-57 V, constant current 0.2-1.05 A (set at max 700 mA) max output power 50W.</p>
	LED Module (for model Nebula S RGBW)	<p>Located in a Class 2 circuit, composed by a circular PWB metal clad, approx. 88 mm diam., equipped with three LED chips by CREE INC model XML Color (RGBW), each rated max 1 A, Vf 2.25-3.3 Vdc, each color series connected and driven at max 700 mA</p> <p>Alternate: Any located in a Class 2 circuit with same characteristics</p>

Photos	
Photo 1 Luminaire overview	
Photo 2 Luminaire overview (fully disassembled)	

Photo 3

Luminaire
overview
(top)



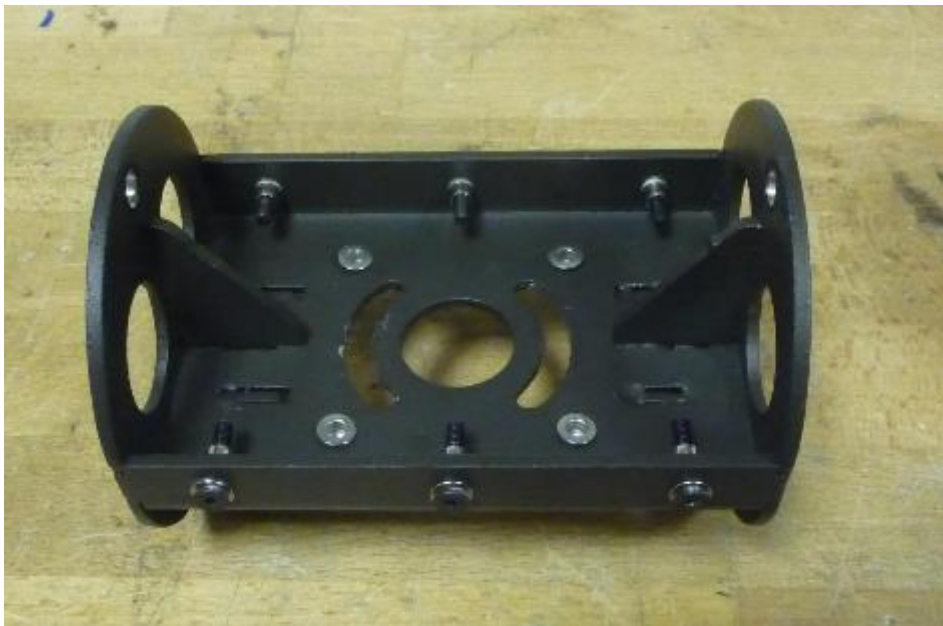
Photo 4



Photo 5

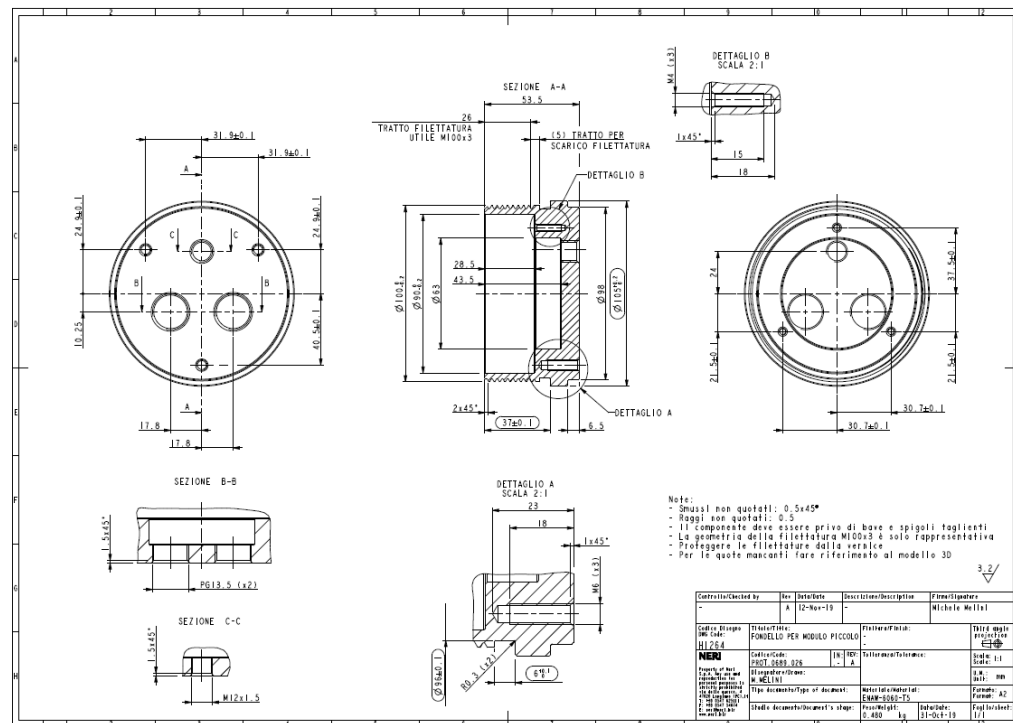


Photo 6

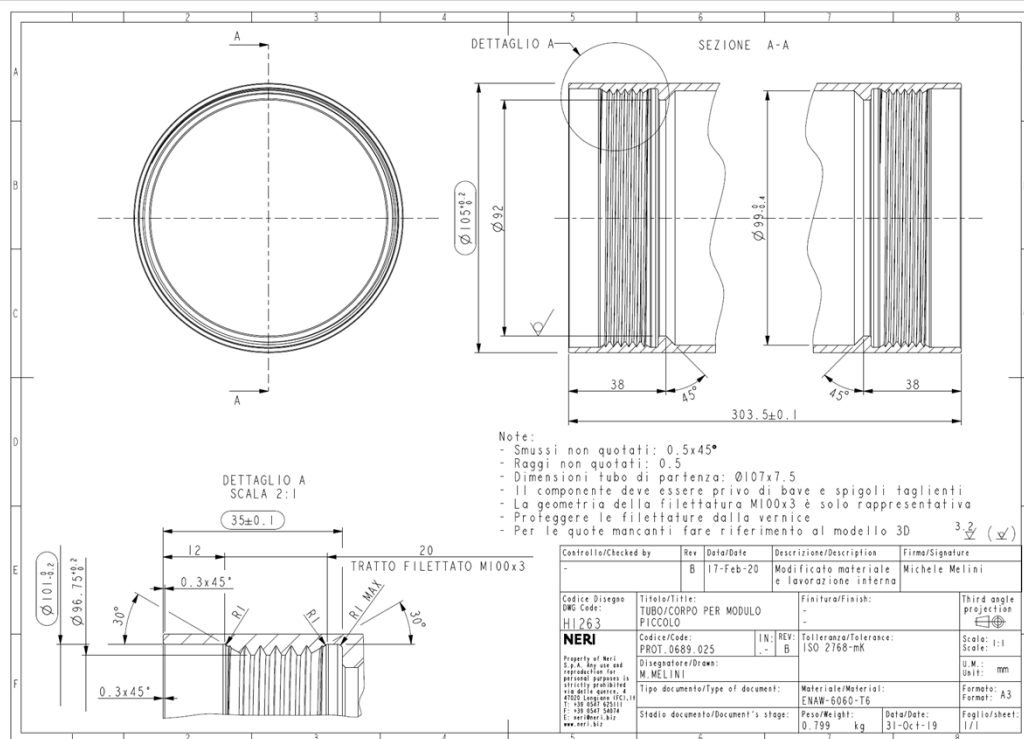


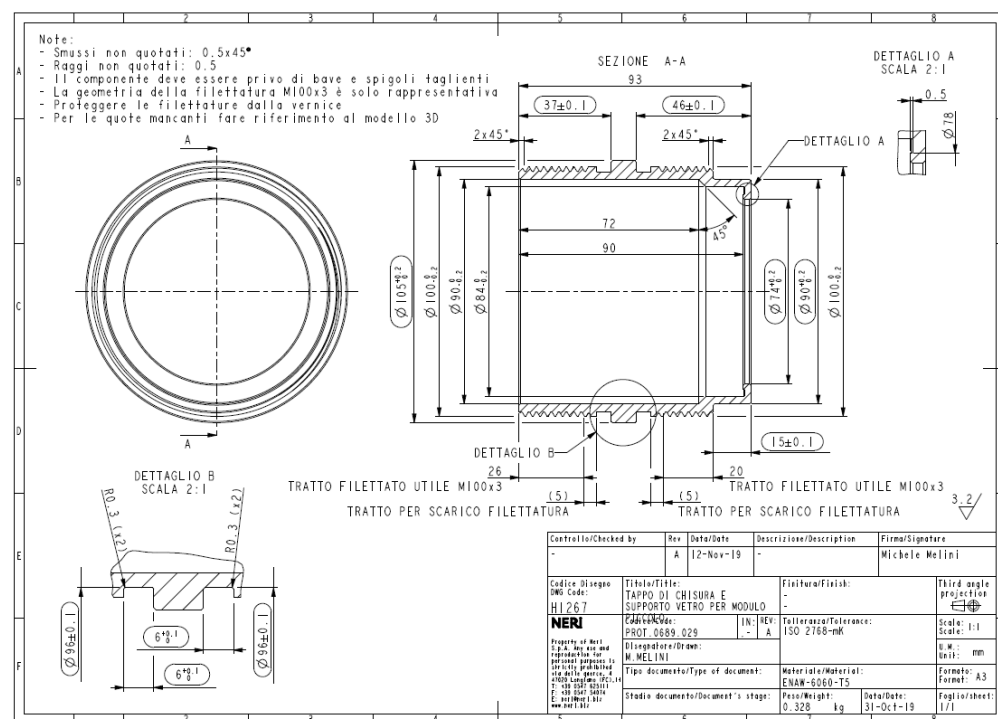
Illustrations

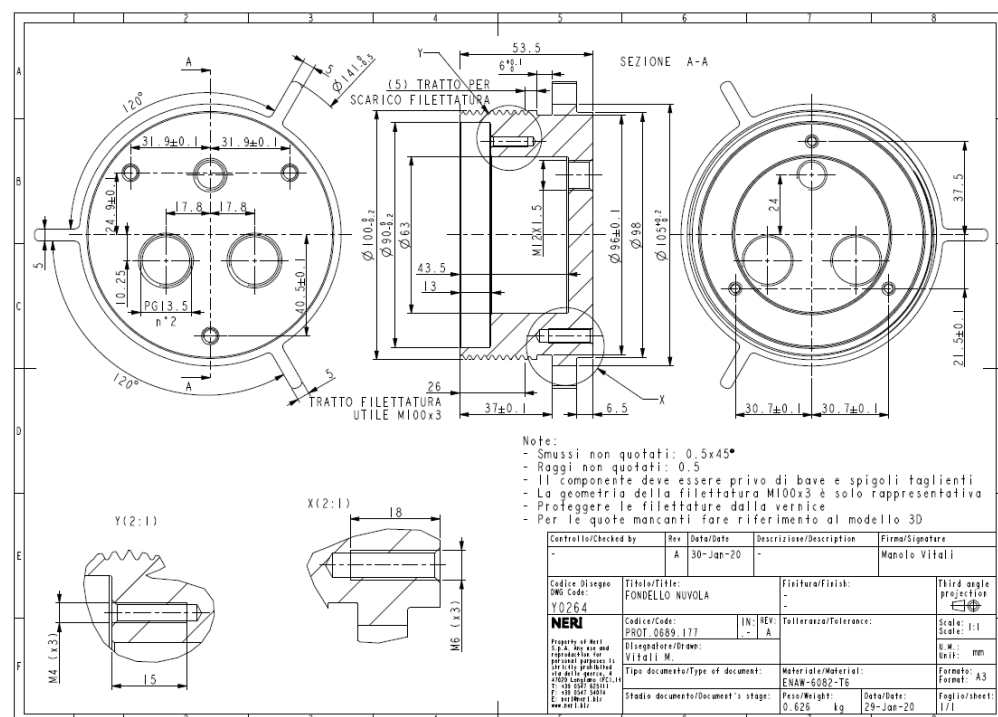
Ill.1



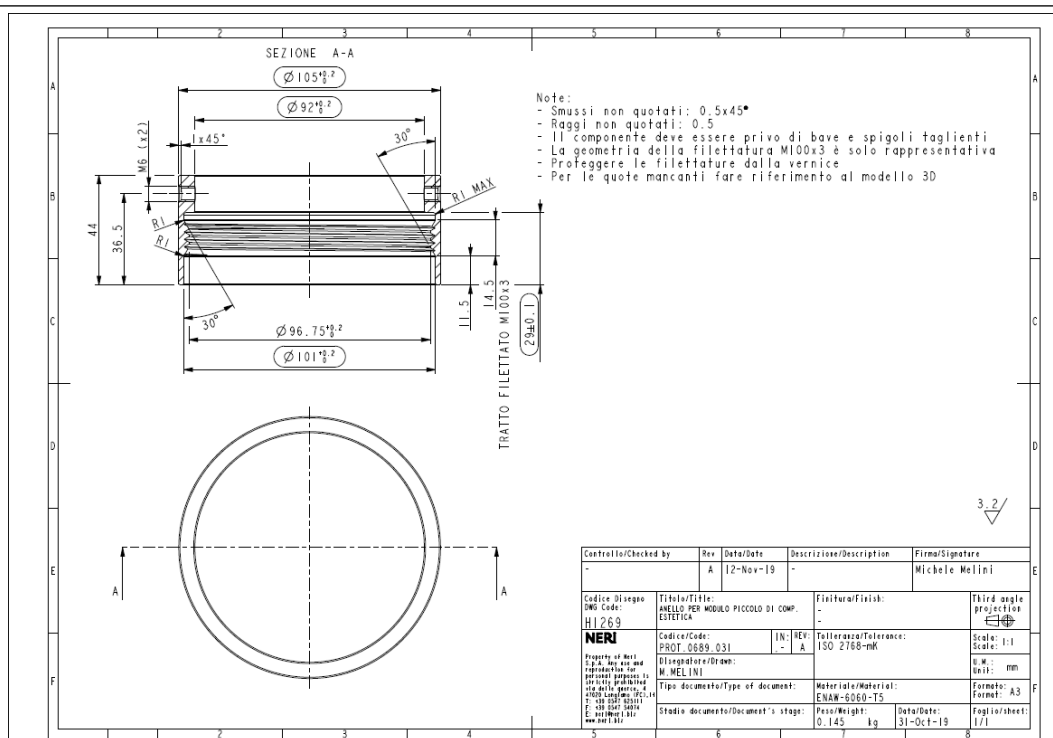
Ill.2



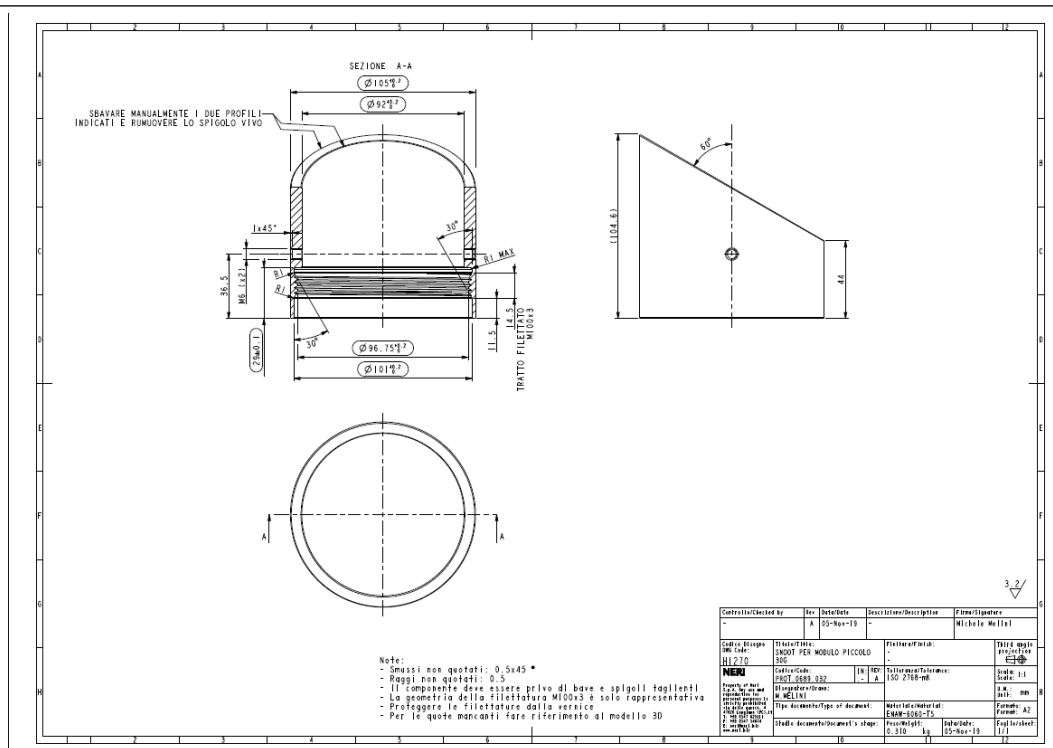
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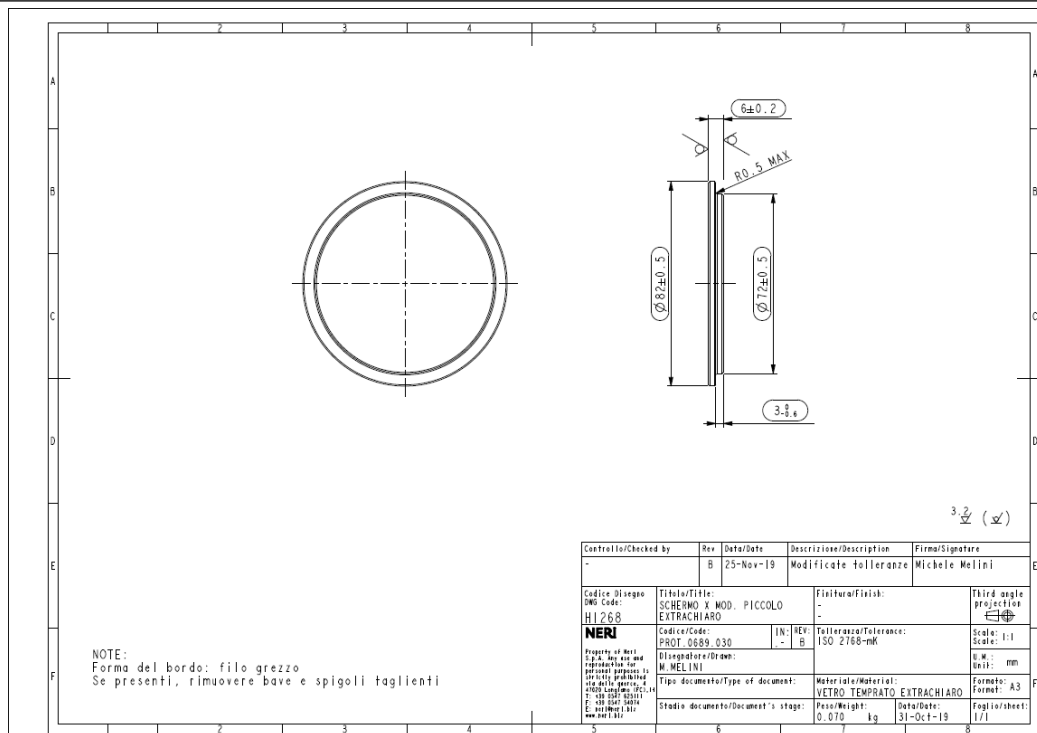
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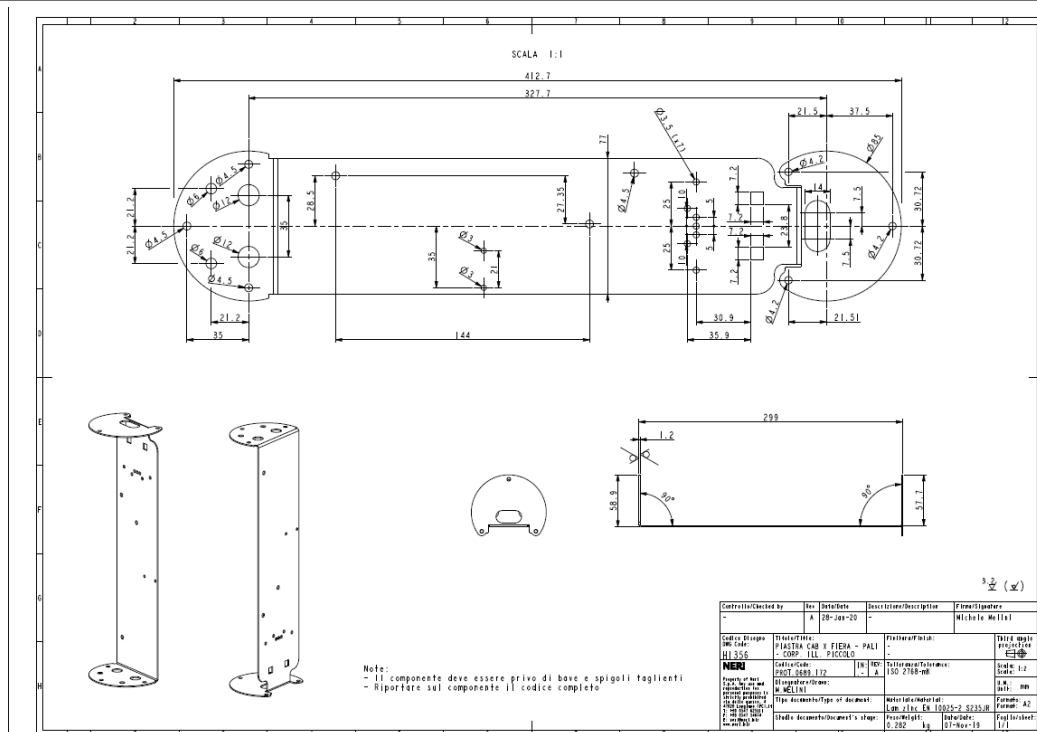
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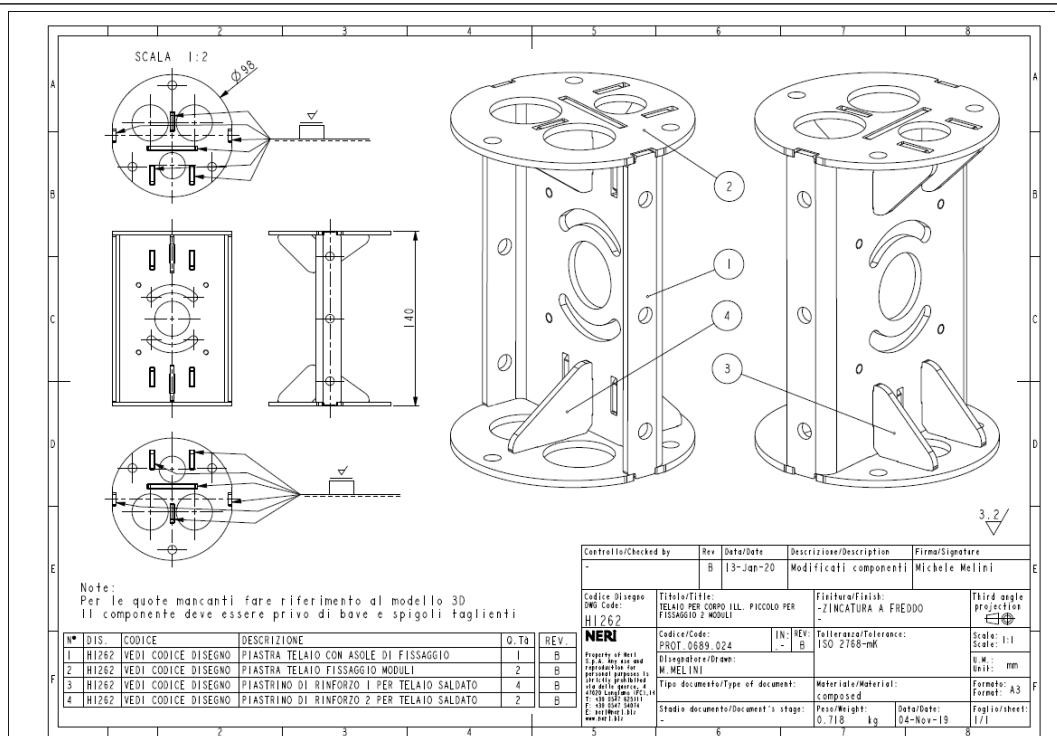
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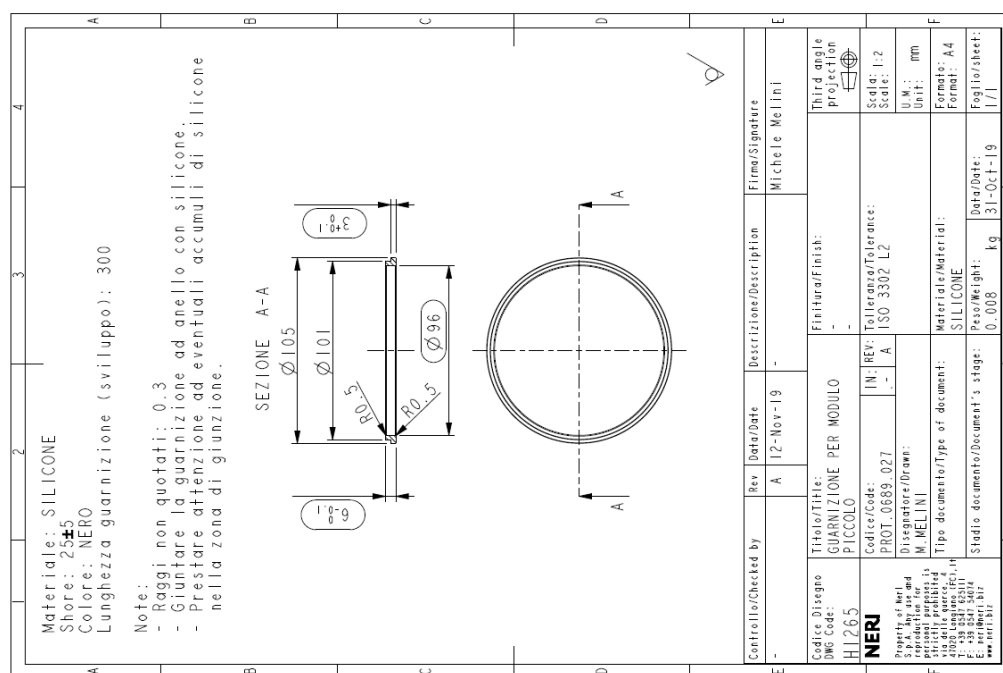
111.7

111.8

I11.9



I11.10



TEST RECORD NO. 1

SAMPLES:

Samples of the LED luminaires series "Nebula S" as indicated below and constructed as described herein, were submitted by the manufacturer for examination and test.

Model	Maximum Ratings	LED type
Nebula S ST	28 W, 120-277 Vac, 50/60Hz	3 x XHP50.2
Nebula S PR	28 W, 120-277 Vac, 50/60Hz	1 x CMA2550
Nebula S A	23 W, 120-277 Vac, 50/60Hz	12 x XB-D
Nebula S RGBW	28 W, 120-277 Vac, 50/60Hz	3 x XML color

[X]The following tests were conducted:			
TEST	STANDARD	CODE (See Below)	CLAUSE
Dielectric Voltage- Withstand	UL 1598	OS	18.1
Bonding Circuit Impedance	UL 1598	OS	18.2
Led Normal Temperature, Surface, General	UL 1598	OS	15, 19
Input Test	UL 8750 CSA 250.13	OS	8.2 9.2
Loading	UL 1598	OS	17.15
Rain Test	UL 1598	OS	17.5.2
S = Same test. C = Combined test (identified by the test names of two or more similar tests in multiple standards) to represent the worst-case parameters of the similar tests. OS = Testing requirements come from one standard only. MS = One of the two or more standards identified is more severe and the more severe one is indicated by underlining.			
Test results relate only to the items tested.			

Rain Test was performed on model Nebula S ST and considered representative for entire series.

All the models were examined and tested.

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the standard(s) noted below and, therefore, such products are judged eligible to bear UL's Mark as described on the Conclusion Page of this Report.

Standard	Title	Edition or Publication Date	Revision Date
CSA C22.2 NO 250.0	Luminaires	Fourth	August 28, 2018
UL 1598	Luminaires	Fourth	August 28, 2018
UL 8750	Light Emitting Diode (LED) Equipment for Use in Lighting Products	Second	October 11, 2019
CSA C22.2 No. 250.13	LED Equipment for Lighting Applications	Third	October 1, 2017

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

CONCLUSION

Samples of the products covered by this Report have been found to comply with the requirements covering the category and the products are found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the samples investigated by UL and does not signify UL certification or that the products described are covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the Certification Mark of UL on such products which comply with UL's Follow-Up Service Procedure and any other applicable requirements of UL LLC. The Certification Mark of UL on the product, or the UL symbol on the product and the Certification Mark of UL on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Listing and Follow-Up Service.

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