




	Test report	448-QL23-R03 ver. 0	
	Applicant	LARES di Claudio Lerici Regione Viazzi, 6 15010 - Castelletto d'Erro (AL) - Italy	
	Type	SC_02 (IEN 5587)	

TEST REPORT 448-QL23-R03 ver. 0

Dates and authorization Date e autorizzazioni		
Report Date Data emissione rapporto di prova	11/05/2023	
Written by Preparato da	Matteo Roncali	
Authorized by Autorizzato da	Ing. Michele Peschiera	
Data declared under the sole responsibility of the applicant Dati dichiarati dal richiedente e sotto la sua responsabilità		
Applicant Richiedente	LARES di Claudio Lerici - Regione Viazzi, 6 - 15010 - Castelletto d'Erro (AL) - Italy	
Manufacturer Produttore	Same as applicant/Come il richiedente	
Sample description Descrizione campione	Reflecting sheets	
Type Modello	LARES O03 - Amber LARES W03 - White LARES R03 - Red	
Applicable Standard Norme applicabili		
	CIE 54.2:2001 - Retroreflection: definition and measurement, Addendum 149: UN Regulation No. 150 Amendment 5 "Uniform provisions concerning the approval of retro-reflective devices and markings for power driven vehicles and their trailers" up to Suppl. 01 to 00 dated: 04/01/23 (hereinafter called Regulation No. 150) and FMVSS108:2022	

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LAB N° 1235 L



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Mutual Recognition Agreements

Annex Annesso	Test Name Identificazione prova	Test Method Metodo di prova	Test Requirement Requisito di prova	Verdict / Result Esito / Risultato
I	LARES O03	<i>CIL</i> measurement in accordance to CIE 54.2:2001, Regulation No. 150 and FMVSS108:2022	Not applicable	See Annex I
II	LARES W03	<i>CIL</i> measurement in accordance to CIE 54.2:2001, Regulation No. 150 and FMVSS108:2022	Not applicable	See Annex II
III	LARES R03	<i>CIL</i> measurement in accordance to CIE 54.2:2001, Regulation No. 150 and FMVSS108:2022	Not applicable	See Annex III
IV	Photographs	-	-	-



Uncertainty Incertezza	
Photometric parameter Parametri fotometrici	Coefficient of retroreflection/Coefficiente areico di intensità luminosa= 2,8 %
Color coordinates Coordinate cromatiche	$x = 0,0007$ $y = 0,0009$
Sample mounting precision Precisione montaggio dispositivo	$\pm 0,5^\circ$
Statement Dichiarazione	<p>The measured value (y) and the associated expanded uncertainty (U) represent the interval ($y \pm U$) which contains the value of the measured quantity with a probability of approximately 95 % and a coverage factor $k = 2$.</p> <p>The values into the different annex have the maximum significant figures managed by the measurement software.</p> <p>Il valore misurato (y) e l'incertezza estesa associata (U) rappresentano l'intervallo ($y \pm U$) che contiene il valore della grandezza misurata con una probabilità di circa il 95 % e un fattore di copertura $k = 2$.</p> <p>I valori negli annessi sono riportati con il massimo numero di cifre significative gestite dal software della strumentazione.</p>

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ANNEX I		LARES O03 - Amber	
Test method	CIE 54.2:2001, Regulation No. 150 and FMVSS108:2022		
Sample identification	LARES O03		
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy		
Test date	10/05/2023		
Environmental conditions	Temperature 23 °C ± 3 °C		
Instruments	Temperature-humidity datalogger QL-IN-018 Temperature-humidity datalogger QL-IN-020 Goniophotometer QL-IN-002 Retroreflection Unit QL-IN-008		
Test description	The sample was prepared, stabilized and measured like defined in Regulation No. 150 and FMVSS108:2022		
Test requirements	Not applicable		
Test measurement	The sample was mounted onto the test stand, provided by the applicant. The sample was illuminated with standard illuminant A. The sample was installed perpendicular to the light source. Afterwards the grid, given in the Regulation No. 150 and FMVSS108:2022, was measured.		
VERDICT / RESULT			
Regulation No. 150		FMVSS108:2022	
Functions	CIL [mcd/lx]	Functions	CIL [mcd/lx]
0,333 at H - V	1680,0	0,200 at H - V	2350,0
0,333 at H - 10U	1558,0	0,200 at H - 10U	2220,0
0,333 at H - 10D	1543,0	0,200 at H - 10D	2190,0
0,333 at 20R - 5U	1511,0	0,200 at 20L - V	2160,0
0,333 at 20R - 5D	1509,0	0,200 at 20R - V	2150,0
0,333 at 20L - 5U	1515,0	1,500 at H - V	146,2
0,333 at 20L - 5D	1514,0	1,500 at H - 10U	126,2
1,500 at H - V	146,5	1,500 at H - 10D	126,8
1,500 at H - 10U	126,3	1,500 at 20L - V	129,7
1,500 at H - 10D	127,0	1,500 at 20R - V	130,1
1,500 at 20R - 5U	128,0		
1,500 at 20R - 5D	128,9		
1,500 at 20L - 5U	127,6		
1,500 at 20L - 5D	128,5		

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ANNEX II		LARES W03 - White			
Test method	CIE 54.2:2001, Regulation No. 150 and FMVSS108:2022				
Sample identification	LARES W03				
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy				
Test date	10/05/2023				
Environmental conditions	Temperature 23 °C ± 3 °C				
Instruments	Temperature-humidity datalogger QL-IN-018 Temperature-humidity datalogger QL-IN-020 Goniophotometer QL-IN-002 Retroreflection Unit QL-IN-008				
Test description	The sample was prepared, stabilized and measured like defined in Regulation No. 150 and FMVSS108:2022				
Test requirements	Not applicable				
Test measurement	The sample was mounted onto the test stand, provided by the applicant. The sample was illuminated with standard illuminant A. The sample was installed perpendicular to the light source. Afterwards the grid, given in the Regulation No. 150 and FMVSS108:2022, was measured.				
VERDICT / RESULT					
Regulation No. 150		FMVSS108:2022			
Functions	CIL [mcd/lx]	Functions	CIL [mcd/lx]		
	0,333 at H - V		2250	0,200 at H - V	3030,0
	0,333 at H - 10U		2060	0,200 at H - 10U	2820,0
	0,333 at H - 10D		2080	0,200 at H - 10D	2840,0
	0,333 at 20R - 5U		1980	0,200 at 20L - V	2730,0
	0,333 at 20R - 5D		1980	0,200 at 20R - V	2720,0
	0,333 at 20L - 5U		1980	1,500 at H - V	175,3
	0,333 at 20L - 5D		1990	1,500 at H - 10U	129,9
	1,500 at H - V		175,9	1,500 at H - 10D	130,0
	1,500 at H - 10U		129,8	1,500 at 20L - V	135,1
	1,500 at H - 10D		130,0	1,500 at 20R - V	135,3
	1,500 at 20R - 5U		132,5		
	1,500 at 20R - 5D		133,6		
	1,500 at 20L - 5U		132,3		
	1,500 at 20L - 5D		133,6		

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ANNEX III		LARES R03 - Red			
Test method	CIE 54.2:2001, Regulation No. 150 and FMVSS108:2022				
Sample identification	LARES R03				
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy				
Test date	10/05/2023				
Environmental conditions	Temperature 23 °C ± 3 °C				
Instruments	Temperature-humidity datalogger QL-IN-018 Temperature-humidity datalogger QL-IN-020 Goniophotometer QL-IN-002 Retroreflection Unit QL-IN-008				
Test description	The sample was prepared, stabilized and measured like defined in Regulation No. 150 and FMVSS108:2022				
Test requirements	Not applicable				
Test measurement	The sample was mounted onto the test stand, provided by the applicant. The sample was illuminated with standard illuminant A. The sample was installed perpendicular to the light source. Afterwards the grid, given in the Regulation No. 150 and FMVSS108:2022, was measured.				
VERDICT / RESULT					
Regulation No. 150		FMVSS108:2022			
Functions	CIL [mcd/lx]	Functions	CIL [mcd/lx]		
	0,333 at H - V		682,0	0,200 at H - V	857,0
	0,333 at H - 10U		460,0	0,200 at H - 10U	601,0
	0,333 at H - 10D		461,0	0,200 at H - 10D	604,0
	0,333 at 20R - 5U		435,0	0,200 at 20L - V	575,0
	0,333 at 20R - 5D		436,0	0,200 at 20R - V	572,0
	0,333 at 20L - 5U		438,0	1,500 at H - V	85,6
	0,333 at 20L - 5D		438,0	1,500 at H - 10U	35,0
	1,500 at H - V		86,3	1,500 at H - 10D	35,9
	1,500 at H - 10U		35,0	1,500 at 20L - V	34,5
	1,500 at H - 10D		35,9	1,500 at 20R - V	34,4
	1,500 at 20R - 5U		34,0		
	1,500 at 20R - 5D		34,3		
	1,500 at 20L - 5U		34,1		
	1,500 at 20L - 5D		34,4		

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ANNEX IV

Photographs

