





	Test report n.	191-QL20-R03 ver. 0	 <small>LAB N°1235</small> <small>Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC</small> <small>Signatory of EA, IAF and ILAC Mutual Recognition Agreements</small>
	Applicant	LARES di Claudio Lerici Regione Viazzi, 6 15010 - Castelletto d'Erro (AL) - Italy	
	EUT/Type	Reflecting sheets O03, R03, W03	

## TEST REPORT Nr. 191-QL20-R03 ver. 0

Addresses Indirizzi		
Applicant Richiedente	LARES di Claudio Lerici - Regione Viazzi, 6 - 15010 - Castelletto d'Erro (AL) - Italy	
Manufacturer Produttore	Same as applicant/ Come il richiedente	
Test laboratory Laboratorio di prova	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy	
Dates and authorization Date e autorizzazioni		
EUT acceptance date Data accettazione campioni	Simultaneously with the beginning of the test. Contestualmente all'inizio delle prove.	
Report Date Data emissione rapporto di prova	06/02/2020	
Authorization Autorizzazioni	Ing. Nicola Parolini Test engineer	
	Ing. Michele Peschiera Reviewer	 
Equipment under test EUT (data declared by the applicant and under applicant's responsibility) Dispositivo sottoposto a prova EUT (Dati forniti dal richiedente e sotto la sua responsabilità)		
EUT description Descrizione EUT	Reflecting sheets	
Type Modello	LARES O03 - amber LARES W03 - white LARES R03 - red	
Marking Marcature	-	
Applicable norms Norme applicabili		
	CIE 54.2:2001 - Retroreflection: definition and measurement, ECE R03 rev.4 suppl. 17 to 02 series of amendments and FMVSS108:2018	



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I risultati e le osservazioni indicate in questo rapporto di prova sono riferite esclusivamente ai campioni testati. Non è permesso utilizzare i risultati e le osservazioni di questo rapporto di prova per altri sistemi o configurazioni. Non è permessa la pubblicazione o la duplicazione completa o parziale di questo rapporto di prova e dei suoi allegati senza un consenso scritto da parte del laboratorio di prova. Il laboratorio di prova non si assume responsabilità nei confronti di terzi per danni o eventuali costi derivanti dall'utilizzo dei dati presenti in questo rapporto di prova. Ogni uso del nome del laboratorio di prova e dei suoi marchi per la vendita o per pubblicizzare il prodotto testato deve essere prima approvato in forma scritta dal laboratorio di prova. In caso di rapporti di prova con più lingue, la versione inglese è da considerarsi quella ufficiale.

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Test Name Identificazione prova	Test Procedure Procedura di prova	Test Requirement Requisito di prova	Test Result Esito Prova
LARES O03	CIL measurement in accordance to CIE 54.2, ECE R03 and FMVSS108	N/A	See Appendix I
LARES W03	CIL measurement in accordance to CIE 54.2, ECE R03 and FMVSS108	N/A	See Appendix I
LARES R03	CIL measurement in accordance to CIE 54.2, ECE R03 and FMVSS108	N/A	See Appendix I

Uncertainty Incertezza	
Photometric parameter Parametri fotometrici	Coefficient of retroreflection: 3,3 % Coefficiente di retroriflessione
Statement Dichiarazione	<p>The measured value (<math>y</math>) and the associated expanded uncertainty (<math>U</math>) represent the interval (<math>y \pm U</math>) which contains the value of the measured quantity with a probability of approximately 95 % and a coverage factor <math>k = 2</math>.</p> <p>The values into the different appendix have the maximum significant figures managed by the measurement software.</p> <p>Il valore misurato (<math>y</math>) e l'incertezza estesa associata (<math>U</math>) rappresentano l'intervallo (<math>y \pm U</math>) che contiene il valore della grandezza misurata con una probabilità di circa il 95 % e un fattore di copertura <math>k = 2</math>.</p> <p>I valori negli appendici sono riportati con il massimo numero di cifre significative gestite dal software della strumentazione.</p>

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	EUT/Type	Reflecting sheets O03, R03, W03	



APPENDIX I	LARES O03 - amber
Norm and applicable points	CIE 54.2, ECE R3 and FMVSS108
Sample identification	191-QL20-S03
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	From 03/02/2020 to 04/02/2020
Environmental conditions	Temperature 23 °C ± 3 °C
Instruments	Goniometer LMT GOH1200 QL-IN-002 Retro Unit LMT RETRO 2000 QL-IN-008 Datalogger TESTO 174H QL-IN-018
Test procedure	The sample was prepared, stabilized and measured like defined in ECE R03 and FMVSS08
Test requirements	n.a.
Test measurement	The sample was mounted onto the test stand, provided by the manufacturer. The sample was illuminated with standard illuminant A. The sample was installed perpendicular to the light source. Afterwards the grid, given in the ECE R03 and FMVSS108, was measured.
TEST RESULT	

#### ECE R03

Functions	R [mcd/lx]
0.333 at H - V	1643
0.333 at H - 10U	1622
0.333 at H - 10D	1609
0.333 at 20R - 5U	1571
0.333 at 20R - 5D	1570
0.333 at 20L - 5U	1568
0.333 at 20L - 5D	1574
1.500 at H - V	144,6
1.500 at H - 10U	132,1
1.500 at H - 10D	132,7
1.500 at 20R - 5U	133,1
1.500 at 20R - 5D	134,7
1.500 at 20L - 5U	133,0
1.500 at 20L - 5D	134,6

#### FMVSS108

Functions	R [mcd/lx]
0.200 at H - V	2320
0.200 at H - 10U	2300
0.200 at H - 10D	2270
0.200 at 20L - V	2230
0.200 at 20R - V	2230
1.500 at H - V	143,8
1.500 at H - 10U	132,0
1.500 at H - 10D	133,3
1.500 at 20L - V	135,2
1.500 at 20R - V	135,5

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	EUT/Type	Reflecting sheets O03, R03, W03	



APPENDIX II	LARES W03 - white
Norm and applicable points	CIE 54.2, ECE R3 and FMVSS108
Sample identification	191-QL20-S04
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	From 03/02/2020 to 04/02/2020
Environmental conditions	Temperature 23 °C ± 3 °C
Instruments	Goniometer LMT GOH1200 QL-IN-002 Retro Unit LMT RETRO 2000 QL-IN-008 Datalogger TESTO 174H QL-IN-018
Test procedure	The sample was prepared, stabilized and measured like defined in ECE R03 and FMVSS08
Test requirements	n.a.
Test measurement	The sample was mounted onto the test stand, provided by the manufacturer. The sample was illuminated with standard illuminant A. The sample was installed perpendicular to the light source. Afterwards the grid, given in the ECE R03 and FMVSS108, was measured.
TEST RESULT	

#### ECE R03

Functions	R [mcd/lx]
0.333 at H - V	2240
0.333 at H - 10U	2150
0.333 at H - 10D	2180
0.333 at 20R - 5U	2070
0.333 at 20R - 5D	2080
0.333 at 20L - 5U	2070
0.333 at 20L - 5D	2080
1.500 at H - V	150,3
1.500 at H - 10U	136,2
1.500 at H - 10D	135,7
1.500 at 20R - 5U	138,1
1.500 at 20R - 5D	139,5
1.500 at 20L - 5U	138,3
1.500 at 20L - 5D	140,2

#### FMVSS108

Functions	R [mcd/lx]
0.200 at H - V	3060
0.200 at H - 10U	2930
0.200 at H - 10D	2980
0.200 at 20L - V	2850
0.200 at 20R - V	2850
1.500 at H - V	149,2
1.500 at H - 10U	136,1
1.500 at H - 10D	136,2
1.500 at 20L - V	141,1
1.500 at 20R - V	141,3

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	EUT/Type	Reflecting sheets O03, R03, W03	

APPENDIX III	LARES R03 - red
Norm and applicable points	CIE 54.2, ECE R3 and FMVSS108
Sample identification	191-QL20-S05
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Test date	From 03/02/2020 to 04/02/2020
Environmental conditions	Temperature 23 °C ± 3 °C
Instruments	Goniometer LMT GOH1200 QL-IN-002 Retro Unit LMT RETRO 2000 QL-IN-008 Datalogger TESTO 174H QL-IN-018
Test procedure	The sample was prepared, stabilized and measured like defined in ECE R03 and FMVSS08
Test requirements	n.a.
Test measurement	The sample was mounted onto the test stand, provided by the manufacturer. The sample was illuminated with standard illuminant A. The sample was installed perpendicular to the light source. Afterwards the grid, given in the ECE R03 and FMVSS108, was measured.
TEST RESULT	

#### ECE R03

Functions	R [mcd/lx]
0.333 at H - V	560
0.333 at H - 10U	478
0.333 at H - 10D	482
0.333 at 20R - 5U	454
0.333 at 20R - 5D	456
0.333 at 20L - 5U	454
0.333 at 20L - 5D	456
1.500 at H - V	56,1
1.500 at H - 10U	36,7
1.500 at H - 10D	37,5
1.500 at 20R - 5U	35,6
1.500 at 20R - 5D	36,1
1.500 at 20L - 5U	35,7
1.500 at 20L - 5D	36,0

#### FMVSS108

Functions	R [mcd/lx]
0.200 at H - V	723
0.200 at H - 10U	625
0.200 at H - 10D	630
0.200 at 20L - V	596
0.200 at 20R - V	596
1.500 at H - V	56,1
1.500 at H - 10U	36,9
1.500 at H - 10D	37,5
1.500 at 20L - V	36,3
1.500 at 20R - V	36,2

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## APPENDIX IV

## Photographs

