


	Test report	1003-QL21-R04 ver. 0	 LAB N° 1235 L Membro degli Accordi di Mutuo Riconoscimento EA, IAF e ILAC Signatory of EA, IAF and ILAC Mutual Recognition Agreements
	Applicant	Relco Srl Via delle Azalee, 6/A 20090 - Buccinasco - Milano - Italy	
	Type	25930/SP	

## TEST REPORT 1003-QL21-R04 ver. 0

<b>Addresses</b> Indirizzi		
Applicant Richiedente	Relco Srl – Via delle Azalee, 6/A – 20090 - Buccinasco - Milano - Italy	
Manufacturer Produttore	Same as applicant/ Come il richiedente	
<b>Dates and authorization</b> Date e autorizzazioni		
Report Date Data emissione rapporto di prova	04/08/2021	
Written by Preparato da	Marco Zanfabro	
Authorized by Autorizzato da	Ing. Michele Peschiera	
<b>Sample under test (data declared by the applicant and under applicant's responsibility)</b> Dispositivo sottoposto a prova (dati forniti dal richiedente e sotto la sua responsabilità)		
Sample description Descrizione dispositivo	LED luminaire/ Apparecchio di illuminazione a LED	
Type Modello	25930/SP	
Light source Sorgente luminosa	N. 192 Leds Samsung SPMWH1228FD5WATMSE 4000 K	
Secondary optic Ottica secondaria:	None	
Power supply Alimentazione	AC 230 V, 50 Hz	
Driver model Modello alimentatore	RN9154	
Output power supply current Corrente in uscita dall'alimentatore	1050 mA	
Single led supply current Corrente sul singolo led	60 mA	
LM80 test report	Bay Area Compliance Laboratories Corp. test report number: RSZ170905514-10, 03-11-2017 (accreditation IAS TL-460)	
<b>Applicable standards</b> Norme applicabili		
ANSI/UL 1598:2008, IES TM-21-11		

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Test Name Identificazione prova	Result Risultato
ANSI/UL 1598:2008 par 19.7 (ISTMT)	See annex I
IES TM-21-11 Energy Star TM21 Calculator Rev 06-18-2018 (from calculation)	See annex II

Uncertainty Incertezza	
Temperature measurement Misure di temperatura	$\pm 2,0$ °C
Electrical parameter Parametri elettrici	$P= 0,13$ % $V= 0,05$ % $I_{AC}= 0,28$ % $I_{DC}= 0,08$ % $PF= 0,15$ %
Statement Dichiarazione	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 $k = 2$ . 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 $k = 2$ .



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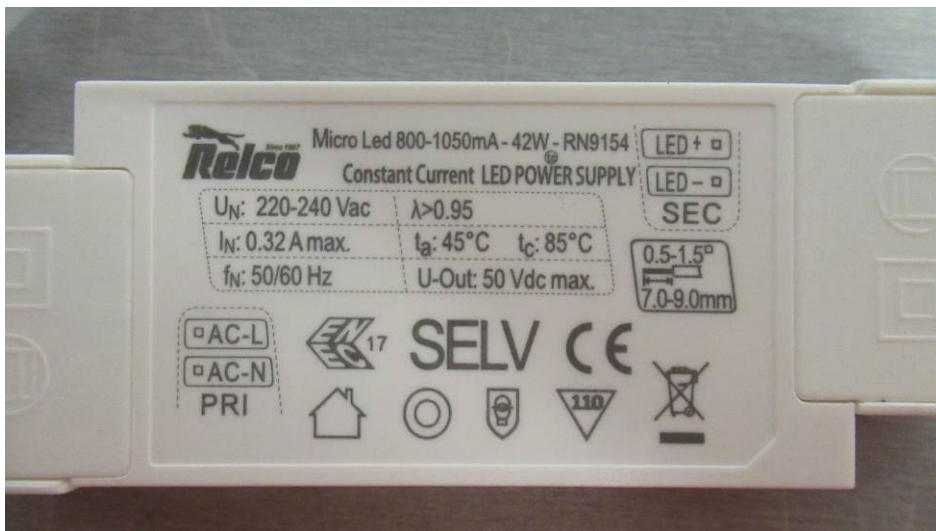
**ACCREDIA**  
L'ENTE ITALIANO DI ACCREDITAMENTO



LAB N° 1235 L

Membro degli Accordi di Mutuo Riconoscimento  
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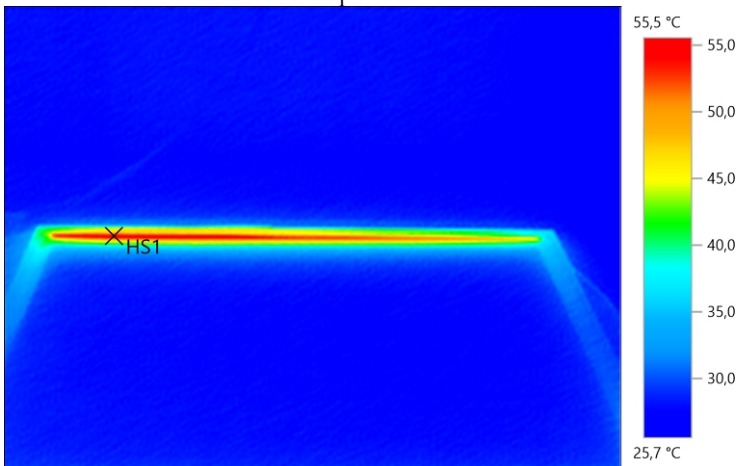
## Photographs

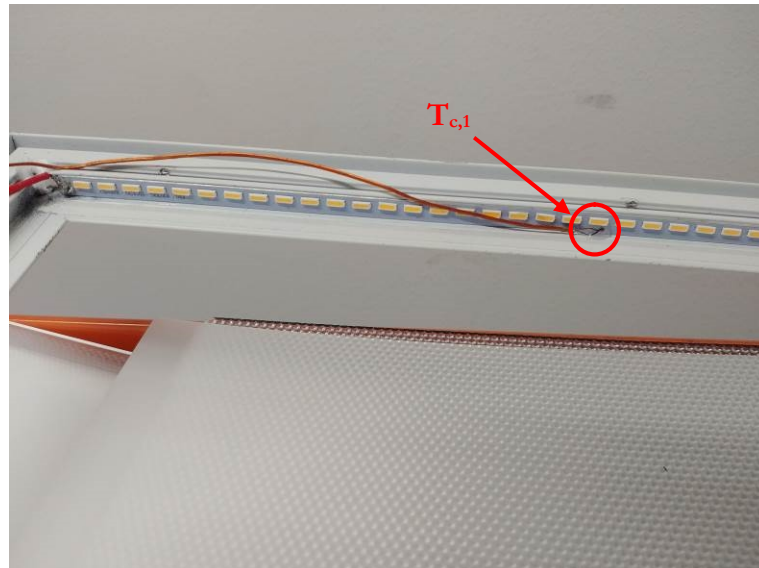
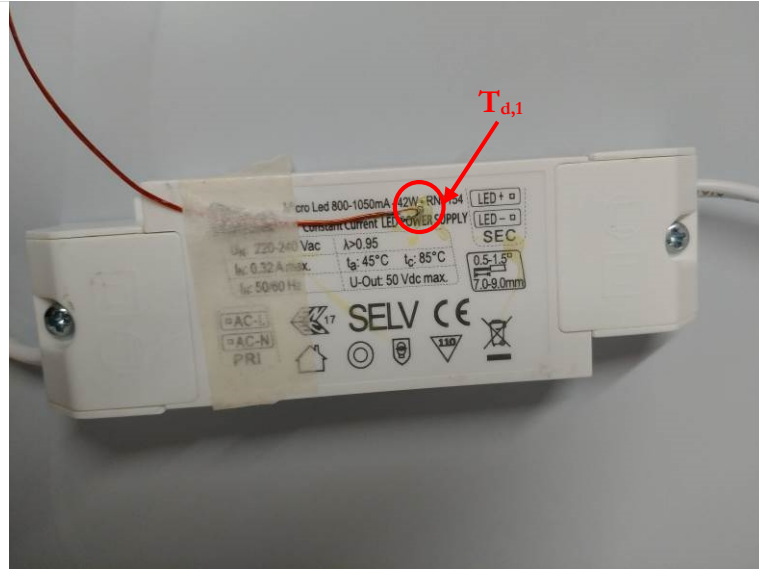
Foto

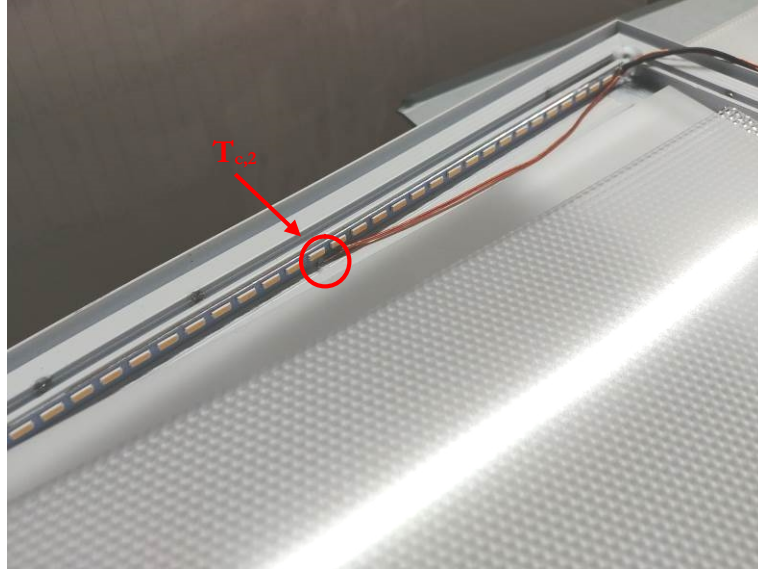


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<b>ANNEX I</b>	<b>ISTMT</b>
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Standards	ANSI/UL 1598:2008 par 19.7 (ISTMT)
Sample number	1003-QL21-S01
Place of testing	Qualilab Srl - Via Trento, 87 - 25020 - Capriano del Colle (BS) - Italy
Date of testing	06/07/2021
Environmental conditions	-
Instruments	Powermeter Hioki 3333 QL-IN-186 Datalogger HIOKI 8400/20LR QL-IN-096 Termocouple TERSID T HF-D-30-TT QL-IN-197 Thermal chamber QUALILAB QL-IN-196 AC power source Chroma 6415 QL-IN-011 Thermal imager camera TESTO 865 QL-IN-253
Test procedure	<p>IES LM-82-12 §6 Directional measurement method used.</p> <p><math>T_b</math>: according to applicant's request the air temperature of the chamber was taken</p> <p><math>T_{d,1}</math>: driver temperature central power supply</p> <p><math>T_{c,1}</math>: Led module (see figure)</p> <p><math>T_{c,2}</math>: Led module (see figure)</p> <p>Temperature setup</p> <p><math>T_{b,0} = 25,0 \text{ }^\circ\text{C}</math></p> <p><math>T_{b,1} = T_{b,0} + 10 \text{ }^\circ\text{C} = 35,0 \text{ }^\circ\text{C}</math></p> <p>According to applicant's requirement the test was performed on a luminaire</p> <p>Stabilization time at each temperature &gt;5 h</p> <div style="text-align: center;">  </div> <p>Only for the evaluation of the hot point position - Temperature value not validated</p>





Test Measurement

$T_{b,x}$ [°C]	$T_{d,1}$ [°C]	$T_{c,1}$ [°C]	$T_{c,2}$ [°C]	Input Power [W]	Input Voltage [V]	Input Current [A]
25,0	61,8	57,3	45,6	39,0	230,0	0,173
35,0	70,0	64,0	52,9	38,8	230,0	0,172

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ANNEX II		IES TM-21-11
Standards	IES TM-21-11	
Sample number	1003-QL21-S01	
Light source	N. 192 Leds Samsung SPMWH1228FD5WATMSE 4000 K	
Single led supply current	60 mA	
Test procedure	Energy Star TM21 Calculator Rev 06-18-2018	
Statement	Calculation below based on test report Bay Area Compliance Laboratories Corp. test report number: RSZ170905514-10, 03-11-2017 (accreditation IAS TL-460) and measurement data from annex I	
TM21 calculation		

		LM-80 Test Inputs					
Description of LED Light Source Tested (manufacturer, model, catalog number)		Test Data for 55°C Case Temperature		Test Data for 85°C Case Temperature		Test Data for 105°C Case Temperature	
		Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)
Leds Samsung SPMWH1228FD5WATMSE 4000 K		0	100,00%	0	100,00%	0	100,00%
		1000	100,16%	1000	99,99%	1000	98,82%
		2000	99,96%	2000	99,75%	2000	99,57%
		3000	99,77%	3000	99,52%	3000	99,32%
		4000	99,56%	4000	99,28%	4000	99,05%
		5000	99,35%	5000	99,06%	5000	98,81%
		6000	99,14%	6000	98,82%	6000	98,54%
		7000	98,95%	7000	98,60%	7000	98,29%
		8000	98,75%	8000	98,36%	8000	98,02%
		9000	98,55%	9000	98,14%	9000	97,76%
		10000	98,36%	10000	97,91%	10000	97,49%
LM-80 Testing Details							
Total number of units tested per case temperature	25						
Number of failures:	0						
Number of units measured:	25						
Test duration (hours):	10000						
Tested drive current (mA):	160						
Tested case temperature 1 (T <sub>c</sub> , °C):	55						
Tested case temperature 2 (T <sub>c</sub> , °C):	85						
Tested case temperature 3 (T <sub>c</sub> , °C):	105						
In-Situ Inputs							
Drive current for each LED package/array/module (mA):	60						
In-situ case temperature (T <sub>c</sub> , °C):	64						
Percentage of initial lumens to project to (e.g. for L <sub>70</sub> , enter 70):	70						
Results							
Time (t) at which to estimate lumen maintenance (hours):	100,000						
Lumen maintenance at time (t) (%):	81,29%						
Reported L70 (hours):	>80000						

L70 T<sub>b,1</sub> (35 °C)



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### LM-80 Test Inputs

Description of LED Light Source Tested (manufacturer, model, catalog number)	Test Data for 55°C Case Temperature		Test Data for 85°C Case Temperature		Test Data for 105°C Case Temperature	
	Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)
Leds Samsung SPMWH1228FD5WATMSE 4000 K	0	100,00%	0	100,00%	0	100,00%
	1000	100,16%	1000	99,99%	1000	98,82%
	2000	99,96%	2000	99,75%	2000	99,57%
	3000	99,77%	3000	99,52%	3000	99,32%
	4000	99,56%	4000	99,28%	4000	99,05%
	5000	99,35%	5000	99,06%	5000	98,81%
	6000	99,14%	6000	98,82%	6000	98,54%
	7000	98,95%	7000	98,60%	7000	98,29%
	8000	98,75%	8000	98,36%	8000	98,02%
	9000	98,55%	9000	98,14%	9000	97,76%
	10000	98,36%	10000	97,91%	10000	97,49%

LM-80 Testing Details	
Total number of units tested per case temperature	25
Number of failures:	0
Number of units measured:	25
Test duration (hours):	10000
Tested drive current (mA):	160
Tested case temperature 1 (T <sub>cr</sub> , °C):	55
Tested case temperature 2 (T <sub>cr</sub> , °C):	85
Tested case temperature 3 (T <sub>cr</sub> , °C):	105

In-Situ Inputs	
Drive current for each LED package/array/module (mA):	60
In-situ case temperature (T <sub>cr</sub> , °C):	64
Percentage of initial lumens to project to (e.g. for L <sub>70</sub> , enter 70):	80

Results	
Time (t) at which to estimate lumen maintenance (hours):	100.000
Lumen maintenance at time (t) (%):	81,29%
Reported L80 (hours):	>60000

L80 T<sub>b,1</sub> (35 °C)





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### LM-80 Test Inputs

Description of LED Light Source Tested (manufacturer, model, catalog number)	Test Data for 55°C Case Temperature		Test Data for 85°C Case Temperature		Test Data for 105°C Case Temperature	
	Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)	Time (hours)	Lumen Maintenance (%)
Leds Samsung SPMWH1228FD5WATMSE 4000 K	0	100,00%	0	100,00%	0	100,00%
	1000	100,16%	1000	99,99%	1000	98,82%
	2000	99,96%	2000	99,75%	2000	99,57%
	3000	99,77%	3000	99,52%	3000	99,32%
	4000	99,56%	4000	99,28%	4000	99,05%
	5000	99,35%	5000	99,06%	5000	98,81%
	6000	99,14%	6000	98,82%	6000	98,54%
	7000	98,95%	7000	98,60%	7000	98,29%
	8000	98,75%	8000	98,36%	8000	98,02%
	9000	98,55%	9000	98,14%	9000	97,76%
	10000	98,36%	10000	97,91%	10000	97,49%

LM-80 Testing Details	
Total number of units tested per case temperature	25
Number of failures:	0
Number of units measured:	25
Test duration (hours):	10000
Tested drive current (mA):	160
Tested case temperature 1 (T <sub>cr</sub> , °C):	55
Tested case temperature 2 (T <sub>cr</sub> , °C):	85
Tested case temperature 3 (T <sub>cr</sub> , °C):	105

In-Situ Inputs	
Drive current for each LED package/array/module (mA):	60
In-situ case temperature (T <sub>cr</sub> , °C):	64
Percentage of initial lumens to project to (e.g. for L <sub>70</sub> , enter 70):	90

Results	
Time (t) at which to estimate lumen maintenance (hours):	100.000
Lumen maintenance at time (t) (%):	81,29%
Reported L90 (hours):	52.000

L90 T<sub>b,1</sub> (35 °C)