

# VISUAL COMFORT & CO.

## TEST REPORT

### SCOPE OF WORK

LED Performance Testing

### MODEL NUMBER

E4PSLRD-9408-W

### PROJECT NUMBER

G104206403

### REPORT NUMBER

104206403CHI-127

### ISSUE DATE

8/5/2020

### REVISED DATE

None

### TEST DATES

07/28/2020.

### DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104206403CHI-127

**MODEL NUMBER(s)**

E4PSLRD-9408-W

**REPORT RENDERED TO:**

VISUAL COMFORT & CO.  
7400 LINDER AVE.  
SKOKIE, IL, 60077  
USA

**STATEMENT OF LIMITATION**

NVLAP Lab Code 600186-0. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government.

**AUTHORIZATION**

The testing performed was authorized by signed quote number Qu-01040682-1.

**TEST STANDARDS**

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

ANSI NEMA ANSLG C78.377: 2017: Specifications for the Chromaticity of Solid State Lighting (SSL) Products

In Charge of Testing:



Ian Smith  
Engineer  
Lighting Division

Reviewer:



Jeff Davis  
NA Technical Lead  
Lighting Division

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## SAMPLE INFORMATION

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### ITEMS RECEIVED

Item No.	Control No.	Model No.	Description	Type	Received
1	AH07242020122945-127	E4PSLRD-9408-W	E4PSL 85deg 400mA	Production	7/23/2020

### TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	E4PSLRD-9408-W	1

### SAMPLE PHOTOS - TESTED CONFIGURATIONS

1



## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	E4PSLRD-9408-W
Product Description:	E4PSL 85deg 400mA
LED Model No.:	Bridgelux BXRE-**E2000-C-83
Driver Model No.:	ERP 255ESS020W400
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	1320.0	1326.4
Input Power (W) @ 120 (Vac)	15.20	15.16
Lumen Efficacy (lm/W)	86.8	87.5
Input Power Factor (I) @ 120 (Vac)	0.989	0.989

Criteria	Results
Input ATHD (%) @ 120 (Vac)	10.77
Correlated Color Temperature (K)	3918
Color Rendering Index - Ra (I)	92.7
Color Rendering Index - R9 (I)	77.6
Duv (I)	0.0009
Chromaticity Coordinate (x)	0.385
Chromaticity Coordinate (y)	0.381
Chromaticity Coordinate (u')	0.226
Chromaticity Coordinate (v')	0.504

## TEST METHODS

### SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS

No seasoning was performed in accordance with IESNA LM-79.

### INTEGRATING SPHERE TESTING

A spectroradiometer and integrating sphere were used to measure the spectral distribution for each EUT resulting in photometric and colorimetric data. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature was measured at a position inside the sphere and stabilization procedures to LM-79 were followed.

### TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING

A Type C Mirror Goniophotometer system was used to measure the luminous intensity (candela) at each angle of distribution for the EUT. Electrical measurements of the unit were measured using a power analyzer. Each EUT was operated at the rated input voltage of the system in its designated orientation. The ambient temperature was measured at a position near the EUT at equal height and stabilization procedures to LM-79 were followed.

**TYPE C GONIOPHOTOMETER DISTRIBUTION TESTING**

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	E4PSLRD-9408-W	NA

**PHOTOMETRIC AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)**

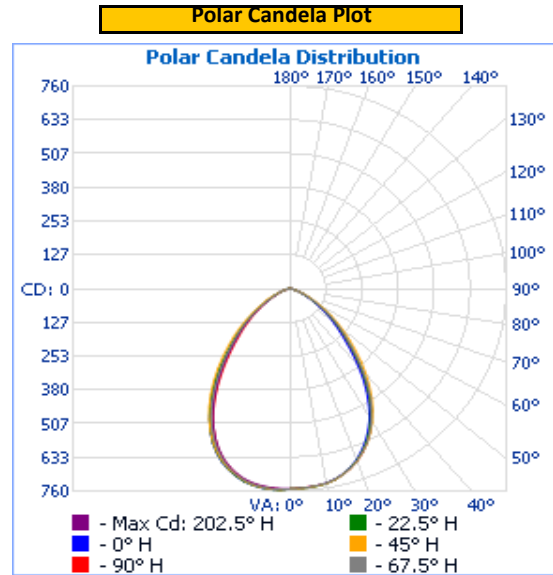
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )
Up	120.1	128.1	15.20	0.989

Light Output (lm)	Lumen Efficacy (lm/W)
1320.0	86.8

**INTENSITY SUMMARY - CANDELA**

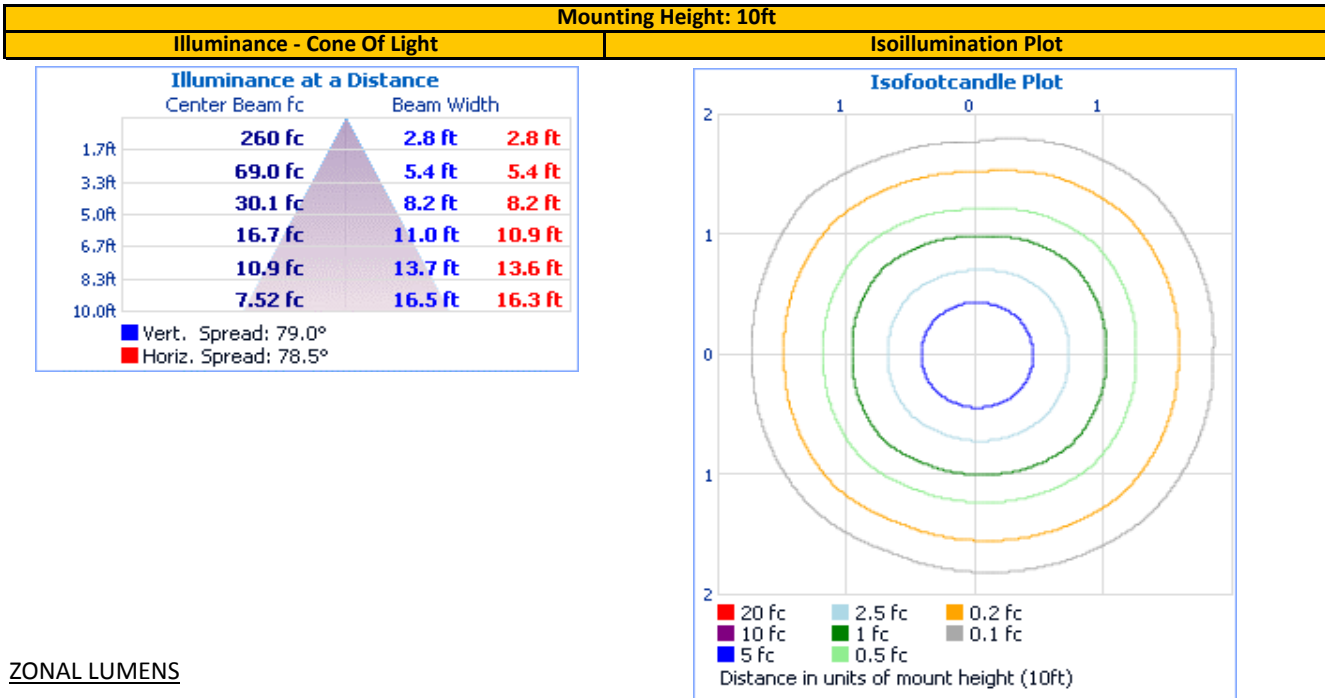
Angle	0	22.5	45	67.5	90
0	752	752	752	752	752
5	748	749	749	748	747
10	741	742	742	741	741
15	719	721	722	722	722
20	684	686	689	689	689
25	630	636	642	640	640
30	560	568	579	574	571
35	469	485	502	492	484
40	369	389	414	397	384
45	275	298	325	305	292
50	205	224	246	230	218
55	146	161	178	167	157
60	95	106	119	111	105
65	60	66	74	70	66
70	35	38	41	40	39
75	18	20	21	22	22
80	11	11	11	11	11
85	6	6	6	5	6
90	0	0	0	0	0
95	0	0	0	0	0
100	0	0	0	0	0
105	0	0	0	0	0
110	0	0	0	0	0
115	0	0	0	0	0
120	0	0	0	0	0
125	0	0	0	0	0
130	0	0	0	0	0
135	0	0	0	0	0
140	0	0	0	0	0
145	0	0	0	0	0
150	0	0	0	0	0
155	0	0	0	0	0
160	0	0	0	0	0
165	0	0	0	0	0
170	0	0	0	0	0
175	0	0	0	0	0
180	0	0	0	0	0

Entire luminous intensity matrix found in .IES file



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ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	564.5	42.8%	90-100	0.0	0.0%
0-40	861.2	65.2%	100-110	0.0	0.0%
0-60	1,229.2	93.1%	110-120	0.0	0.0%
60-90	90.8	6.9%	120-130	0.0	0.0%
70-100	26.3	2.0%	130-140	0.0	0.0%
90-120	0.0	0.0%	140-150	0.0	0.0%
0-90	1,320.0	100.0%	150-160	0.0	0.0%
90-180	0.0	0.0%	160-170	0.0	0.0%
0-180	1,320.0	100.0%	170-180	0.0	0.0%

# **INTEGRATING SPHERE TESTING**

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Test Configuration	Tested Model No.	Pass/Fail/NA
1	E4PSLRD-9408-W	NA

PHOTOMETRIC, COLORIMETRIC, AND ELECTRICAL MEASUREMENTS (25°C +/- 1°C)

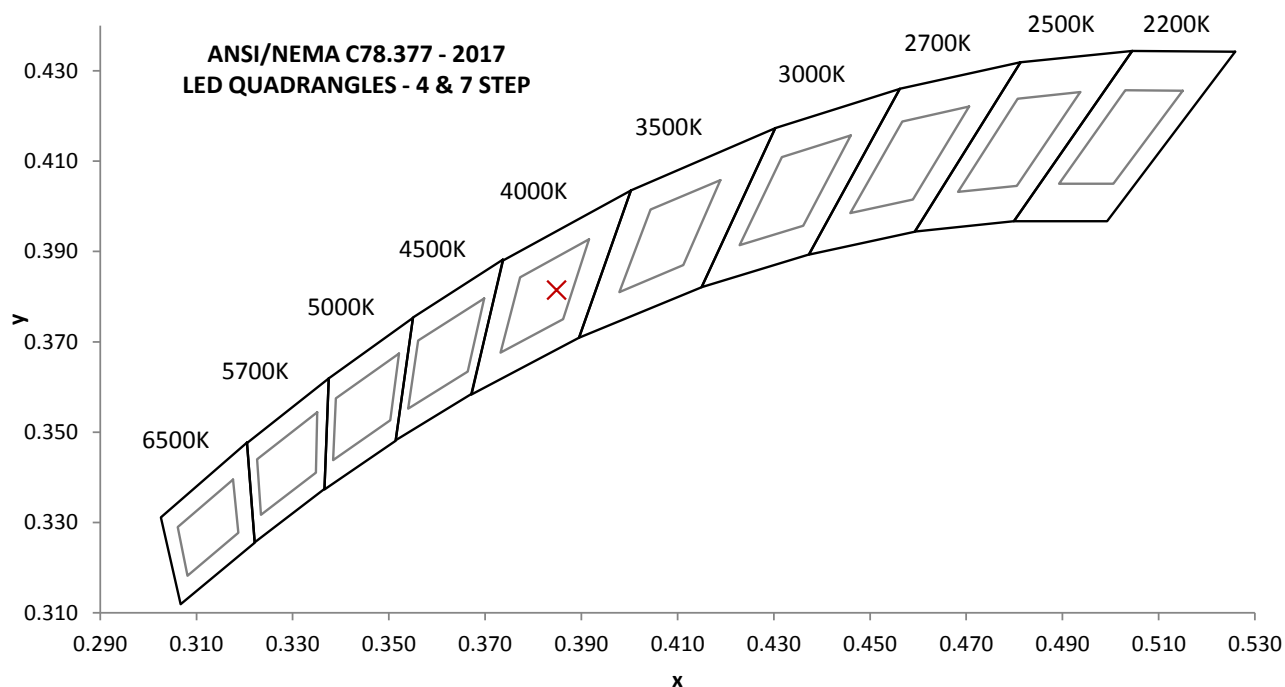
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Input ATHD (%)
120.04	127.8	15.16	0.989	10.77

Measured at 120.04(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ( )	CRI - R9 ( )
1326.4	87.5	3918	92.7	77.6

Duv ( )	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0009	0.385	0.381	0.226	0.504

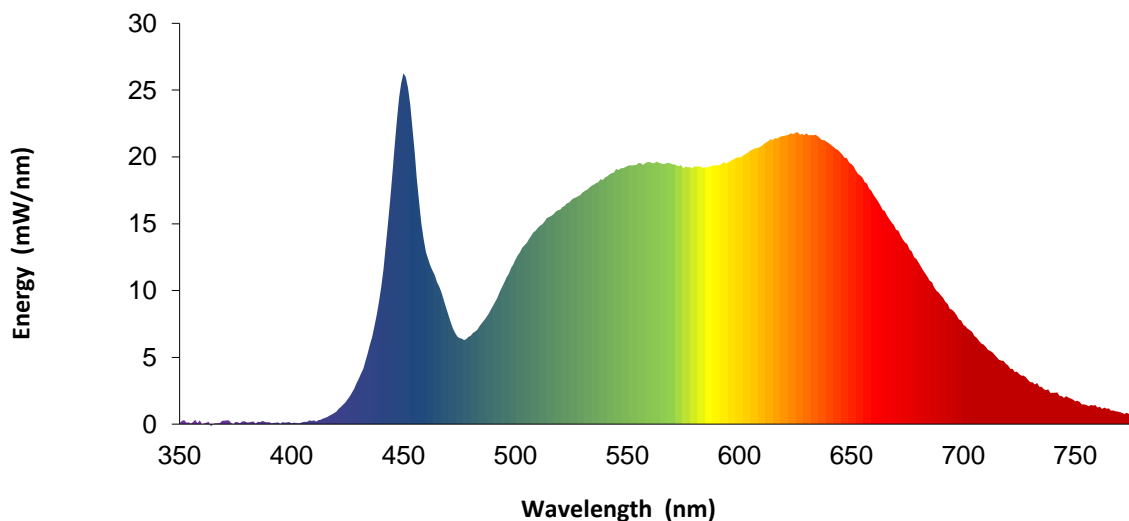


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	12.9		570	19.4		680	12.1
355	0.0		465	10.6		575	19.2		685	10.7
360	0.0		470	8.2		580	19.3		690	9.6
365	0.0		475	6.4		585	19.2		695	8.6
370	0.3		480	6.6		590	19.4		700	7.4
375	0.2		485	7.5		595	19.6		705	6.6
380	0.1		490	8.9		600	20.0		710	5.8
385	0.2		495	10.6		605	20.5		715	5.0
390	0.1		500	12.3		610	20.8		720	4.4
395	0.0		505	13.6		615	21.3		725	3.8
400	0.1		510	14.7		620	21.6		730	3.1
405	0.2		515	15.5		625	21.8		735	2.8
410	0.3		520	16.1		630	21.8		740	2.4
415	0.5		525	16.8		635	21.6		745	2.0
420	0.9		530	17.3		640	21.0		750	1.7
425	1.9		535	17.9		645	20.4		755	1.4
430	3.4		540	18.5		650	19.5		760	1.2
435	5.9		545	19.1		655	18.4		765	1.2
440	10.3		550	19.3		660	17.1		770	0.9
445	18.7		555	19.6		665	16.0		775	0.7
450	26.3		560	19.6		670	14.5		780	0.6
455	20.2		565	19.5		675	13.5		---	---

Without correction of sample absorption.



Portrayed color in graphic is estimated by wavelength (nm) and may not be exact - it is a visual representation only



**EQUIPMENT LIST**

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#	Equipment	Model No	Control No.	Last Cal	Cal Due
1	Yokogawa Power Meter	WT210	146919	7/1/2020	7/1/2021
2	Omega Thermometer	DPI8-C24	146920	10/3/2019	10/3/2020
3	LSI High Speed Mirror Goniometer	6440T	146928	VBV	VBV
4	Newport Thermohygrometer	iServer	146957	12/2/2019	12/2/2020
5	Pacific AC Power Supply	118-ACX	CHI0153	VBV	VBV
6	Newport Humidity Recorder	iTHX-SD	146961	7/26/2019	7/26/2020
7	Labsphere Spectroradiometer	CDS-600	146923	VBV	VBV
8	2M Rotating Sphere	7660-ROT	146923	VBV	VBV
9	Omega thermometer	USB TC08	EQAH002615	4/7/2020	4/7/2021
10	Ametek DC Power Supply	XFR150-8	1468464	VBV	VBV
11	Yokogawa Power Meter	WT210	146880	10/2/2019	10/2/2020
12	Chroma Power Supply	61604	CHI0371	VBV	VBV
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Note: Standard sources listed above are traceable to NIST: National Institute of Standards and Technology

**REVISION HISTORY**

#	Revision Date	Updated By	Reviewed By	Description of Change
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