

# VISUAL COMFORT & CO.

## TEST REPORT

### SCOPE OF WORK

LED Performance Testing

### MODEL NUMBER

E4PSLRD-9358-W

### PROJECT NUMBER

G104206403

### REPORT NUMBER

104206403CHI-125

### ISSUE DATE

8/5/2020

### REVISED DATE

None

### TEST DATES

07/28/2020 through 07/30/2020.

### DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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**REPORT NUMBER**

104206403CHI-125

**MODEL NUMBER(s)**

E4PSLRD-9358-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	AH07242020122945-125	E4PSLRD-9358-W	E4PSL 85deg 400mA	Production	7/23/2020

### TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	E4PSLRD-9358-W	1

### SAMPLE PHOTOS - TESTED CONFIGURATIONS

1



## SUMMARY

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### PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	E4PSLRD-9358-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)	1305.3	1298.4
Input Power (W) @ 120 (Vac)	15.21	15.17
Lumen Efficacy (lm/W)	85.8	85.6
Input Power Factor (I) @ 120 (Vac)	0.989	0.989

Criteria	Results
Input ATHD (%) @ 120 (Vac)	10.81
Correlated Color Temperature (K)	3458
Color Rendering Index - Ra (I)	92.2
Color Rendering Index - R9 (I)	74.5
Duv (I)	0.0005
Chromaticity Coordinate (x)	0.408
Chromaticity Coordinate (y)	0.393
Chromaticity Coordinate (u')	0.237
Chromaticity Coordinate (v')	0.513

## 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-9358-W	NA

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

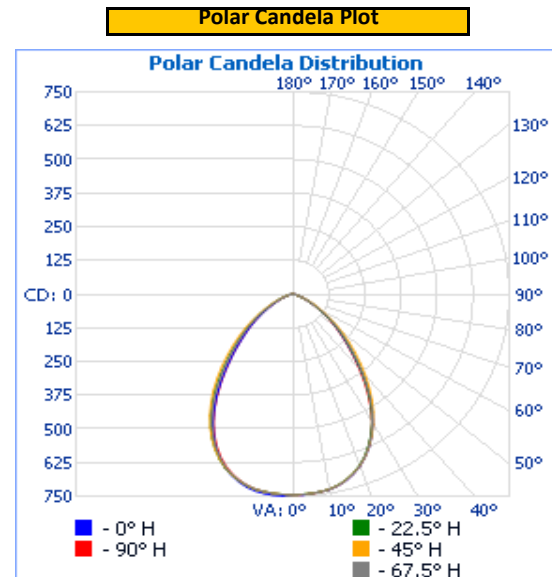
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )
Up	120.1	128.1	15.21	0.989

Light Output (lm)	Lumen Efficacy (lm/W)
1305.3	85.8

**INTENSITY SUMMARY - CANDELA**

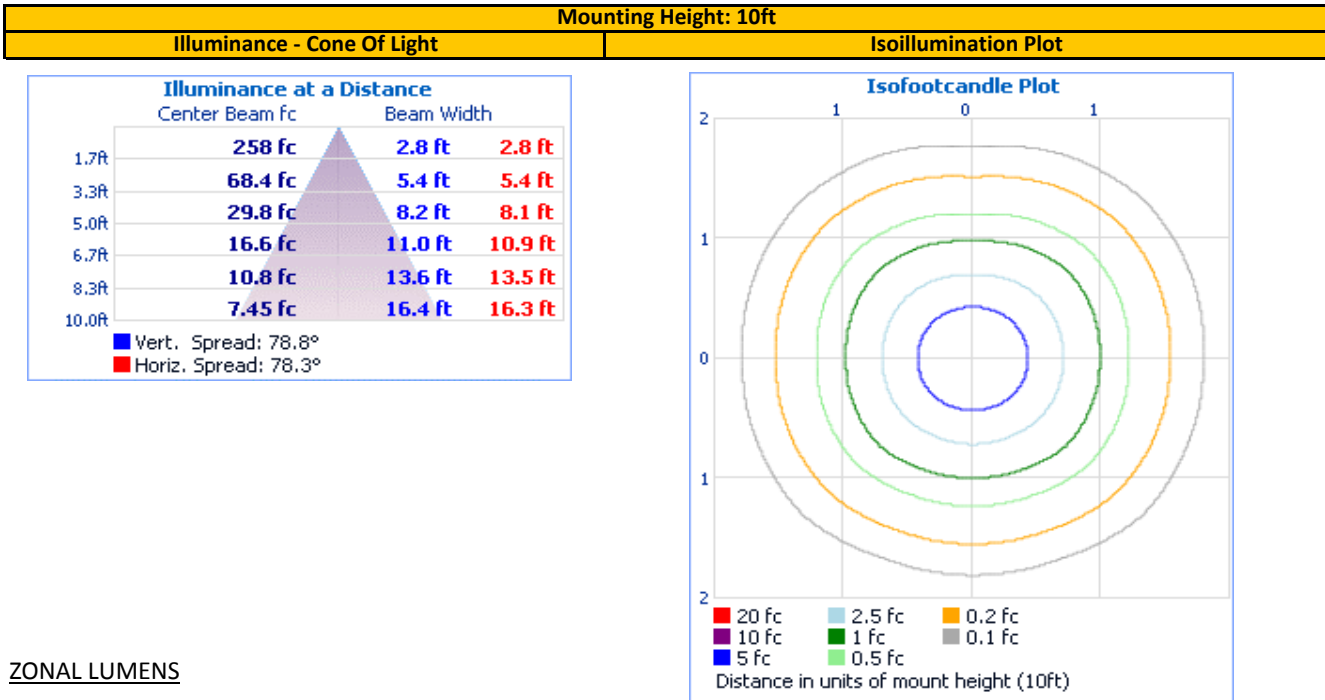
Angle	0	22.5	45	67.5	90
0	745	745	745	745	745
5	742	742	742	743	743
10	736	734	735	735	736
15	715	712	714	714	714
20	679	676	678	678	678
25	626	620	625	623	623
30	556	549	558	552	549
35	468	463	477	464	456
40	367	367	390	369	357
45	276	280	304	282	270
50	207	209	229	212	199
55	148	147	161	150	141
60	95	95	106	98	92
65	59	58	68	60	57
70	35	32	34	34	33
75	19	17	18	17	17
80	11	10	9	9	9
85	6	5	4	4	4
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	558.9	42.8%	90-100	0.0	0.0%
0-40	851.9	65.3%	100-110	0.0	0.0%
0-60	1,215.7	93.1%	110-120	0.0	0.0%
60-90	89.6	6.9%	120-130	0.0	0.0%
70-100	26.0	2.0%	130-140	0.0	0.0%
90-120	0.0	0.0%	140-150	0.0	0.0%
0-90	1,305.3	100.0%	150-160	0.0	0.0%
90-180	0.0	0.0%	160-170	0.0	0.0%
0-180	1,305.3	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-9358-W	NA

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

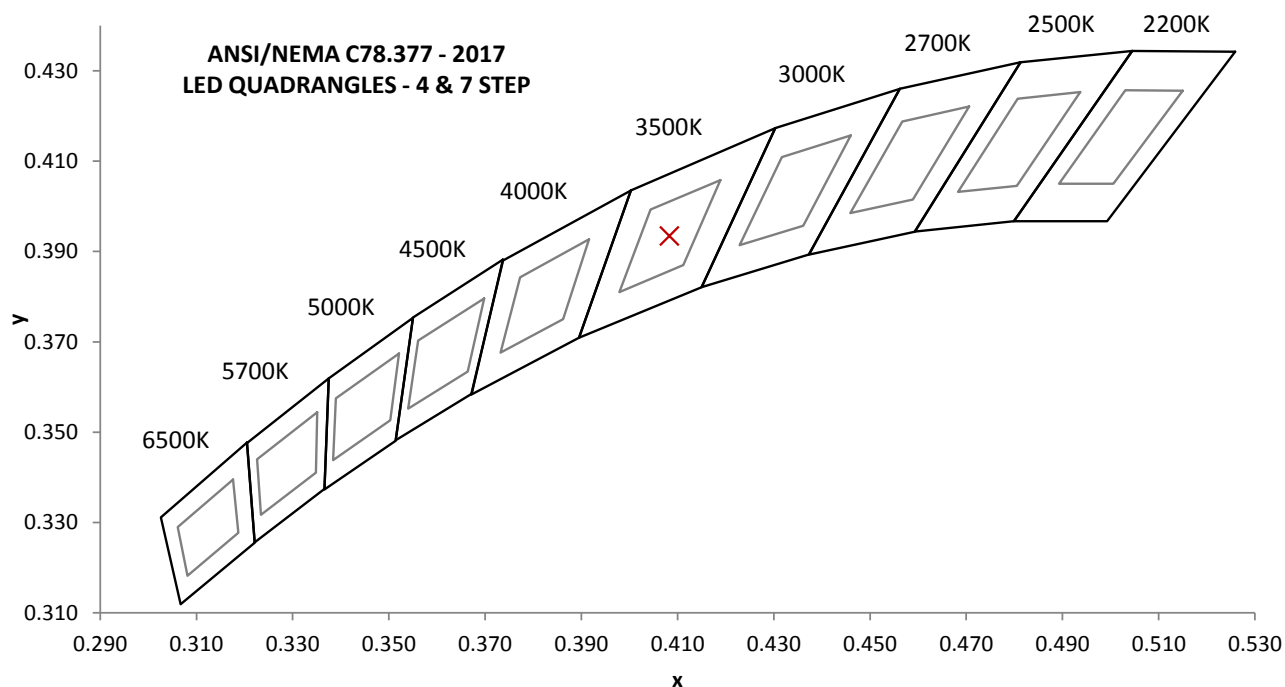
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ( )	Input ATHD (%)
120.04	127.9	15.17	0.989	10.81

Measured at 120.04(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ( )	CRI - R9 ( )
1298.4	85.6	3458	92.2	74.5

Duv ( )	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0005	0.408	0.393	0.237	0.513

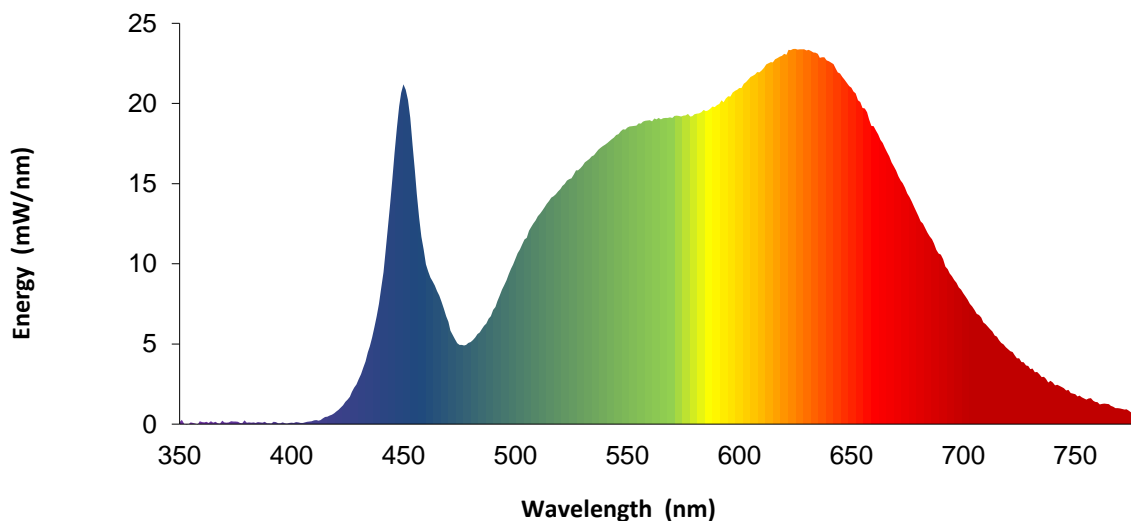


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SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.1		460	10.0		570	19.1		680	13.0
355	0.1		465	8.3		575	19.2		685	11.7
360	0.1		470	6.4		580	19.3		690	10.6
365	0.1		475	4.9		585	19.5		695	9.2
370	0.1		480	5.1		590	19.9		700	8.2
375	0.2		485	5.9		595	20.5		705	7.1
380	0.1		490	7.1		600	21.0		710	6.2
385	0.1		495	8.7		605	21.7		715	5.5
390	0.1		500	10.3		610	22.1		720	4.7
395	0.1		505	11.6		615	22.6		725	4.1
400	0.1		510	13.0		620	23.1		730	3.4
405	0.1		515	13.9		625	23.4		735	2.9
410	0.2		520	14.7		630	23.3		740	2.6
415	0.4		525	15.3		635	23.1		745	2.2
420	0.8		530	16.1		640	22.6		750	1.9
425	1.5		535	16.8		645	21.9		755	1.5
430	2.8		540	17.4		650	21.0		760	1.4
435	4.9		545	18.0		655	19.7		765	1.2
440	8.5		550	18.5		660	18.6		770	1.0
445	15.3		555	18.8		665	17.3		775	0.7
450	21.2		560	19.0		670	15.8		780	0.7
455	15.8		565	19.0		675	14.4		---	---

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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