

VISUAL COMFORT & CO.

TEST REPORT

SCOPE OF WORK

LED Performance Testing

MODEL NUMBER

E4PSLRD-9308-W

PROJECT NUMBER

G104206403

REPORT NUMBER

104206403CHI-124

ISSUE DATE

8/5/2020

REVISED DATE

None

TEST DATES

07/30/2020 through 08/04/2020.

DOCUMENT CONTROL NUMBER

RTTDS-R-AMER-Test-3407

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REPORT NUMBER

104206403CHI-124

MODEL NUMBER(s)

E4PSLRD-9308-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

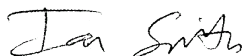
The testing performed was authorized by signed quote number Qu-01040682-1.

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

REPORT NO. 104206403CHI-124

ITEMS RECEIVED

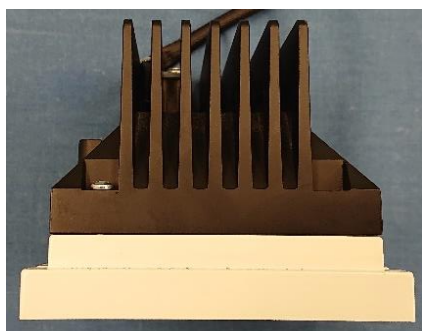
Item No.	Control No.	Model No.	Description	Type	Received
1	AH07242020122945-124	E4PSLRD-9308-W	E4PSL 85deg 700mA	Production	7/23/2020

TESTED SAMPLE CONFIGURATIONS

Config No.	Tested Model No.	Item Nos. Utilized
1	E4PSLRD-9308-W	1

SAMPLE PHOTOS - TESTED CONFIGURATIONS

1



SUMMARY

REPORT NO. 104206403CHI-124

PRODUCT INFORMATION AND SUMMARY OF DATA

Product Model No.:	E4PSLRD-9308-W
Product Description:	E4PSL 85deg 700mA
LED Model No.:	Bridgelux BXRE-**E2000-C-83
Driver Model No.:	ERP 255ESS020W700
Light Source:	LED

Criteria	Results	
	Goniophotometer	Integrating Sphere
Light Output (lumens)	2155.0	2177.2
Input Power (W) @ 120 (Vac)	27.73	27.63
Lumen Efficacy (lm/W)	77.7	78.8
Input Power Factor (I) @ 120 (Vac)	0.985	0.985

Criteria	Results
Input ATHD (%) @ 120 (Vac)	12.41
Correlated Color Temperature (K)	3086
Color Rendering Index - Ra (I)	91.2
Color Rendering Index - R9 (I)	68.2
Duv (I)	0.0000
Chromaticity Coordinate (x)	0.431
Chromaticity Coordinate (y)	0.402
Chromaticity Coordinate (u')	0.248
Chromaticity Coordinate (v')	0.520

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

REPORT NO. 104206403CHI-124

Test Configuration	Tested Model No.	Pass/Fail/NA
1	E4PSLRD-9308-W	NA

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

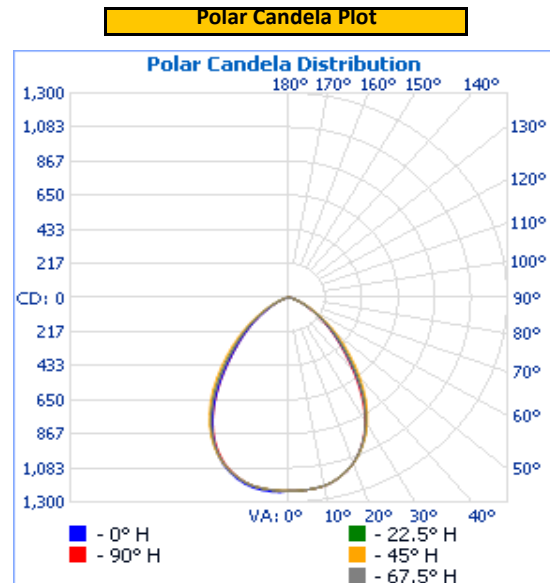
Base Orientation	Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()
Up	120.0	234.6	27.73	0.985

Light Output (lm)	Lumen Efficacy (lm/W)
2155.0	77.7

INTENSITY SUMMARY - CANDELA

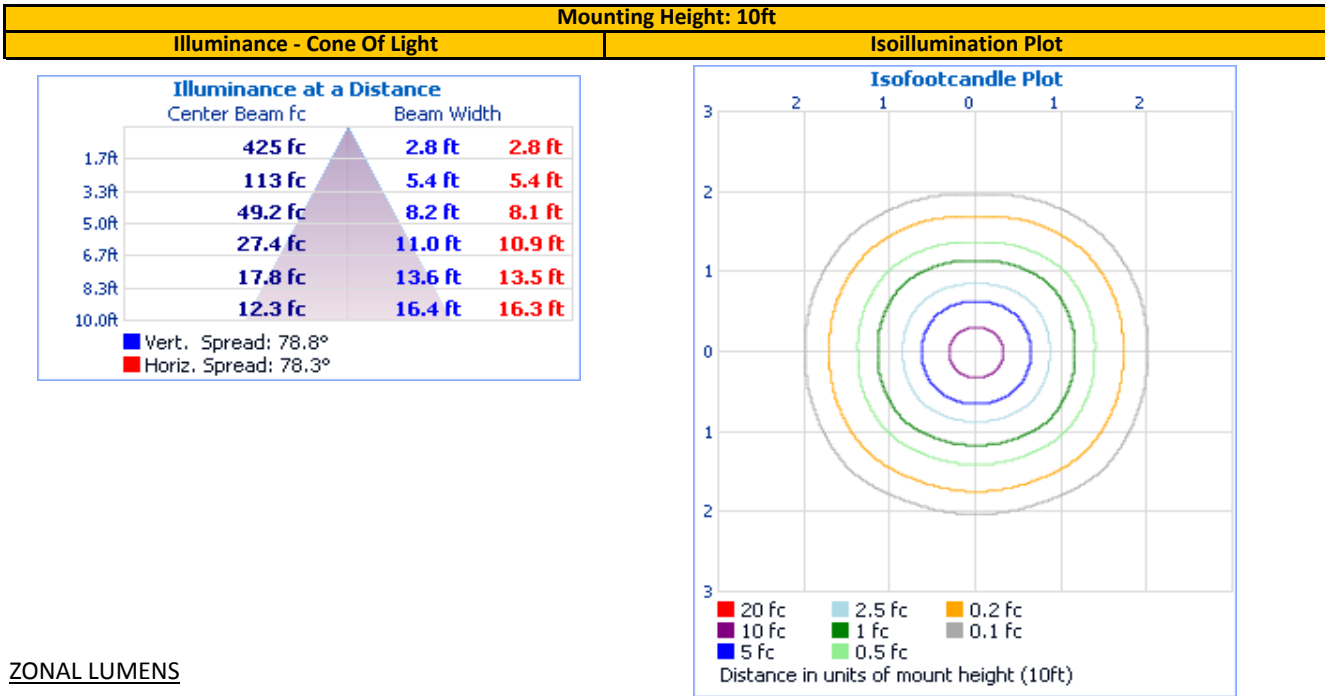
Angle	0	22.5	45	67.5	90
0	1230	1230	1230	1230	1230
5	1227	1227	1227	1226	1227
10	1215	1215	1215	1214	1216
15	1179	1179	1179	1178	1179
20	1121	1121	1122	1119	1120
25	1034	1034	1038	1031	1030
30	923	920	930	914	908
35	774	777	798	771	754
40	606	618	653	613	589
45	458	471	508	470	445
50	340	352	383	352	330
55	243	249	271	250	232
60	162	163	179	164	152
65	100	100	116	100	94
70	58	56	58	56	54
75	32	30	30	29	27
80	18	16	15	15	14
85	10	8	7	7	7
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



REPORT NO. 104206403CHI-124

ILLUMINANCE SUMMARY



ZONAL LUMENS

Zonal Lumen Summary					
Zone	Lumens	Luminaire	Zone	Lumens	Total
0-30	923.7	42.9%	90-100	0.0	0.0%
0-40	1,408.5	65.4%	10-20	332.2	15.4%
0-60	2,008.1	93.2%	20-30	474.8	22.0%
60-90	146.9	6.8%	30-40	484.8	22.5%
70-100	42.4	2.0%	40-50	371.0	17.2%
90-120	0.0	0.0%	50-60	228.6	10.6%
0-90	2,155.0	100.0%	60-70	104.5	4.8%
90-180	0.0	0.0%	70-80	33.9	1.6%
0-180	2,155.0	100.0%	80-90	8.5	0.4%
			100-110	0.0	0.0%
			110-120	0.0	0.0%
			120-130	0.0	0.0%
			130-140	0.0	0.0%
			140-150	0.0	0.0%
			150-160	0.0	0.0%
			160-170	0.0	0.0%
			170-180	0.0	0.0%

INTEGRATING SPHERE TESTING

REPORT NO. 104206403CHI-124

Test Configuration	Tested Model No.	Pass/Fail/NA
1	E4PSLRD-9308-W	NA

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

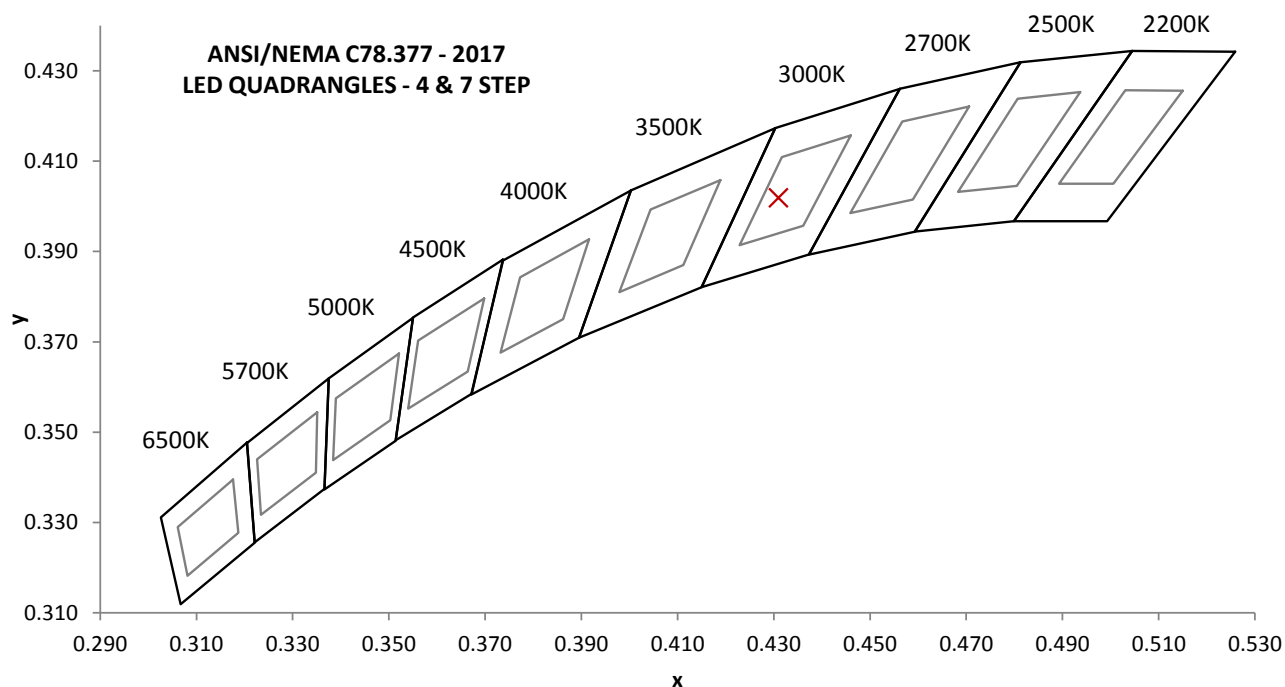
Base Orientation
Up

Input Voltage (Vac)	Input Current (mA)	Input Power (W)	Input Power Factor ()	Input ATHD (%)
119.98	233.8	27.63	0.985	12.41

Measured at 119.98(Vac)

Light Output (lm)	Lumen Efficacy (lm/W)	CCT (K)	CRI - Ra ()	CRI - R9 ()
2177.2	78.8	3086	91.2	68.2

Duv ()	1931 Chrom (x)	1931 Chrom (y)	1976 Chrom (u')	1976 Chrom (v')
0.0000	0.431	0.402	0.248	0.520

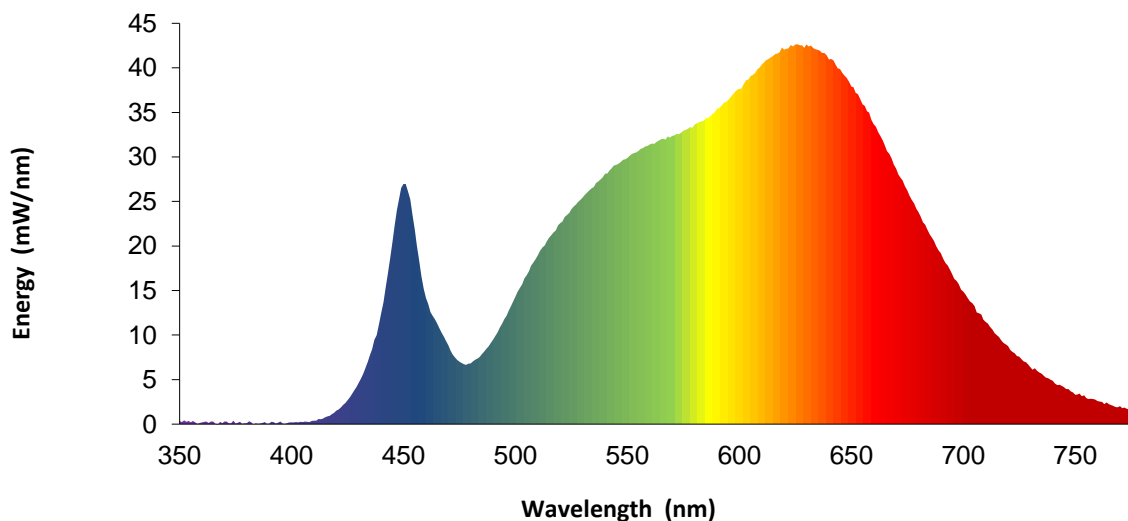


REPORT NO. 104206403CHI-124

SPECTRAL DISTRIBUTION OVER WAVELENGTHS

nm	mW/nm		nm	mW/nm		nm	mW/nm		nm	mW/nm
350	0.4		460	14.2		570	32.4		680	23.8
355	0.2		465	11.3		575	32.9		685	21.3
360	0.2		470	8.8		580	33.6		690	19.2
365	0.3		475	7.0		585	34.4		695	16.9
370	0.3		480	6.8		590	35.4		700	14.9
375	0.1		485	7.8		595	36.4		705	13.3
380	0.1		490	9.5		600	37.6		710	11.5
385	0.0		495	11.8		605	39.1		715	10.0
390	0.1		500	14.3		610	40.4		720	8.8
395	0.3		505	16.7		615	41.3		725	7.6
400	0.2		510	19.0		620	42.1		730	6.4
405	0.2		515	20.9		625	42.6		735	5.7
410	0.4		520	22.6		630	42.6		740	4.9
415	0.8		525	24.2		635	42.0		745	4.2
420	1.5		530	25.4		640	40.9		750	3.3
425	2.7		535	26.6		645	39.9		755	2.9
430	4.6		540	28.1		650	37.9		760	2.6
435	7.7		545	29.1		655	35.9		765	2.3
440	12.5		550	29.9		660	33.7		770	2.0
445	20.3		555	30.7		665	31.3		775	1.6
450	27.0		560	31.4		670	28.7		780	1.4
455	21.8		565	32.0		675	26.2		---	---

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

REPORT NO. 104206403CHI-124

#	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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