

# VISUAL COMFORT GROUP TEST REPORT

## SCOPE OF WORK

Electrical and Photometric tests as required to the IESNA test standard.

## MODEL NUMBER

E2RL-LH9XX40AI

## REPORT NUMBER

104097742CHI-001

## ISSUE DATE

October 3, 2019

## REVISION DATE

None

## DOCUMENT CONTROL NUMBER

TBD

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**REPORT NO.: 104097742CHI-001**

**REPORT DATE: October 3, 2019**

**TEST REPORT**

**TEST OF ONE RECESSED LUMINAIRE**

**MODEL NO. E2RL-LH9XX40AI**  
**LED MODEL NO. BRIDGELUX, BXRV-TR-2750G-10A0-A-23**  
**DRIVER MODEL NO. ELDOLED, DUAL DRIVE 561/S**

**RENDERED TO:**

**VISUAL COMFORT GROUP**  
**7400 LINDER AVE**  
**SKOKIE, IL 60077**

**AUTHORIZATION**

The testing performed was authorized by signed quote number Qu-00981438-2.

**STANDARDS USED**

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting  
ANSI NEMA ANSLG C78.377: 2015: Specifications of the Chromaticity of Solid State Lighting Products

**DESCRIPTION OF SAMPLE**

The client submitted one prototype sample of model number E2RL-LH9XX40AI. The sample was received by Intertek on September 25, 2019 in undamaged condition and one sample was tested as received. The sample designation was AH09252019095945-001.

**DATE OF TESTS**

September 28, 2019

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**TEST REPORT**

**SUMMARY**

<b>MODEL NO:</b>	E2RL-LH9XX40AI
<b>DESCRIPTION:</b>	RECESSED LUMINAIRE

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	973.6	932.4
Input Power (W) @ 120 (VAC)	14.53	14.45
Lumen Efficacy (lm/W)	67.0	64.5
Input Power Factor @ 120 (VAC)	0.960	0.960

CRITERIA	RESULTS
Input Current ATHD (%) @ 120 (VAC)	13.17
Correlated Color Temperature (K)	5321
Color Rendering Index - Ra	94.7
Color Rendering - R9	75.2
DUV	0.0007
Chromaticity Coordinate (x)	0.337
Chromaticity Coordinate (y)	0.347
Chromaticity Coordinate (u')	0.208
Chromaticity Coordinate (v')	0.481

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**EQUIPMENT LIST**

<b>EQUIPMENT USED</b>	<b>MODEL NO.</b>	<b>CONTROL NO.</b>	<b>LAST CAL DATE</b>	<b>CAL DUE DATE</b>
Yokogawa Power Meter	WT210	146919	7/1/2019	7/1/2020
Omega Thermometer	DPI8-C24	146920	10/4/2018	10/4/2019
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
Newport Thermohygrometer	iServer	146957	12/11/2018	12/11/2019
Pacific, AC power supply	118-ACX	CHI0358	VBU	VBU
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU
3 Meter Sphere	SPR600	CHI0088	VBU	VBU
Elgar AC Power Supply	CW1251	146112	VBU	VBU
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
Newport Humidity Recorder	iTHX-SD	146382	4/17/2019	4/17/2020
Yokogawa Power Meter	WT1600	146769	4/3/2019	4/3/2020
Extech K Temperature Meter	SD200	CHI0207	4/3/2019	4/3/2020

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**TEST REPORT**

**TEST METHODS**

**SEASONING IN SAMPLE ORIENTATION - LED PRODUCTS**

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

**PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - INTEGRATING SPHERE METHOD**

A Spectroradiometer and integrating sphere was used to measure correlated color temperature, chromaticity coordinates, and the color rendering index for each SSL unit.

Ambient temperature was measured at a position inside the sphere. Each SSL unit was operated on the client provided driver at the rated input voltage in its designated orientation. Each SSL unit was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.

The calibration of the sphere photometer-spectroradiometer system is traceable to the National Institute of Standards and Technology.

**PHOTOMETRIC AND ELECTRICAL MEASUREMENTS - DISTRIBUTION METHOD**

A Type C Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for the SSL sample.

Ambient temperature was measured equal to the height of the sample mounted on the goniometer equipment. The SSL sample was operated on the client provided driver at rated input volts in its designated orientation. The SSL sample was allowed to stabilize for at least thirty minutes before measurements were made. Stabilization procedures to LM-79 were followed. Electrical measurements including voltage, current, and power were measured using a power analyzer.

**TEST REPORT**

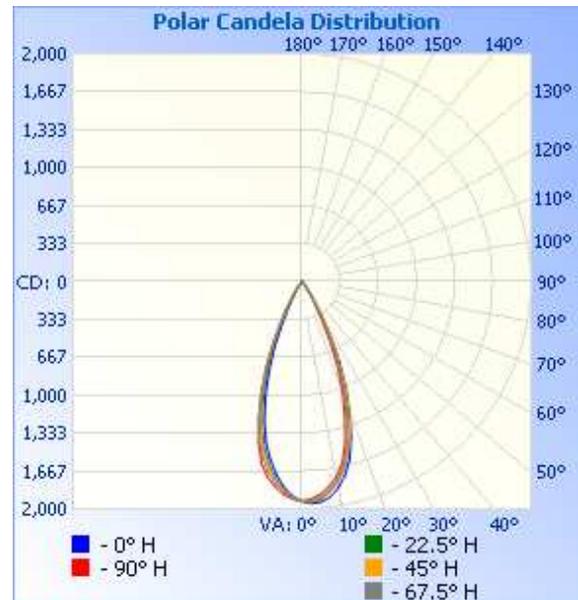
**RESULTS OF TESTS**

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

INTERTEK CONTROL NO.	BASE POSITION	INPUT VOLTAGE (VAC)	INPUT CURRENT (mA)	INPUT POWER (W)	INPUT POWER FACTOR ( )	LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)
AH09252019095945-001	Base Up	119.9	125.5	14.45	0.960	932.4	64.5

**INTENSITY SUMMARY - CANDELAS**

Angle	0	22.5	45	67.5	90
0	1929	1929	1929	1929	1929
5	1945	1921	1907	1896	1875
10	1839	1791	1782	1769	1741
15	1615	1561	1555	1515	1463
20	1220	1170	1205	1100	1038
25	773	738	733	681	592
30	336	327	363	282	227
35	135	116	132	92	78
40	45	35	42	29	25
45	12	11	11	8	6
50	1	1	3	1	1
55	1	1	1	1	1
60	0	1	1	1	1
65	1	1	1	1	1
70	1	1	1	1	1
75	1	0	0	1	1
80	0	0	0	0	0
85	0	0	0	0	0
90	0	0	0	0	0



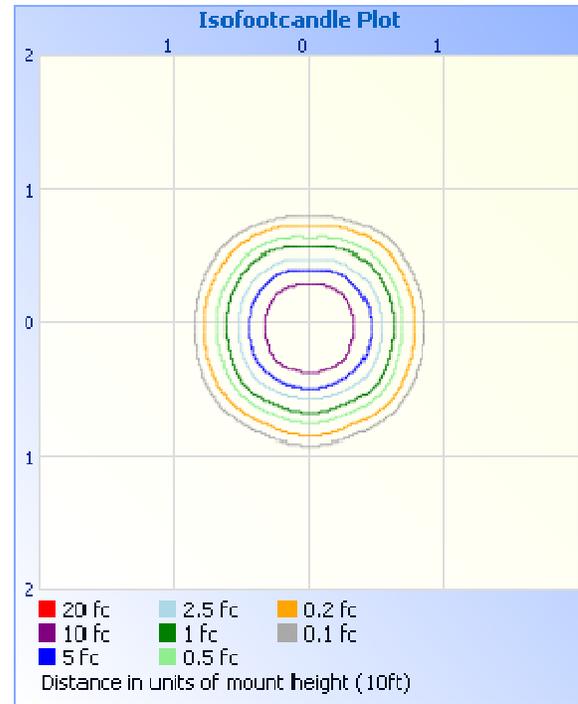
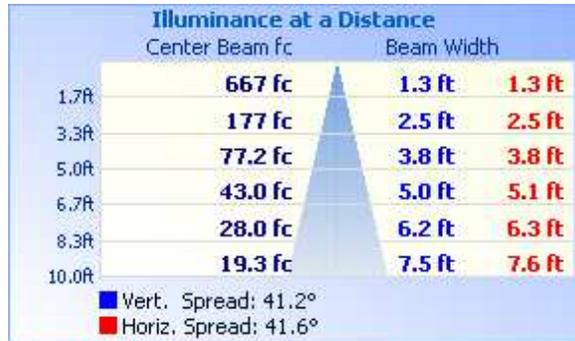
**TEST REPORT**

**RESULTS OF TESTS**

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

**MOUNTING HEIGHT: 10ft**

<b>ILLUMINANCE - CONE OF LIGHT</b>	<b>ISOILLUMINATION PLOT</b>
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**ZONAL LUMEN SUMMARY AND PERCENTAGES**

ZONE	LUMENS	% LUMINAIRE
0-30	853.6	91.5
0-40	922.1	98.9
0-60	930.9	99.8
60-90	1.5	0.2
70-100	0.7	0.1
90-120	0.0	0.0
0-90	932.4	100.0
90-180	0.0	0.0
0-180	932.4	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	173.9	18.7
10-20	396.3	42.5
20-30	283.4	30.4
30-40	68.5	7.4
40-50	8.1	0.9
50-60	0.8	0.1
60-70	0.7	0.1
70-80	0.6	0.1
80-90	0.2	0.0

**TEST REPORT**

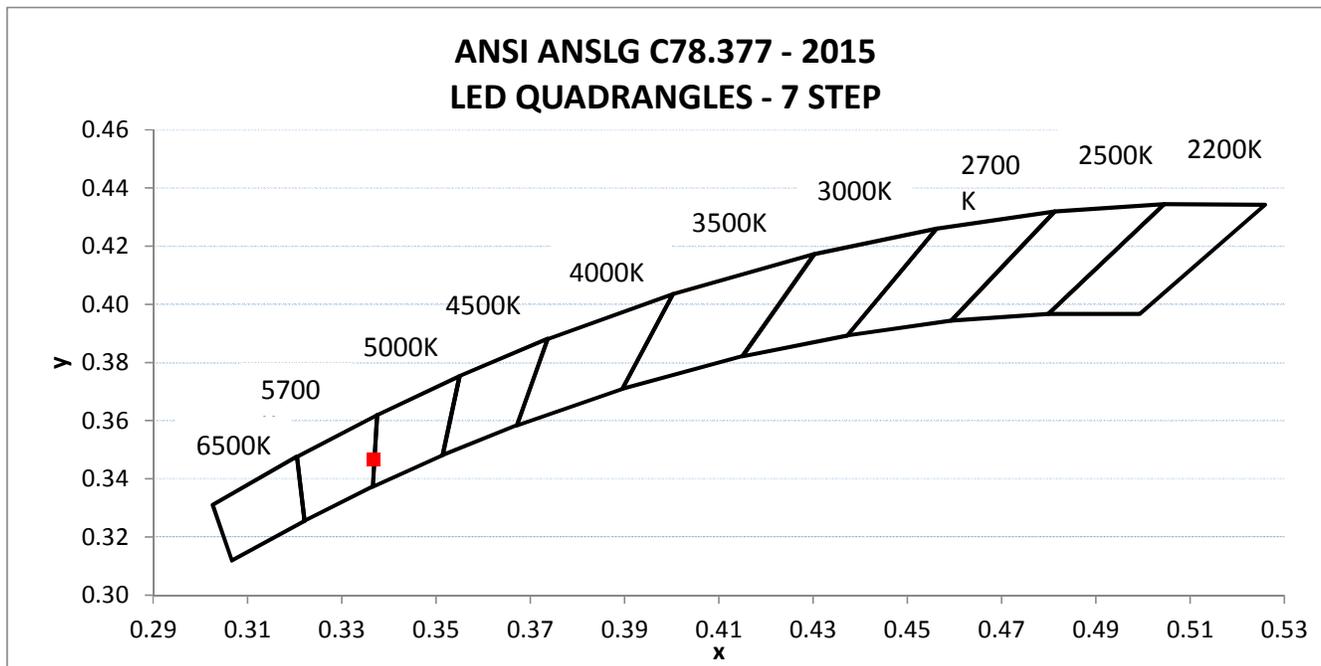
**RESULTS OF TESTS**

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

INTERTEK CONTROL NO.	BASE POSITION	INPUT VOLTAGE (VAC)	INPUT CURRENT (mA)	INPUT POWER (W)	INPUT POWER FACTOR	INPUT CURRENT ATHD (%)
AH09252019095945-001	Base Up	119.99	126.21	14.53	0.960	13.17

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra	CRI - R9	DUV
973.6	67.0	5321	94.7	75.2	0.0007

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.337	0.347	0.208	0.481



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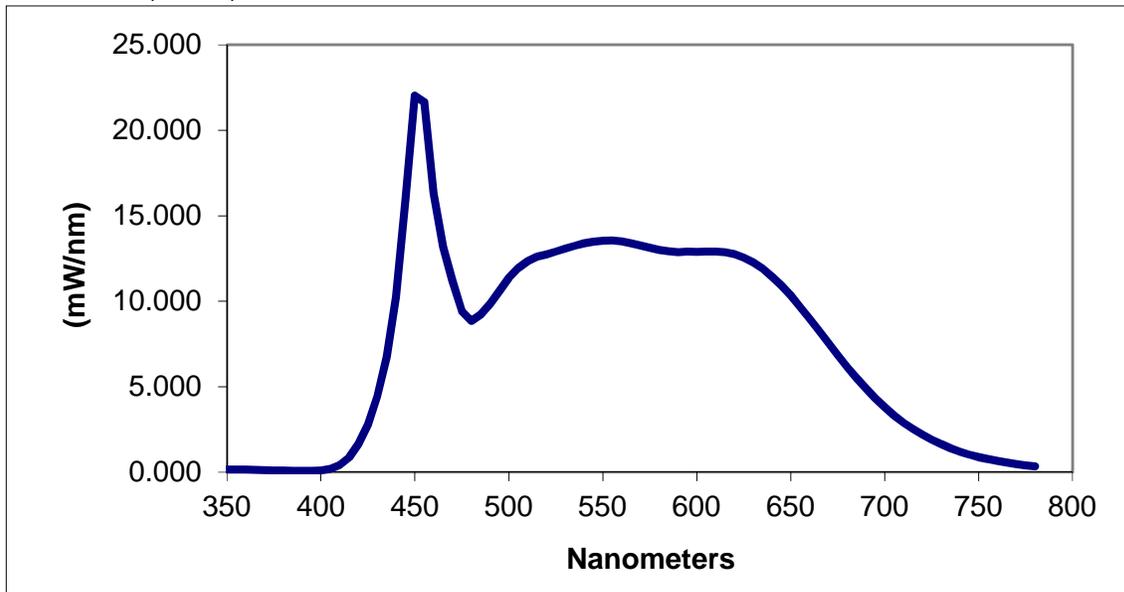
**TEST REPORT**

**RESULTS OF TESTS**

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

SPECTRAL DISTRIBUTION OVER VISIBLE WAVELENGTHS*							
nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.163	460	16.336	570	13.257	680	6.165
355	0.169	465	13.196	575	13.139	685	5.515
360	0.161	470	11.219	580	13.000	690	4.904
365	0.148	475	9.438	585	12.934	695	4.336
370	0.135	480	8.858	590	12.879	700	3.809
375	0.114	485	9.231	595	12.903	705	3.333
380	0.105	490	9.856	600	12.891	710	2.908
385	0.097	495	10.597	605	12.906	715	2.541
390	0.090	500	11.383	610	12.905	720	2.206
395	0.097	505	11.933	615	12.867	725	1.911
400	0.118	510	12.350	620	12.755	730	1.645
405	0.199	515	12.606	625	12.564	735	1.409
410	0.418	520	12.743	630	12.276	740	1.209
415	0.880	525	12.912	635	11.927	745	1.039
420	1.648	530	13.072	640	11.446	750	0.899
425	2.793	535	13.247	645	10.931	755	0.771
430	4.426	540	13.394	650	10.332	760	0.665
435	6.750	545	13.480	655	9.674	765	0.567
440	10.255	550	13.538	660	8.983	770	0.485
445	15.985	555	13.560	665	8.290	775	0.415
450	22.029	560	13.510	670	7.564	780	0.354
455	21.657	565	13.385	675	6.859		

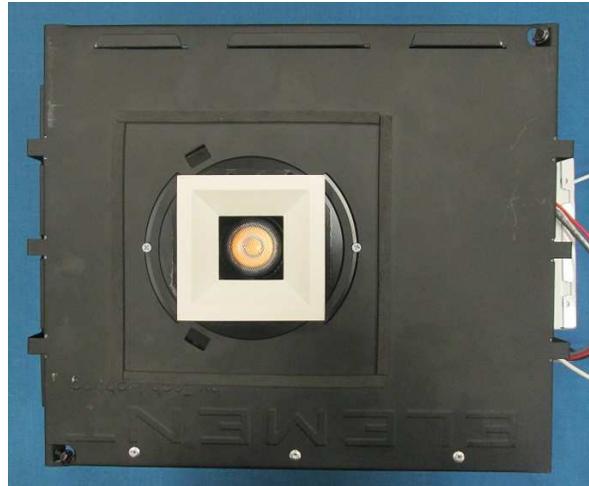
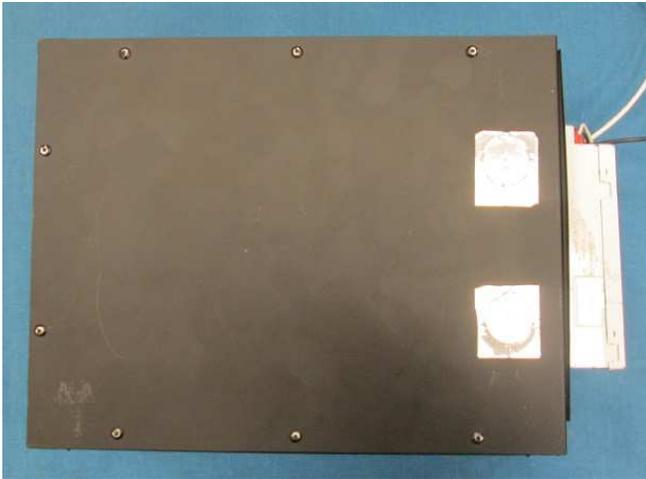
\*Without correction of sample absorption.



**End Of Test Results**

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**TEST REPORT**  
**PICTURES**



**CONCLUSION**

The results tabulated in this report are representative of the actual test samples submitted for this report only. The data is provided to the client for further evaluation. Compliance to the referenced specification requirements was not determined in this report.

In Charge Of Tests:

Timothy Quigley  
Project Engineer  
Lighting Division

Report Reviewed By:

Jeff Davis  
N.A. Technical Lead  
Lighting Division

Attachments: IES File

**REVISION HISTORY**

JOB NUMBER	DATE OF REVISION	PROJECT HANDLER	REVIEWED BY	REVISION NOTE
None				