

VISUAL COMFORT GROUP TEST REPORT

SCOPE OF WORK

Electrical and Photometric tests as required to the IESNA LM-79 test standard.

MODEL NUMBER

E4SF-LH9XX40AN

REPORT NUMBER

104166867CHI-006

ISSUE DATE

December 8, 2019

REVISION DATE

None

DOCUMENT CONTROL NUMBER

TBD

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REPORT DATE: December 8, 2019

TEST REPORT

TEST OF ONE RECESSED LUMINAIRE

MODEL NO. E4SF-LH9XX40AN
LED MODEL NO. BRIDGELUX, BXRV-TR-2750G-20A0-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 E4SF-LH9XX40AN. The sample was received by Intertek on November 26, 2019 in undamaged condition and one sample was tested as received. The sample designation was AH11262019095526-006.

DATE OF TESTS

November 27, 2019 through December 6, 2019.

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SUMMARY

MODEL NO:	E45F-LH9XX40AN
DESCRIPTION:	RECESSED LUMINAIRE

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	2157.2	2065.2
Input Power (W) @ 120 (VAC)	27.93	27.93
Lumen Efficacy (lm/W)	77.2	73.9
Input Power Factor () @ 120 (VAC)	0.979	0.979

CRITERIA	RESULTS
Input Current ATHD (%) @ 120 (VAC)	12.26
Correlated Color Temperature (K)	5271
Color Rendering Index - Ra	92.4
Color Rendering - R9	58.7
DUV	0.0016
Chromaticity Coordinate (x)	0.338
Chromaticity Coordinate (y)	0.349
Chromaticity Coordinate (u')	0.208
Chromaticity Coordinate (v')	0.482

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EQUIPMENT LIST

EQUIPMENT USED	MODEL NO.	CONTROL NO.	LAST CAL DATE	CAL DUE DATE
Yokogawa Power Meter	WT210	146919	7/1/2019	7/1/2020
Omega Thermometer	DPI8-C24	146920	10/3/2019	10/3/2020
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
Newport Thermohygrometer	iServer	146957	12/11/2018	12/11/2019
Elgar, AC Power Supply	CW1251	146111	VBU	VBU
Labsphere Spectroradiometer	CDS2600	CHI0539	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 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

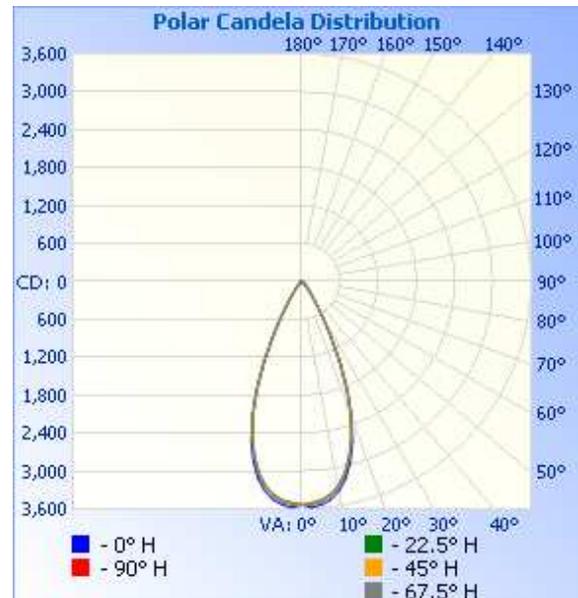
RESULTS OF TESTS

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)
AH11262019095526-006	Base Up	119.9	237.9	27.93	0.979	2065.2	73.9

INTENSITY SUMMARY - CANDELAS

Angle	0	22.5	45	67.5	90
0	3531	3531	3531	3531	3531
5	3546	3500	3484	3467	3474
10	3362	3311	3296	3277	3282
15	2945	2894	2876	2872	2880
20	2285	2242	2252	2264	2273
25	1415	1404	1426	1437	1442
30	668	669	684	691	692
35	289	296	306	305	306
40	155	154	157	157	157
45	86	85	88	85	83
50	42	45	50	44	41
55	15	21	28	22	15
60	5	6	13	6	5
65	2	3	4	3	2
70	1	1	2	1	1
75	1	1	1	1	1
80	1	1	1	1	1
85	0	0	0	0	0
90	0	0	0	0	0



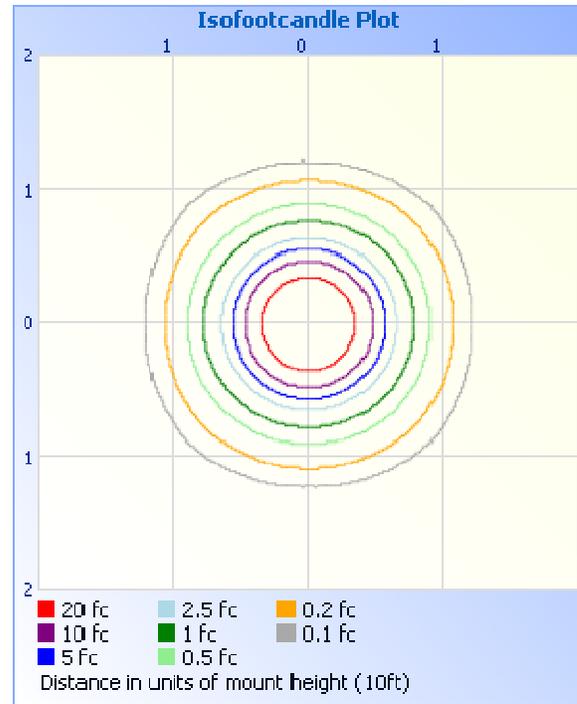
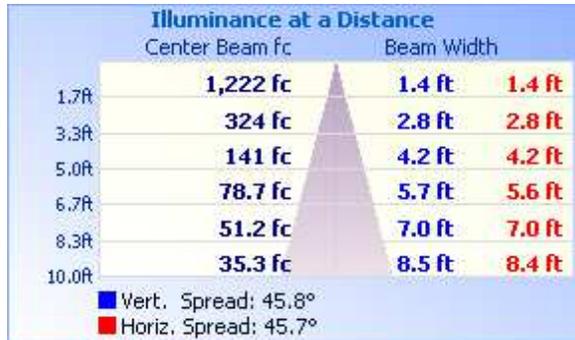
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RESULTS OF TESTS

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

MOUNTING HEIGHT: 10ft

ILLUMINANCE - CONE OF LIGHT	ISOILLUMINATION PLOT
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ZONAL LUMEN SUMMARY AND PERCENTAGES

ZONE	LUMENS	% LUMINAIRE
0-30	1760.6	85.3
0-40	1970.7	95.4
0-60	2060.5	99.8
60-90	4.7	0.2
70-100	1.2	0.1
90-120	0.0	0.0
0-90	2065.2	100.0
90-180	0.0	0.0
0-180	2065.2	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	327.0	15.8
10-20	790.9	38.3
20-30	642.8	31.1
30-40	210.0	10.2
40-50	69.3	3.4
50-60	20.5	1.0
60-70	3.5	0.2
70-80	0.8	0.0
80-90	0.4	0.0

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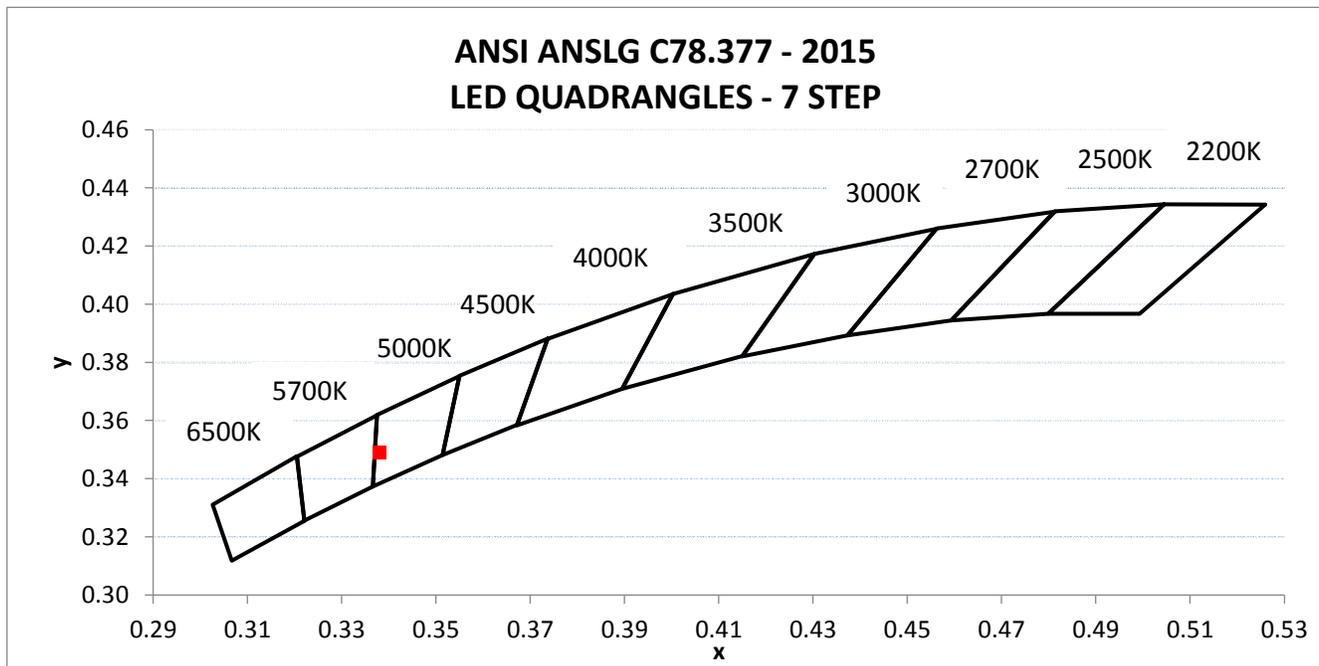
RESULTS OF TESTS

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 (%)
AH11262019095526-006	Base Up	120.02	237.56	27.93	0.979	12.26

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra	CRI - R9	DUV
2157.2	77.2	5271	92.4	58.7	0.0016

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.338	0.349	0.208	0.482



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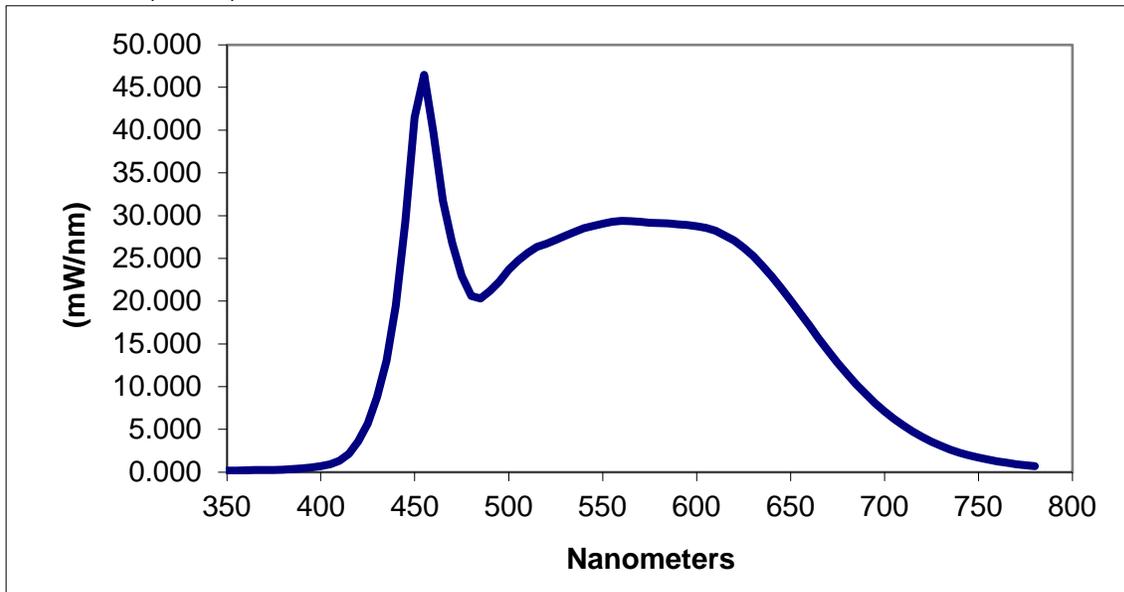
TEST REPORT

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	0.196	460	39.748	570	29.272	680	11.481
355	0.196	465	31.726	575	29.184	685	10.251
360	0.212	470	26.820	580	29.131	690	9.133
365	0.243	475	22.958	585	29.105	695	8.061
370	0.245	480	20.621	590	28.990	700	7.094
375	0.273	485	20.310	595	28.898	705	6.245
380	0.308	490	21.222	600	28.755	710	5.464
385	0.361	495	22.290	605	28.572	715	4.757
390	0.459	500	23.686	610	28.233	720	4.109
395	0.561	505	24.754	615	27.694	725	3.566
400	0.700	510	25.649	620	27.100	730	3.078
405	0.921	515	26.344	625	26.248	735	2.653
410	1.319	520	26.700	630	25.287	740	2.283
415	2.170	525	27.146	635	24.125	745	1.961
420	3.586	530	27.639	640	22.886	750	1.708
425	5.681	535	28.092	645	21.548	755	1.481
430	8.767	540	28.540	650	20.090	760	1.270
435	13.048	545	28.780	655	18.623	765	1.097
440	19.496	550	29.054	660	17.138	770	0.938
445	29.309	555	29.275	665	15.634	775	0.812
450	41.470	560	29.394	670	14.175	780	0.697
455	46.502	565	29.338	675	12.794		

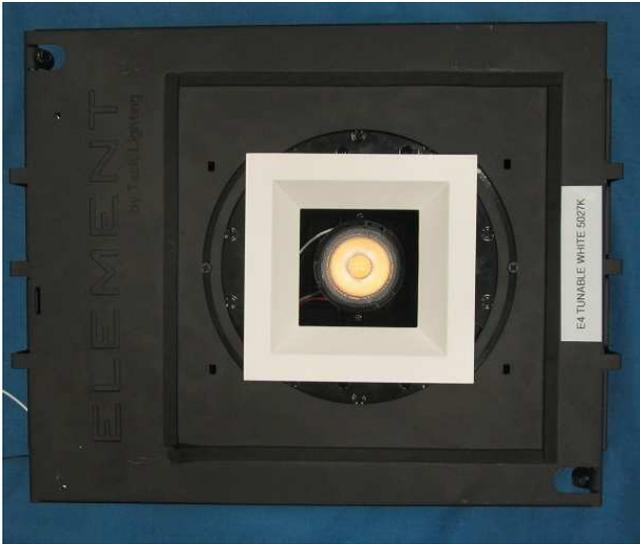
*Without correction of sample absorption.



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:

Report Reviewed By:

Signature on File

Signature on File

Timothy Quigley
Project Engineer
Lighting Division

Jeff Davis
N.A. Technical Lead
Lighting Division

Attachments: IES File

REVISION HISTORY

JOB NUMBER	DATE OF REVISION	PROJECT HANDLER	REVIEWED BY	REVISION NOTE
G104206403	1/9/2020	<i>Jan IS Smith</i>	JD JD	Corrected Model Number