

TECH LIGHTING

TEST REPORT

SCOPE OF WORK

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

MODEL NUMBER

E4SF-LH83060AI

REPORT NUMBER

103643585CHI-001

ISSUE DATE

September 26, 2018

REVISION DATE

None

DOCUMENT CONTROL NUMBER

TBD

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TEST REPORT

REPORT NO.: 103643585CHI-001
REPORT DATE: September 26, 2018

TEST OF ONE ELEMENT E4 ADJUSTABLE HOUSING W/60° OPTICS

MODEL NO. E4SF-LH83060AI
LED MODEL NO. CITIZEN CLU038-1205C4-302M2M2-F1
DRIVER MODEL NO. LTF DA30W750C40BF-0000

RENDERED TO:

TECH LIGHTING
7400 LINDER AVE.
SKOKIE, IL, 60077

AUTHORIZATION

The testing performed was authorized by signed quote number Qu-00912313-2.

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 production sample of model number E4SF-LH83060AI. The sample was received by Intertek on September 24, 2018 in undamaged condition and one sample was tested as received. The sample designation was AH09242018011625-01.

DATE OF TESTS

September 26, 2018

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SUMMARY

MODEL NO:	E45F-LH83060AI
DESCRIPTION:	Element E4 Adjustable Housing w/60° optics

CRITERIA	RESULTS	
	INTEGRATING SPHERE	GONIOPHOTOMETER
Lumen Output (lumens)	3178.2	3058.7
Input Power (W) @ 120 (VAC)	30.75	30.70
Lumen Efficacy (lm/W)	103.4	99.6
Input Power Factor () @ 120 (VAC)	0.984	0.986

CRITERIA	RESULTS
Input Current ATHD (%) @ 120 (VAC)	8.70
Correlated Color Temperature (K)	3148
Color Rendering Index - Ra	82.8
Color Rendering - R9	4.3
DUV	0.0012
Chromaticity Coordinate (x)	0.429
Chromaticity Coordinate (y)	0.405
Chromaticity Coordinate (u')	0.245
Chromaticity Coordinate (v')	0.521

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EQUIPMENT LIST

EQUIPMENT USED	MODEL NO.	CONTROL NO.	LAST CAL DATE	CAL DUE DATE
Yokogawa Power Meter	WT210	146919	7/9/2018	7/9/2019
Omega Newport Thermometer	DPI8-C24	146920	10/4/2017	10/4/2018
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
Newport Thermohygrometer	iServer	146957	11/17/2017	11/17/2018
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	146379	4/16/2018	4/16/2019
Yokogawa Power Meter	WT1600	146769	4/6/2018	4/6/2019
Extech K Temperature Meter	SD200	CHI0207	4/12/2018	4/12/2019

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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

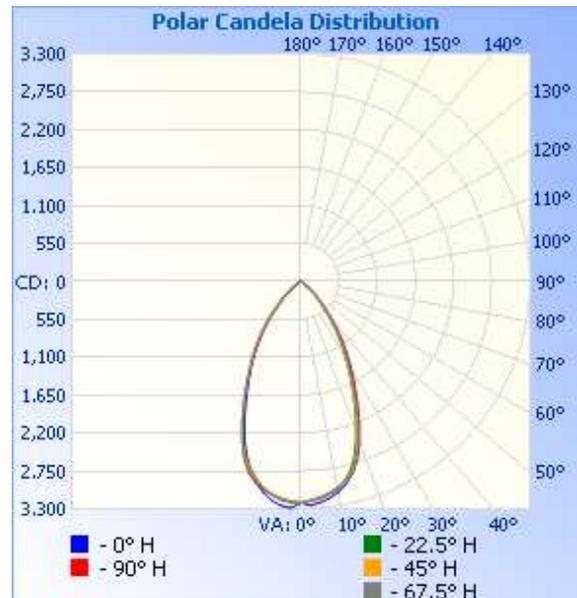
RESULTS OF TESTS

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)
AH09242018011625-01	Base Up	120.1	259.4	30.70	0.986	3058.7	99.6

INTENSITY SUMMARY - CANDELAS

Angle	0	22.5	45	67.5	90
0	3209	3209	3209	3209	3209
5	3215	3140	3152	3156	3158
10	3103	3035	3067	3065	3068
15	2869	2808	2852	2861	2881
20	2428	2337	2393	2432	2468
25	1881	1788	1814	1870	1930
30	1398	1308	1324	1380	1441
35	982	910	939	987	1038
40	597	569	603	640	681
45	334	330	359	375	393
50	186	188	202	210	210
55	89	100	118	106	98
60	46	51	74	55	50
65	25	28	38	30	27
70	6	8	15	11	7
75	4	4	4	4	4
80	3	3	3	3	3
85	1	1	1	1	1
90	0	0	0	0	0



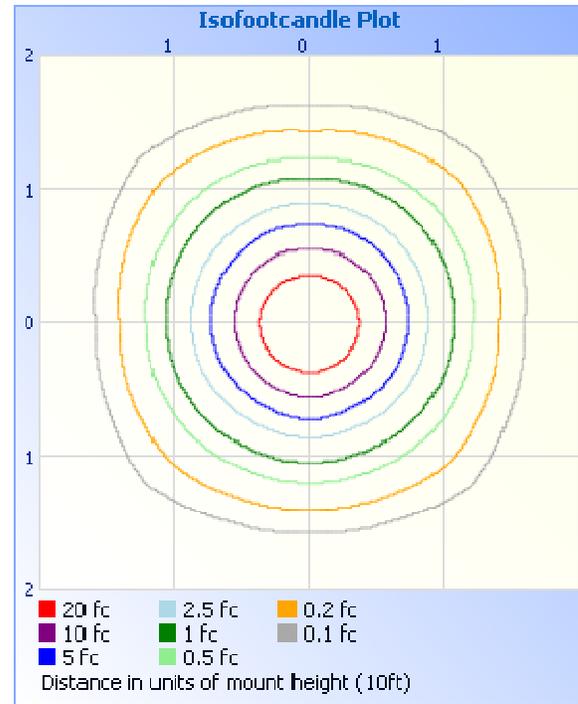
TEST REPORT

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	1947.9	63.7
0-40	2587.9	84.6
0-60	3017.8	98.7
60-90	40.9	1.3
70-100	6.7	0.2
90-120	0.0	0.0
0-90	3058.7	100.0
90-180	0.0	0.0
0-180	3058.7	100.0

ZONE	LUMENS	% LUMINAIRE
0-10	298.9	9.8
10-20	784.7	25.7
20-30	864.2	28.3
30-40	640.0	20.9
40-50	317.6	10.4
50-60	112.2	3.7
60-70	34.1	1.1
70-80	5.2	0.2
80-90	1.5	0.0

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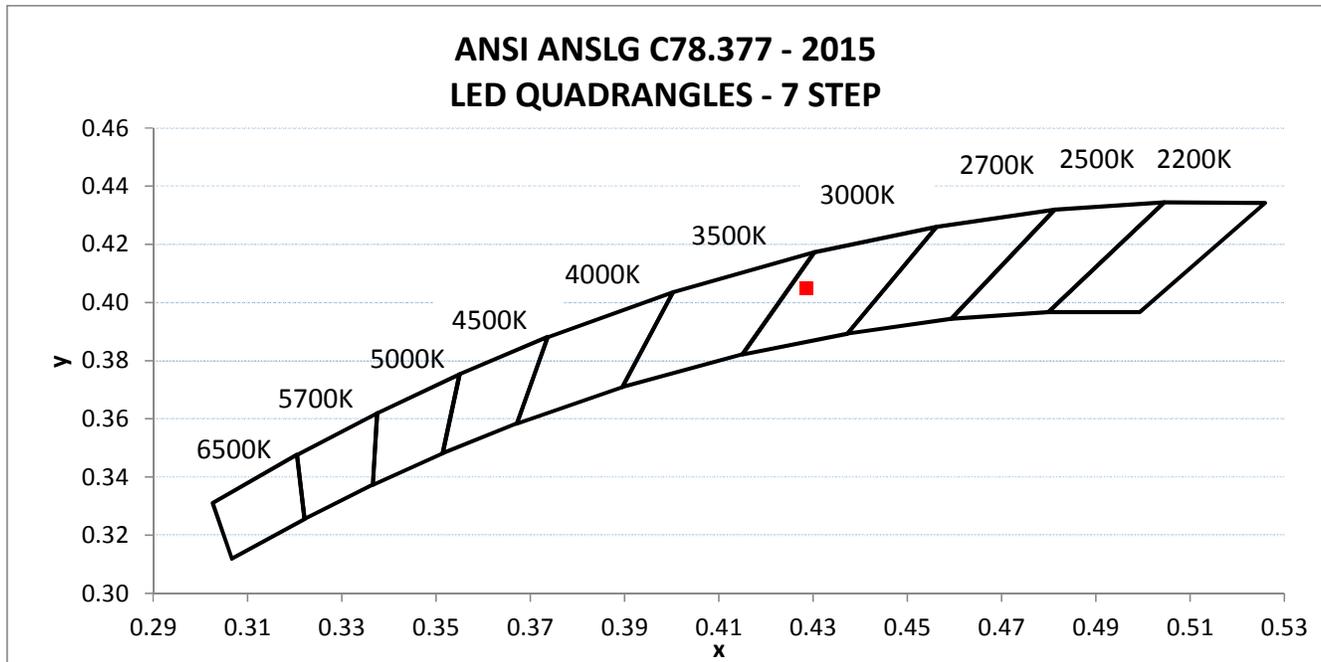
RESULTS OF TESTS

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 (%)
AH09242018011625-01	Base Up	120.00	260.38	30.75	0.984	8.70

LIGHT OUTPUT (lm)	LUMEN EFFICACY (lm/W)	CORRELATED COLOR TEMPERATURE - CCT (K)	CRI - Ra	CRI - R9	DUV
3178.2	103.4	3148	82.8	4.3	0.0012

CIE 1931 CHROMATICITY COORDINATE (x)	CIE 1931 CHROMATICITY COORDINATE (y)	CIE 1976 CHROMATICITY COORDINATE (u')	CIE 1976 CHROMATICITY COORDINATE (v')
0.429	0.405	0.245	0.521



TEST REPORT

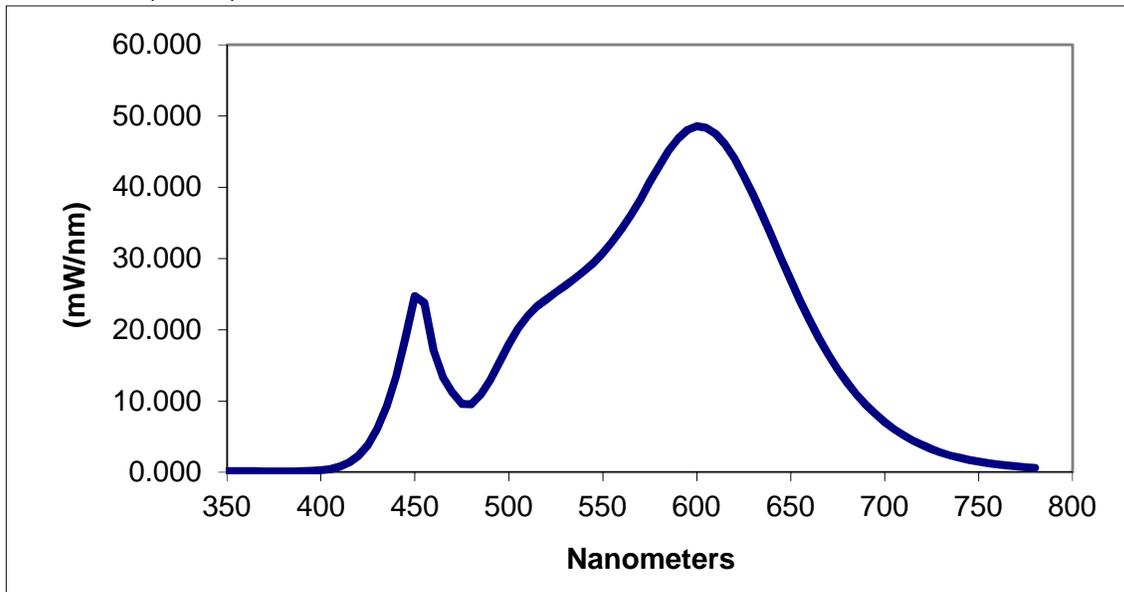
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RESULTS OF TESTS

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	0.168	460	17.161	570	38.321	680	12.571
355	0.165	465	13.301	575	40.744	685	10.914
360	0.168	470	11.214	580	42.980	690	9.454
365	0.158	475	9.597	585	45.120	695	8.210
370	0.142	480	9.549	590	46.812	700	7.043
375	0.149	485	10.909	595	48.046	705	6.058
380	0.140	490	12.958	600	48.568	710	5.198
385	0.142	495	15.424	605	48.339	715	4.457
390	0.163	500	18.037	610	47.496	720	3.818
395	0.206	505	20.200	615	46.060	725	3.253
400	0.287	510	21.961	620	44.047	730	2.778
405	0.448	515	23.300	625	41.674	735	2.368
410	0.782	520	24.300	630	38.913	740	2.043
415	1.364	525	25.255	635	36.055	745	1.750
420	2.336	530	26.192	640	33.011	750	1.511
425	3.850	535	27.178	645	29.975	755	1.307
430	6.101	540	28.256	650	26.961	760	1.130
435	9.276	545	29.353	655	24.058	765	0.966
440	13.374	550	30.764	660	21.339	770	0.836
445	18.923	555	32.363	665	18.843	775	0.719
450	24.720	560	34.165	670	16.501	780	0.621
455	23.796	565	36.095	675	14.455		

*Without correction of sample absorption.



End Of Test Results

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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
Engineer
Lighting Division

Report Reviewed By:

Hector Huitron
Associate Engineer
Lighting Division

Attachments: IES File

REVISION HISTORY

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