



REPORT

545 E. Algonquin Rd., Arlington Heights, IL 60005

Project No. G101518786

Date: December 22, 2014

REPORT NO. 101518786CHI-077

TEST OF ONE RECESSED LINEAR LED

MODEL NO. ELEMENT SLOT SPOT 4FT SLOT
LED MODEL NO. NICHIA NFSL757D-V1
DRIVER MODEL NO. ERP ESP040W-0900-42

RENDERED TO

GENERATION BRANDS
7400 LINDER AVE
SKOKIE, IL 60077

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

STATEMENT OF LIMITATION: 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 500506211.

STANDARDS USED: The following American National Standards or Illuminating Engineering Society of North America Test Guides were used in part or totally to test each specimen:

IESNA LM-79 - 2008: Electrical and Photometric Measurements of Solid State Lighting

ANSI NEMA ANSLG C78.377: 2012: Specifications of the Chromaticity of Solid State Lighting Products

DESCRIPTION OF SAMPLE: The client submitted one production sample of model number Element Slot Spot 4ft Slot. The sample was received by Intertek on December 11, 2014, in undamaged condition and one sample was tested as received. The sample designation was 12112014043939.

DATES OF TESTS: December 15, 2014

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SUMMARY

Model No.:	Element Slot Spot 4ft Slot
Description:	Recessed Linear LED

Criteria	Result	
	Sphere	Goniometer
Total Lumen Output (Lumens)	2750	2620
Total Power (W)	35.48	35.58
Luminaire Efficacy (LPW)	77.51	73.64

Criteria	Result
Power Factor at 120Vac	0.990
Power Factor at 277Vac	0.936
Current ATHD % at 120Vac	11.84
Current ATHD % at 277Vac	12.92
Correlated Color Temperature (CCT - K)	3567
Color Rendering Index (CRI - Ra)	81.6
Color Rendering Index (CRI - R9)	16.7
DUV	0.000
Chromaticity Coordinate (x)	0.401
Chromaticity Coordinate (y)	0.388
Chromaticity Coordinate (u')	0.234
Chromaticity Coordinate (v')	0.509

EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU
3 Meter Sphere	SPR600	CHI0088	VBU	VBU
Elgar AC Power Supply	CW1251M	146112	VBU	VBU
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU
Newport Humidity Recorder	iTHX-SD	146382	07/02/14	07/02/15
Yokogawa Power Meter	WT1600	146768	01/16/14	01/16/15
Omega Temperature Meter	MDSi8	146139	04/02/14	04/02/15
Yokogawa Power Meter	WT210	146919	07/16/14	07/16/15
Omega Thermometer	DPI8-C24	146920	10/09/14	10/09/15
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU
Newport Hygrometer	iServer	146956	01/02/14	01/02/15
Elgar, AC Power Supply	CW1251P	146918	VBU	VBU
Cole-Parmer Triple Timer	94440-00	CHI0041	04/01/14	04/01/15



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 Labsphere Model CDS 1100 CCD Array Spectroradiometer and Three Meter 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. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa 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 LSI Type C High Speed Model 6440 Mirror Goniometer was used to measure the intensity (candelas) at each angle of distribution for each sample.

Ambient temperature was measured equal to the height of the sample mounted on the Goniometer equipment. Each sample was operated at input rated voltage in its designated orientation. Each sample was allowed to stabilize for at least thirty minutes before measurements were made. Electrical measurements including voltage, current, and power were measured using the Xitron or Yokogawa Power Analyzer.

Some graphics were created with Photometrics Plus software.

RESULTS OF TEST

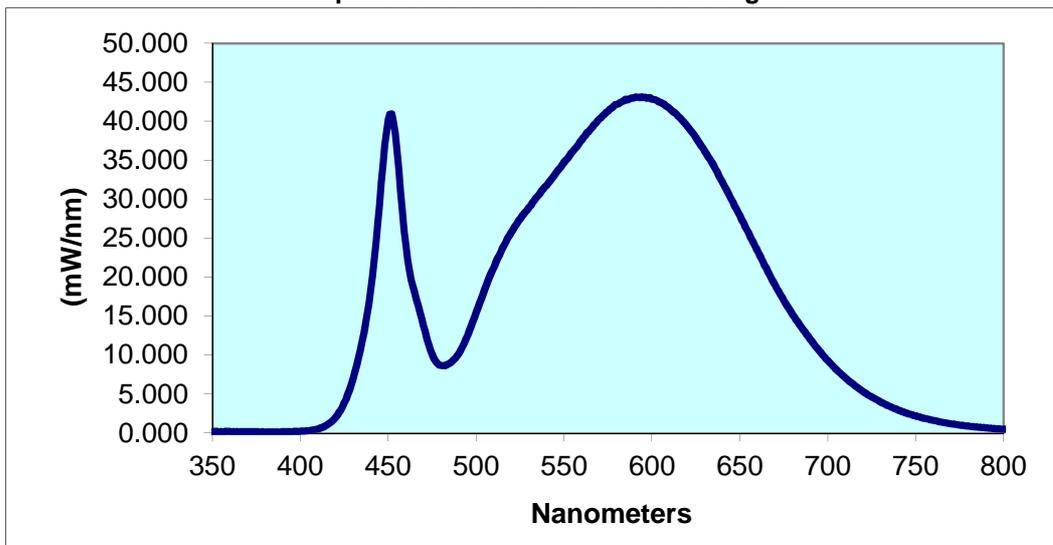
Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) - Integrating Sphere Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)	Luminous Flux (Lumens)	Lumen Efficacy (LPW)
12112014043939	UP	120.0	298.6	35.48	0.990	11.84	2750	77.51
		277.0	141.4	36.66	0.936	12.92		
Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')	
3567	81.6	16.7	0.000	0.401	0.388	0.234	0.509	

Spectral Distribution over Visible Wavelengths

nm	mW/nm								
350	0.17	440	18.28	530	28.97	620	39.36	710	7.075
355	0.214	445	29.38	535	30.41	625	37.87	715	6.158
360	0.196	450	40.24	540	31.78	630	36.17	720	5.328
365	0.184	455	36.3	545	33.26	635	34.32	725	4.629
370	0.157	460	24.05	550	34.74	640	32.2	730	3.998
375	0.153	465	18.02	555	36.18	645	30.07	735	3.448
380	0.145	470	13.8	560	37.61	650	27.87	740	2.971
385	0.141	475	10.03	565	38.98	655	25.63	745	2.55
390	0.151	480	8.682	570	40.29	660	23.39	750	2.201
395	0.181	485	8.972	575	41.3	665	21.13	755	1.899
400	0.236	490	10.19	580	42.21	670	18.97	760	1.641
405	0.334	495	12.5	585	42.84	675	17	765	1.407
410	0.558	500	15.5	590	43.07	680	15.21	770	1.207
415	1.038	505	18.52	595	43.06	685	13.56	775	1.04
420	2.005	510	21.28	600	42.86	690	12.02	780	0.89
425	3.876	515	23.7	605	42.43	695	10.6		
430	6.999	520	25.79	610	41.64	700	9.286		
435	11.64	525	27.5	615	40.62	705	8.13		

Spectral Data Over Visible Wavelengths



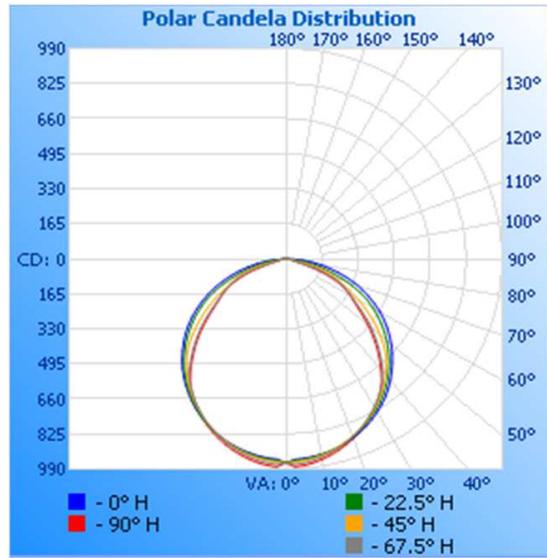
RESULTS OF TEST (cont'd)

Photometric and Electrical Measurements at Ambient Temperature (25°C +/- 1°C) – Distribution Method

Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Absolute Luminous Flux (Lumens)	Lumen Efficacy (Lumens Per Watt)
12112014043939	UP	120.0	299.8	35.58	0.990	2620	73.64

Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	960	960	960	960	960
5	944	948	953	964	976
10	935	937	940	948	958
15	920	919	918	924	933
20	898	893	890	892	899
25	869	860	855	853	859
30	834	822	814	808	811
35	793	777	766	755	756
40	744	726	711	690	678
45	689	668	648	602	589
50	630	603	567	513	496
55	566	534	475	420	404
60	496	459	382	341	338
65	419	375	292	278	268
70	337	278	226	188	170
75	249	183	139	59	48
80	163	109	33	30	29
85	78	17	15	14	13
90	0	0	0	0	0



Coefficients Of Utilization - Zonal Cavity Method

Effective Floor Cavity Reflectance 0.20

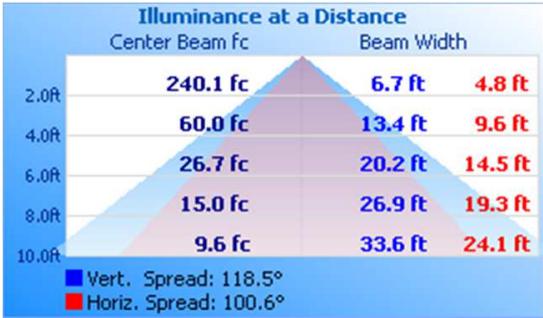
RC	80				70				50			30			10			0
R/W	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	109	105	101	97	107	103	99	95	98	95	92	94	92	90	91	89	87	85
2	100	92	85	80	97	90	84	79	86	81	77	83	79	75	80	77	73	71
3	91	81	73	66	89	79	72	66	76	70	65	73	68	64	71	66	62	60
4	83	72	63	56	81	70	62	56	68	61	55	65	59	54	63	58	54	52
5	77	64	55	49	75	63	55	48	61	53	48	59	52	47	57	51	47	45
6	71	58	49	42	69	57	48	42	55	47	42	53	47	42	52	46	41	39
7	66	52	44	38	64	51	43	37	50	43	37	48	42	37	47	41	37	35
8	61	48	39	33	60	47	39	33	46	38	33	44	38	33	43	37	33	31
9	57	44	36	30	56	43	35	30	42	35	30	41	34	30	40	34	30	28
10	54	40	33	27	52	40	32	27	39	32	27	38	32	27	37	31	27	25

RESULTS OF TEST (cont'd)

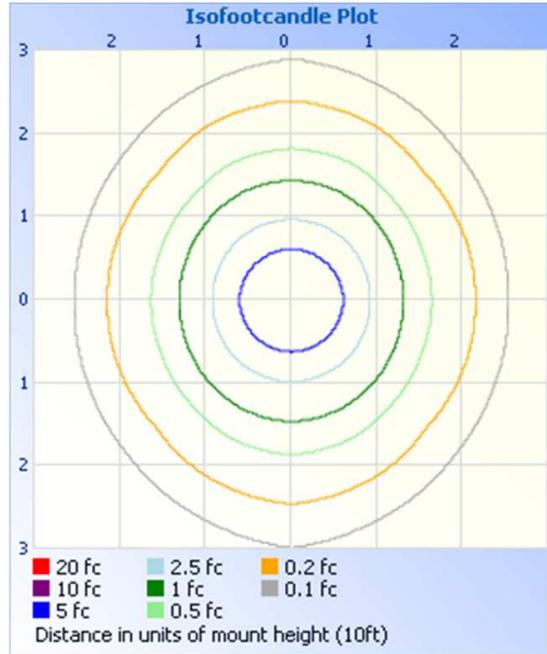
Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	745.1	28.4
0-40	1223	46.7
0-60	2137	81.5
60-90	483.5	18.5
0-90	2620	100.0
90-180	0.0	0.0
0-180	2620	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	90.8	3.5
10-20	259.7	9.9
20-30	394.6	15.1
30-40	478.0	18.2
40-50	489.4	18.7
50-60	424.5	16.2
60-70	312.1	11.9
70-80	143.6	5.5
80-90	27.8	1.1

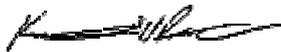
PICTURE (not to scale)



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:



Kenneth Prettyman
Technician
Lighting Division

Attachment: None

Report Reviewed By:



Tim Quigley
Engineer
Lighting Division