



# REPORT

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

Project No. G102235195

Date: August 9, 2015

REPORT NO. 102235195CHI-002

TEST OF ONE PLAZA LARGE LED MIRROR

MODEL NO. PLAZA-L-LED-27K  
LED MODEL NO. LUMILEDS 3535L, MXA9-PW27-0000  
DRIVER MODEL NO. LTF, TA60WD24LED

RENDERED TO

EDGE LIGHTING  
1718 W. FULLERTON AVE.  
CHICAGO, IL 60630

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 Qu-00595093-1.

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 PLAZA-L-LED-27K. The sample was received by Intertek on August 4, 2015, in undamaged condition and one sample was tested as received. The sample designation was AH08042015090953-002.

DATES OF TESTS: August 7, 2015 through August 9, 2015.

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## SUMMARY

Model No.:	PLAZA-L-LED-27K
Description:	PLAZA LARGE LED MIRROR

Criteria	Result
Total Lumen Output (Lumens)	1991
Total Power (W)	115.0
Luminaire Efficacy (LPW)	17.31
Power Factor	0.942
Current ATHD %	33.31
Correlated Color Temperature (CCT - K)	2774
Color Rendering Index (CRI - Ra)	88.2
Color Rendering Index (CRI - R9)	42.8
DUV	0.004
Chromaticity Coordinate (x)	0.460
Chromaticity Coordinate (y)	0.422
Chromaticity Coordinate (u')	0.258
Chromaticity Coordinate (v')	0.532

## EQUIPMENT LIST

Equipment Used	Model Number	Control Number	Last Date Calibrated	Calibration Due Date	Date Used
Yokogawa Power Meter	WT210	146919	07/14/15	07/14/16	08/09/15
Omega Thermometer	DPI8-C24	146920	10/09/14	10/09/15	08/09/15
LSI High Speed Mirror Goniometer	6440T	146928	VBU	VBU	08/09/15
Newport Hygrometer	iServer	146956	01/06/15	01/06/16	08/09/15
Elgar, AC Power Supply	CW1251P	146918	VBU	VBU	08/09/15
Labsphere Spectroradiometer	CDS1100	CHI0091	VBU	VBU	08/07/15
3 Meter Sphere	SPR600	CHI0088	VBU	VBU	08/07/15
Elgar AC Power Supply	CW1251M	146112	VBU	VBU	08/07/15
Sorenson DC Power Supply	XFR150-8	146846	VBU	VBU	08/07/15
Newport Humidity Recorder	iTHX-SD	146382	07/09/15	07/09/16	08/07/15
Yokogawa Power Meter	WT1600	146768	01/15/15	01/15/16	08/07/15
Omega Temperature Meter	MDSi8	146139	04/03/15	04/03/16	08/07/15

## 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 Two Meter or Ten Foot 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**

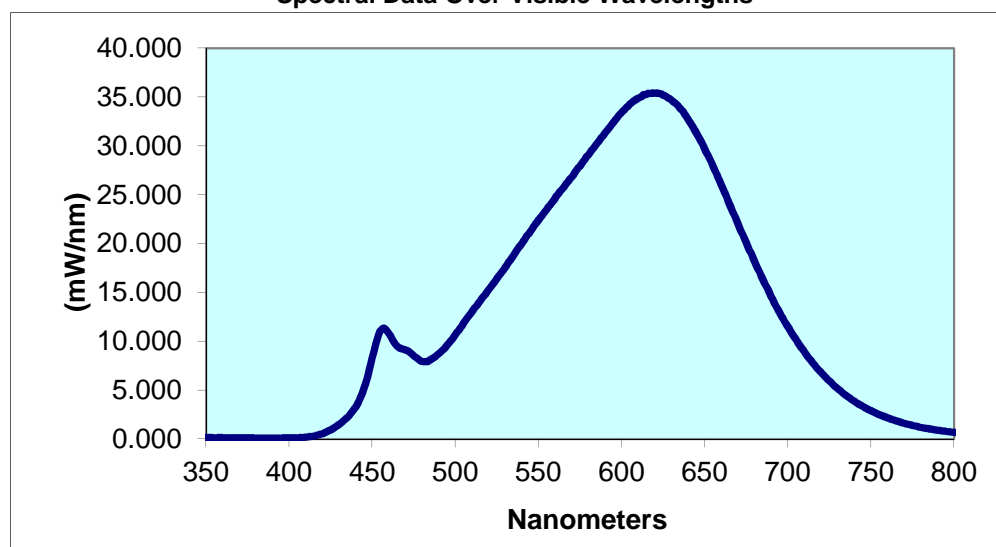
Intertek Sample No.	Base Orientation	Input Voltage {Vac}	Input Current (mA)	Input Power (Watts)	Input Power Factor	Current ATHD (%)
\H08042015090953-00:	Horizontal	120.0	1018	115.1	0.942	33.31

Correlated Color Temperature (K)	CRI -Ra	CRI -R9	DUV	CIE 31' Chromaticity Coordinate (x)	CIE 31' Chromaticity Coordinate (y)	CIE 76' Chromaticity Coordinate (u')	CIE 76' Chromaticity Coordinate (v')
2774	88.2	42.8	0.004	0.460	0.422	0.258	0.532

## **Spectral Distribution over Visible Wavelengths**

nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm	nm	mW/nm
350	0.138	440	3.259	530	17.56	620	35.39	710	8.904
355	0.112	445	5.106	535	18.77	625	35.21	715	7.786
360	0.126	450	8.251	540	19.98	630	34.70	720	6.808
365	0.112	455	11.09	545	21.22	635	33.90	725	5.947
370	0.097	460	10.83	550	22.40	640	32.74	730	5.162
375	0.091	465	9.509	555	23.50	645	31.33	735	4.472
380	0.084	470	9.107	560	24.64	650	29.72	740	3.870
385	0.079	475	8.531	565	25.72	655	27.95	745	3.344
390	0.080	480	7.935	570	26.82	660	26.07	750	2.894
395	0.085	485	8.093	575	27.93	665	24.03	755	2.497
400	0.097	490	8.734	580	29.08	670	22.06	760	2.171
405	0.115	495	9.585	585	30.23	675	20.12	765	1.870
410	0.175	500	10.65	590	31.33	680	18.20	770	1.612
415	0.308	505	11.86	595	32.38	685	16.36	775	1.388
420	0.539	510	13.00	600	33.39	690	14.60	780	1.198
425	0.931	515	14.13	605	34.26	695	13.00		
430	1.471	520	15.28	610	34.88	700	11.52		
435	2.215	525	16.40	615	35.26	705	10.15		

**Spectral Data Over Visible Wavelengths**



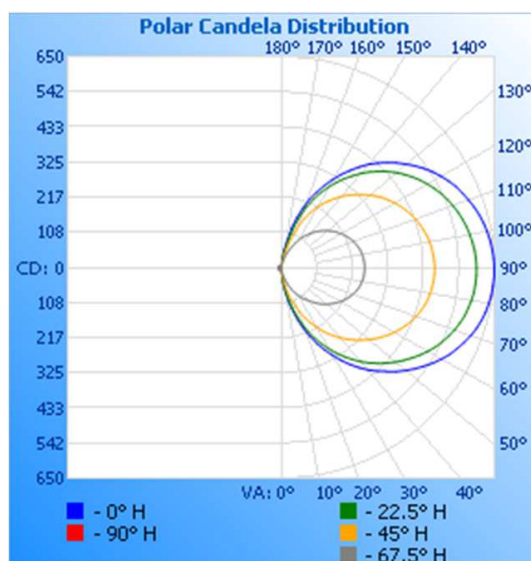
# RESULTS OF TEST (cont'd)

## 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 (LPW)
AH08042015090953-002	Horizontal	120.0	1020	115.0	0.939	1991	17.31

## Intensity (Candlepower) Summary at 25°C - Candelas

Angle	0	22.5	45	67.5	90
0	0	0	0	0	0
5	25	22	13	3	0
10	80	72	44	15	0
15	138	128	87	31	0
20	201	185	128	51	0
25	259	239	170	74	0
30	312	290	211	96	0
35	365	336	249	116	0
40	413	379	284	135	0
45	453	418	316	156	0
50	494	454	347	176	0
55	531	487	374	194	0
60	565	517	399	210	0
65	592	542	421	224	0
70	615	563	439	236	0
75	632	579	452	245	0
80	643	589	461	250	0
85	648	594	467	254	0
90	650	596	468	255	0
95	646	592	465	253	0
100	638	584	459	249	0
105	625	573	449	244	0
110	608	558	436	235	0
115	589	539	419	223	0
120	563	515	399	209	0
125	532	487	375	194	0
130	496	455	348	177	0
135	458	419	318	158	0
140	415	378	286	136	0
145	365	333	250	115	0
150	313	285	211	87	0
155	256	231	166	61	0
160	197	169	108	37	0
165	127	92	56	18	0
170	55	36	21	5	0
175	4	2	2	0	0

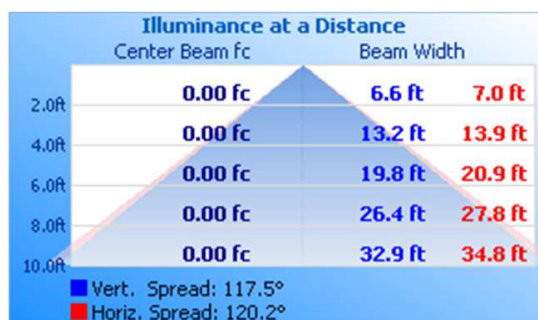


# RESULTS OF TEST (cont'd)

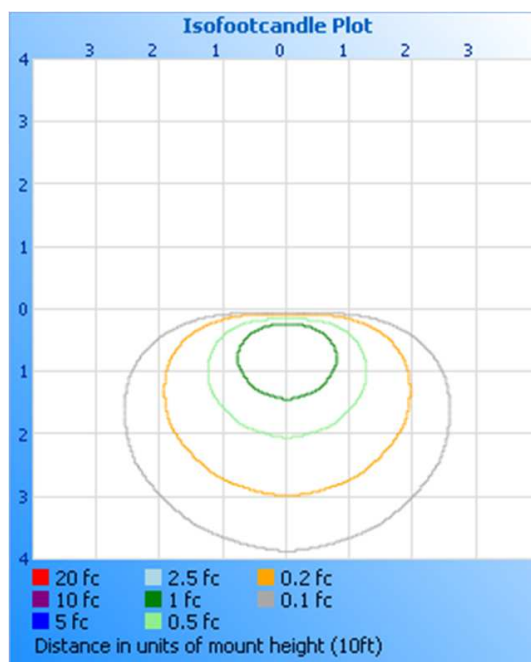
## Illumination Plots

Mounting Height: 10 ft.

Illuminance - Cone of Light



Isoillumination Plot



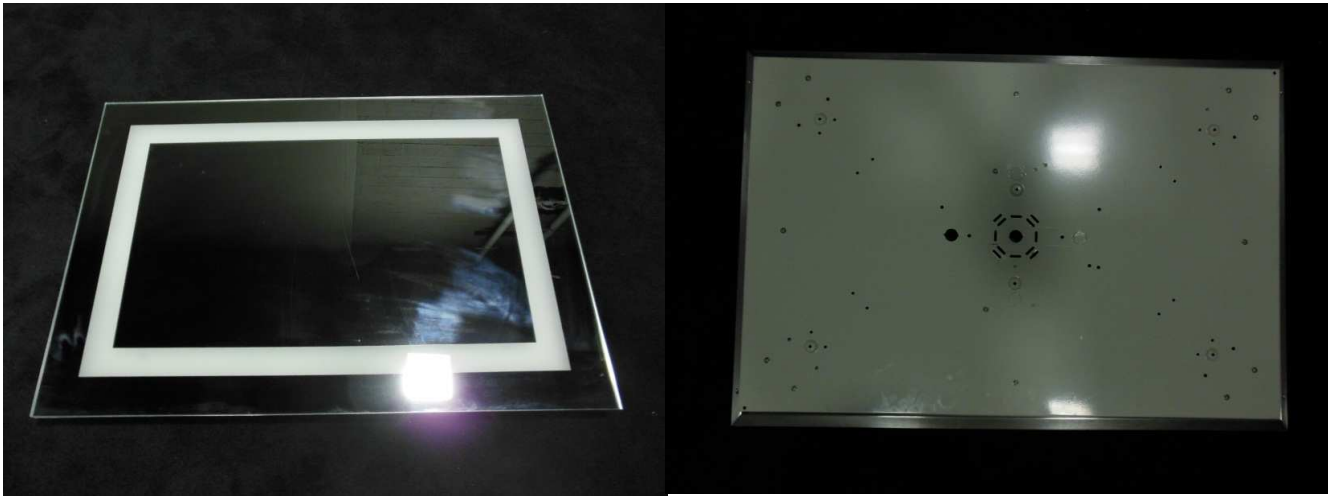
Zonal Lumen Summary and Percentages at 25°C

Zone	Lumens	% Luminaire
0-30	49.5	2.5
0-40	120.1	6.0
0-60	379.4	19.1
60-90	621.3	31.2
0-90	1001	50.3
90-180	990.6	49.7
0-180	1991	100.0

Zonal Lumens and Percentages at 25°C

Zone	Lumens	% Luminaire
0-10	1.1	0.1
10-20	12.0	0.6
20-30	36.4	1.8
30-40	70.6	3.5
40-50	109.7	5.5
50-60	149.5	7.5
60-70	185.3	9.3
70-80	211.5	10.6
80-90	224.5	11.3
90-100	223.7	11.2
100-110	209.7	10.5
110-120	184.1	9.2
120-130	149.4	7.5
130-140	109.8	5.5
140-150	69.9	3.5
150-160	34.3	1.7
160-170	9.1	0.5
170-180	0.4	0.0

PICTURES (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:



Vladimir Kozak  
Senior Associate Engineer  
Lighting Division

Attachment: None

Report Reviewed By:



Timothy Quigley  
Engineer  
Lighting Division