



8165 E Kaiser Blvd. Anaheim, CA 92808
 p. 714.282.2270
 f. 714.676.5558

Test #: L05132304

Date: 5/23/2013



NVLAP LAB CODE 200927-0

Test Report: L05132304

Model Number: LARC4-9-PW-BA

Report Prepared For: GM Lighting
 9830 W. 190th Street Unit F. Mokena, IL. 60448

Test: Electrical and Photometric tests as required by the IESNA test standards.

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products

Description of Sample: Client submitted the sample. Fixture catalog number is LARC4-9-PW-BA . Received in working and undamaged condition. No modifications were necessary.

Sample Arrival Date: 05.06.13

Date of Tests: 05.23.13 - 05.23.13

Seasoning of Sample SSL: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	01/04/14
Xitron Power Analysis System	2503AH	MT-EL01	01/09/14
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/14
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

LM-79 Test Summary

Manufacturer:	GM Lighting
Model Number:	LARC4-9-PW-BA
LAMPCAT:	N/A
Driver Model Number:	N/A
Total Lumens:	369.70
Input Voltage (VDC):	24.00
Input Current (Amp):	0.17
Input Power (W):	4.04
Input Power Factor:	N/A
Total Harmonic Distortion @ 120V(%):	N/A
Total Harmonic Distortion @ 277V(%):	N/A
Efficacy:	91.41
Color Rendering Index (CRI):	65.30
Correlated Color Temperature (K):	6182
Chromaticity Coordinate x:	0.3177
Chromaticity Coordinate y:	0.3408
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:05
Off State Power(W):	0.00

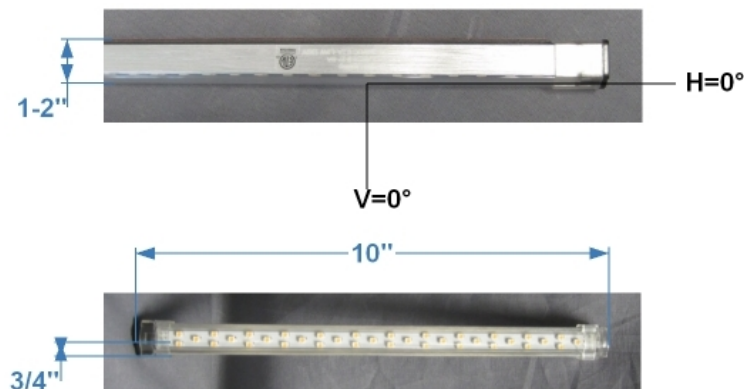
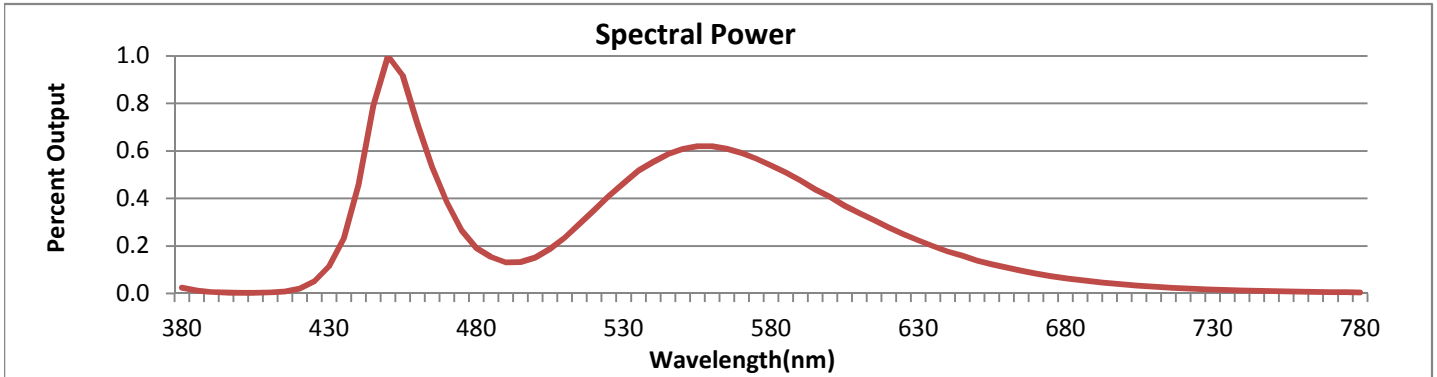


FIG.1 LUMINAIRE

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



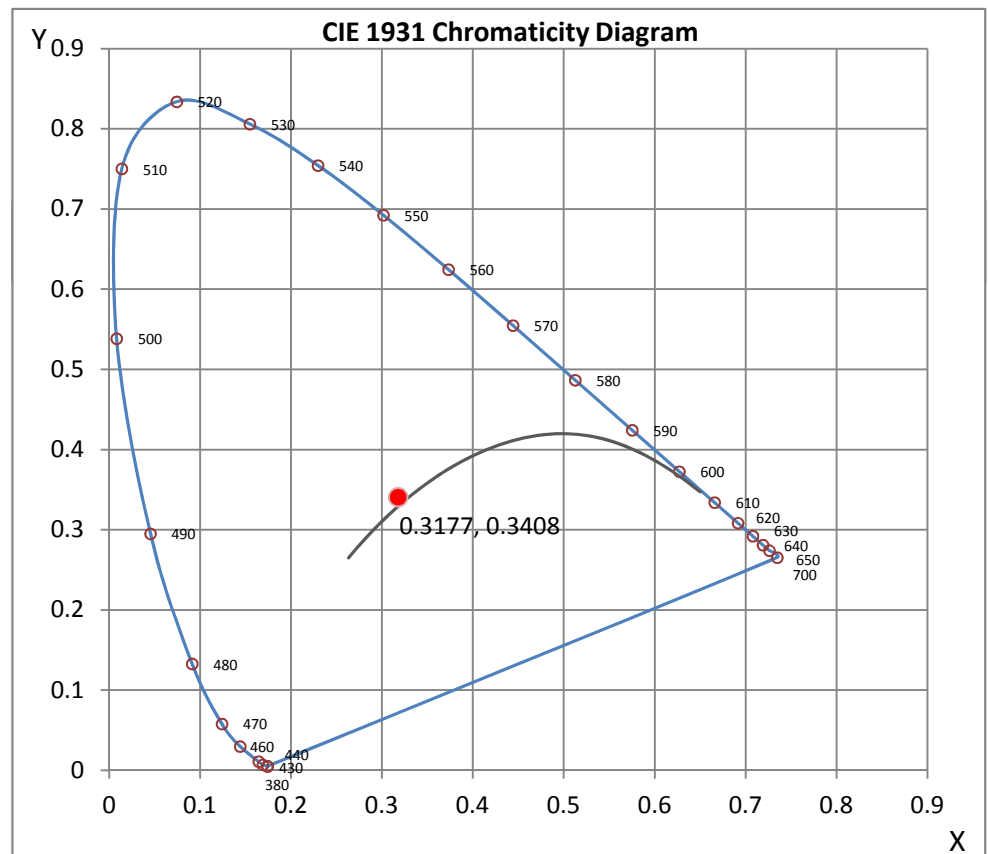
Wavelength	W/m ² nm	440	0.0227	510	0.0116	580	0.0267	650	0.0068	720	0.0011
380	0.0012	450	0.0494	520	0.0173	590	0.0235	660	0.0054	730	0.0008
390	0.0003	460	0.0353	530	0.0230	600	0.0201	670	0.0041	740	0.0006
400	0.0002	470	0.0190	540	0.0274	610	0.0167	680	0.0032	750	0.0005
410	0.0002	480	0.0095	550	0.0300	620	0.0137	690	0.0024	760	0.0004
420	0.0010	490	0.0065	560	0.0306	630	0.0111	700	0.0019	770	0.0003
430	0.0057	500	0.0075	570	0.0292	640	0.0087	710	0.0014	780	0.0002

CRI & CCT

x	0.3177
y	0.3408
u'	0.1969
v'	0.4752
CRI	65.30
CCT	6182
Duv	0.00671

R Values

R1	59.37
R2	73.36
R3	79.41
R4	60.78
R5	59.92
R6	60.52
R7	80.33
R8	48.80
R9	-64.87
R10	33.57
R11	51.29
R12	28.54
R13	63.16
R14	87.78



*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



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Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Test Report Released by:

Jeff Ahn
Engineering Manager

Test Report Reviewed by:

Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 4*



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Test #: L05132305

Date: 5/23/2013



NVLAP LAB CODE 200927-0

Test Report: L05132305

Model Number: LARC4-19-PW-BA

Report Prepared For: GM Lighting
 9830 W. 190th Street Unit F. Mokena, IL. 60448

Test: Electrical and Photometric tests as required by the IESNA test standards.

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products

Description of Sample: Client submitted the sample. Fixture catalog number is LARC4-19-PW-BA. Received in working and undamaged condition. No modifications were necessary.

Sample Arrival Date: 05.06.13

Date of Tests: 05.23.13 - 05.23.13

Seasoning of Sample SSL: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	01/04/14
Xitron Power Analysis System	2503AH	MT-EL01	01/09/14
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/14
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

LM-79 Test Summary

Manufacturer:	GM Lighting
Model Number:	LARC4-19-PW-BA
LAMPCAT:	N/A
Driver Model Number:	N/A
Total Lumens:	760.86
Input Voltage (VDC):	24.00
Input Current (Amp):	0.39
Input Power (W):	9.48
Input Power Factor:	N/A
Total Harmonic Distortion @ 120V(%):	N/A
Total Harmonic Distortion @ 277V(%):	N/A
Efficacy:	80.28
Color Rendering Index (CRI):	67.40
Correlated Color Temperature (K):	6502
Chromaticity Coordinate x:	0.3115
Chromaticity Coordinate y:	0.3385
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:05
Off State Power(W):	0.00

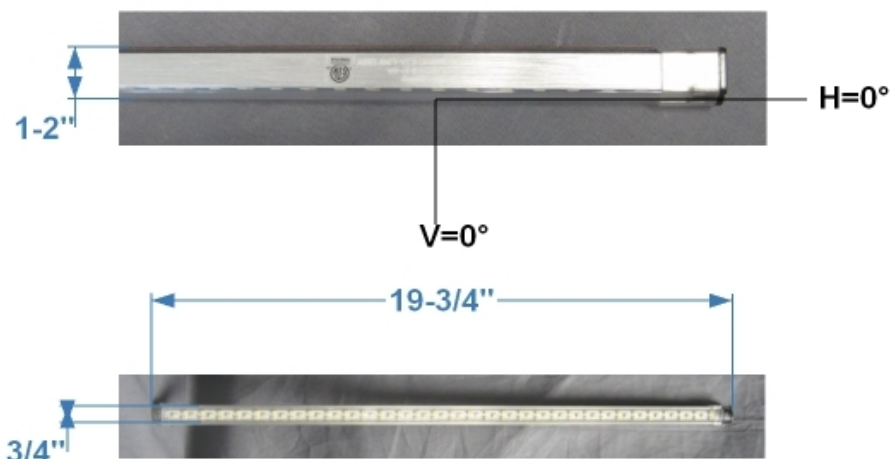
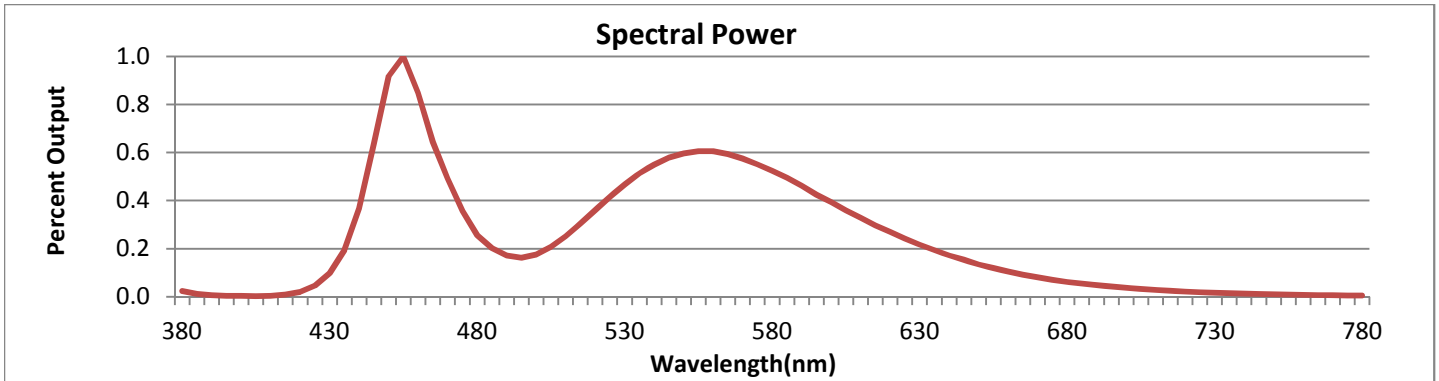


FIG.1 LUMINAIRE

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



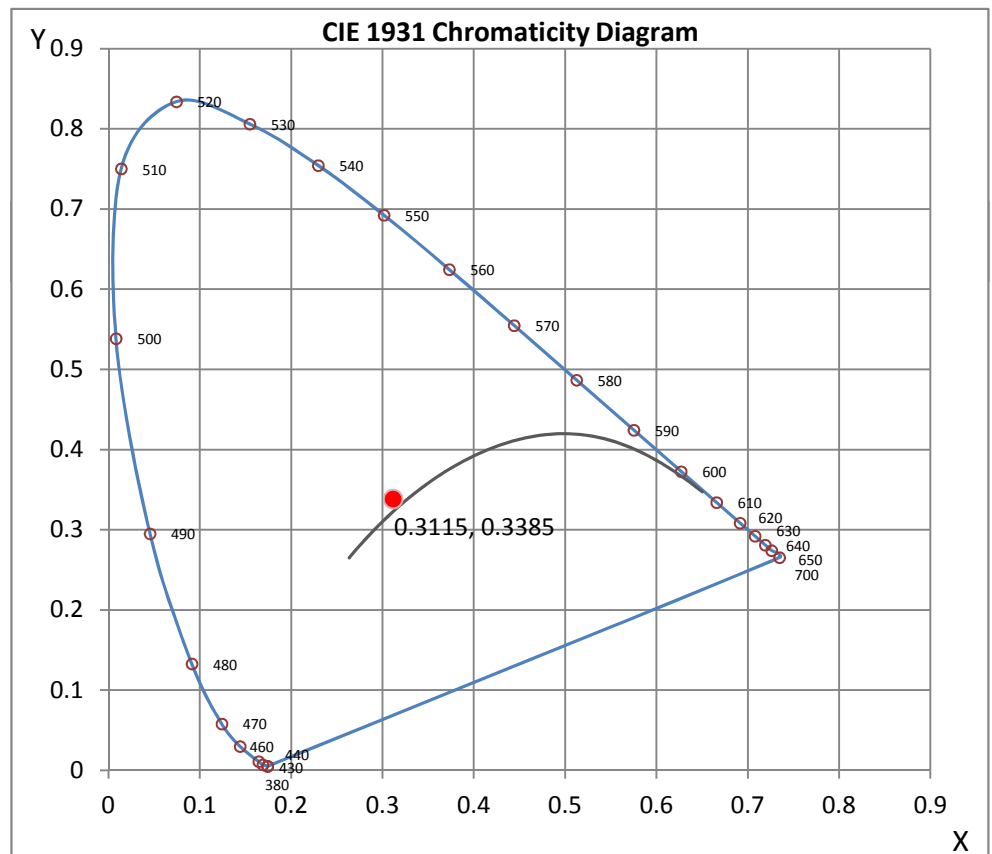
Wavelength	W/m ² nm	440	0.0375	510	0.0257	580	0.0536	650	0.0136	720	0.0022
380	0.0024	450	0.0937	520	0.0366	590	0.0472	660	0.0107	730	0.0017
390	0.0006	460	0.0866	530	0.0476	600	0.0402	670	0.0083	740	0.0013
400	0.0003	470	0.0503	540	0.0562	610	0.0335	680	0.0063	750	0.0010
410	0.0004	480	0.0261	550	0.0609	620	0.0276	690	0.0049	760	0.0008
420	0.0020	490	0.0175	560	0.0618	630	0.0221	700	0.0038	770	0.0006
430	0.0100	500	0.0180	570	0.0588	640	0.0175	710	0.0029	780	0.0005

CRI & CCT

x	0.3115
y	0.3385
u'	0.1935
v'	0.4731
CRI	67.40
CCT	6502
Duv	0.00859

R Values

R1	61.08
R2	76.56
R3	82.97
R4	60.56
R5	61.46
R6	64.83
R7	81.65
R8	49.74
R9	-61.16
R10	40.99
R11	51.47
R12	31.85
R13	65.91
R14	89.76



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Test Methods

Photometric Measurements - Goniophotometer

A Custom Light Laboratory Type C Rotating Mirror Goniophotometer was used to measure candelas(intensity) at each angle of distribution as defined by IESNA for the appropriate fixture type.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Spectral Measurements - Integrating Sphere

A Sensing Spectroradiometer SPR-3000, in conjunction with Light Laboratory 2 meter integrating sphere was used to measure chromaticity coordinates, correlated color temperature(CCT) and the color rendering index(CRI) for each sample.

Ambient temperature is set to 25°C and is measured from the center of the fixture, within 1ft from the outside of the fixture. Temperature is maintained at 25°C throughout the testing process and the sample is stabilized for at least 30mins and longer as necessary for the sample to achieve stabilization.

Electrical measurements are measured using the listed equipment.

Test Report Released by:

Jeff Ahn
Engineering Manager

Test Report Reviewed by:

Steve Kang
Quality Assurance

**Attached are photometric data reports. Total number of pages: 4*



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Test #: L05132306

Date: 5/23/2013



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Test Report: L05132306

Model Number: LARC4-39-PW-BA

Report Prepared For: GM Lighting
 9830 W. 190th Street Unit F. Mokena, IL. 60448

Test: Electrical and Photometric tests as required by the IESNA test standards.

Standards Used: Appropriate part or all test guidelines were used for test performed:
IESNA LM79: 2008 Approved Methods for Electrical and Photometric Measurements of Solid-State Lighting Products
ANSI NEMA ANSLG C78.377: 2008 Specification of the Chromaticity of Solid State Lighting Products

Description of Sample: Client submitted the sample. Fixture catalog number is LARC4-39-PW-BA. Received in working and undamaged condition. No modifications were necessary.

Sample Arrival Date: 05.06.13

Date of Tests: 05.23.13 - 05.23.13

Seasoning of Sample SSL: No seasoning was performed in accordance with IESNA LM-79.

Equipment List

Equipment Used	Model No	Stock No	Calibration Due Date
Chroma Programmable AC Source	61604	PS-AC02	--
Yokogawa Digital Power Meter	WT210	MT-EL06-S1	01/04/14
Xitron Power Analysis System	2503AH	MT-EL01	01/09/14
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/14
LLI Type C Goniophotometer System	RMG-C-MKII	CD-LL04-GC	--
LLI 2M Sphere	2MR97	CD-SN03-S2	--
LLI Spectroradiometer	SPR-3000	MT-SC01-S2	Before Use

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.

LM-79 Test Summary

Manufacturer:	GM Lighting
Model Number:	LARC4-39-PW-BA
LAMPCAT:	N/A
Driver Model Number:	N/A
Total Lumens:	1883.12
Input Voltage (VDC):	24.00
Input Current (Amp):	0.92
Input Power (W):	22.07
Input Power Factor:	N/A
Total Harmonic Distortion @ 120V(%):	N/A
Total Harmonic Distortion @ 277V(%):	N/A
Efficacy:	85.33
Color Rendering Index (CRI):	65.00
Correlated Color Temperature (K):	6174
Chromaticity Coordinate x:	0.3178
Chromaticity Coordinate y:	0.3408
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:35
Total Operating Time (Hours):	1:05
Off State Power(W):	0.00

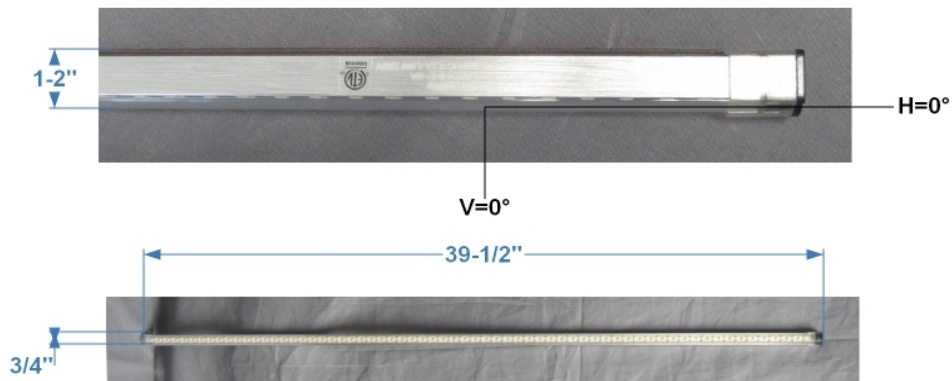
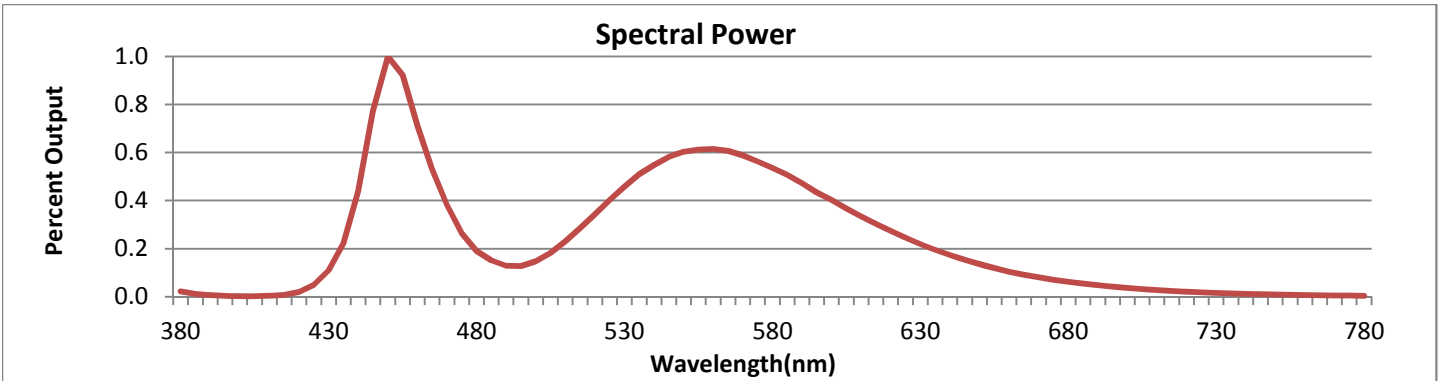


FIG.1 LUMINAIRE

*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



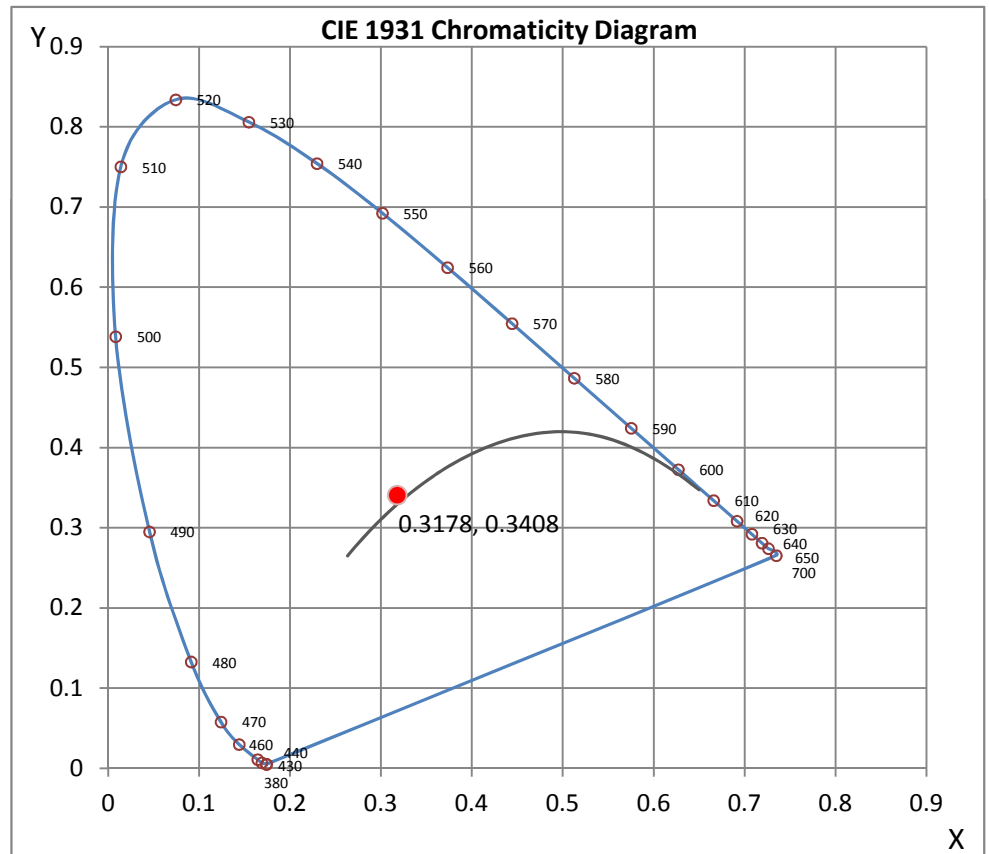
Wavelength	W/m ² nm	440	0.1225	510	0.0640	580	0.1498	650	0.0376	720	0.0058
380	0.0062	450	0.2789	520	0.0957	590	0.1318	660	0.0290	730	0.0044
390	0.0016	460	0.1986	530	0.1277	600	0.1124	670	0.0225	740	0.0033
400	0.0007	470	0.1070	540	0.1531	610	0.0933	680	0.0173	750	0.0025
410	0.0011	480	0.0531	550	0.1681	620	0.0766	690	0.0131	760	0.0019
420	0.0055	490	0.0358	560	0.1717	630	0.0613	700	0.0101	770	0.0014
430	0.0309	500	0.0412	570	0.1640	640	0.0482	710	0.0076	780	0.0011

CRI & CCT

x	0.3178
y	0.3408
u'	0.1970
v'	0.4752
CRI	65.00
CCT	6174
Duv	0.00667

R Values

R1	58.95
R2	73.26
R3	79.42
R4	60.23
R5	59.49
R6	60.26
R7	80.13
R8	48.16
R9	-66.78
R10	33.27
R11	50.55
R12	27.97
R13	62.84
R14	87.78



*All Results in accordance to IESNA LM-79-2008: Approved Method for the Electrical and Photometric Testing of Solid-State Lighting.



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Test Methods

Photometric Measurements - Goniophotometer

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Electrical measurements are measured using the listed equipment.

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Engineering Manager

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Quality Assurance

**Attached are photometric data reports. Total number of pages: 4*