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

Report No: L111407102
Date: 12/9/2014

NVLAP LAB CODE 200927-0

Report No: **L111407102**

Report Prepared For: Cast Lighting
1120-A Goffle Rd., Hawthorne, NJ., 07506

Model Number: **CCSL10536**

Test: Electrical and Photometric tests

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
ANSI C82.77:2002: Harmonic Emission Limits-Related Quality Requirements for Lighting Equipment

Description of Sample: Client submitted the sample. Catalog number is CCSL10536. Received in working and undamaged condition. No modifications were necessary.

Testing Condition: Fixture is tested with no special conditions.

Sample Arrival Date: 12/4/14

Date of Tests: 12/8/14 - 12/9/14

Seasoning of Sample: 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	01/04/15
Xitron Power Analysis System	2503AH	MT-EL01	01/09/15
BK Precision DC Power Supply	1747	PSDC-04	01/08/15
Fluke Digital Thermometer	52k/J	MT-TP02-GC	01/04/15
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.

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Test Summary	
Manufacturer:	Cast Lighting
Model Number:	CCSL10536
Driver Model Number:	N/A
Total Lumens:	88.52
Input Voltage (VAC/60Hz):	12.00
Input Current (Amp):	0.26
Input Power (W):	2.80
Input Power Factor:	0.89
Current ATHD @ 12V(%):	52%
Current ATHD @ 277V(%):	N/A
Efficacy:	32
Color Rendering Index (CRI):	81
Correlated Color Temperature (K):	2736
Chromaticity Coordinate x:	0.4575
Chromaticity Coordinate y:	0.4110
Ambient Temperature (°F):	77.0
Stabilization Time (Hours):	0:30
Total Operating Time (Hours):	1:50
Off State Power(W):	0.00

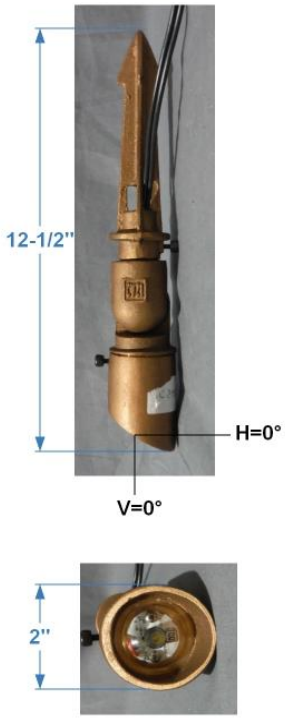

FIG. 1 LUMINAIRE

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

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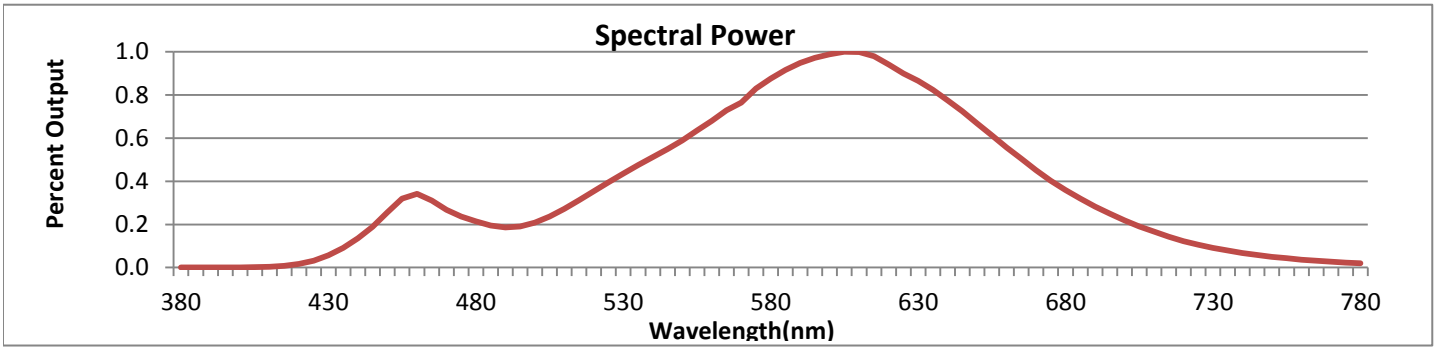


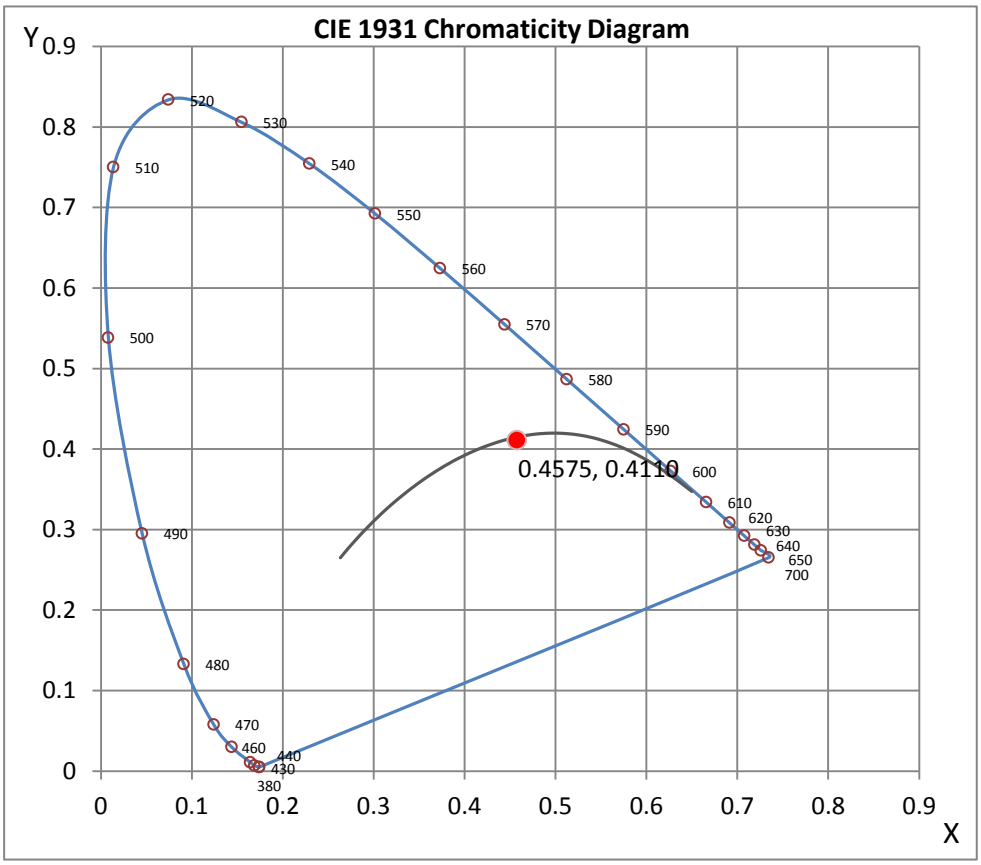
Wavelength	W/m²nm	440	0.1350	510	0.2720	580	0.8767	650	0.6682	720	0.1221
380	0.0007	450	0.2554	520	0.3541	590	0.9495	660	0.5569	730	0.0912
390	0.0008	460	0.3417	530	0.4360	600	0.9883	670	0.4510	740	0.0677
400	0.0010	470	0.2676	540	0.5126	610	0.9986	680	0.3601	750	0.0500
410	0.0035	480	0.2135	550	0.5902	620	0.9410	690	0.2830	760	0.0363
420	0.0161	490	0.1859	560	0.6800	630	0.8661	700	0.2184	770	0.0271
430	0.0569	500	0.2078	570	0.7648	640	0.7744	710	0.1667	780	0.0201

CRI & CCT

x	0.4575
y	0.4110
u'	0.2608
v'	0.5271
CRI	80.70
CCT	2736
Duv	0.00036

R Values

R1	78.74
R2	90.26
R3	96.63
R4	75.56
R5	77.35
R6	86.67
R7	82.37
R8	58.35
R9	9.75
R10	76.23
R11	71.08
R12	67.46
R13	81.21
R14	98.61



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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.

Disclaimers:

This report must not be used by the customer to claim product certification, approval or endorsement by NVLAP, NIST or any agency of Federal Government.

Report Prepared by : Keyur Patel

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: 8*

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Photometric Test Report

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L111407102.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-2002
[TEST] L111407102
[TESTLAB] LIGHT LABORATORY, INC.
[ISSUEDATE] 12/09/2014
[MANUFAC] CAST LIGHTING
[LUMCAT] CCSL10536
[LUMINAIRE] 2"DIA. X 12-1/2"H. LED LUMINAIRE
[MORE] CLEAR LENS
[BALLASTCAT] N.A.
[BALLAST] N.A.
[LAMPPOSITION] 0,0
[LAMPCAT] N/A
[OTHER] INDICATING THE CANDELA VALUES ARE ABSOLUTE AND
[MORE] SHOULD NOT BE FACTORED FOR DIFFERENT LAMP RATINGS.
[INPUT] 12VAC, 2.80W
[TEST PROCEDURE] IESNA:LM-79-08

Note: Candela values converted from Type-C to Type-B

CHARACTERISTICS

NEMA Type	3 H x 3 V
Maximum Candela	358.6
Maximum Candela Angle	0H -5V
Horizontal Beam Angle (50%)	27.3
Vertical Beam Angle (50%)	28.4
Horizontal Field Angle (10%)	42.3
Vertical Field Angle (10%)	42.7
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	54
Beam Efficiency	N.A.
Field Lumens	76
Field Efficiency	N.A.
Spill Lumens	13
Luminaire Lumens	89
Total Efficiency	N.A.
Total Luminaire Watts	2.8
Ballast Factor	1.00

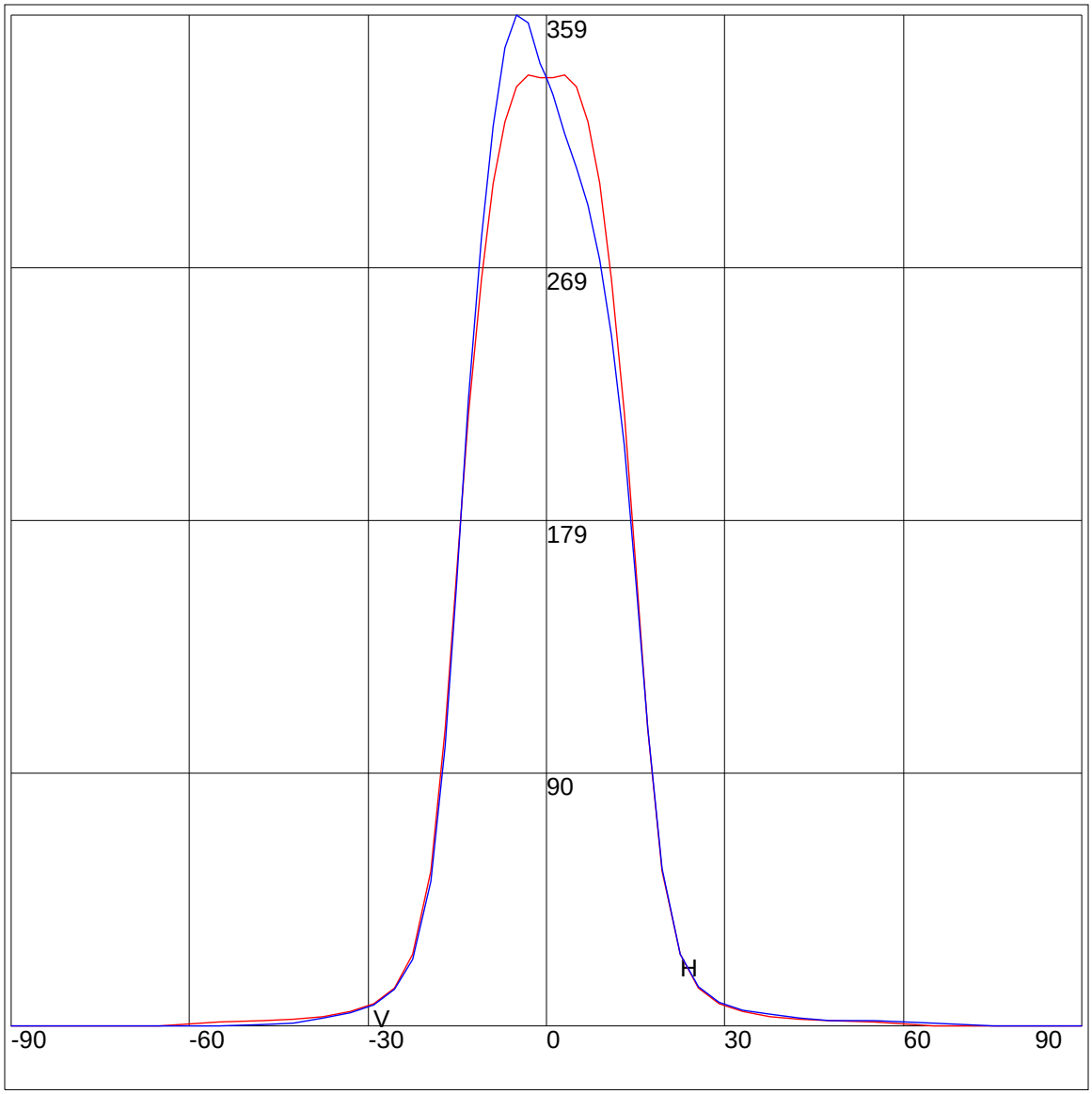
IES FLOOD REPORT
PHOTOMETRIC FILENAME : L111407102.IES

AXIAL CANDELA

DEG.	HOR.	DEG.	VERT.
90	0	90	.17
85	0	85	.17
75	0	75	.34
65	.25	65	1.01
55	1.43	55	1.85
47.5	2.01	47.5	2.18
42.5	2.52	42.5	2.85
37.5	3.61	37.5	4.19
33	5.37	33	5.7
29	8.05	29	8.39
25.5	13.67	25.5	13.92
22.5	25.58	22.5	25.83
19.5	55.27	19.5	56.19
17	105.58	17	106
15	161.35	15	156.99
13	217.37	13	205.63
11	264.93	11	244.88
9	298.97	9	271.89
7	320.53	7	291.01
5	333.36	5	304.76
3	337.47	3	316.5
1	336.63	1	330.42
0	336.39	0	336.39
-1	336.63	-1	341.66
-3	337.47	-3	355.75
-5	333.36	-5	358.6
-7	320.53	-7	347.03
-9	298.97	-9	319.19
-11	264.93	-11	279.6
-13	217.37	-13	222.91
-15	161.35	-15	157.66
-17	105.58	-17	99.29
-19.5	55.27	-19.5	51.49
-22.5	25.58	-22.5	23.82
-25.5	13.67	-25.5	12.92
-29	8.05	-29	7.55
-33	5.37	-33	5.03
-37.5	3.61	-37.5	3.02
-42.5	2.52	-42.5	1.34
-47.5	2.01	-47.5	.5
-55	1.43	-55	0
-65	.25	-65	0
-75	0	-75	0
-85	0	-85	0
-90	0	-90	0

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L111407102.IES

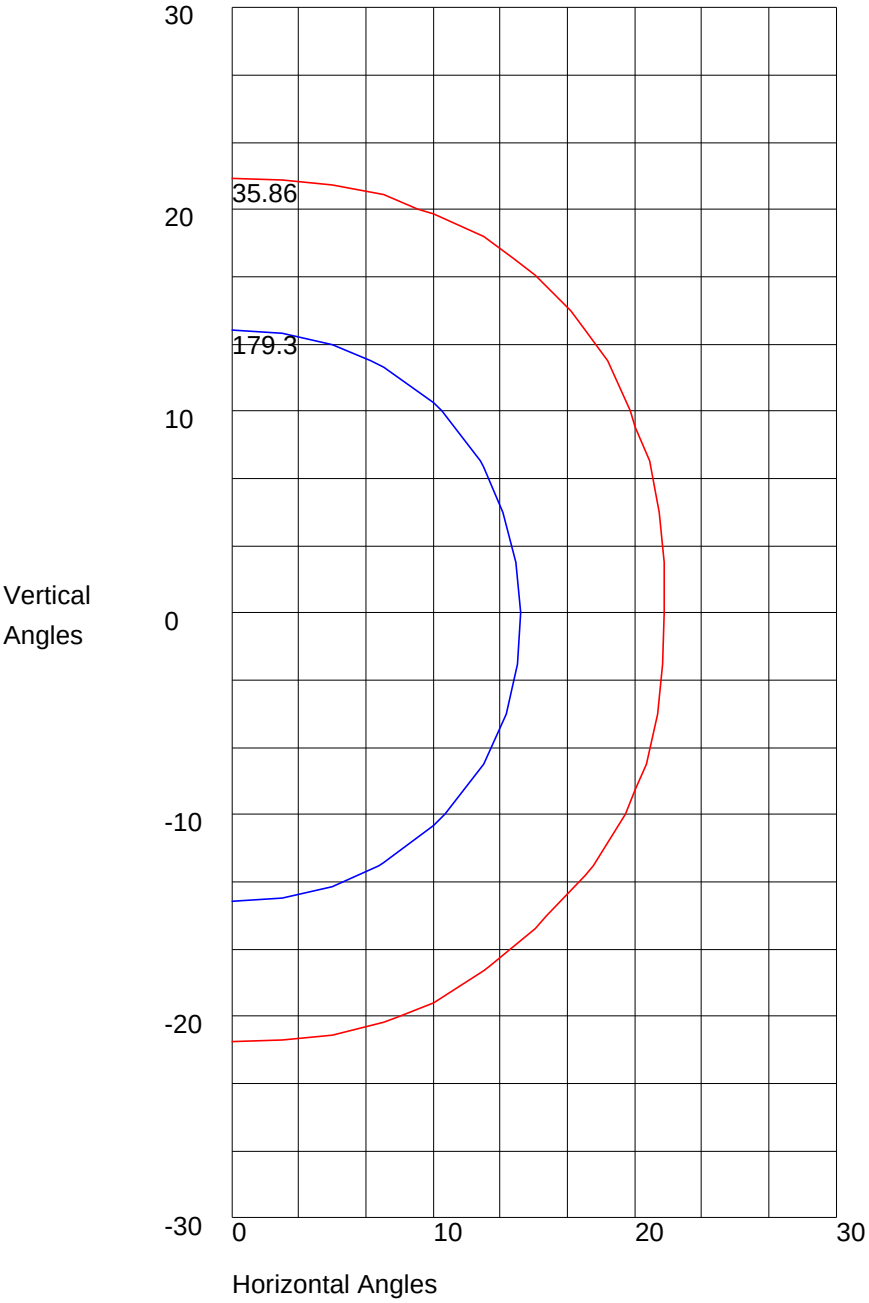
AXIAL CANDELA DISPLAY



Maximum Candela = 358.6 Located At Horizontal Angle = 0, Vertical Angle =-5
H - Horizontal Axial Candela
V - Vertical Axial Candela

IES FLOOD REPORT
PHOTOMETRIC FILENAME : L111407102.IES

ISOCANDELA CURVES



Maximum Candela = 358.6 Located At Horizontal Angle = 0, Vertical Angle =-5
50% Maximum Candela = 179.3
10% Maximum Candela = 35.86