



7036 Snowdrift Road Suite 200
Allentown, PA 18106
610-774-1300

Integrating Sphere Test Report

Relevant Standards
IES LM-79-2008
ANSI C78.377-2011, ANSI C82.77-2002
CIE 13.3-1995, CIE 15-2004

Prepared For
Lighting Science Group Corporation
Ivars Lauzums
1227 South Patrick Dr.
Satellite Beach, FL 32937-3970

Catalog Number
xxx BR30 65WE CW 120 CB BX

Order Number
10151501
Test Number
432160

Test Date

2013-12-17

Prepared By

A handwritten signature in black ink, appearing to read "Jeff A. Smith Jr.".

Jeff Smith Jr., Project Handler

Approved By

A handwritten signature in black ink, appearing to read "Jeffrey M. Lockner".

Jeffrey Lockner, Engineer

The results contained in this report pertain only to the tested sample.
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Lamp Description: Formed white plastic housing, aluminum heatsinks, frosted plastic enclosure
Catalog Number: xxx BR30 65WE CW 120 CB BX
Lamp: One white LED array
Mounting: VBU

Lamp



Summary of Results

Radiant Flux:	2510 mW
Luminous Flux:	762.4 Lumens
Lamp Efficacy:	86.6 Lumens/Watt
CCT:	5086 K
CRI (Ra):	85.5
Chromaticity (x):	0.3425
Chromaticity (y):	0.3478
Chromaticity (u):	0.2111
Chromaticity (v):	0.3216
Duv:	-0.0015

Test Conditions

Test Temperature:	24.6 °C
Voltage:	120.0 VAC
Current:	0.07898 A
Power:	8.802 W
Power Factor:	0.929
Frequency:	60 Hz
Current THD:	35.3 %

Testing was performed in a 1-meter integrating sphere using the 4 π geometry method.

Absorption correction was employed for this measurement.

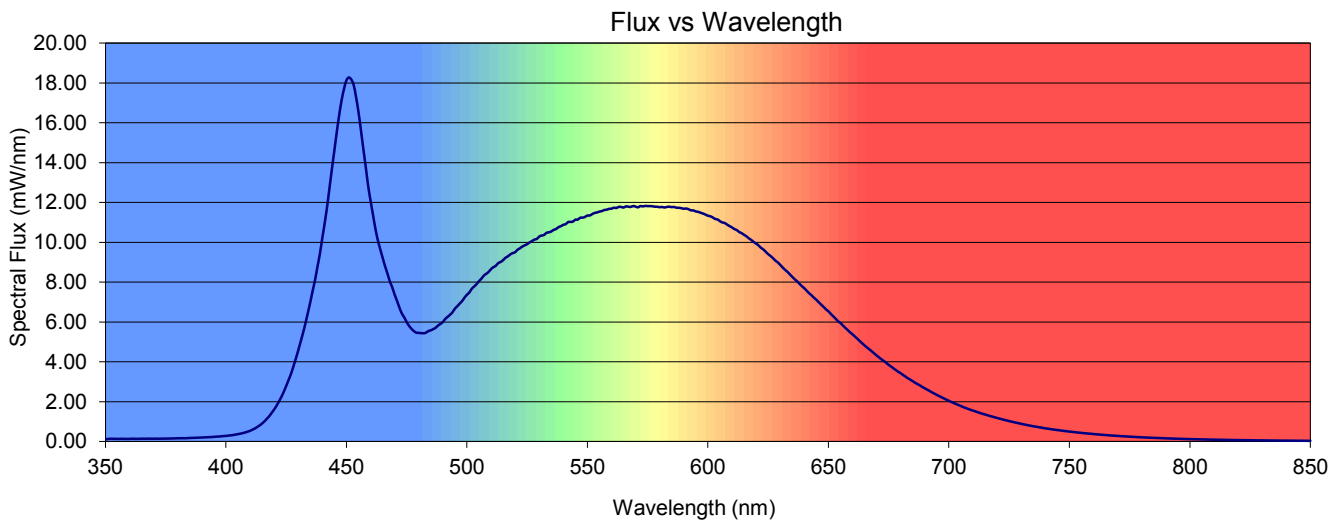
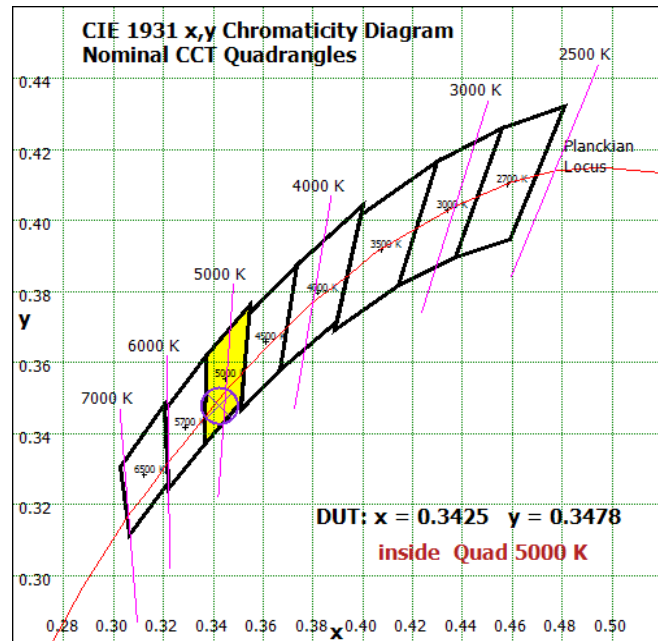
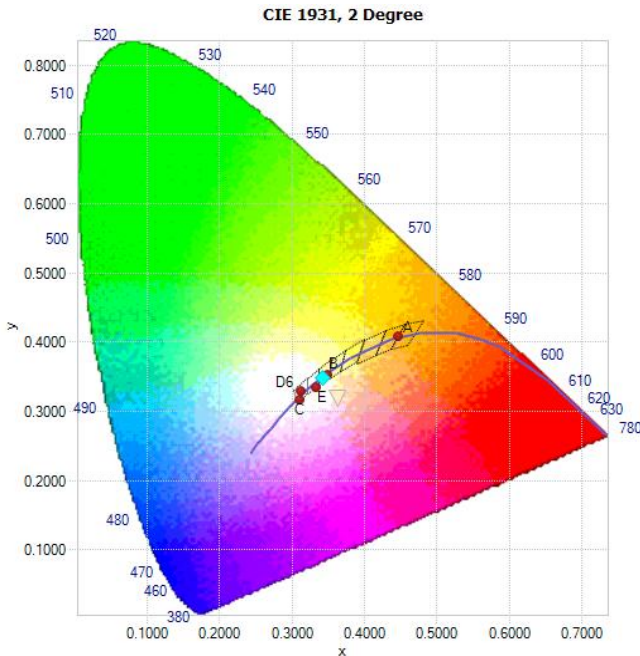


Chromaticity Coordinates

x	y	u	v	u'	v'	Duv
0.3425	0.3478	0.2111	0.3216	0.2111	0.4824	-0.0015

Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
85.5	84.8	89.6	91.7	85.6	85.3	84.6	88.5	74.1	27.2	74.2	84.6	68.0	85.9	95.4





UL Verification Services

7036 Snowdrift Road Suite 200
Allentown, PA 18106
610-774-1300



Reflector Lamp Test Report

Relevant Standards
IES LM-79-2008, IES LM-20-2013
ANSI C82.77

Prepared For
Lighting Science Group Corporation
Ivars Lauzums
1227 South Patrick Dr.
Satellite Beach, FL 32937-3970

Catalog Number
xxx BR30 65WE CW 120 CB BX

Test Number
432159

Test Date

2013-12-21

Prepared By

A handwritten signature in black ink, appearing to read 'Jeff A. Smith Jr.'.

Jeff Smith Jr., Project Handler

Approved By

A handwritten signature in black ink, appearing to read 'Jeffrey M. Lockner'.

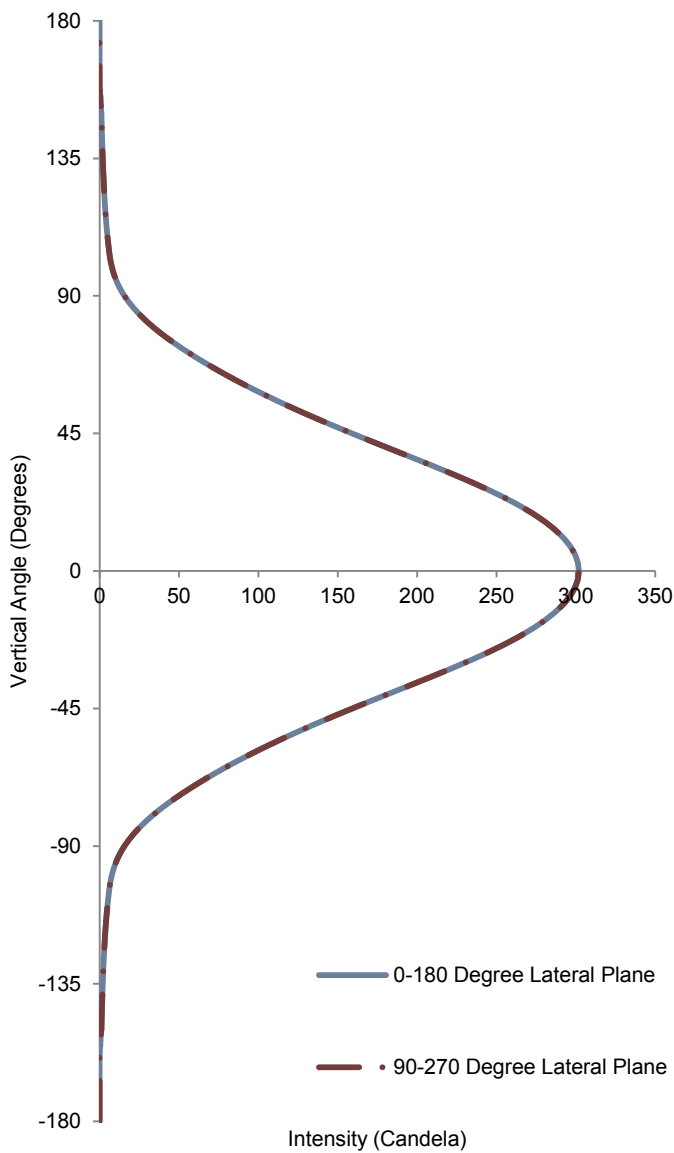
Jeffrey Lockner, Engineer

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Lamp Description: Formed white plastic housing, aluminum heatsinks, frosted plastic enclosure
 Catalog Number: xxx BR30 65WE CW 120 CB BX
 Lamp: One white LED array
 Mounting: VBU

Intensity vs Vertical Angle



Lamp



Test Conditions

Test Temperature: 24.4 °C
 Voltage: 120.0 VAC
 Current: 0.07914 A
 Power: 8.823 W
 Power Factor: 0.929
 Frequency: 60 Hz
 Current THD: 35.2 %

Total Lumen Output: 756.7 Lumens
 Luminaire Efficacy: 85.8 Lumens/Watt
 CIE Type: Direct
 Spacing Criterion: 1.15 All Directions

Center Beam Intensity: 301.9 Candela
 Central Cone Intensity: 301.1 Candela
 Beam Flux: 437.6 Lumens
 Beam Angle 0-180: 93.5 Degrees
 Beam Angle 90-270: 93.5 Degrees
 Field Angle 0-180: 162.8 Degrees
 Field Angle 90-270: 162.8 Degrees

Data was acquired using the calibrated photodetector method of absolute photometry.



Utilization of Lumens - Zonal Cavity Method

Effective Floor Cavity Reflectance 20%												
Ceiling Cavity Reflectance	90				80				70			
Wall Reflectance	70	50	30	10	70	50	30	10	70	50	30	10
Room Cavity Ratio (RCR)	** Values are expressed as Lumens delivered to the task surface **											
0	919.4	919.4	919.4	919.4	894.3	894.3	894.3	894.3	870.3	870.3	870.3	870.3
1	839.5	798.7	762.3	729.7	814.7	777.8	744.8	715.0	791.2	757.9	727.9	700.7
2	766.8	698.5	642.6	596.0	743.1	681.1	629.8	586.6	720.6	664.4	617.4	577.5
3	702.1	616.0	550.3	498.6	679.9	601.4	540.7	492.2	658.9	587.4	531.3	486.0
4	645.2	548.0	478.1	425.4	624.6	535.7	470.6	420.9	605.3	523.9	463.3	416.5
5	595.0	491.5	420.5	368.8	576.3	481.1	414.5	365.4	558.6	471.0	408.7	362.2
6	550.7	444.0	373.7	324.0	533.6	435.1	368.9	321.4	517.5	426.5	364.2	318.9
7	511.5	403.6	335.2	287.8	496.0	396.0	331.2	285.8	481.4	388.6	327.3	283.8
8	476.7	369.2	303.0	258.0	462.7	362.6	299.7	256.4	449.5	356.2	296.4	254.8
9	445.8	339.6	275.8	233.3	433.1	333.8	273.0	232.0	421.1	328.3	270.3	230.6
10	418.2	313.8	252.6	212.4	406.7	308.8	250.3	211.3	395.8	304.0	247.9	210.2

Ceiling Cavity Reflectance	50				30			10			0
Wall Reflectance	70	50	30	10	50	30	10	50	30	10	0
Room Cavity Ratio (RCR)	** Values are expressed as Lumens delivered to the task surface **										
0	825.5	825.5	825.5	825.5	784.5	784.5	784.5	746.9	746.9	746.9	729.2
1	747.5	720.6	696.1	673.5	686.4	666.5	648.0	654.8	638.9	624.0	606.3
2	679.2	633.2	593.9	559.9	604.3	571.7	543.1	577.7	550.9	527.0	509.3
3	620.2	561.0	513.3	474.0	536.6	496.2	462.3	513.9	480.1	451.1	433.5
4	569.7	501.5	449.2	407.8	480.8	435.8	399.4	461.5	423.0	391.2	374.1
5	526.0	452.0	397.5	355.7	434.3	386.8	349.4	417.7	376.5	343.3	326.8
6	488.0	410.2	355.1	314.0	395.0	346.3	309.1	380.7	337.9	304.3	288.5
7	454.5	374.6	319.8	279.9	361.4	312.5	276.0	349.1	305.5	272.3	257.1
8	425.1	344.1	290.1	251.7	332.6	284.1	248.6	321.9	278.2	245.5	231.0
9	398.9	317.7	265.0	228.0	307.7	259.8	225.5	298.2	254.8	222.9	209.1
10	375.7	294.7	243.4	208.0	285.9	239.0	205.9	277.6	234.7	203.7	190.6

Average Luminance Table (cd/m²)

		Horizontal Angle (Degrees)		
		0	45	90
Vertical Angle (Degree)	0	37230	37230	37230
	45	27760	27760	27760
	55	24650	24650	24650
	65	22390	22390	22390
	75	21840	21840	21840
	85	32860	32860	32860

This test was conducted using photometry techniques according to standard IES procedures. The user must therefore use caution in the following situations: 1) This test was performed using a specific ballast/lamp combination. Extrapolation of this data for other ballast/lamp combinations may produce erroneous results. 2) This test was conducted in a controlled laboratory environment where the ambient temperature was held at 25°C ±1°C. Field performance may differ particularly in regards to change in luminous output as a result of difference in ambient temperature and method of mounting the luminaire.



Zonal Lumen Tabulation (5 degree zones)

Zone (Degrees)	Lumens	Zone (Degrees)	Lumens	Zone (Degrees)	Lumens	Zone (Degrees)	Lumens
0-5	7.19	45-50	59.56	90-95	7.07	135-140	0.68
5-10	21.23	50-55	54.42	95-100	4.82	140-145	0.51
10-15	34.23	55-60	48.30	100-105	3.54	145-150	0.37
15-20	45.53	60-65	41.59	105-110	2.82	150-155	0.19
20-25	54.57	65-70	34.62	110-115	2.24	155-160	0.04
25-30	60.89	70-75	27.66	115-120	1.79	160-165	0
30-35	64.34	75-80	21.05	120-125	1.42	165-170	0
35-40	65.00	80-85	15.23	125-130	1.13	170-175	0
40-45	63.25	85-90	10.53	130-135	0.88	175-180	0

Polar Plot (Candela)

