



Photometric Indoor Test Report

Relevant Standards

IES LM-79-2008

ANSI C82.77

Prepared For

LEDnovation

Evan O'Sullivan

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Catalog Number

LEDH-A19-75-1-27D-I

LTL Test Number

26588

Test Date

2011-10-27

Prepared By

Eric Gaudreau, Technician III

Approved By

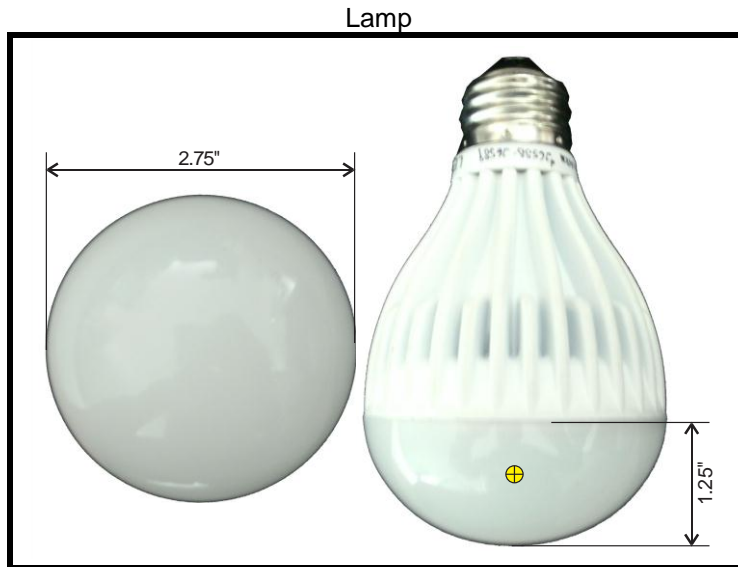
Zachary Mooney, Project Coordinator

The results contained in this report pertain only to the tested sample.

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Lamp Description: Cast aluminum housing, translucent white plastic enclosure
Catalog Number: LEDH-A19-75-1-27D-I
Lamp: One 10 watt A19 LED replacement lamp
Mounting: VBU



Zonal Lumen Summary

Table with 4 columns: Zone (Degrees), Lumens, % of Lamp, % of Luminaire. Rows include zones from 0-30 to 0-180 degrees.

Test Conditions

Test Temperature: 24.5 °C
Voltage: 120.0 VAC
Current: 0.06958 A
Power: 7.849 W
Power Factor: 0.940
Frequency: 60 Hz

Summary of Results

Total Lumen Output: 814.1 Lumens
Luminaire Efficacy: 104 Lumens/Watt
CIE Type: Semi-Direct
Spacing Criterion: 1.32 All Directions

Data was acquired using the calibrated photodetector method of absolute photometry. A spectral mismatch correction factor was employed based on the spectral responsivity of the photodetector and the spectral power distribution of the test subject.



Candela Tabulation
Horizontal Angle (Degrees)

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5
0	183.7	183.7	183.7	183.7	183.7	183.7	183.7	183.7	183.7	183.7	183.7	183.7	183.7	183.7	183.7	183.7
5	183.2	183.2	183.2	183.2	183.2	183.2	183.2	183.2	183.2	183.2	183.2	183.2	183.2	183.2	183.2	183.2
10	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8	181.8
15	178.9	178.9	178.9	178.9	178.9	178.9	178.9	178.9	178.9	178.9	178.9	178.9	178.9	178.9	178.9	178.9
20	175.3	175.3	175.3	175.3	175.3	175.3	175.3	175.3	175.3	175.3	175.3	175.3	175.3	175.3	175.3	175.3
25	170.2	170.2	170.2	170.2	170.2	170.2	170.2	170.2	170.2	170.2	170.2	170.2	170.2	170.2	170.2	170.2
30	163.6	163.6	163.6	163.6	163.6	163.6	163.6	163.6	163.6	163.6	163.6	163.6	163.6	163.6	163.6	163.6
35	156.4	156.4	156.4	156.4	156.4	156.4	156.4	156.4	156.4	156.4	156.4	156.4	156.4	156.4	156.4	156.4
40	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0	148.0
45	139.1	139.1	139.1	139.1	139.1	139.1	139.1	139.1	139.1	139.1	139.1	139.1	139.1	139.1	139.1	139.1
50	129.9	129.9	129.9	129.9	129.9	129.9	129.9	129.9	129.9	129.9	129.9	129.9	129.9	129.9	129.9	129.9
55	119.7	119.7	119.7	119.7	119.7	119.7	119.7	119.7	119.7	119.7	119.7	119.7	119.7	119.7	119.7	119.7
60	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0	109.0
65	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.3	98.3
70	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2	88.2
75	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2	77.2
80	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3	67.3
85	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9	57.9
90	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3	49.3
95	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8	41.8
100	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9	34.9
105	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7	28.7
110	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6	23.6
115	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0	19.0
120	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1	15.1
125	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7	11.7
130	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7	8.7
135	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6	6.6
140	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4	4.4
145	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5
150	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Zonal Lumen Tabulation (5 degree zones)

Zone (Degrees)	Lumens	Zone (Degrees)	Lumens	Zone (Degrees)	Lumens	Zone (Degrees)	Lumens
0-5	4.39	45-50	54.22	90-95	24.91	135-140	2.07
5-10	13.07	50-55	54.28	95-100	20.78	140-145	1.31
10-15	21.39	55-60	52.84	100-105	16.97	145-150	0.21
15-20	29.17	60-65	50.37	105-110	13.66	150-155	0
20-25	36.26	65-70	47.17	110-115	10.63	155-160	0
25-30	42.29	70-75	43.24	115-120	8.23	160-165	0
30-35	47.06	75-80	38.58	120-125	6.09	165-170	0
35-40	50.83	80-85	33.98	125-130	4.48	170-175	0
40-45	53.23	85-90	29.34	130-135	3.06	175-180	0



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	979.1	979.1	979.1	979.1	942.4	942.4	942.4	942.4	907.4	907.4	907.4	907.4
1	870.4	815.4	766.5	722.6	833.5	784.0	739.6	699.7	798.5	754.0	713.9	677.5
2	783.3	696.3	625.1	565.8	748.1	669.6	604.6	549.9	714.8	644.0	584.8	534.5
3	709.3	603.0	522.0	458.1	676.4	580.2	505.8	446.4	645.4	558.4	490.1	435.0
4	646.1	528.8	444.3	380.6	615.9	509.3	431.2	371.6	587.4	490.6	418.5	362.8
5	591.7	468.5	384.1	322.6	564.1	451.8	373.4	315.4	538.1	435.7	362.9	308.4
6	544.3	418.9	336.4	277.9	519.3	404.4	327.4	272.1	495.6	390.5	318.6	266.4
7	502.9	377.5	297.8	242.7	480.2	364.9	290.2	237.9	458.8	352.8	282.8	233.1
8	466.7	342.6	266.1	214.3	446.1	331.6	259.7	210.2	426.6	321.0	253.3	206.2
9	434.7	312.9	239.8	191.1	416.0	303.3	234.2	187.6	398.3	293.9	228.7	184.1
10	406.4	287.4	217.6	171.8	389.4	278.9	212.8	168.8	373.2	270.6	208.0	165.8

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	842.1	842.1	842.1	842.1	782.4	782.4	782.4	727.5	727.5	727.5	701.7
1	733.6	697.8	665.2	635.2	646.2	619.9	595.6	598.6	577.8	558.3	532.2
2	653.3	595.9	547.0	504.7	551.6	511.5	476.3	510.7	478.1	449.1	423.9
3	588.3	517.2	459.9	412.7	479.2	431.4	391.2	443.8	404.3	370.5	346.4
4	535.0	455.2	394.0	345.5	422.4	370.6	328.6	391.9	348.3	312.2	289.5
5	490.4	405.2	342.6	294.6	376.8	323.2	281.0	350.4	304.6	267.8	246.5
6	452.3	364.1	301.6	255.0	339.4	285.2	243.9	316.3	269.5	233.0	213.0
7	419.4	329.7	268.3	223.6	308.1	254.4	214.3	287.9	240.9	205.1	186.4
8	390.8	300.8	240.9	198.2	281.7	228.9	190.2	263.9	217.3	182.4	164.9
9	365.6	276.0	218.0	177.3	259.2	207.5	170.5	243.3	197.4	163.8	147.3
10	343.4	254.7	198.6	159.8	239.8	189.5	154.0	225.6	180.6	148.2	132.7

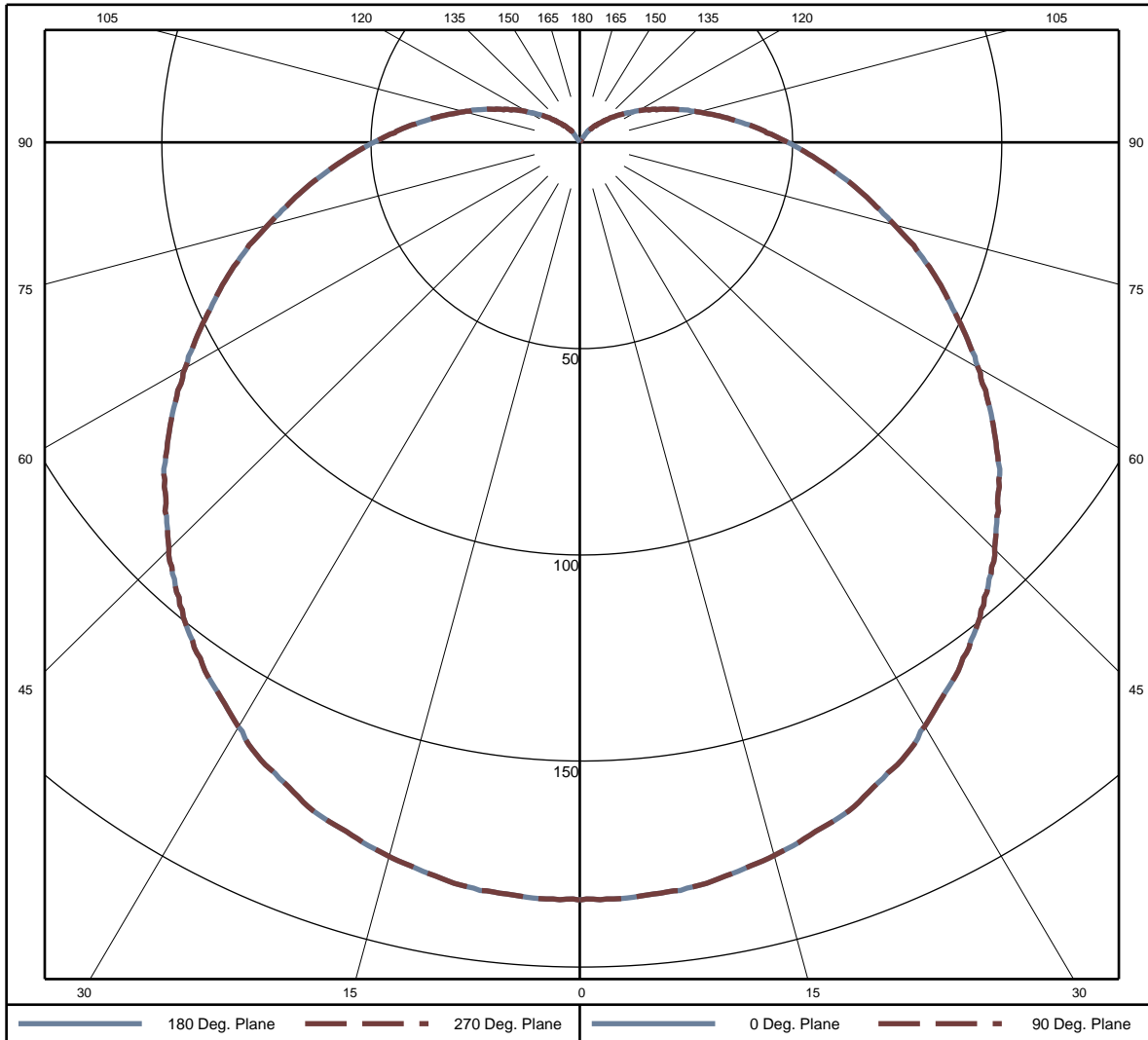
Average Luminance Table (cd/m²)

		Horizontal Angle (Degrees)		
		0	45	90
Vertical Angle (Degree)	0	47970	47970	47970
	45	32530	32530	32530
	55	29830	29830	29830
	65	27090	27090	27090
	75	24650	24650	24650
	85	22770	22770	22770

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.



Polar Plot (Candela)





Integrating Sphere Test Report

Relevant Standards

IES LM-79-2008

ANSI C78.377-2008, ANSI C82.77

CIE 13.3-1995, CIE 15-2004

Prepared For

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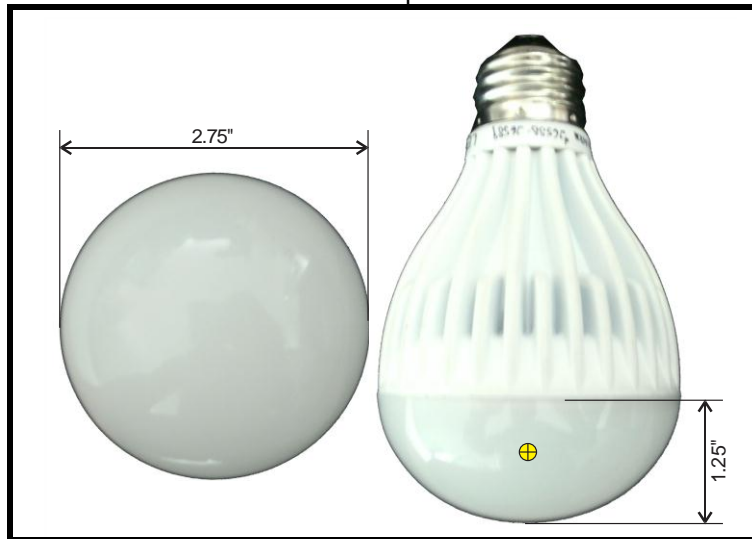
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Lamp Description: Cast aluminum housing, translucent white plastic enclosure
Catalog Number: LEDH-A19-75-1-27D-I
Lamp: One 10 watt A19 LED replacement lamp
Mounting: VBU

Lamp



Summary of Results

Radiant Flux: 2396 mW
Luminous Flux: 802.4 Lumens
Lamp Efficacy: 102 Lumens/Watt
CCT: 2648 K
CRI (Ra): 93.2
Chromaticity (x): 0.4632
Chromaticity (y): 0.4101
Chromaticity (u): 0.2649
Chromaticity (v): 0.3518
Duv: -0.0005

Test Conditions

Test Temperature: 24.0 °C
Voltage: 120.0 VAC
Current: 0.06973 A
Power: 7.865 W
Power Factor: 0.940
Frequency: 60 Hz
Current THD: 33.7 %

Testing was performed in a Labsphere SLMS7650 two meter integrating sphere using the 4π geometry method, a Labsphere CDS 1100 spectrometer, and LightMtrX software.
Absorption correction was employed for this measurement.

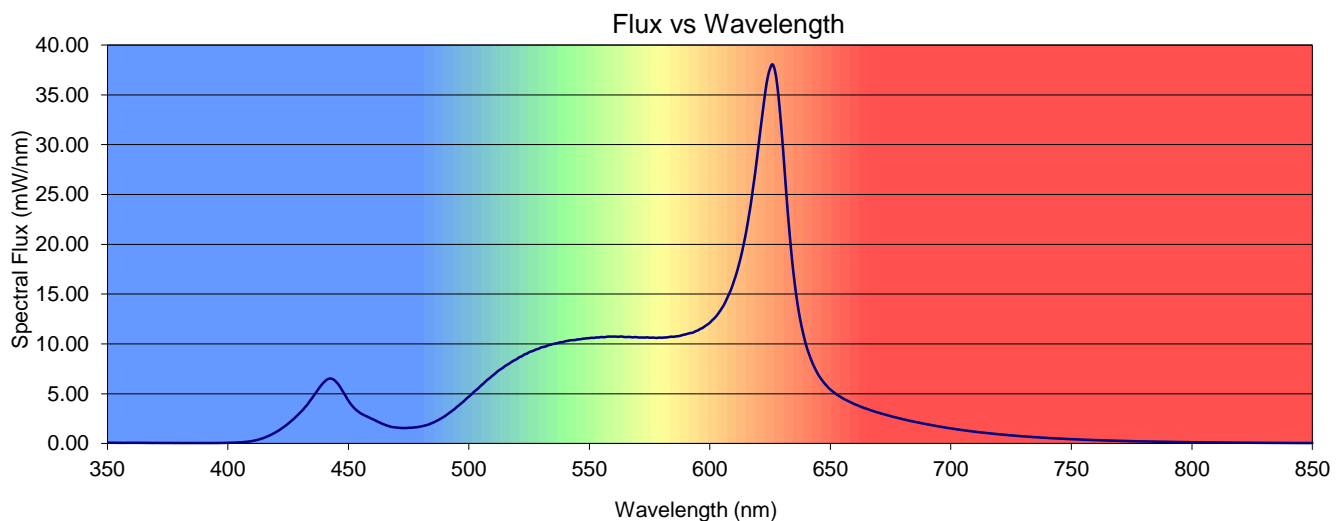
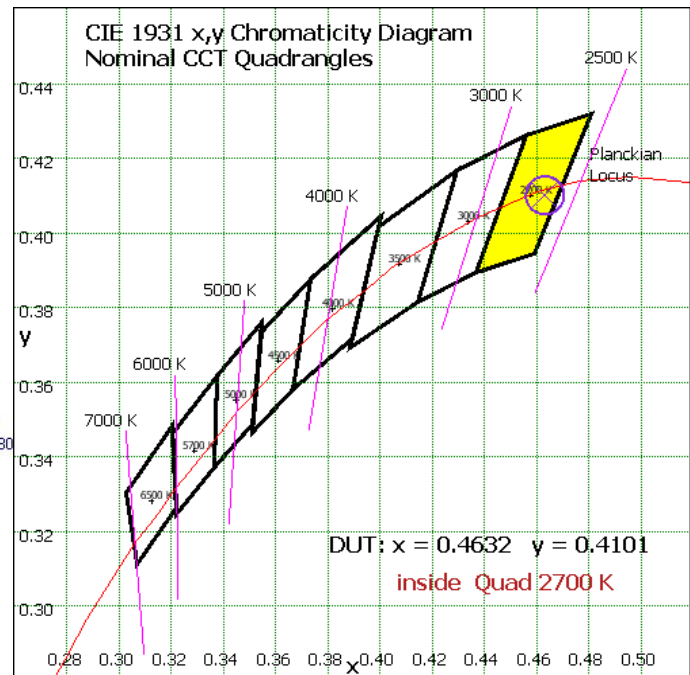
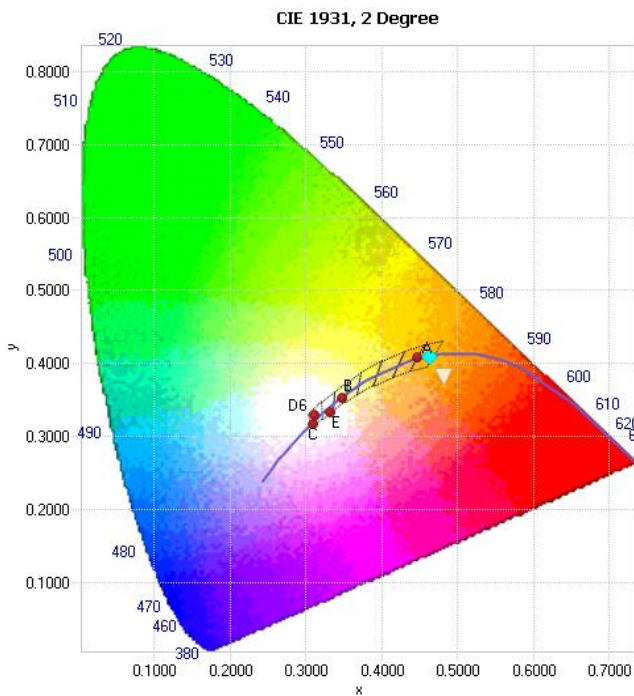


Chromaticity Coordinates

x	y	u	v	u'	v'	Duv
0.4632	0.4101	0.2649	0.3518	0.2649	0.5277	-0.0005

Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
93.2	94.6	97.8	87.3	87.4	95.4	96.9	93.8	92.3	76.8	89.6	84.3	88.8	96.5	89.9





Spectral Power Distribution

Table with 16 columns (λ(nm), mW/nm) and 40 rows of spectral data points.