



## Photometric Indoor Test Report

Relevant Standards

IES LM-79-2008

ANSI C82.77

Prepared For

LEDnovation

Bob Pantalone

13053 W. Linebaugh Avenue

Tampa, FL 33626-4451

Catalog Number

LEDH-A19-100-1-27D-I

LTL Test Number

26935

Test Date

2011-11-21

Prepared By

Kyle Spaziani, Technician III

Approved By

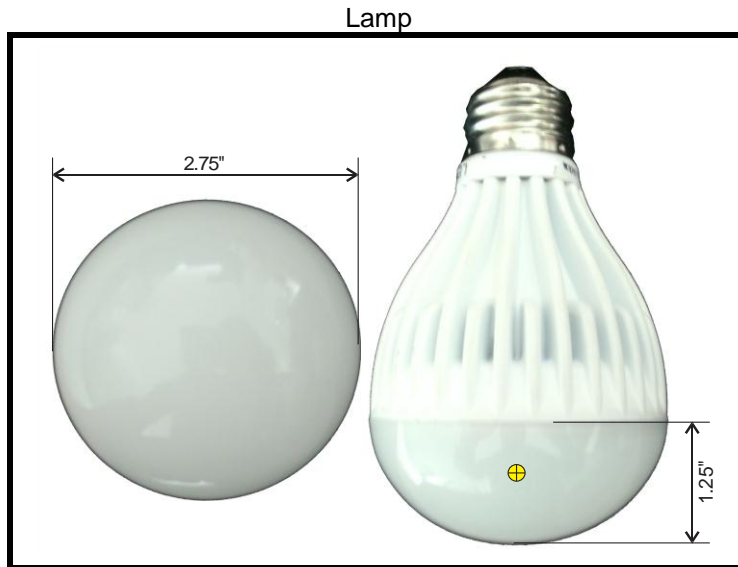
Zachary Mooney, Project Coordinator III

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-A19-100-1-27D-I
Lamp: One 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.

Test Conditions

Test Temperature: 24.4 °C
Voltage: 120.0 VAC
Current: 0.08945 A
Power: 10.10 W
Power Factor: 0.940
Frequency: 60 Hz
Current THD: 31.9 %

Summary of Results

Total Lumen Output: 1013 Lumens
Luminaire Efficacy: 100 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	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6	229.6
5	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3	229.3
10	227.8	227.8	227.8	227.8	227.8	227.8	227.8	227.8	227.8	227.8	227.8	227.8	227.8	227.8	227.8	227.8
15	224.3	224.3	224.3	224.3	224.3	224.3	224.3	224.3	224.3	224.3	224.3	224.3	224.3	224.3	224.3	224.3
20	219.2	219.2	219.2	219.2	219.2	219.2	219.2	219.2	219.2	219.2	219.2	219.2	219.2	219.2	219.2	219.2
25	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7	212.7
30	204.2	204.2	204.2	204.2	204.2	204.2	204.2	204.2	204.2	204.2	204.2	204.2	204.2	204.2	204.2	204.2
35	194.7	194.7	194.7	194.7	194.7	194.7	194.7	194.7	194.7	194.7	194.7	194.7	194.7	194.7	194.7	194.7
40	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2	184.2
45	172.9	172.9	172.9	172.9	172.9	172.9	172.9	172.9	172.9	172.9	172.9	172.9	172.9	172.9	172.9	172.9
50	161.0	161.0	161.0	161.0	161.0	161.0	161.0	161.0	161.0	161.0	161.0	161.0	161.0	161.0	161.0	161.0
55	148.2	148.2	148.2	148.2	148.2	148.2	148.2	148.2	148.2	148.2	148.2	148.2	148.2	148.2	148.2	148.2
60	134.9	134.9	134.9	134.9	134.9	134.9	134.9	134.9	134.9	134.9	134.9	134.9	134.9	134.9	134.9	134.9
65	121.6	121.6	121.6	121.6	121.6	121.6	121.6	121.6	121.6	121.6	121.6	121.6	121.6	121.6	121.6	121.6
70	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1	109.1
75	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4	95.4
80	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1	83.1
85	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7	71.7
90	60.9	60.9	60.9	60.9	60.9	60.9	60.9	60.9	60.9	60.9	60.9	60.9	60.9	60.9	60.9	60.9
95	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6	51.6
100	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0	43.0
105	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6	35.6
110	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1	29.1
115	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4	23.4
120	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6	18.6
125	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4	14.4
130	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9	10.9
135	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2	8.2
140	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9	5.9
145	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1	4.1
150	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
155	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6	1.6
160	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
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	5.49	45-50	67.37	90-95	30.80	135-140	2.61
5-10	16.36	50-55	67.31	95-100	25.68	140-145	1.67
10-15	26.78	55-60	65.42	100-105	20.98	145-150	1.02
15-20	36.52	60-65	62.33	105-110	16.87	150-155	0.54
20-25	45.33	65-70	58.38	110-115	13.25	155-160	0.28
25-30	52.87	70-75	53.43	115-120	10.19	160-165	0.10
30-35	58.66	75-80	47.71	120-125	7.65	165-170	0
35-40	63.26	80-85	42.03	125-130	5.50	170-175	0
40-45	66.21	85-90	36.26	130-135	3.87	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	1218	1218	1218	1218	1172	1172	1172	1172	1128	1128	1128	1128
1	1083	1015	954	900	1037	976	921	871	993	938	888	843
2	975	867	778	705	931	834	753	685	889	802	728	666
3	883	751	650	571	842	723	630	556	803	695	610	542
4	804	659	554	475	767	634	537	463	731	611	521	452
5	737	584	479	402	702	563	465	393	670	543	452	385
6	678	522	419	347	647	504	408	340	617	487	397	332
7	626	470	371	303	598	455	362	297	571	440	353	291
8	581	427	332	268	555	413	324	262	531	400	316	257
9	541	390	299	239	518	378	292	234	496	366	285	230
10	506	358	272	215	485	348	265	211	465	337	259	207

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	1047	1047	1047	1047	972	972	972	904	904	904	872
1	912	868	828	790	804	771	741	744	718	694	662
2	813	742	681	628	686	637	593	635	595	559	528
3	732	644	573	514	596	537	487	552	503	461	431
4	666	567	491	431	526	462	410	488	434	389	361
5	610	505	427	367	469	403	350	436	379	334	307
6	563	454	376	318	423	356	304	394	336	291	266
7	522	411	335	279	384	317	267	359	300	256	233
8	487	375	300	247	351	285	237	329	271	228	206
9	455	344	272	221	323	259	213	303	246	204	184
10	428	317	248	200	299	236	192	281	225	185	166

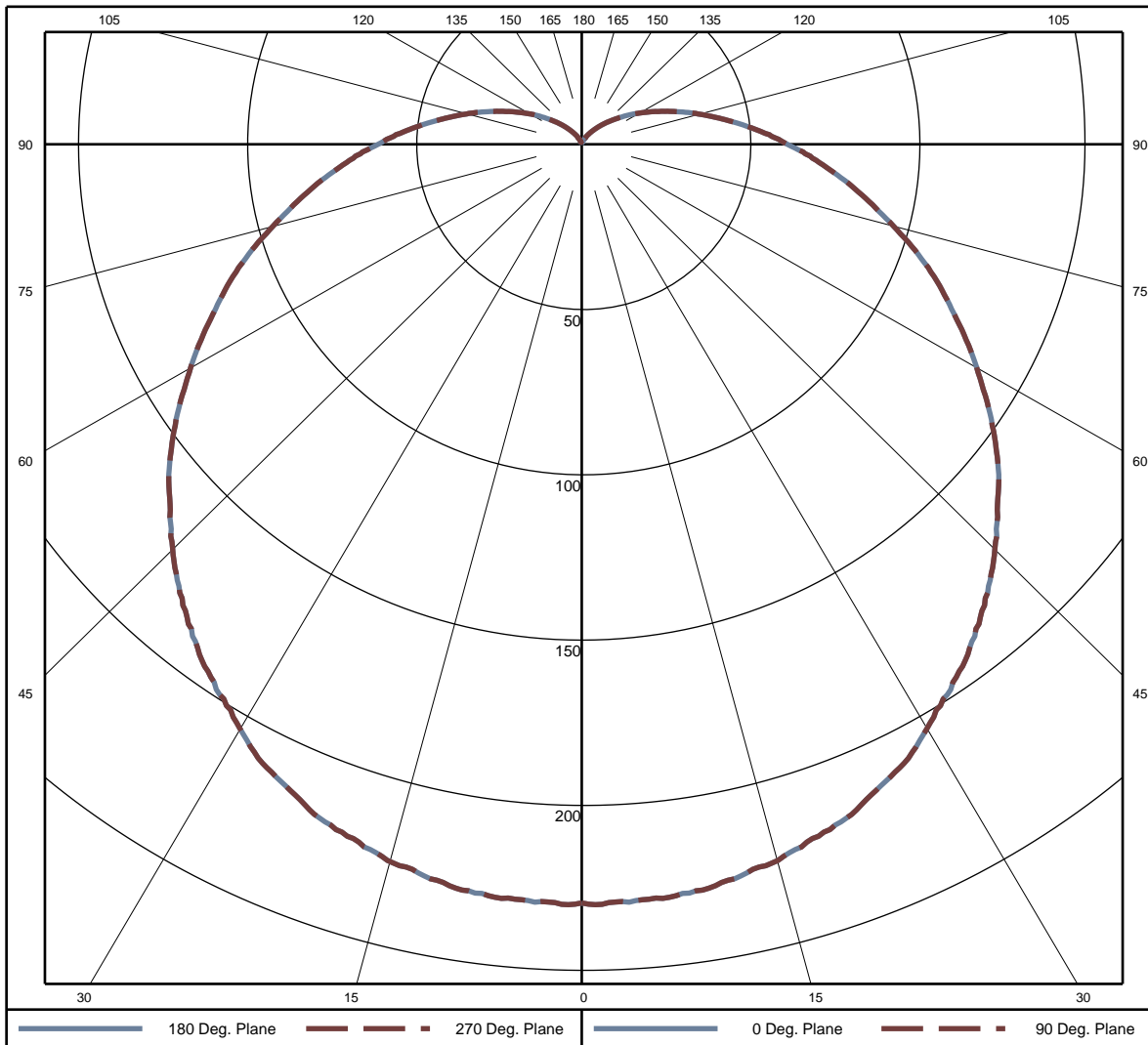
Average Luminance Table (cd/m<sup>2</sup>)

		Horizontal Angle (Degrees)		
		0	45	90
Vertical Angle (Degree)	0	59930	59930	59930
	45	40420	40420	40420
	55	36940	36940	36940
	65	33510	33510	33510
	75	30460	30460	30460
	85	28190	28190	28190

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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Catalog Number  
LEDH-A19-100-1-27D-I

LTL Test Number  
26936

Test Date  
2011-11-17

Prepared By

Kyle Spaziani, Technician III

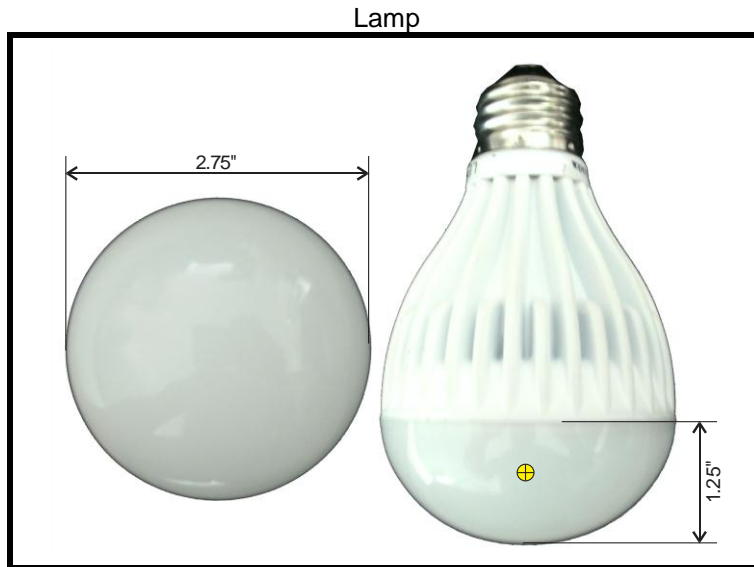
Approved By

Zachary Mooney, Project Coordinator III

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Lamp Description: Cast aluminum housing, translucent white plastic enclosure  
Catalog Number: LEDH-A19-100-1-27D-I  
Lamp: One A19 LED replacement lamp  
Mounting: VBU



#### Summary of Results

Radiant Flux:	2997 mW
Luminous Flux:	997.9 Lumens
Lamp Efficacy:	98.7 Lumens/Watt
CCT:	2702 K
CRI (Ra):	93.8
Chromaticity (x):	0.4593
Chromaticity (y):	0.4100
Chromaticity (u):	0.2624
Chromaticity (v):	0.3514
Duv:	-0.0005

#### Test Conditions

Test Temperature:	24.5 °C
Voltage:	120.0 VAC
Current:	0.08961 A
Power:	10.11 W
Power Factor:	0.940
Frequency:	60 Hz
Current THD:	32.1 %

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

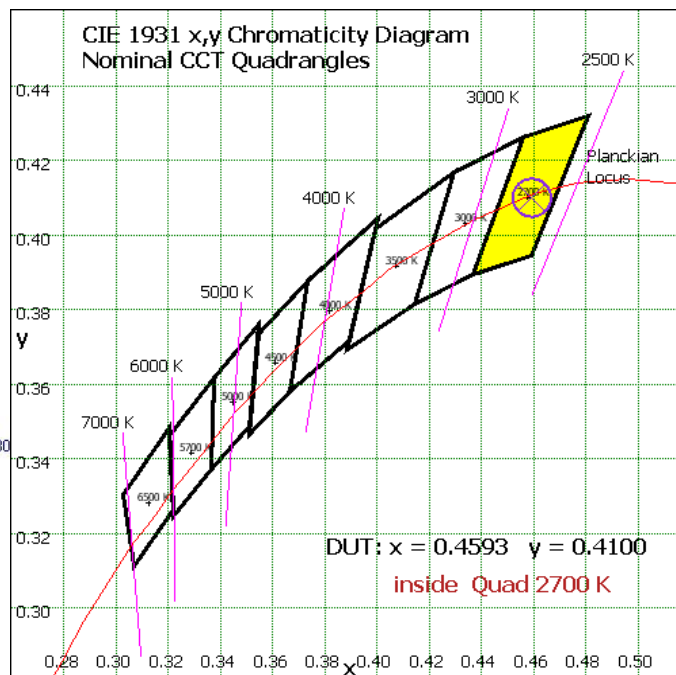
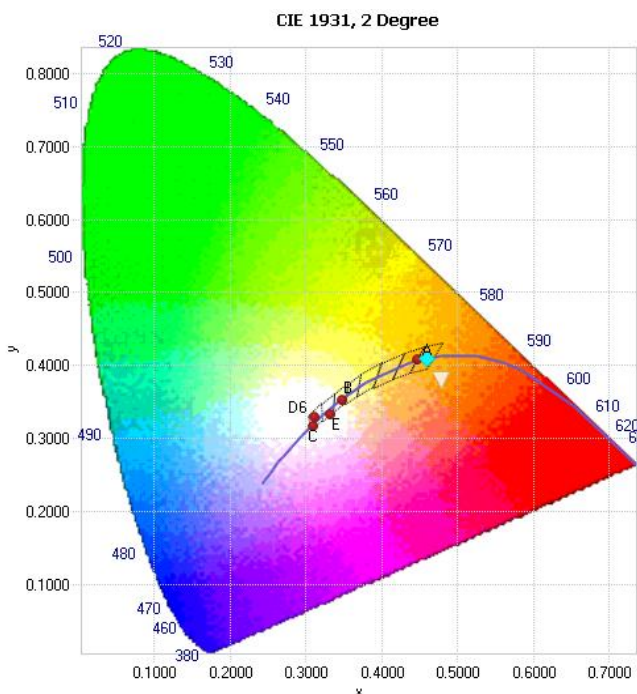


Chromaticity Coordinates

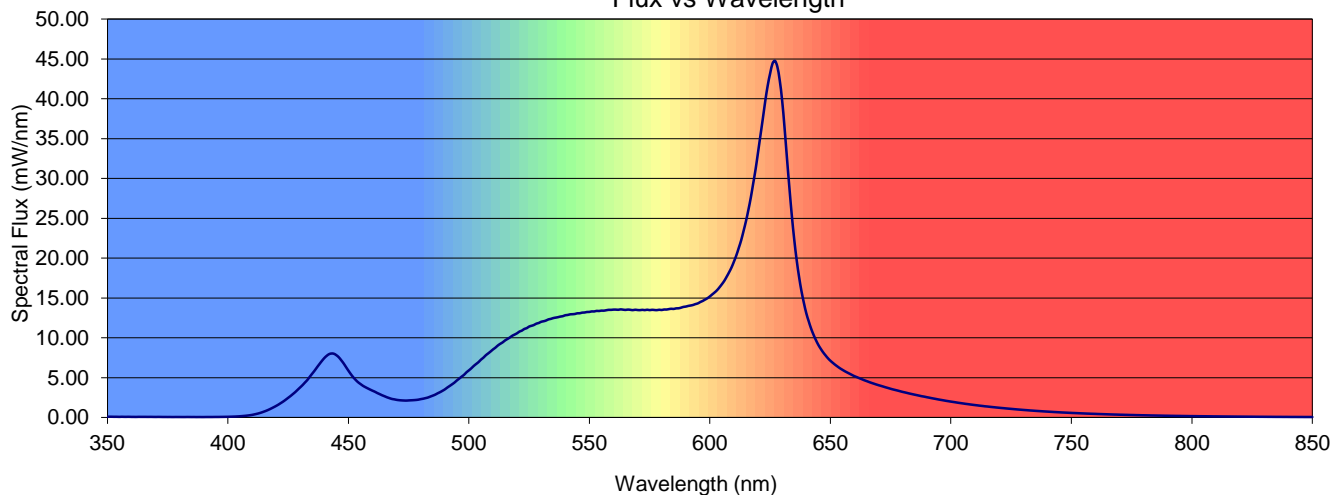
x	y	u	v	u'	v'	Duv
0.4593	0.4100	0.2624	0.3514	0.2624	0.5270	-0.0005

Color Rendering Index Detail

Ra (CRI)	R1	R2	R3	R4	R5	R6	R7	R8	R9	R10	R11	R12	R13	R14
93.8	96.1	97.1	87.2	88.8	96.3	97.9	93.9	92.9	78.5	88.2	86.4	87.8	97.9	90.1



Flux vs Wavelength





Spectral Power Distribution

Table with 16 columns (λ(nm), mW/nm) and 48 rows of spectral data points.