



LTL Number: 17166

Date: 11-23-2009

Prepared For: LEDnovation

Catalog Number: LED A19-25-1W-I

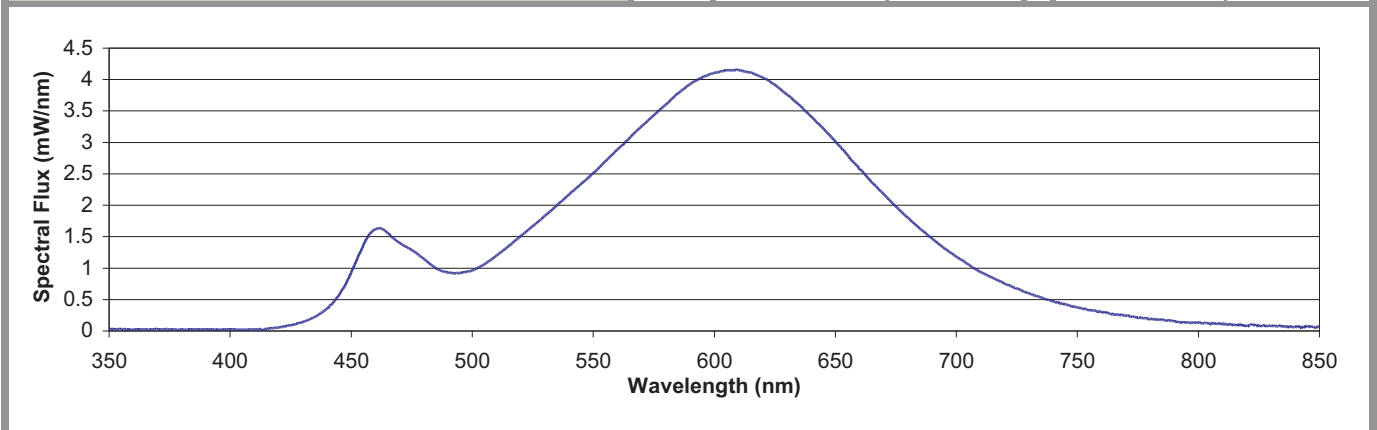
Lamp: One VBU 25 Watt A19 LED Replacement Lamp

Lamp Catalog Number: LED A19-25-1W-I

LED Power Supply: Internal

Lamp Efficacy: 63.7 Lumens/Watt

Lamp Input Voltage	Lamp Current	Lamp Watts	Power Factor	Wavelength in nm	Spectral Flux in mW/nm	Wavelength in nm	Spectral Flux in mW/nm
120.0VAC	0.0289A	3.135W	0.905	350	0.0252	610	4.1466
<b>Radiant Flux mW</b>	<b>Luminous Flux lumen</b>	<b>Corr.Color Temperature K</b>	<b>Color Rend. Index Ra</b>	360	0.0248	620	4.0339
668.0552	199.736	2724	81.4	370	0.0265	630	3.7629
<b>Chroma x</b>	<b>Chroma y</b>	<b>Chroma u</b>	<b>Chroma v</b>	380	0.0239	640	3.4133
0.459	0.4122	0.2612	0.3519	390	0.0213	650	3.0157
<p>Chromaticity Diagram CIE 1931, 2 degree</p>				400	0.0241	660	2.5832
				410	0.0250	670	2.1776
				420	0.0530	680	1.8023
				430	0.1423	690	1.4705
				440	0.3564	700	1.1801
				450	0.9295	710	0.9363
				460	1.6192	720	0.7507
				470	1.4011	730	0.5982
				480	1.1480	740	0.4693
				490	0.9277	750	0.3738
				500	0.9640	760	0.3032
				510	1.1999	770	0.2373
				520	1.5093	780	0.1939
				530	1.8325	790	0.1551
				540	2.1719	800	0.1393
550	2.5100	810	0.1169				
560	2.8895	820	0.0852				
570	3.2586	830	0.0820				
580	3.6018	840	0.0735				
590	3.9275	850	0.0691				
600	4.1069						





# LUMINAIRE TESTING LABORATORY, INC.

SUSTAINING  
MEMBER  
of the  
IESNA

905 Harrison Street · Allentown, PA 18103 · 610-770-1044 · Fax 610-770-8912 · www.LuminaireTesting.com

LTL NUMBER: 17163

DATE: 12-01-2009

PREPARED FOR: LEDNOVATION

CATALOG NUMBER: LED A19-25-1W-I

LUMINAIRE: CAST ALUMINUM HOUSING, TRANSLUCENT WHITE PLASTIC ENCLOSURE.

LAMP: ONE VBU 25 WATT A19 LED REPLACEMENT LAMP

LAMP CATALOG NUMBER: LEDNOVATION LED A19-25-1W-I

LED POWER SUPPLY: INTERNAL

ELECTRICAL VALUES: 120.0VAC, 0.0290A, 3.148W, PF=0.904

NOTE: THIS TEST WAS PERFORMED USING THE CALIBRATED

PHOTODETECTOR METHOD OF ABSOLUTE PHOTOMETRY.\*

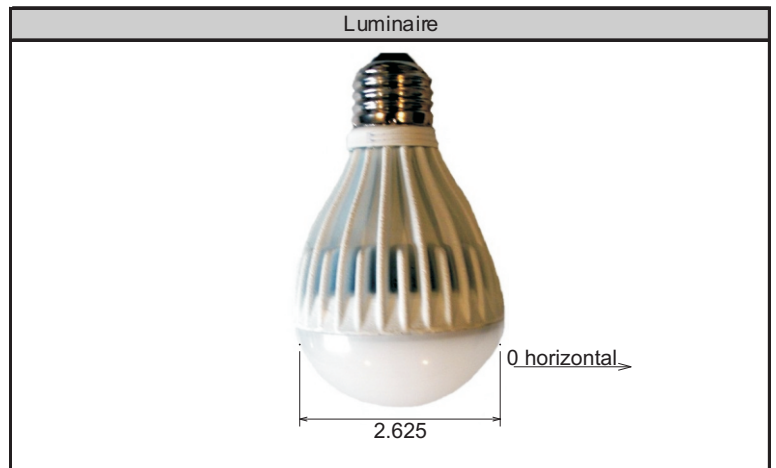
### Candela Distribution

	0	22.5	45	67.5	90	112.5	135	157.5	180	202.5	225	247.5	270	292.5	315	337.5	Flux
0	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	
5	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	3.7
15	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	10.6
25	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	16.5
35	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	20.9
45	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	23.4
55	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	24.0
65	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	22.9
75	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	20.3
85	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	16.9
90	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	
95	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	13.2
105	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.5
115	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
125	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	3.7
135	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	1.8
145	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	0.7
155	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.1
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	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	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	0.0

### Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	30.8	N/A	15.8%
0-40	51.7	N/A	26.6%
0-60	99.1	N/A	50.9%
0-90	159.2	N/A	81.8%
90-180	35.4	N/A	18.2%
0-180	194.7	N/A	100.0%

Total lumen Output: 194.7 Lumens  
 Luminaire efficacy: 61.8 Lumens per Watt  
 CIE Type: Semi-Direct  
 Spacing Criterion: 1.33



Approved By: MG

\*DATA WAS ACQUIRED USING THE CALIBRATED PHOTODETECTOR METHOD OF ABSOLUTE PHOTOMETRY. A UDT MODEL #211 PHOTODETECTOR AND UDT MODEL #S370 OPTOMETER COMBINATION WERE USED AS A STANDARD. A SPECTRAL MISMATCH CORRECTION FACTOR WAS EMPLOYED BASED ON THE SPECTRAL RESPONSIVITY OF THE PHOTODETECTOR AND THE SPECTRAL POWER DISTRIBUTION OF THE TEST SUBJECT.

## TESTING WAS PERFORMED IN ACCORDANCE WITH IES LM-79-08.

TEST ANGULAR INCREMENTS AND REPORT FORMATTING WAS BASED ON IES LM-41-98 AND LM-46-04.



Candela Tabulation (5 degree Vertical Increments)

	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	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8	38.8
5	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6	38.6
10	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2	38.2
15	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6	37.6
20	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8	36.8
25	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8	35.8
30	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6	34.6
35	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3	33.3
40	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8	31.8
45	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3	30.3
50	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6	28.6
55	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8	26.8
60	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0	25.0
65	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1	23.1
70	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2	21.2
75	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2	19.2
80	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3	17.3
85	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5	15.5
90	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7	13.7
95	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1	12.1
100	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5	10.5
105	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0
110	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6	7.6
115	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3
120	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2	5.2
125	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
130	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
135	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
140	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
145	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
150	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6
155	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
160	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	0.1
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	Lumens	Zone	Lumens	Zone	Lumens	Zone	Lumens
0-5	0.9	45-50	11.9	90-95	7.1	135-140	0.7
5-10	2.8	50-55	12.0	95-100	6.1	140-145	0.4
10-15	4.5	55-60	12.0	100-105	5.2	145-150	0.2
15-20	6.1	60-65	11.7	105-110	4.3	150-155	0.1
20-25	7.6	65-70	11.2	110-115	3.5	155-160	0.0
25-30	8.9	70-75	10.6	115-120	2.8	160-165	0.0
30-35	10.0	75-80	9.8	120-125	2.1	165-170	0.0
35-40	10.9	80-85	8.9	125-130	1.6	170-175	0.0
40-45	11.5	85-90	8.0	130-135	1.1	175-180	0.0



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	233.1	233.1	233.1	233.1	223.3	223.3	223.3	223.3	214	214	214	214
1	206.1	192.5	180.4	169.6	196.3	184.1	173.2	163.3	187	176.1	166.2	157.3
2	185.1	163.8	146.4	131.9	175.8	156.6	140.8	127.4	167	149.8	135.4	123.1
3	167.4	141.5	121.8	106.3	158.7	135.4	117.3	102.9	150.5	129.5	113	99.69
4	152.3	123.9	103.4	87.95	144.3	118.6	99.75	85.35	136.8	113.5	96.21	82.8
5	139.3	109.6	89.17	74.29	132.1	105	86.16	72.21	125.2	100.7	83.21	70.15
6	128.1	97.84	77.92	63.82	121.5	93.91	75.4	62.11	115.3	90.13	72.92	60.41
7	118.3	88.07	68.87	55.59	112.3	84.64	66.72	54.15	106.7	81.33	64.6	52.73
8	109.7	79.84	61.44	48.96	104.3	76.83	59.59	47.74	99.12	73.93	57.77	46.53
9	102.1	72.85	55.27	43.56	97.18	70.19	53.67	42.51	92.5	67.62	52.09	41.46
10	95.43	66.85	50.08	39.06	90.92	64.49	48.68	38.15	86.65	62.21	47.3	37.25

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	196.6	196.6	196.6	196.6	180.7	180.7	180.7	166.1	166.1	166.1	159.2
1	169.8	161.1	153.1	145.7	147.3	140.9	134.9	134.5	129.5	124.8	117.9
2	150.7	136.9	125	114.8	125	115.4	106.9	114	106.2	99.33	92.79
3	135.5	118.4	104.7	93.36	108.2	96.8	87.25	98.66	89.34	81.35	75.2
4	123	104	89.38	77.8	95.14	82.87	72.94	86.89	76.67	68.21	62.47
5	112.7	92.43	77.53	66.1	84.74	72.08	62.14	77.56	66.86	58.28	52.93
6	103.9	82.94	68.11	57.06	76.23	63.5	53.77	69.94	59.06	50.55	45.57
7	96.26	75.04	60.5	49.91	69.15	56.54	47.13	63.61	52.72	44.4	39.77
8	89.66	68.39	54.23	44.13	63.18	50.8	41.76	58.28	47.49	39.42	35.11
9	83.88	62.72	49	39.39	58.09	46.02	37.35	53.73	43.12	35.33	31.31
10	78.77	57.84	44.59	35.45	53.72	41.97	33.68	49.82	39.42	31.92	28.16

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

	0	45	90
0	11112	11112	11112
45	12250	12250	12250
55	13803	13803	13803
65	13007	13007	13007
75	12318	12318	12318
85	11973	11973	11973

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 THESE 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.

