



LTL Number: 17168

Date: 11-23-2009

Prepared For: LEDnovation

Catalog Number: LED A19-60-1W-I

Lamp: One VBU 60 Watt A19 LED Replacement Lamp

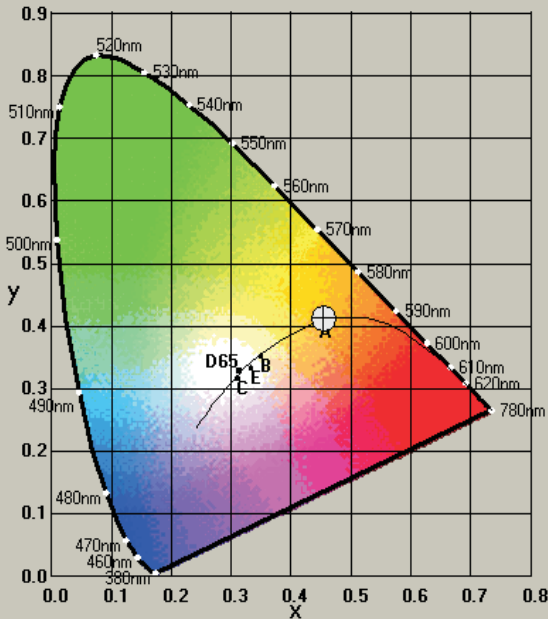
Lamp Catalog Number: LED A19-60-1W-I

LED Power Supply: Internal

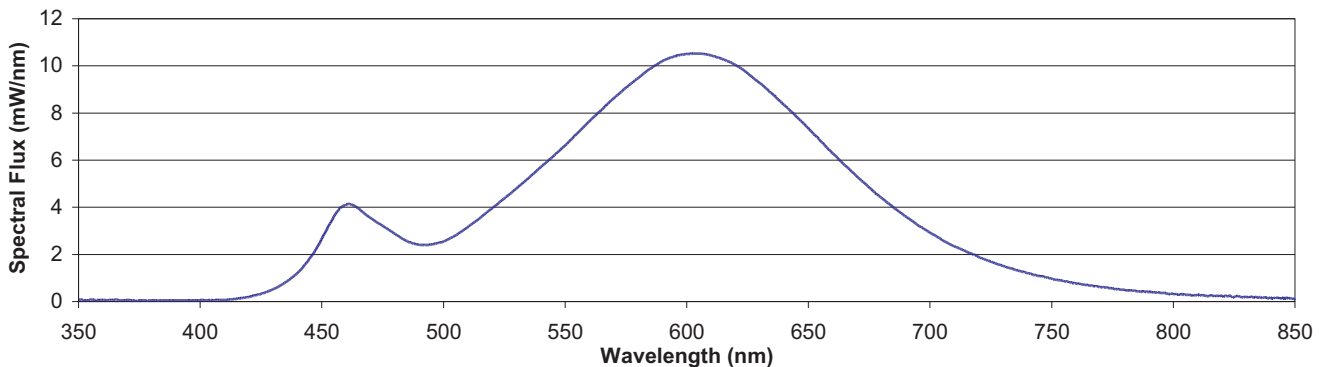
Lamp Efficacy: 52.4 Lumens/Watt

Lamp Input Voltage	Lamp Current	Lamp Watts	Power Factor
120.0VAC	0.0888A	9.890W	0.928
Radiant Flux mW	Luminous Flux lumen	Corr.Color Temperature K	Color Rend. Index Ra
1706.44	518.326	2802	80.4
Chroma x	Chroma y	Chroma u	Chroma v
0.4537	0.4125	0.2577	0.3514

Wavelength in nm	Spectral Flux in mW/nm	Wavelength in nm	Spectral Flux in mW/nm
350	0.0654	610	10.4390
360	0.0553	620	10.0410
370	0.0622	630	9.2730
380	0.0510	640	8.3424
390	0.0479	650	7.3527
400	0.0541	660	6.2887
410	0.0726	670	5.3067
420	0.1904	680	4.4076
430	0.5245	690	3.6116
440	1.2122	700	2.9236
450	2.6654	710	2.3531
460	4.1124	720	1.8806
470	3.5513	730	1.5058
480	2.8745	740	1.2017
490	2.4099	750	0.9724
500	2.5466	760	0.7723
510	3.1621	770	0.6105
520	3.9624	780	0.5080
530	4.8025	790	0.4109
540	5.7092	800	0.3166
550	6.6239	810	0.2950
560	7.6620	820	0.2534
570	8.6311	830	0.2134
580	9.4814	840	0.1333
590	10.2090	850	0.1349
600	10.5040		



Chromaticity Diagram CIE 1931, 2 degree





LUMINAIRE TESTING LABORATORY, INC.

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

LTL NUMBER: 17165

DATE: 12-01-2009

PREPARED FOR: LEDNOVATION

CATALOG NUMBER: LED A19-60-1W-I

LUMINAIRE: CAST ALUMINUM HOUSING, TRANSLUCENT WHITE PLASTIC ENCLOSURE.

LAMP: ONE VBU 60 WATT A19 LED REPLACEMENT LAMP

LAMP CATALOG NUMBER: LEDNOVATION LED A19-60-1W-I

LED POWER SUPPLY: INTERNAL

ELECTRICAL VALUES: 120.0VAC, 0.0889A, 9.895W, PF=0.928

NOTE: THIS TEST WAS PERFORMED USING THE CALIBRATED

PHOTODETECTOR METHOD OF ABSOLUTE PHOTOMETRY.*

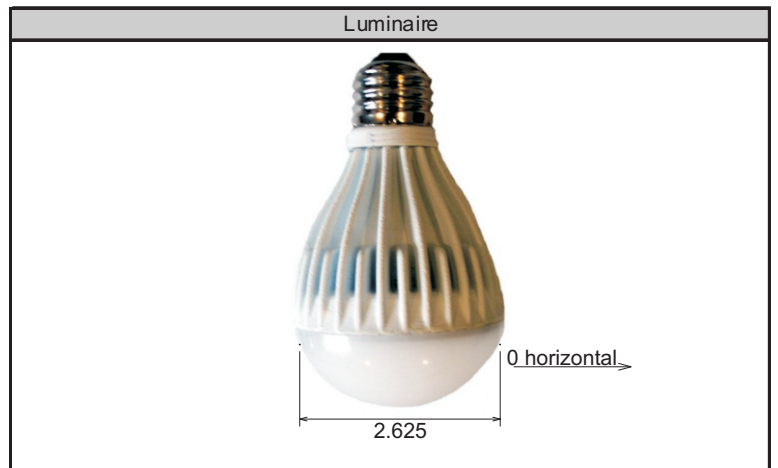
Candela Distribution

	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	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	
5	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	9.7
15	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	28.1
25	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	43.5
35	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	54.8
45	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	61.3
55	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	62.7
65	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	59.6
75	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	52.8
85	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	43.7
90	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	
95	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	33.8
105	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	24.3
115	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
125	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	9.2
135	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	4.5
145	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	2.5	1.6
155	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.3
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	81.4	N/A	16.1%
0-40	136.2	N/A	26.9%
0-60	260.2	N/A	51.4%
0-90	416.2	N/A	82.3%
90-180	89.7	N/A	17.7%
0-180	506.0	N/A	100.0%

Total lumen Output: 506.0 Lumens
 Luminaire efficacy: 51.1 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	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6	102.6
5	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3	102.3
10	101.1	101.1	101.1	101.1	101.1	101.1	101.1	101.1	101.1	101.1	101.1	101.1	101.1	101.1	101.1	101.1
15	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4
20	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1	97.1
25	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3	94.3
30	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1	91.1
35	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5	87.5
40	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5	83.5
45	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3	79.3
50	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8	74.8
55	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0	70.0
60	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1	65.1
65	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1	60.1
70	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0	55.0
75	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9	49.9
80	44.9	44.9	44.9	44.9	44.9	44.9	44.9	44.9	44.9	44.9	44.9	44.9	44.9	44.9	44.9	44.9
85	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1	40.1
90	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4	35.4
95	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0	31.0
100	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
105	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9	22.9
110	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3	19.3
115	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
120	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9	12.9
125	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2	10.2
130	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7	7.7
135	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6	5.6
140	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9
145	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	2.5
150	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	1.4
155	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7	0.7
160	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
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	2.4	45-50	31.1	90-95	18.2	135-140	1.8
5-10	7.3	50-55	31.5	95-100	15.7	140-145	1.1
10-15	11.9	55-60	31.2	100-105	13.3	145-150	0.6
15-20	16.2	60-65	30.4	105-110	11.0	150-155	0.3
20-25	20.1	65-70	29.1	110-115	8.9	155-160	0.1
25-30	23.5	70-75	27.4	115-120	7.0	160-165	0.0
30-35	26.3	75-80	25.4	120-125	5.3	165-170	0.0
35-40	28.5	80-85	23.1	125-130	3.9	170-175	0.0
40-45	30.1	85-90	20.6	130-135	2.7	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	606.1	606.1	606.1	606.1	581	581	581	581	557	557	557	557
1	536.2	500.9	469.5	441.4	511.1	479.4	451	425.4	487.2	458.7	433.1	409.9
2	481.7	426.4	381.2	343.5	457.7	408	366.8	332.2	435	390.3	352.9	321.2
3	435.6	368.5	317.3	277	413.3	352.7	305.8	268.5	392.2	337.6	294.7	260.2
4	396.4	322.6	269.4	229.3	375.9	309.1	260.1	222.7	356.6	296.1	251	216.2
5	362.7	285.4	232.4	193.8	344	273.8	224.7	188.5	326.4	262.6	217.2	183.2
6	333.5	254.9	203.2	166.6	316.5	244.8	196.7	162.2	300.5	235.1	190.4	157.9
7	308	229.5	179.6	145.1	292.6	220.7	174.1	141.5	278	212.2	168.7	137.8
8	285.6	208.1	160.3	127.9	271.6	200.4	155.5	124.8	258.4	192.9	150.9	121.7
9	265.9	189.9	144.2	113.8	253.2	183.1	140.1	111.1	241.2	176.5	136.1	108.5
10	248.5	174.3	130.7	102.1	236.9	168.2	127.1	99.77	225.9	162.4	123.6	97.47

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	512.3	512.3	512.3	512.3	471.4	471.4	471.4	433.9	433.9	433.9	416.2
1	442.8	420.1	399.4	380.3	384.6	368	352.6	351.9	338.8	326.5	308.9
2	393.2	357.2	326.5	299.9	326.6	301.6	279.6	298.4	278.2	260.2	243.4
3	353.5	309.1	273.4	244	282.8	253.2	228.4	258.4	234.1	213.3	197.4
4	321.1	271.6	233.5	203.4	248.8	216.9	191	227.6	201	179	164.1
5	294.1	241.4	202.6	172.9	221.7	188.7	162.8	203.2	175.4	153	139.1
6	271.1	216.7	178.1	149.3	199.4	166.3	141	183.3	154.9	132.7	119.9
7	251.3	196.1	158.2	130.7	180.9	148.1	123.6	166.7	138.3	116.6	104.7
8	234.1	178.7	141.9	115.6	165.4	133.1	109.5	152.8	124.6	103.6	92.44
9	219	163.9	128.2	103.2	152.1	120.6	98.01	140.9	113.2	92.87	82.45
10	205.7	151.2	116.7	92.91	140.6	110	88.4	130.6	103.5	83.93	74.18

Average Luminance Table (cd/m²)

	0	45	90
0	29401	29401	29401
45	32082	32082	32082
55	36062	36062	36062
65	33876	33876	33876
75	31974	31974	31974
85	30889	30889	30889

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.

