

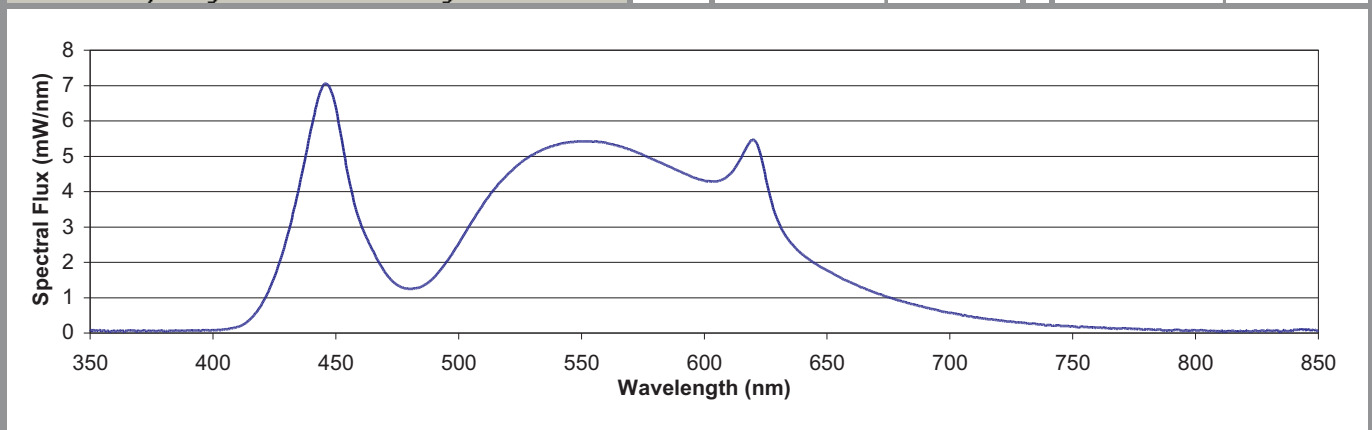
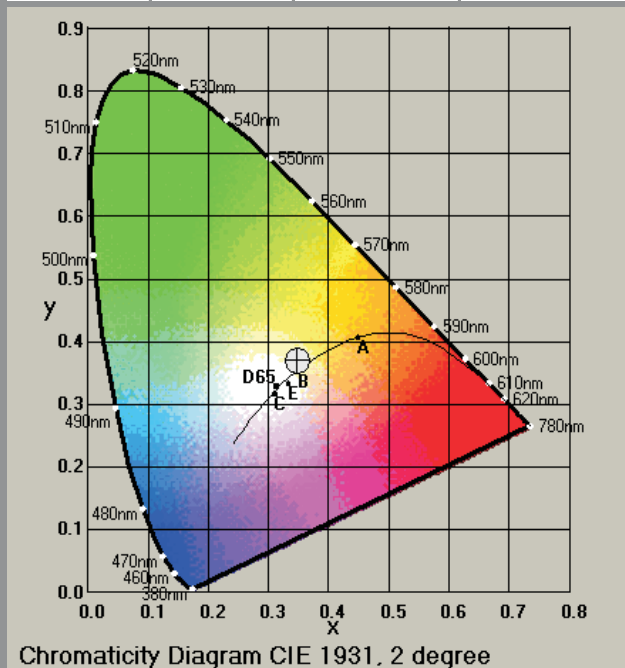


LTL Number: 17100
 Prepared For: LEDnovation
 Catalog Number: LED A19-40-1D-I
 Lamp: One VBU 40 Watt A19 LED Replacement Lamp
 Lamp Catalog Number: LED A19-40-1D-I
 LED Power Supply: Internal
 Lamp Efficacy: 99.1 Lumens/Watt

Date: 11-10-2009

Lamp Input Voltage	Lamp Current	Lamp Watts	Power Factor
120.0VAC	0.0306A	3.341W	0.909
Radiant Flux mW	Luminous Flux lumen	Corr.Color Temperature K	Color Rend. Index Ra
986.7051	331.004	4987	76.1
Chroma x	Chroma y	Chroma u	Chroma v
0.3471	0.3706	0.2056	0.3293

Wavelength in nm	Spectral Flux in mW/nm	Wavelength in nm	Spectral Flux in mW/nm
350	0.0968	610	4.4642
360	0.0545	620	5.4617
370	0.0575	630	3.1717
380	0.0586	640	2.2205
390	0.0730	650	1.7741
400	0.0720	660	1.4236
410	0.1700	670	1.1315
420	0.8290	680	0.9013
430	2.6666	690	0.7242
440	5.7878	700	0.5690
450	6.3856	710	0.4380
460	3.1181	720	0.3564
470	1.7258	730	0.2861
480	1.2456	740	0.2276
490	1.5756	750	0.1821
500	2.5308	760	0.1502
510	3.6422	770	0.1243
520	4.4904	780	0.1076
530	5.0365	790	0.0662
540	5.3202	800	0.0685
550	5.4220	810	0.0522
560	5.3772	820	0.0642
570	5.1813	830	0.0615
580	4.8862	840	0.0858
590	4.5743	850	0.0761
600	4.3067		





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: 17099

DATE: 11-10-2009

PREPARED FOR: LEDNOVATION

CATALOG NUMBER: LED A19-40-1D-I

LUMINAIRE: CAST ALUMINUM HOUSING, TRANSLUCENT WHITE PLASTIC ENCLOSURE.

LAMP: ONE VBU 40 WATT A19 LED REPLACEMENT LAMP

LAMP CATALOG NUMBER: LEDNOVATION LED A19-40-1D-I

LED POWER SUPPLY: INTERNAL

ELECTRICAL VALUES: 120.0VAC, 0.0309A, 3.363W, PF=0.908

NOTE: THIS TEST WAS PERFORMED USING THE CALIBRATED
PHOTODETECTOR METHOD OF ABSOLUTE PHOTOMETRY.*

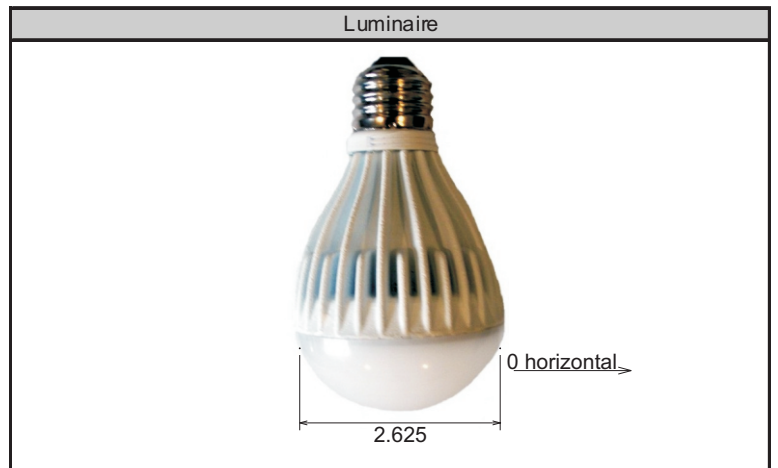
Candela Distribution

	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	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	
5	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	6.2
15	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	18.0
25	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	27.9
35	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	35.1
45	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	39.1
55	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	40.0
65	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	37.8
75	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	33.1
85	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	27.2
90	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	
95	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	20.9
105	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	14.8
115	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	9.5	9.5
125	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	5.3
135	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	2.4
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	0.8
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	0.2
165	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	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	

Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	52.1	N/A	16.4%
0-40	87.2	N/A	27.4%
0-60	166.3	N/A	52.2%
0-90	264.4	N/A	83.1%
90-180	53.9	N/A	16.9%
0-180	318.3	N/A	100.0%

Total lumen Output: 318.3 Lumens
 Luminaire efficacy: 94.6 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	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7
5	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3	65.3
10	64.5	64.5	64.5	64.5	64.5	64.5	64.5	64.5	64.5	64.5	64.5	64.5	64.5	64.5	64.5	64.5
15	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7	63.7
20	62.2	62.2	62.2	62.2	62.2	62.2	62.2	62.2	62.2	62.2	62.2	62.2	62.2	62.2	62.2	62.2
25	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4	60.4
30	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4	58.4
35	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0	56.0
40	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5	53.5
45	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6	50.6
50	47.8	47.8	47.8	47.8	47.8	47.8	47.8	47.8	47.8	47.8	47.8	47.8	47.8	47.8	47.8	47.8
55	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6	44.6
60	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3	41.3
65	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1	38.1
70	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
75	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4	31.4
80	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0	28.0
85	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9
90	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
95	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1	19.1
100	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5	16.5
105	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9	13.9
110	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
115	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	9.5
120	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
125	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
130	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
135	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
140	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	2.0
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	0.1	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
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	1.6	45-50	19.9	90-95	11.2	135-140	0.9
5-10	4.6	50-55	20.1	95-100	9.6	140-145	0.5
10-15	7.6	55-60	19.9	100-105	8.1	145-150	0.3
15-20	10.4	60-65	19.3	105-110	6.7	150-155	0.1
20-25	12.9	65-70	18.4	110-115	5.4	155-160	0.0
25-30	15.0	70-75	17.3	115-120	4.2	160-165	0.0
30-35	16.8	75-80	15.9	120-125	3.1	165-170	0.0
35-40	18.2	80-85	14.4	125-130	2.2	170-175	0.0
40-45	19.3	85-90	12.8	130-135	1.5	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	381.6	381.6	381.6	381.6	366.1	366.1	366.1	366.1	351.3	351.3	351.3	351.3
1	337.8	315.7	296	278.3	322.2	302.4	284.5	268.5	307.5	289.6	273.5	259
2	303.5	268.8	240.4	216.7	288.7	257.4	231.6	209.8	274.6	246.5	223	203.1
3	274.5	232.3	200.1	174.8	260.7	222.6	193.1	169.6	247.6	213.3	186.3	164.6
4	249.8	203.4	170	144.8	237.1	195.1	164.3	140.8	225.2	187.1	158.7	136.8
5	228.6	180	146.7	122.4	217	172.8	142	119.2	206.1	165.9	137.4	116
6	210.2	160.8	128.2	105.2	199.7	154.6	124.3	102.6	189.8	148.6	120.4	99.93
7	194.1	144.7	113.4	91.7	184.6	139.3	110	89.48	175.6	134.1	106.7	87.27
8	180	131.3	101.2	80.81	171.4	126.5	98.31	78.93	163.2	121.9	95.48	77.06
9	167.6	119.8	91.08	71.93	159.8	115.6	88.58	70.32	152.3	111.6	86.12	68.71
10	156.7	110	82.56	64.55	149.5	106.3	80.37	63.15	142.7	102.7	78.22	61.76

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	323.7	323.7	323.7	323.7	298.5	298.5	298.5	275.3	275.3	275.3	264.4
1	280.1	265.8	252.7	240.8	243.9	233.4	223.7	223.7	215.4	207.7	196.8
2	248.7	226.1	206.7	190	207.3	191.5	177.6	189.8	177.1	165.7	155.3
3	223.7	195.7	173.2	154.7	179.5	160.8	145.1	164.4	149.1	135.9	126.1
4	203.2	172	148	129	157.9	137.8	121.5	144.9	128.1	114.1	104.9
5	186.1	152.9	128.4	109.7	140.7	119.9	103.6	129.4	111.7	97.57	88.93
6	171.6	137.2	112.9	94.76	126.6	105.7	89.67	116.7	98.74	84.69	76.64
7	159	124.2	100.3	82.92	114.9	94.13	78.64	106.2	88.17	74.43	66.93
8	148.1	113.2	89.95	73.36	105	84.61	69.71	97.28	79.45	66.11	59.12
9	138.6	103.8	81.31	65.53	96.56	76.66	62.38	89.69	72.15	59.27	52.74
10	130.2	95.78	74.02	59	89.29	69.94	56.27	83.15	65.97	53.57	47.45

Average Luminance Table (cd/m²)

	0	45	90
0	18834	18834	18834
45	20469	20469	20469
55	22986	22986	22986
65	21476	21476	21476
75	20109	20109	20109
85	19190	19190	19190

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.

