



LTL Number: 16890

Date: 10-09-2009

Prepared For: LEDnovation

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

Lamp: One VBU 60 Watt A19 LED Replacement Lamp

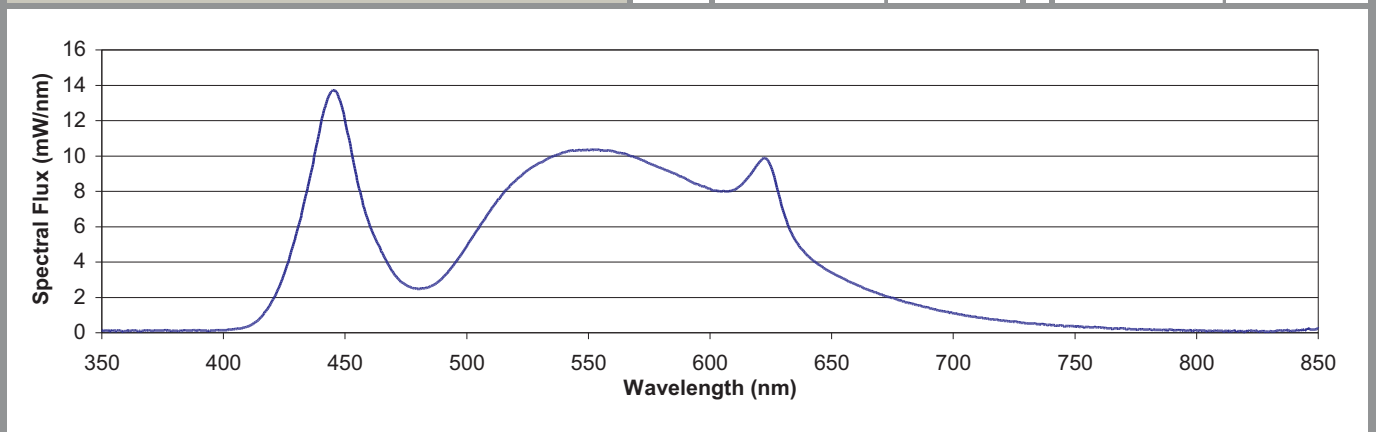
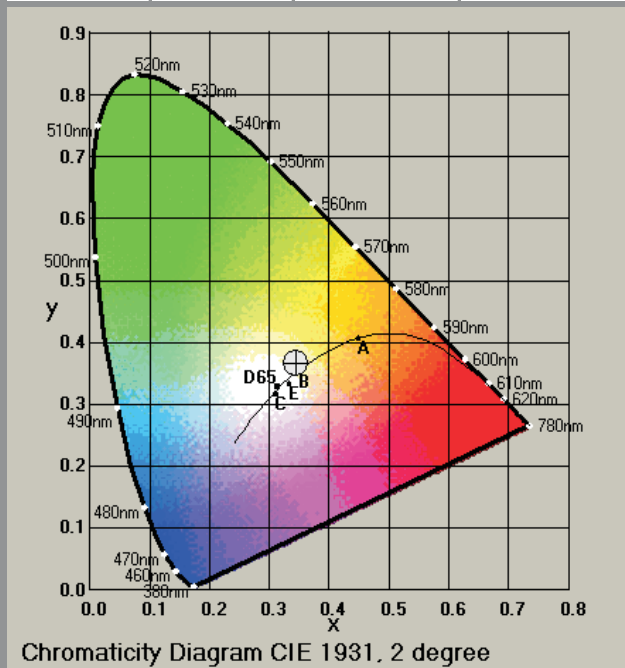
Lamp Catalog Number: LED A19-60-1D-I

LED Power Supply: Internal

Lamp Efficacy: 91.2 Lumens/Watt

Lamp Input Voltage	Lamp Current	Lamp Watts	Power Factor
120.0VAC	0.0629a	6.919W	0.918
Radiant Flux mW	Luminous Flux lumen	Corr. Color Temperature K	Color Rend. Index Ra
1903.353	631.280	5078	76.4
Chroma x	Chroma y	Chroma u	Chroma v
0.3442	0.3666	0.2051	0.3278

Wavelength in nm	Spectral Flux in mW/nm	Wavelength in nm	Spectral Flux in mW/nm
350	0.1640	610	8.0696
360	0.0927	620	9.5863
370	0.1094	630	6.9326
380	0.1080	640	4.3742
390	0.1366	650	3.4019
400	0.1520	660	2.7357
410	0.3516	670	2.1748
420	1.7981	680	1.7401
430	5.6057	690	1.4002
440	11.7490	700	1.1016
450	12.0110	710	0.8552
460	6.1370	720	0.6911
470	3.3589	730	0.5379
480	2.4827	740	0.4317
490	3.0906	750	0.3555
500	4.9022	760	0.3000
510	6.9803	770	0.2363
520	8.5996	780	0.1832
530	9.6210	790	0.1547
540	10.1920	800	0.1301
550	10.3450	810	0.1111
560	10.2640	820	0.0798
570	9.8894	830	0.0949
580	9.3092	840	0.1087
590	8.7161	850	0.2425
600	8.1302		





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: 16889

DATE: 10-09-2009

PREPARED FOR: LEDNOVATION

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

LUMINAIRE: CAST ALUMINUM HOUSING, TRANSLUCENT WHITE PLASTIC ENCLOSURE.

LAMP: ONE VBU 60 WATT A19 LED REPLACEMENT LAMP

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

LED POWER SUPPLY: INTERNAL

ELECTRICAL VALUES: 120.0VAC, 0.0628A, 6.917W, PF=0.918

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

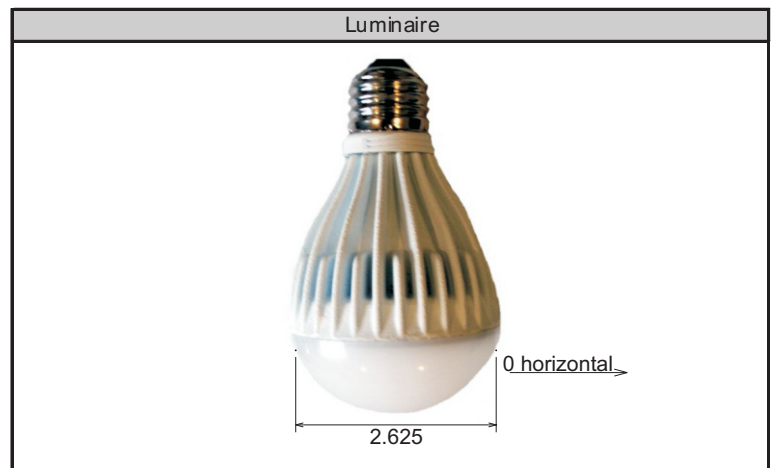
Candela Distribution

	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	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	
5	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	12.0
15	123	123	123	123	123	123	123	123	123	123	123	123	123	123	123	123	34.7
25	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	53.9
35	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	67.9
45	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	75.8
55	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	77.6
65	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	73.5
75	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	64.8
85	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	53.5
90	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	
95	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	41.3
105	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	29.5
115	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19.3
125	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	11.0
135	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	5.3
145	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	1.9
155	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	0.4
165	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1
175	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	

Zonal Lumen Summary

Zone	Lumens	% of Lamp	% of Luminaire
0-30	100.6	N/A	16.2%
0-40	168.5	N/A	27.1%
0-60	321.9	N/A	51.7%
0-90	513.7	N/A	82.5%
90-180	108.8	N/A	17.5%
0-180	622.6	N/A	100.0%

Total lumen Output: 622.6 Lumens
 Luminaire efficacy: 90.0 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.



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

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	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127	127
5	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126	126
10	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125	125
15	123	123	123	123	123	123	123	123	123	123	123	123	123	123	123	123
20	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120	120
25	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117	117
30	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113	113
35	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108	108
40	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103	103
45	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98	98
50	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93	93
55	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87	87
60	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80
65	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74	74
70	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68	68
75	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61	61
80	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55	55
85	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49	49
90	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43	43
95	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38	38
100	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33	33
105	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28	28
110	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
115	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
120	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16	16
125	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
130	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9
135	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
140	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
145	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
150	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2
155	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
160	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
170	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
180	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	3.0	45-50	38.5	90-95	22.2	135-140	2.1
5-10	9.0	50-55	39.0	95-100	19.1	140-145	1.3
10-15	14.7	55-60	38.6	100-105	16.2	145-150	0.7
15-20	20.1	60-65	37.6	105-110	13.4	150-155	0.3
20-25	24.9	65-70	35.9	110-115	10.8	155-160	0.1
25-30	29.0	70-75	33.7	115-120	8.5	160-165	0.0
30-35	32.6	75-80	31.1	120-125	6.4	165-170	0.0
35-40	35.3	80-85	28.2	125-130	4.6	170-175	0.0
40-45	37.3	85-90	25.2	130-135	3.2	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	746	746	746	746	715.3	715.3	715.3	715.3	686	686	686	686
1	660.2	616.8	578.2	543.7	629.4	590.4	555.5	524.1	600.1	565.2	533.7	505.1
2	593	525	469.5	423.2	563.7	502.5	451.9	409.4	535.9	481	435	395.9
3	536.3	453.8	390.8	341.2	509	434.5	376.8	330.9	483.2	416	363.3	320.8
4	488.1	397.2	331.9	282.5	463	380.7	320.5	274.5	439.3	364.9	309.4	266.6
5	446.6	351.5	286.3	238.8	423.7	337.3	276.9	232.3	402.2	323.6	267.7	225.9
6	410.6	313.9	250.3	205.2	389.8	301.6	242.4	199.9	370.2	289.7	234.7	194.6
7	379.2	282.6	221.3	178.8	360.3	271.9	214.6	174.4	342.5	261.5	208	170
8	351.7	256.3	197.4	157.6	334.6	246.8	191.7	153.8	318.4	237.7	186	150
9	327.4	233.9	177.7	140.2	311.9	225.5	172.7	137	297.1	217.5	167.8	133.8
10	306	214.6	161	125.8	291.8	207.3	156.7	123	278.4	200.1	152.4	120.2

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	631.3	631.3	631.3	631.3	581.3	581.3	581.3	535.3	535.3	535.3	513.7
1	545.9	517.9	492.4	469	474.5	454.1	435.2	434.5	418.4	403.3	381.7
2	484.7	440.4	402.6	370	403.1	372.3	345.2	368.5	343.7	321.5	300.9
3	435.8	381.2	337.2	301	349	312.6	282	319.2	289.2	263.6	244.1
4	395.9	334.9	288.1	251	307.1	267.7	235.9	281.2	248.4	221.2	203
5	362.6	297.7	250	213.4	273.6	233	201.1	251	216.7	189.1	172.1
6	334.2	267.2	219.7	184.3	246.1	205.3	174.1	226.4	191.4	164.1	148.3
7	309.8	241.8	195.2	161.2	223.3	182.8	152.6	206	170.9	144.2	129.5
8	288.6	220.4	175	142.6	204.1	164.3	135.3	188.7	154	128.1	114.3
9	270	202.1	158.2	127.4	187.7	148.9	121	174	139.9	114.8	102
10	253.5	186.4	144	114.7	173.5	135.8	109.2	161.3	127.9	103.7	91.75

Average Luminance Table (cd/m²)

	0	45	90
0	36395	36395	36395
45	39650	39650	39650
55	44644	44644	44644
65	41842	41842	41842
75	39311	39311	39311
85	37717	37717	37717

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.

