

# Photometric Test Report

## Relevant Standards

- ☒ IES LM-79-2008
- ☒ ANSI C82.77:2017

## Prepared For RAB Lighting Inc.

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## Project Number

**DLF2207109**

## Report Number

**DLF2207109-7a**

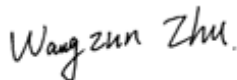
## Test Date

**2022/7/29**

## Issue Date

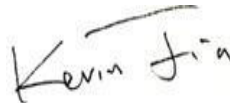
**2022/7/30**

### Prepared By



Wangzun Zhu

### Approved By



Kevin Jia

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## 1.0 Test Summary

DLC Technical Requirements v5.1

Outdoor - Pole/Arm-Mounted Area and Roadway Luminaires				
Requirement Category	Test Method	Requirements		Test value
Luminaire Output (lm) (Goniophotometer - Section 4.2)	IES LM-79-2008	1000		10945
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	132.3
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		82.7
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	2.01%
		20.00%	277V	7.41%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.999
		0.9	277V	0.967
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3985±275	3856
		4 step	3985±154	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥70		83
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥-40		5
Minimum Rf (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥70		83
Minimum Rg (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥89		93
Minimum IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-13%
Zonal Lumen Requirement (0°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	100%		100.00%
Zonal Lumen Requirement (80°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	≤10%		0.18%
Input Voltage (V)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		120
(Goniophotometer - Section 4.2)		Non-Worst Case		277
Input Current (A)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		0.690
(Goniophotometer - Section 4.2)		Non-Worst Case		0.300
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		82.7
(Goniophotometer - Section 4.2)		Non-Worst Case		80.2

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2022/7/29	ALEDSATN	G1
2	Goniophotometer Test	2022/7/29	ALEDSATN	G1
3	THD and PF Test	2022/7/29	ALEDSATN	G1

### Remark(If any)

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- 2、 The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products. This report does not imply that the product(s) has met the criteria for certification.

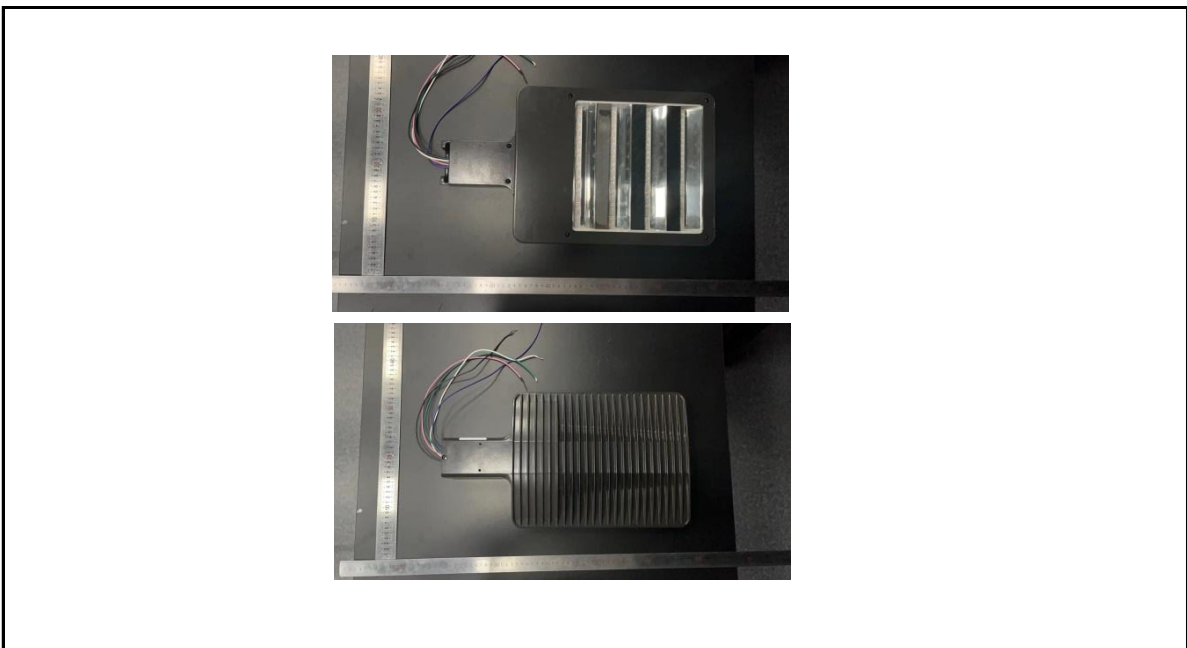
## 3.0 Production Description

**Luminaire Description:** ALEDSATN

**Description:** 80W @ 4000K

**Electrical Specification:** 120V-277V,50/60HZ

### Photos of Luminaire Characteristics



## 4.0 LM-79 Measurement and Test Results

### 4.1 Integrating Sphere Test

Model No.	ALEDSATN	Sample ID.	G1
Operate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.3	Humidity (%RH)	56.0

#### Test Method

The samples were tested according to the IES LM-79-2008.

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ .

The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere.

The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within  $\pm 0.2$  percent under load.

The sample was measured using  $4\pi$  geometry and operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

#### Test Result

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.01	60	0.689	82.6	0.999
277.00	60	0.300	80.2	0.967

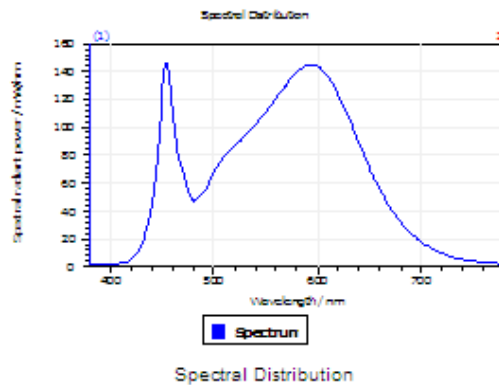
#### Test Result

CCT (K)	CRI	R9	Duv
3856	83	5	0.0011

Rf	Rg	IES Rcs,h1
83	93	-13%

## 4.1 Integrating Sphere Test

### Results



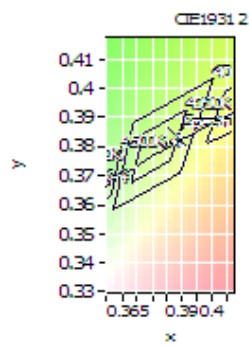
#### Spectral values

DominantWavelength 579.07 nm  
Purity 0.316  
PeakWavelength 454.18 nm  
Radiant Power 24.44 W  
Width50%:

#### Color Coordinates

Correlated Color Temperatur 3856 K  
x: 0.3879 u: 0.2272 u': 0.2272  
y: 0.3838 v: 0.3371 v': 0.5057

CRI01	80.5	CRI09	4.8
CRI02	90.4	CRI10	77.1
CRI03	96.1	CRI11	78.3
CRI04	79.9	CRI12	61.7
CRI05	80.9	CRI13	83.0
CRI06	86.7	CRI14	98.3
CRI07	84.7	CRI15	74.0
CRI08	62.0	CRI16	70.9
ResultsCRI	82.6		



PlanckDistance 1.1E-003

## 4.1 Integrating Sphere Test

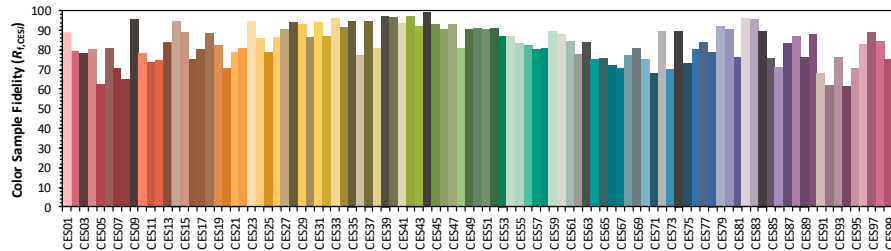
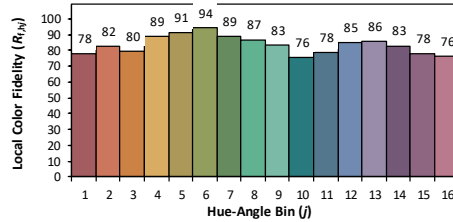
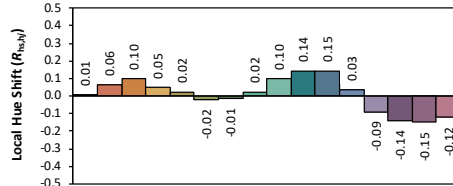
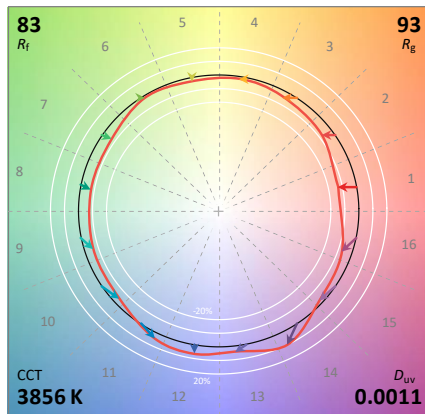
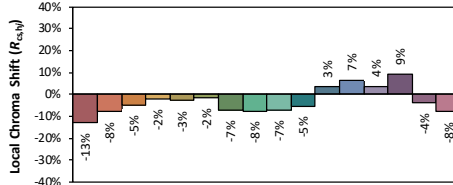
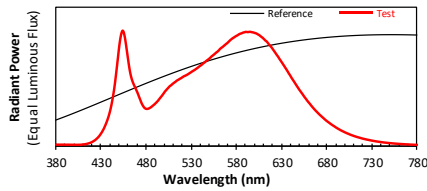
### IES TM-30-18 Color Rendition Report

Source: DLF2207109-7a

Manufacturer: RAB Lighting Inc.

Date: 2022/7/29

Model: ALEDSATN



**Notes:** This is a recommended method for displaying ANSI/IES TM-30-18 information.

$x$  **0.3879**  
 $y$  **0.3836**  
 $u'$  **0.2272**  
 $v'$  **0.5057**

CIE 13.3-1995  
(CRI)  
 $R_a$  82  
 $R_g$  3

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

Model No.	ALEDSATN	Sample ID.	G1
Operate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.3	Humidity (%RH)	54.0

#### Test Method

The samples were tested according to the IES LM-79-2008.

Photometric parameters were measured using a type C goniophotometer and software.

The ambient temperature shall be maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , measured at a point not more than 1 m from the sample and at the same height as the sample.

The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within  $\pm 0.2$  percent under load.

The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at  $0.5^{\circ}$  vertical intervals and  $10^{\circ}$  horizontal intervals.

#### Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	119.97	60	0.690	82.7	0.999
NON-WORST CASE	276.99	60	0.300	80.2	0.966

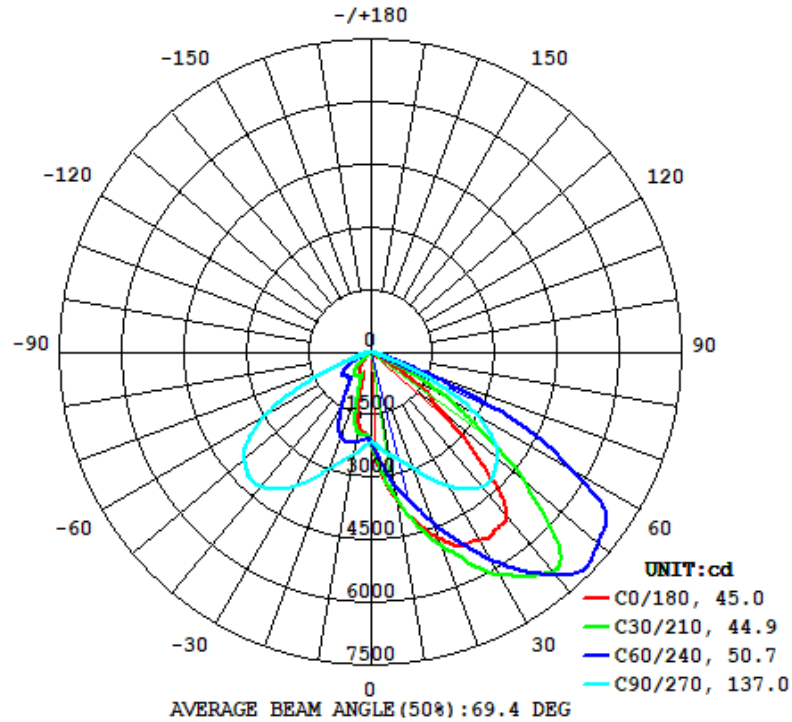
#### Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
10945	93.1	153.6	45.0	137.0	132.3

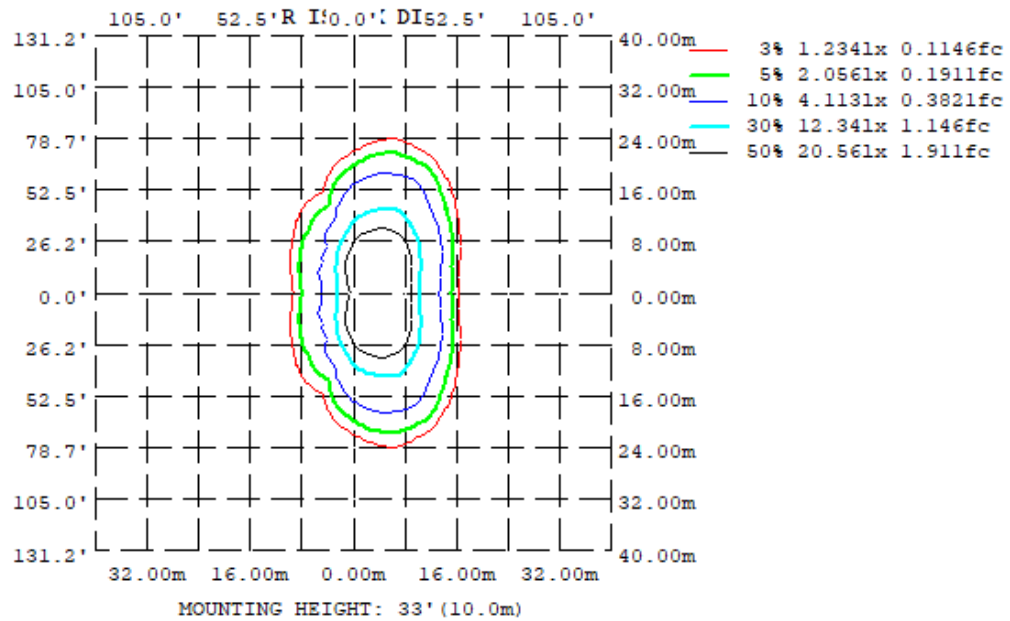
Zonal Lumen Requirement ( $0^{\circ}$ - $90^{\circ}$ )	Zonal Lumen Requirement ( $80^{\circ}$ - $90^{\circ}$ )	BUG rating
100.00%	0.18%	B2-U0-G1

## 4.2 Goniophotometer Test

### Light Distrubtion Curve



### Isolux Plot





## 4.2 Goniophotometer Test

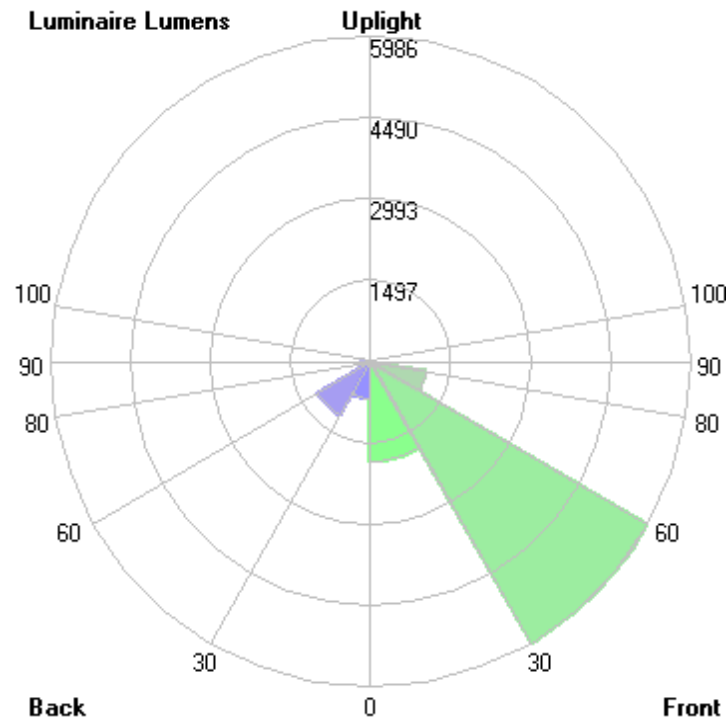
### Zonal Lumen Summary

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315
10	3566	3416	2484	2077	1771	2077	2484	3416
20	4717	4713	2958	1423	566.6	1423	2958	4713
30	5205	6175	3704	684.4	573.1	684.4	3704	6175
40	5125	7412	4198	760.6	369.3	760.6	4198	7412
50	2250	6915	4003	618.4	90.91	618.4	4003	6915
60	566.4	3220	2902	116.6	20.81	116.6	2902	3220
70	115.4	423.5	810.9	33.27	12.80	33.27	810.9	423.5
80	22.44	101.5	102.5	11.27	5.754	11.27	102.5	101.5
90	0	0	0	0	0	0	0	0
100	0	0	0	0	0	0	0	0
110	0	0	0	0	0	0	0	0
120	0	0	0	0	0	0	0	0
130	0	0	0	0	0	0	0	0
140	0	0	0	0	0	0	0	0
150	0	0	0	0	0	0	0	0
160	0	0	0	0	0	0	0	0
170	0	0	0	0	0	0	0	0
180	0	0	0	0	0	0	0	0
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	235.75	0 - 10	235.75	2.15%
10-20	807.67	0 - 20	1043.42	9.53%
20-30	1491.57	0 - 30	2534.99	23.16%
30-40	2274.71	0 - 40	4809.70	43.95%
40-50	2671.78	0 - 50	7481.48	68.36%
50-60	2181.47	0 - 60	9662.95	88.29%
60-70	1055.47	0 - 70	10718.42	97.93%
70-80	206.18	0 - 80	10924.60	99.82%
80-90	19.97	0 - 90	10944.57	100.00%
90-100	0.00	0 - 100	10944.57	100.00%
100-110	0.00	0 - 110	10944.57	100.00%
110-120	0.00	0 - 120	10944.57	100.00%
120-130	0.00	0 - 130	10944.57	100.00%
130-140	0.00	0 - 140	10944.57	100.00%
140-150	0.00	0 - 150	10944.57	100.00%
150-160	0.00	0 - 160	10944.57	100.00%
160-170	0.00	0 - 170	10944.57	100.00%
170-180	0.00	0 - 180	10944.57	100.00%

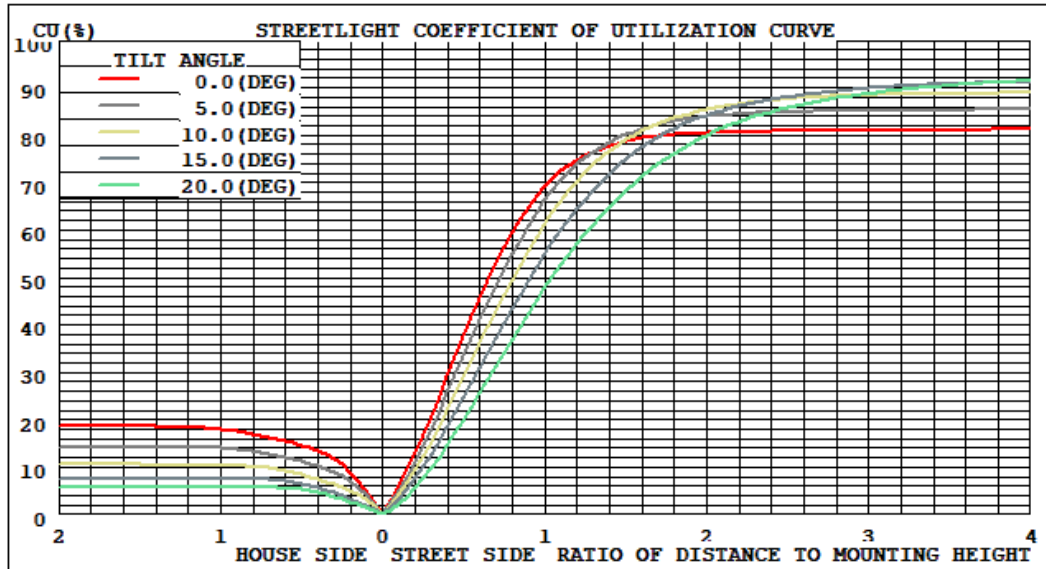
## 4.2 Goniophotometer Test

LCS/BUG

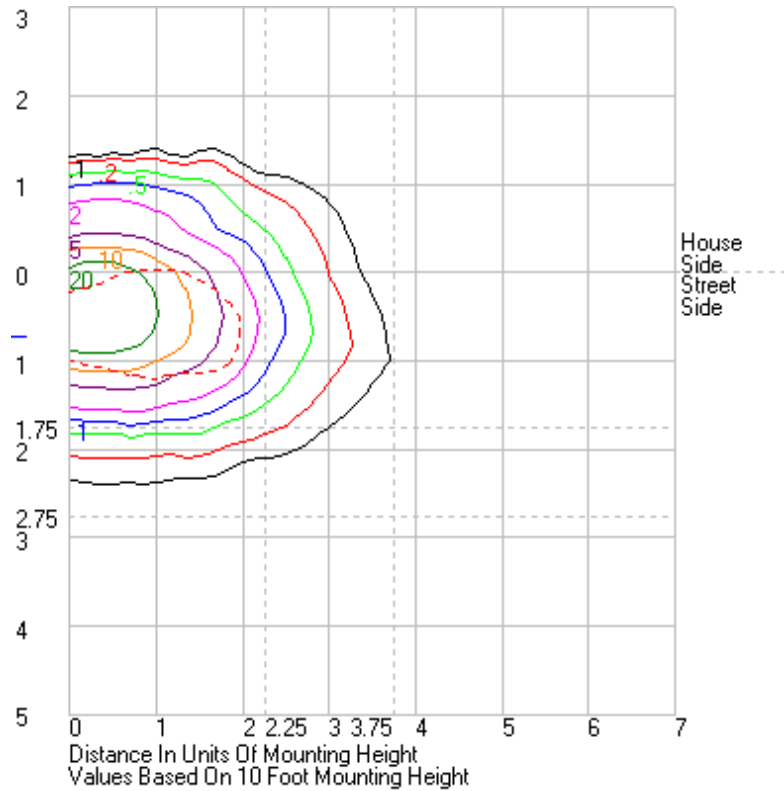


	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	1840.6	N.A.	16.8
FM - Front-Medium (30-60)	5986.3	N.A.	54.7
FH - Front-High (60-80)	1049.6	N.A.	9.6
FVH - Front-Very High (80-90)	15.4	N.A.	0.1
BL - Back-Low (0-30)	694.4	N.A.	6.3
BM - Back-Medium (30-60)	1141.6	N.A.	10.4
BH - Back-High (60-80)	212.0	N.A.	1.9
BVH - Back-Very High (80-90)	4.6	N.A.	0.0
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	10944.5	N.A.	100.0
BUG Rating	B2-U0-G1		

## Coefficients of Utilization



## Isolines



## 4.2 Goniophotometer Test

	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	360
0	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11	2152.11
1	2244.03	2240.97	2236.15	2223.25	2207.77	2188.4	2165.78	2140.05	2116.11	2095.75	2078.15	2066.9	2063.72	2066.9	2078.15	2095.75	2116.11	2140.05	2165.78	2188.4	2207.77	2223.25	2236.15	2240.97	2244.03
2	2379.43	2375.26	2349.83	2213.69	2270.57	2230.69	2184.16	2134.52	2088.05	2059.1	2038.15	2022.99	2021.03	2022.99	2038.15	2059.1	2088.05	2134.52	2184.16	2230.69	2270.57	2313.69	2349.83	2375.26	2379.43
3	2528.35	2516.99	2488.44	2433.5	2354.21	2278.56	2211.37	2137.38	2083.38	2045.25	2017.3	1999.05	1994.22	1999.05	2017.3	2045.25	2083.38	2137.38	2211.37	2278.56	2354.21	2433.5	2488.44	2516.99	2528.35
4	2710.3	2698.54	2647.59	2558.55	2458.72	2338.67	2247.87	2146.83	2087.25	2042.02	2009.76	1984.95	1976.35	1984.95	2009.76	2042.02	2087.25	2146.83	2247.87	2338.67	2458.72	2558.55	2647.59	2698.54	2710.3
5	2882.05	2865.32	2812.01	2710.75	2567.2	2410.7	2287.57	2168.6	2099.55	2049.35	2003.98	1969.31	1958.23	1969.31	2003.98	2049.35	2099.55	2168.6	2287.57	2410.7	2567.2	2710.75	2812.01	2865.32	2882.05
6	3032.4	3021.72	2972.75	2863.58	2683.96	2488.44	2328.56	2196.74	2118.51	2057.71	1999.98	1956.19	1939.59	1956.19	1999.98	2057.71	2118.51	2196.74	2328.56	2488.44	2683.96	2863.58	2972.75	3021.72	3032.4
7	3174.59	3166.97	3123.07	3015.91	2813.75	2570.45	2371.09	2221.62	2142.12	2066.25	1995.22	1937.95	1918.03	1937.95	1995.22	2066.25	2142.12	2221.62	2371.09	2570.45	2813.75	3015.91	3123.07	3166.97	3174.59
8	3304.18	3297.26	3264.36	3154.69	2936.3	2646.96	2410.37	2247.77	2162.36	2072.83	1986.41	1919	1890.91	1919	1986.41	2072.83	2162.36	2247.77	2410.37	2646.96	2936.3	3154.69	3264.36	3297.26	3304.18
9	3429.92	3431.87	3400.49	3288.17	3059.72	2723.03	2446.11	2269.24	2177.77	2077.55	1972.35	1876.3	1839.31	1876.3	1972.35	2077.55	2177.77	2269.24	2446.11	2723.03	3059.72	3288.17	3400.49	3431.87	3429.92
10	3565.63	3566.82	3536.86	3415.58	3172.55	2798.66	2484.4	2295.51	2194.65	2077.06	1938.2	1819.97	1771.03	1819.97	1938.2	2077.06	2194.65	2295.51	2484.4	2798.66	3172.55	3415.58	3536.86	3566.82	3565.63
11	3695.34	3706.97	3676.28	3538.73	3282.52	2874.47	2520.6	2319.97	2208.71	2070.07	1893.96	1739.84	1678.59	1739.84	1893.96	2070.07	2208.71	2319.97	2520.6	2874.47	3282.52	3538.73	3676.28	3706.97	3695.34
12	3831.73	3845.85	3820.02	3663.99	3389.57	2956.84	2555.35	2344.97	2219.2	2048.59	1824.54	1632.23	1555.06	1632.23	1824.54	2048.59	2219.2	2344.97	2555.35	2956.84	3389.57	3663.99	3820.02	3845.85	3831.73
13	3960.21	3981.96	3963.14	3785.07	3495.39	3039.3	2594	2371.35	2230.6	2014.27	1738.68	1501.16	1402.53	1501.16	1738.68	2014.27	2230.6	2371.35	2594	3039.3	3495.39	3785.07	3963.14	3981.96	3960.21
14	4085.63	4120.57	4107.35	3914.49	3599.69	3123.17	2631.49	2401.56	2239.57	1968.57	1630.47	1350.4	1249.99	1350.4	1630.47	1968.57	2239.57	2401.56	2631.49	3123.17	3599.69	3914.49	4107.35	4120.57	4085.63
15	4211.1	4252.95	4245.52	4048.35	3705.69	3209.44	2676.95	2434.2	2242.78	1907.56	1497.89	1194.07	1092.2	1194.07	1497.89	1907.56	2242.78	2434.2	2676.95	3209.44	3705.69	4048.35	4245.52	4252.95	4211.1
16	4318.09	4380.54	4385.98	4187.78	3819.61	3299.23	2724.58	2469.51	2242.1	1832.92	1361.85	1043.4	940.06	1043.4	1361.85	1832.92	2242.1	2469.51	2724.58	3299.23	3819.61	4187.78	4385.98	4380.54	4318.09
17	4428.51	4502.41	4518.82	4324.15	3934.77	3394.79	2777.26	2510.27	2233.75	1744.71	1221.77	898.37	802.28	898.37	1221.77	1744.71	2233.75	2510.27	2777.26	3394.79	3934.77	4324.15	4518.82	4502.41	4428.51
18	4533.26	4615.78	4647.67	4456.01	4058.86	3493.13	2832.26	2551.84	2218.17	1643.67	1085.98	777.92	693.66	777.92	1085.98	1643.67	2218.17	2551.84	2832.26	3493.13	4058.86	4456.01	4647.67	4615.78	4533.26
19	4628.09	4728.43	4772.81	4586.19	4187.27	3601.49	2892.97	2598.8	2194.6	1534.36	959.34	680.55	616.9	680.55	959.34	1534.36	2194.6	2598.8	2892.97	3601.49	4187.27	4586.19	4772.81	4728.43	4628.09
20	4716.67	4837.15	4896.38	4713.48	4320.73	3711.93	2957.68	2646.42	2162.71	1422.51	847.36	621.39	566.56	621.39	847.36	1422.51	2162.71	2646.42	2957.68	3711.93	4320.73	4713.48	4896.38	4837.15	4716.67
21	4807.22	4943	5016.04	4843.68	4454.45	3827.3	3025.49	2689.2	2119.37	1313.04	758.28	572.99	539.22	572.99	758.28	1313.04	2119.37	2689.2	3025.49	3827.3	4454.45	4843.68	5016.04	4943	4807.22
22	4906.2	5055.8	5132	4978.02	4588.44	3940.58	3096.22	2729.45	2066.11	1209.57	696.48	549.61	530.73	549.61	696.48	1209.57	2066.11	2729.45	3096.22	3940.58	4588.44	4978.02	5132	5055.8	4906.2
23	5004	5166.19	5258.28	5116.67	4729	4056.2	3170.55	2765.27	2001.38	1103.52	651.57	544.16	533.27	544.16	651.57	1103.52	2001.38	2765.27	3170.55	4056.2	4729	5116.67	5258.28	5166.19	5004
24	5079.73	5269.64	5387.85	5255.14	4865.54	4170.28	3245.85	2796.02	1931.33	1006.32	616.09	550.29	544.11	550.29	616.09	1006.32	1931.33	2796.02	3245.85	4170.28	4865.54	5255.14	5387.85	5269.64	5079.73
25	5139.57	5356.53	5533.25	5396.6	5005.13	4286.09	3322.75	2825.74	1853.2	918.22	600.28	563.24	555.71	563.24	600.28	918.22	1853.2	2825.74	3322.75	4286.09	5005.13	5396.6	5533.25	5356.53	5139.57
26	5168.85	5431.05	5677.78	5543.02	5143.26	4396.78	3401.47	2847.22	1769.15	850.9	599.6	575.43	568.33	575.43	599.6	850.9	1769.15	2847.22	3401.47	4396.78	5143.26	5543.02	5677.78	5431.05	5168.85
27	5140.46	5469.8	5819.74	5690.28	5281.1	4511.21	3477.96	2863.45	1680.85	788.02	611.3	589.26	579.58	589.26	611.3	788.02	1680.85	2863.45	3477.96	4511.21	5281.1	5690.28	5819.74	5469.8	5140.46
28	5141.75	5479.31	5955.25	5845.64	5420.95	4628.89	3556	2871.31	1591.52	741.91	626.6	602.32	585.38	602.32	626.6	741.91	1591.52	2871.31	3556	4628.89	5420.95	5845.64	5955.25	5479.31	5141.75
29	5160.26	5524.31	6067.93	6006.55	5567.76	4742.53	3630.5	2874.46	1496.85	706.46	643.22	611.13	583.4	611.13	643.22	706.46	1496.85	2874.46	3630.5	4742.53	5567.76	6006.55	6067.93	5524.31	5160.26
30	5204.85	5591.15	6145.13	6175.33	5712.55	4854.86	3703.53	2865.5	1399.35	684.38	664.73	610.66	573.14	610.66	664.73	684.38	1399.35	2865.5	3703.53	4854.86	5712.55	6175.33	6145.13	5591.15	5204.85
31	5238.18	5664.57	6221.23	6342.22	5858.69	4966.73	3773.46	2850.14	1305.46	680.24	683.36	602.45	555.6	602.45	683.36	680.24	1305.46	2850.14	3773.46	4966.73	5858.69	6342.22	6221.23	5664.57	5238.18
32	5272.99	5724.76	6297.9	6509.65	6003.54	5071.89	3841.57	2826.23	1213.45	687.64	693.28	588.04	537.89	588.04	693.28	687.64	1213.45	2826.23	3841.57	5071.89	6003.54	6509.65	6297.9	5724.76	5272.99
33	5277.67	5774.01	6389.88	6678.97	6145.05	5178.03	3904.73	2791.51	1123.91	699.01	694.19	574.24	523.78	574.24	694.19	699.01	1123.91	2791.51	3904.73	5178.03	6145.05	6678.97	6389.88	5774.01	5277.67
34	5250.96	5794.27	6481.23	6815.16	6275.9	5281.67	3959.37	2751.07	1051.27	714.05	687.56	563.92	508.37	563.92	687.56	714.05	1051.27	2751.07	3959.37	5281.67	6275.9	6815.16	6481.23	5794.27	5250.96
35	5216.22	5792.34	6558.38	6943.5	6402.56	5380.64	4009.28	2700.38	982.93	734.05	674.91	552.53	491.23	552.53	674.91	734.05	982.93	2700.38	4009.28	5380.64	6402.56	6943.5	6558.38	5792.34	5216.22
36	5198.93	5792.28	6628.21	7057.93	6523.12	5478.89	4056.39	2636.44	919.25	754.8	662.74	540.88	472.4	540.88	662.74	754.8	919.25	2636.44	4056.39	5478.89	6523.12	7057.93	6628.21	5792.28	5198.93
37	5197.32	5792.55	6677.96	7162.56	6635.78	5567.22	4102.33	2566.79	872.4	766.23	651.48	526.03	451.26	526.03	651.48	766.23	872.4	2566.79	4102.33	5567.22	6635.78	7162.56	6677.96	5792.55	5197.32
38	5201.29	5794.19	6735.32	7254.24	6749.64	5648.36	4143.61	2486.89	833.91	772.29	642.41	509.7	428.98	509.7	642.41	772.29	833.91	2486.89	4143.61	5648.36	6749.64	7254.24	6735.32	5794.19	5201.29
39	5186.99	5765.83	6783.6</																						

51	2069.49	2529.8	4598.56	6549.82	7104.06	5768.44	3947.83	1299.4	895.24	592.99	300.67	105.88	65.36	105.88	300.67	592.99	895.24	1299.4	3947.83	5768.44	7104.06	6549.82	4598.56	2529.8	2069.49
52	1957.5	2307.15	4268.45	6190.65	7061.63	5722.01	3888.77	1235.04	892.37	570.74	242.07	73.81	47.75	73.81	242.07	570.74	892.37	1235.04	3888.77	5722.01	7061.63	6190.65	4268.45	2307.15	1957.5
53	1869.91	2188.59	3868.86	5836.15	7034.03	5664.93	3812.65	1168.24	885.28	547.05	185.34	54.98	38.09	54.98	185.34	547.05	885.28	1168.24	3812.65	5664.93	7034.03	5836.15	3868.86	2188.59	1869.91
54	1764.86	2087.11	3452.16	5512.12	7003.67	5598.36	3721.45	1099.75	870.39	514.48	129.6	43.78	33.29	43.78	129.6	514.48	870.39	1099.75	3721.45	5598.36	7003.67	5512.12	3452.16	2087.11	1764.86
55	1607.63	1955.82	3147.9	5220.5	6947	5510.28	3609.06	1035.24	848.62	470.98	89.12	37.41	29.94	37.41	89.12	470.98	848.62	1035.24	3609.06	5510.28	6947	5220.5	3147.9	1955.82	1607.63
56	1396.51	1773.56	2937.35	4926.83	6826.13	5405.92	3495.05	986.48	821.29	410.03	62.92	34.08	27.14	34.08	62.92	410.03	821.29	986.48	3495.05	5405.92	6826.13	4926.83	2937.35	1773.56	1396.51
57	1159.88	1538.16	2756.5	4548.17	6609.58	5285.24	3369.63	952.48	791.63	333.43	52.66	31.21	24.71	31.21	52.66	333.43	791.63	952.48	3369.63	5285.24	6609.58	4548.17	2756.5	1538.16	1159.88
58	949.34	1267.93	2518.49	4120.12	6309.72	5144.57	3232.09	927.03	762.79	251.21	46.02	28.82	22.95	28.82	46.02	251.21	762.79	927.03	3232.09	5144.57	6309.72	4120.12	2518.49	1267.93	949.34
59	701.57	1007.73	2253.5	3624.66	5930.99	4990.38	3078.07	905.29	737.2	180.88	41.25	27.05	21.77	27.05	41.25	180.88	737.2	905.29	3078.07	4990.38	5930.99	3624.66	2253.5	1007.73	701.57
60	566.45	738.72	1942.68	3220.37	5578.06	4827.31	2901.5	885.24	713.74	116.62	38.26	25.78	20.81	25.78	38.26	116.62	713.74	885.24	2901.5	4827.31	5578.06	3220.37	1942.68	738.72	566.45
61	457.21	563.83	1579.9	2885.65	5235.18	4649.8	2700.01	858.52	680.77	78.99	35.88	24.63	19.93	24.63	35.88	78.99	680.77	858.52	2700.01	4649.8	5235.18	2885.65	1579.9	563.83	457.21
62	374.38	447.34	1262.95	2614.78	4919.31	4425.51	2480.54	821.64	625.89	61.17	34.06	23.55	19.1	23.55	34.06	61.17	625.89	821.64	2480.54	4425.51	4919.31	2614.78	1262.95	447.34	374.38
63	305.99	372.68	916.04	2338.4	4602	4151.78	2256.73	781.09	550.32	54.84	32.41	22.58	18.32	22.58	32.41	54.84	550.32	781.09	2256.73	4151.78	4602	2338.4	916.04	372.68	305.99
64	251.23	314.78	644.83	2045.8	4242.56	3843.9	2020.51	741.2	452.81	49.54	30.77	21.54	17.54	21.54	30.77	49.54	452.81	741.2	2020.51	3843.9	4242.56	2045.8	644.83	314.78	251.23
65	208.28	264.85	488.94	1737.06	3773.75	3488.97	1795.18	706.15	341.08	45.46	29.32	20.53	16.79	20.53	29.32	45.46	341.08	706.15	1795.18	3488.97	3773.75	1737.06	488.94	264.85	208.28
66	174.73	222.73	383.23	1405.58	3186.35	3127.73	1576.2	667.77	247.02	42.62	27.87	19.56	16.04	19.56	27.87	42.62	247.02	667.77	1576.2	3127.73	3186.35	1405.58	383.23	222.73	174.73
67	166.66	197.72	313.8	1081.49	2589.99	2763.48	1361.36	619.58	161.52	40.16	26.16	18.52	15.28	18.52	26.16	40.16	161.52	619.58	1361.36	2763.48	2589.99	1081.49	313.8	197.72	166.66
68	144.83	187.53	270.77	779.41	2077.63	2410.19	1167.97	564.27	102.61	37.84	24.74	17.56	14.46	17.56	24.74	37.84	102.61	564.27	1167.97	2410.19	2077.63	779.41	270.77	187.53	144.83
69	124.69	163.02	239.66	560.17	1640.17	2079.93	984.1	513.03	76.99	35.59	23.3	16.5	13.63	16.5	23.3	35.59	76.99	513.03	984.1	2079.93	1640.17	560.17	239.66	163.02	124.69
70	115.37	145.7	225.68	423.47	1268.01	1771.7	810.85	456.02	63.66	33.27	21.95	15.49	12.8	15.49	21.95	33.27	63.66	456.02	810.85	1771.7	1268.01	423.47	225.68	145.7	115.37
71	106.95	135.56	198.69	315.75	991.09	1435.9	673.38	403.69	56.01	30.98	20.52	14.41	11.96	14.41	20.52	30.98	56.01	403.69	673.38	1435.9	991.09	315.75	198.69	135.56	106.95
72	98.62	128.47	183.36	265.88	749.37	1122.57	563.65	352.88	50.76	28.73	18.95	13.32	11.09	13.32	18.95	28.73	50.76	352.88	563.65	1122.57	749.37	265.88	183.36	128.47	98.62
73	90.12	120.44	173.6	237.98	572.91	949.64	464.72	300.51	46.1	26.37	17.41	12.26	10.22	12.26	17.41	26.37	46.1	300.51	464.72	949.64	572.91	237.98	173.6	120.44	90.12
74	81.13	109.69	164.56	217.36	464.59	799.61	374.06	238.29	42.24	23.97	15.82	11.18	9.38	11.18	15.82	23.97	42.24	238.29	374.06	799.61	464.59	217.36	164.56	109.69	81.13
75	70.5	97.09	151.71	203.42	348.61	661.35	314.68	174.36	38.6	21.69	14.35	10.19	8.6	10.19	14.35	21.69	38.6	174.36	314.68	661.35	348.61	203.42	151.71	97.09	70.5
76	58.94	82.23	137.81	192.24	267.45	553.45	255.65	118.49	34.97	19.38	12.9	9.29	7.92	9.29	12.9	19.38	34.97	118.49	255.65	553.45	267.45	192.24	137.81	82.23	58.94
77	48.11	66.08	118.02	175.58	214.39	441.55	204.58	81.74	31.3	17.07	11.54	8.5	7.32	8.5	11.54	17.07	31.3	81.74	204.58	441.55	214.39	175.58	118.02	66.08	48.11
78	38.07	52.87	93.78	154.4	172.67	336.88	161.95	62.56	27.4	15.02	10.36	7.77	6.76	7.77	10.36	15.02	27.4	62.56	161.95	336.88	172.67	154.4	93.78	52.87	38.07
79	28.99	40.39	73.23	132.97	152.21	245.51	127.78	51.25	23.46	13.02	9.27	7.12	6.27	7.12	9.27	13.02	23.46	51.25	127.78	245.51	152.21	132.97	73.23	40.39	28.99
80	22.44	29.78	55.25	101.5	136.55	182.23	102.52	42.22	19.67	11.27	8.32	6.47	5.75	6.47	8.32	11.27	19.67	42.22	102.52	182.23	136.55	101.5	55.25	29.78	22.44
81	17.74	23.04	40.15	72.51	114.95	130.69	80.31	34.05	16.42	9.83	7.43	5.8	5.21	5.8	7.43	9.83	16.42	34.05	80.31	130.69	114.95	72.51	40.15	23.04	17.74
82	14.26	18.3	28.25	51.65	93.98	93.91	60.96	26.86	13.4	8.56	6.51	5.12	4.65	5.12	6.51	8.56	13.4	26.86	60.96	93.91	93.98	51.65	28.25	18.3	14.26
83	11.43	14.54	21.42	36.75	66.35	65.85	45.35	20.87	10.85	7.34	5.62	4.41	4.03	4.41	5.62	7.34	10.85	20.87	45.35	65.85	66.35	36.75	21.42	14.54	11.43
84	8.98	10.98	16.41	24.25	46.02	47.52	32.45	15.66	8.63	6.06	4.64	3.6	3.34	3.6	4.64	6.06	8.63	15.66	32.45	47.52	46.02	24.25	16.41	10.98	8.98
85	6.98	8.3	11.89	17.56	31.97	34.22	22.22	10.89	6.54	4.68	3.55	2.81	2.64	2.81	3.55	4.68	6.54	10.89	22.22	34.22	31.97	17.56	11.89	8.3	6.98
86	5.26	6.01	8.01	11.6	19.21	21.5	14.14	7.11	4.64	3.29	2.5	2.08	1.98	2.08	2.5	3.29	4.64	7.11	14.14	21.5	19.21	11.6	8.01	6.01	5.26
87	3.55	3.98	5	6.57	9.99	11.53	7.62	4.37	2.87	1.95	1.38	1.07	0.92	1.07	1.38	1.95	2.87	4.37	7.62	11.53	9.99	6.57	5	3.98	3.55
88	1.75	1.93	2.38	3.41	4.29	5	3.8	2.25	1.39	0.82	0.31	0.1	0.05	0.1	0.31	0.82	1.39	2.25	3.8	5	4.29	3.41	2.38	1.93	1.75
89	0.18	0.21	0.39	0.98	1.63	2.1	1.35	0.84	0.52	0.27	0.13	0.09	0.05	0.09	0.13	0.27	0.52	0.84	1.35	2.1	1.63	0.98	0.39	0.21	0.18
90	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
91	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
92	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
93	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
94	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
95	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
96	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
97	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
98	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
99	0	0	0	0																					

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161	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
162	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
163	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
164	0	0	0	0	0	0	0	0	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	0	0	0	0	0	0	0	0
166	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
167	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
168	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
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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
171	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
172	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
173	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
174	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
176	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
177	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
178	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
179	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

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

Model No.	ALEDSATN	Sample ID.	G1
Temperature (°C)	25.3	Humidity (%RH)	56.0

#### Test Method

The samples were tested according to the ANSI C82.77:2002.

The total harmonic distortion shall be measured to the 40th order.

The ambient temperature condition was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . The sample measurements were made using a digital power meter and power supply. The sample was operated at rated voltage and was stabilized before measurement. The total harmonic distortion were calculated.

#### Test Results

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
120.01	60	0.689	82.6	0.999	2.01%
277.00	60	0.300	80.2	0.967	7.41%



## 5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2021/12/26	2022/12/25
DLF108	Auxiliary Lamp	2021/12/26	2022/12/25
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-derectional	2021/12/26	2022/12/25
DLF116	AC Power Source	2021/12/26	2022/12/25
DLF113	Power Meter	2021/12/26	2022/12/25
DLF112	Temperature Recorder	2021/12/26	2022/12/25
DLF114	Temperature & Humidity Datalogger	2021/12/26	2022/12/25
DLF101	Goniophotometer	2021/12/26	2022/12/25
DLF125	Standard Lamp Standard Lamp Type: 76.58 V, 6.7875 A, Tungsten, Omni-derectional	2021/12/26	2022/12/25
DLF104	AC Power Source	2021/12/26	2022/12/25
DLF507	DC Power Source	2021/12/26	2022/12/25
DLF102	Power Meter	2021/12/26	2022/12/25
DLF111	Temperature & Humidity Datalogger	2021/12/26	2022/12/25
DLF119	Power Meter	2021/12/26	2022/12/25
DLF031	Temperature data logger	2021/12/26	2022/12/25
DLF022	Digital power meter	2021/12/26	2022/12/25
DLF003	Temperature & Humidity Datalogger	2021/12/26	2022/12/25

\*\*\*\*\* End of Test Report\*\*\*\*\*