

Photometric Test Report

Relevant Standards

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

Prepared For RAB Lighting Inc.

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Report Number

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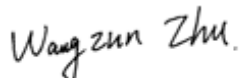
Test Date

2021/11/9

Issue Date

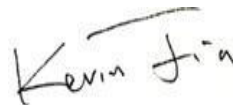
2021/11/12

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	37583	
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	142.8
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case	263.2	
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	4.43%	
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	0.963	
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	5029±355	4955
		4 step	5029±220	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥70	84	
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥-40	13	
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	
IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-18% ≤ IES Rcs,h1 ≤ +23%	-12%	
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%	0.15%	
Input Voltage (V) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case	480	
Input Current (A) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case	0.570	

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2021/11/9	ALEDLAT/480	R1
2	Goniophotometer Test	2021/11/9	ALEDLAT/480	R1
3	THD and PF Test	2021/11/9	ALEDLAT/480	R1

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.

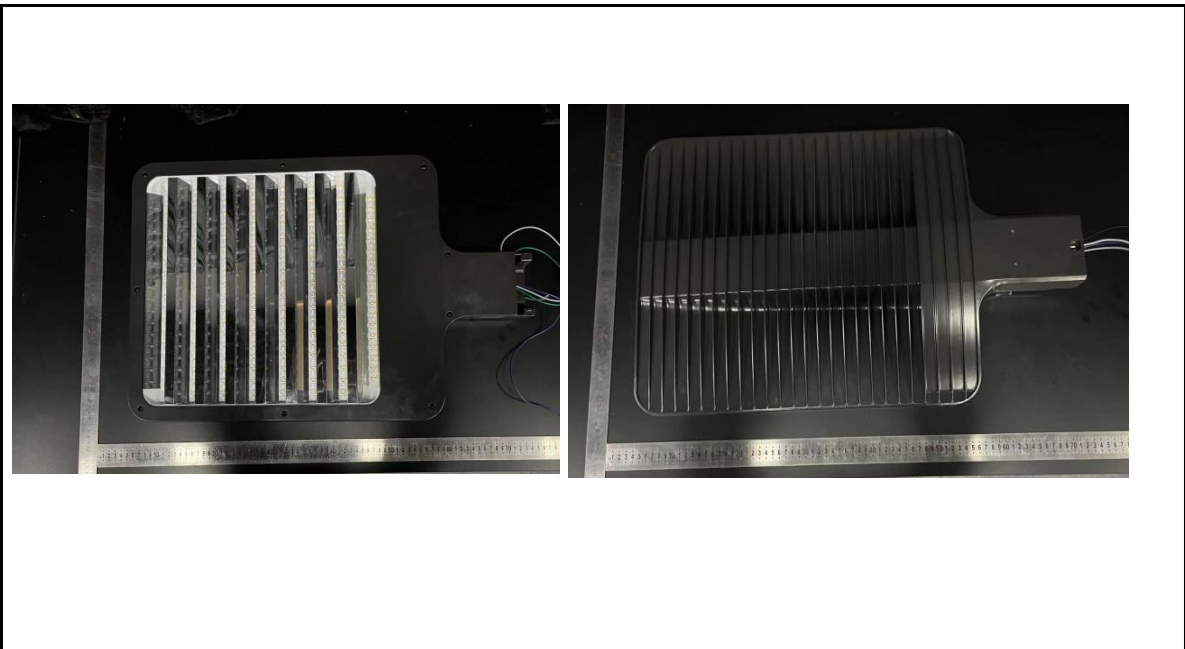
3.0 Production Description

Luminaire Description: ALEDLAT/480

Description: 260W/36,000 lm @ 5000K

Electrical Specification: 480V,50/60HZ

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	ALEDLAT/480	Sample ID.	R1
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 ± 0.2 percent under load.

The sample was measured using 4π 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
480.00	60	0.569	262.9	0.963

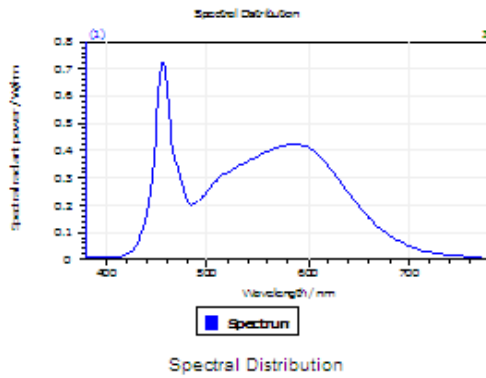
Test Result

CCT (K)	CRI	R9	Duv
4955	84	13	0.0012

Rf	Rg	IES Rcs,h1
83	93	-12%

4.1 Integrating Sphere Test

Results



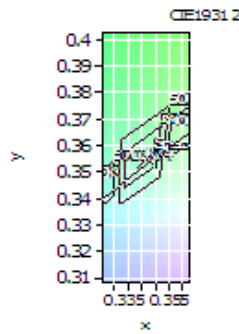
Spectral values

DominantWavelength 572.12 nm
Purity 0.106
PeakWavelength 456.30 nm
Radiant Power 82.5 W
Width50%:

Color Coordinates

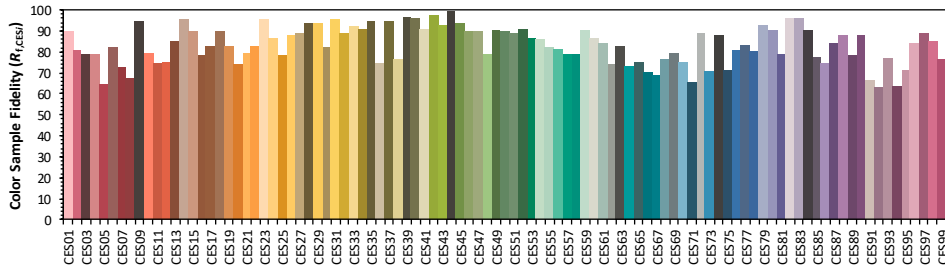
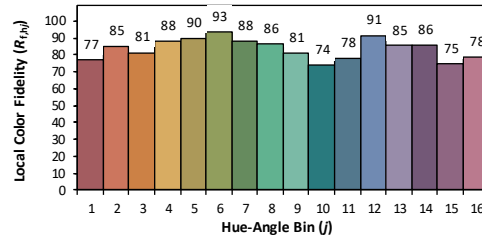
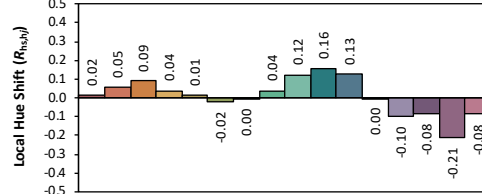
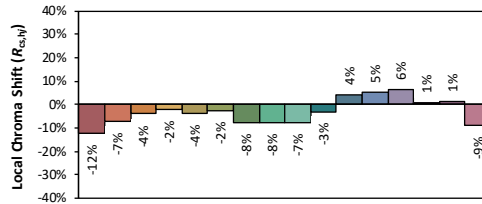
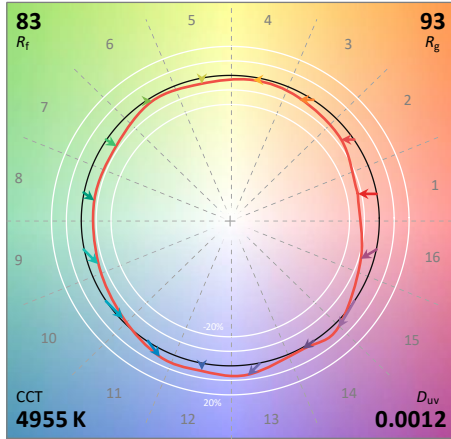
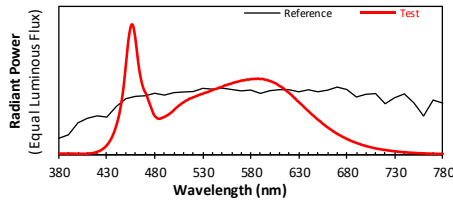
Correlated Color Temporal 4955 K
x: 0.3486 u: 0.2110 u': 0.2110
y: 0.3553 v: 0.3245 v': 0.4867

CRI01	83.4	CRI09	12.8
CRI02	92.6	CRI10	80.9
CRI03	95.1	CRI11	80.1
CRI04	81.2	CRI12	61.8
CRI05	83.2	CRI13	86.5
CRI06	87.5	CRI14	98.0
CRI07	85.4	CRI15	78.5
CRI08	66.8	CRI16	74.1
ResultsCRI	84.4		



PlanckDistance 1.2E-003

4.1 Integrating Sphere Test



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

x 0.3466
 y 0.3553
 u' 0.2110
 v' 0.4867

CIE 13.3-1995 (CRI)	
R _a	84
R _g	13

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.	ALEDLAT/480	Sample ID.	R1
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° C ± 1° 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 ±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° vertical intervals and 10° horizontal intervals.

Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	479.98	60	0.570	263.2	0.962

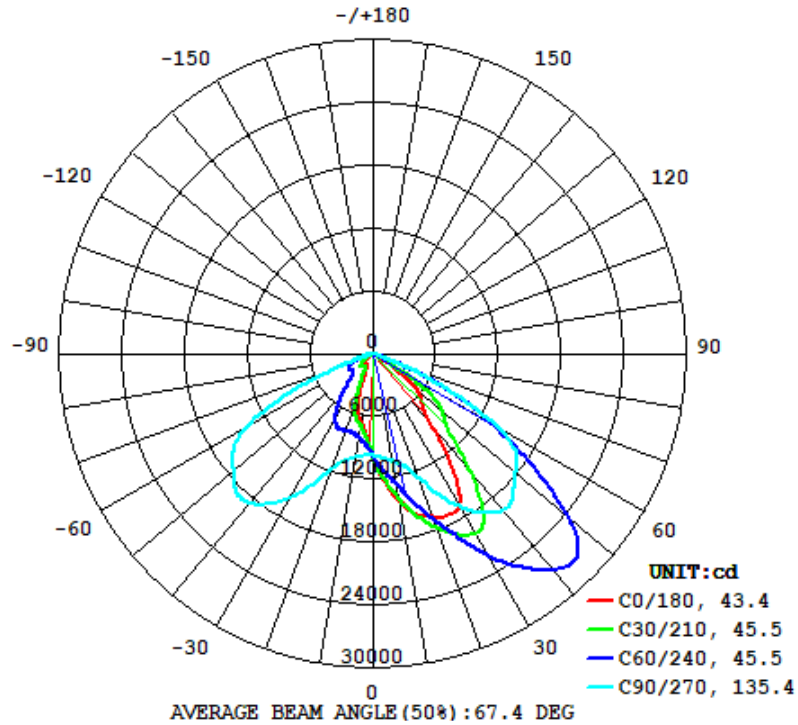
Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
37583	83.4	148.2	43.4	135.4	142.8

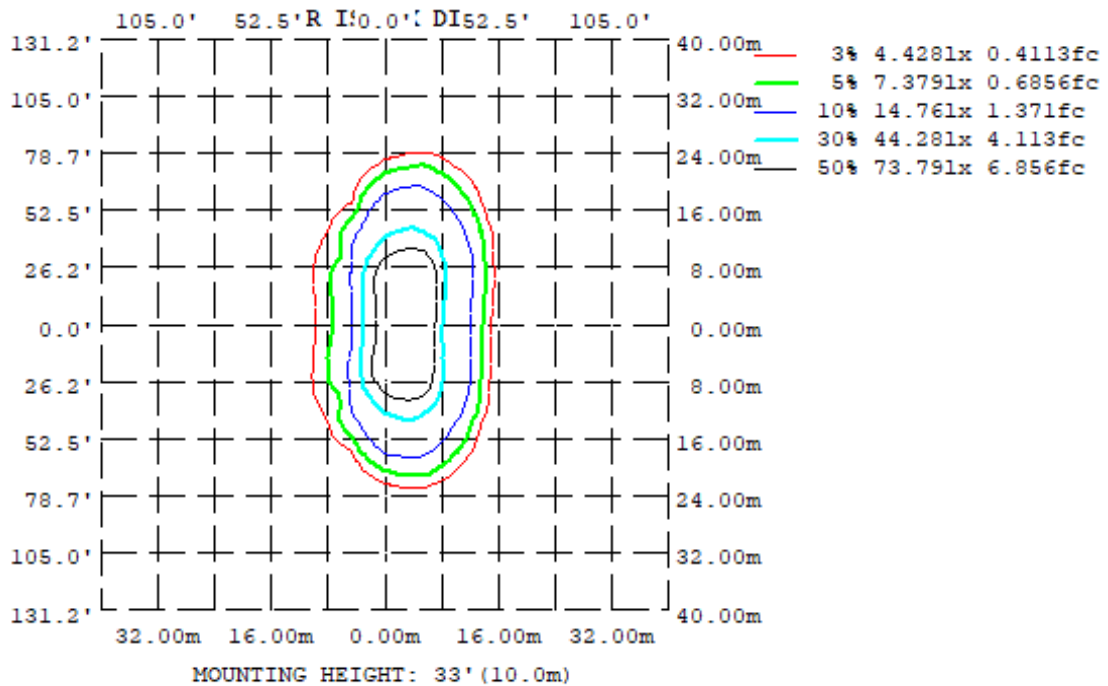
Zonal Lumen Requirement (0°-90°)	Zonal Lumen Requirement (80°-90°)	BUG rating
100.00%	0.15%	B4-U0-G2

4.2 Goniophotometer Test

Light Distribution Curve



Isolux Plot



4.2 Goniophotometer Test

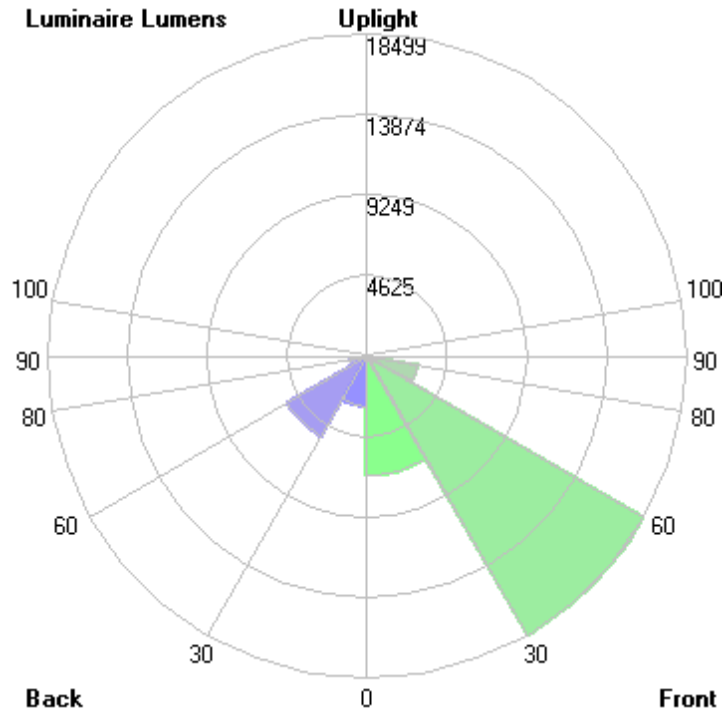
Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	1418	1339	1039	764.1	672.8	750.2	1005	1302
20	1656	1754	1242	667.2	367.7	645.8	1163	1712
30	1667	2200	1693	369.9	127.3	336.1	1577	2166
40	874.6	2307	1946	204.6	136.7	190.0	1859	2446
50	575.1	1482	1785	243.3	76.65	232.4	1745	1721
60	118.5	769.7	1350	173.6	10.70	165.6	1409	960.1
70	16.65	122.9	228.3	11.00	3.768	11.42	339.0	143.6
80	3.713	8.307	43.77	3.657	1.801	3.960	54.62	11.68
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:*10cd							

	Zonal (lm)		Total (lm)	Percent
0-10	958.94	0 - 10	958.94	2.55%
10-20	3123.79	0 - 20	4082.73	10.86%
20-30	5638.76	0 - 30	9721.49	25.87%
30-40	8007.93	0 - 40	17729.42	47.17%
40-50	8596.73	0 - 50	26326.15	70.05%
50-60	7231.02	0 - 60	33557.17	89.29%
60-70	3420.10	0 - 70	36977.27	98.39%
70-80	547.78	0 - 80	37525.05	99.85%
80-90	57.82	0 - 90	37582.87	100.00%
90-100	0.00	0 - 100	37582.87	100.00%
100-110	0.00	0 - 110	37582.87	100.00%
110-120	0.00	0 - 120	37582.87	100.00%
120-130	0.00	0 - 130	37582.87	100.00%
130-140	0.00	0 - 140	37582.87	100.00%
140-150	0.00	0 - 150	37582.87	100.00%
150-160	0.00	0 - 160	37582.87	100.00%
160-170	0.00	0 - 170	37582.87	100.00%
170-180	0.00	0 - 180	37582.87	100.00%

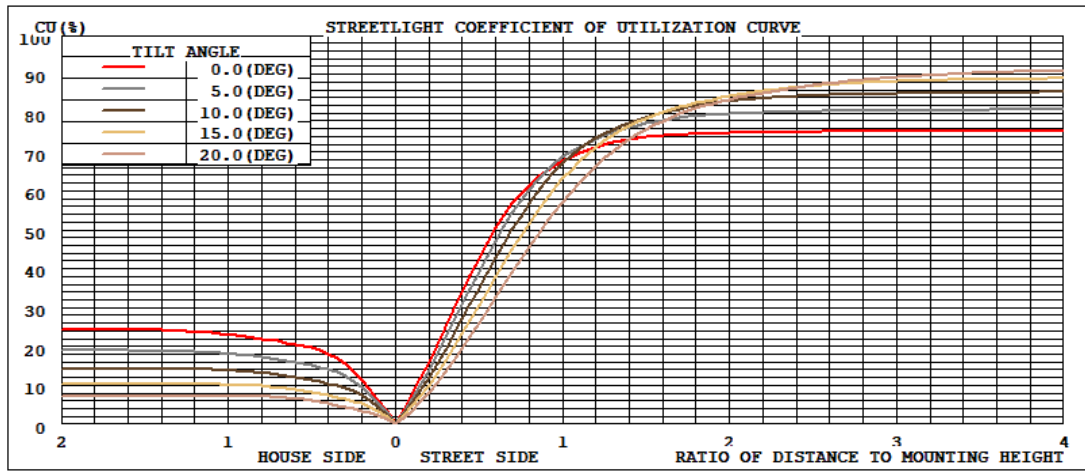
4.2 Goniophotometer Test

LCS/BUG

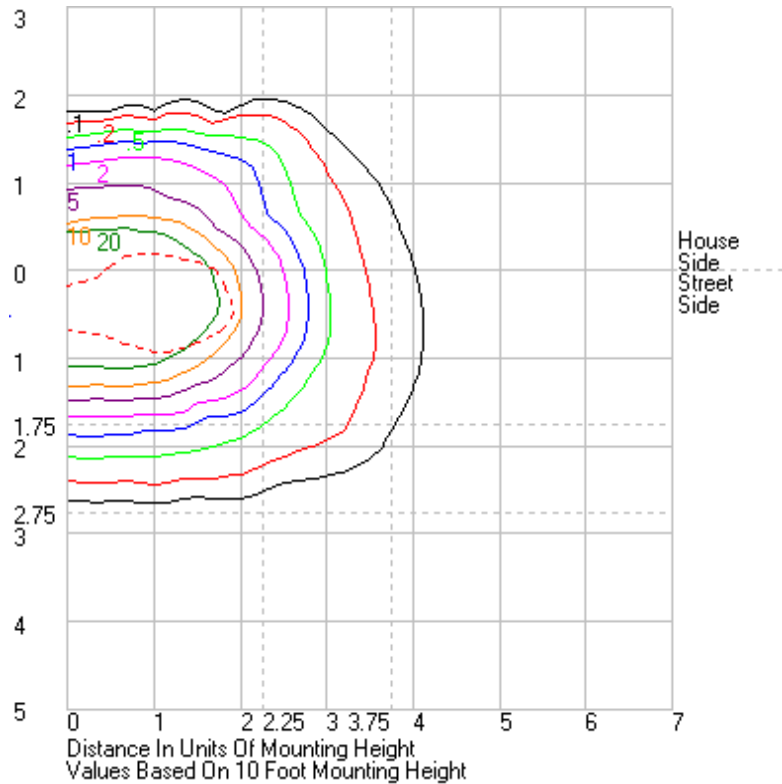


	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	6822.0	N.A.	18.2
FM - Front-Medium (30-60)	18498.7	N.A.	49.2
FH - Front-High (60-80)	2988.5	N.A.	8.0
FVH - Front-Very High (80-90)	37.5	N.A.	0.1
BL - Back-Low (0-30)	2899.5	N.A.	7.7
BM - Back-Medium (30-60)	5337.0	N.A.	14.2
BH - Back-High (60-80)	979.4	N.A.	2.6
BVH - Back-Very High (80-90)	20.3	N.A.	0.1
UL - Uplight-Low (90-100)	0.0	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0
Total	37582.9	N.A.	100.0
BUG Rating	B4-U0-G2		

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	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25	9787.25
1	10230	10232	10189.3	10124.1	10040.3	9936.39	9770.84	9652.77	9534.35	9435.99	9354.56	9296.29	9363.5	9366.19	9407.47	9471.2	9553.59	9658.37	9719.98	9825.98	9927.4	10022.2	10079.9	10129.1	10230
2	10674.2	10651.3	10590.6	10467.6	10292.7	10089.7	9814.18	9576.91	9358.24	9172.19	9011.19	8905.68	8945.56	8964.6	9039.73	9166.39	9340.13	9539.36	9713.27	9939.69	10142.9	10318.8	10453.6	10537.3	10674.2
3	11108.8	11095.8	10982.3	10807.8	10564	10255.5	9870.75	9518.21	9195.35	8903.69	8675.2	8529.74	8552.15	8573.91	8677.64	8872.08	9131.62	9434.82	9717.88	10056.4	10361	10628.6	10830	10967.1	11108.8
4	11517.3	11494.7	11376	11153.5	10831.7	10424.5	9923.32	9464.45	9025.93	8652.91	8377.08	8198.03	8199.29	8227.45	8374.06	8600.72	8931.69	9343.16	9736.08	10188.8	10591.7	10943.6	11198.8	11350.6	11517.3
5	11925.4	11892.6	11751.4	11478.5	11095.5	10602.7	9989.6	9416.69	8877.84	8446.06	8111.14	7909.68	7887.92	7933.02	8087.44	8369.17	8756.68	9260.38	9765.51	10322.3	10830.7	11250.4	11545.8	11742.1	11925.4
6	12374	12334.8	12139.2	11820.1	11376.2	10784.2	10058.4	9377.54	8745.71	8242.93	7883.72	7645.22	7612.9	7662	7848.33	8155.01	8604.54	9189.48	9803.24	10470.3	11079	11554.8	11916.7	12164.1	12374
7	12852.7	12811.6	12584	12179.7	11647	10971	10136.3	9343.48	8628.74	8078.11	7670.36	7381.47	7334.63	7387.92	7622.63	7975.92	8466.98	9127.83	9851.51	10630.6	11329.4	11884.7	12320.3	12613	12852.7
8	13319.1	13275.6	13041.5	12550.8	11917.6	11161.3	10221.9	9315.96	8529.17	7936.11	7455.54	7145.3	7087.16	7153.04	7392.48	7818.04	8351.24	9075.18	9905.79	10797.3	11582.1	12226.1	12753.6	13098.4	13319.1
9	13751.9	13734.4	13500.6	12966.5	12215.2	11351.4	10293	9290.84	8428.34	7783.87	7261.32	6939.96	6890.31	6942.33	7201.61	7656.97	8255.53	9039.76	9974.75	10977.7	11845.3	12607.8	13218	13584.6	13751.9
10	14184.7	14193.2	13959.7	13394.3	12517.4	11557.4	10385.1	9277.41	8358.57	7641.06	7095.5	6786.25	6728.27	6788.4	7034.88	7501.56	8171.65	9010.02	10045.1	11161.5	12132.4	13018	13689.7	14012.2	14184.7
11	14490.3	14513.5	14391.3	13825.7	12851.4	11764.6	10480.3	9272.86	8298.07	7508.41	6958.9	6618.85	6606.97	6666.2	6908.66	7373.36	8098.37	8993.14	10116.2	11344.7	12432.1	13449	14123.4	14356.9	14490.3
12	14827.3	14854	14735.6	14258.4	13204.2	11976.2	10583.1	9277.17	8242.64	7392.93	6842.28	6501.62	6465.6	6546.08	6806.15	7259.68	8021.93	8983.94	10201	11542.7	12750.9	13888.5	14488.8	14672.6	14827.3
13	15144.9	15169.7	15070.3	14679.9	13595.2	12222.8	10706	9307.81	8198.96	7300.7	6751.51	6385.28	6286.82	6390.13	6713.47	7170.22	7944.44	8982.85	10286.7	11754.2	13108.1	14327.5	14799	15003.1	15144.9
14	15534.4	15562.2	15433.1	15053.2	13986.3	12488	10842.3	9341.89	8149.31	7221.94	6699.37	6220.3	6041.45	6189	6588.74	7089.34	7888.22	8998.6	10394.7	11985.4	13496.7	14729.2	15151.7	15369.9	15534.4
15	15834.7	15925.1	15818.1	15382.3	14407.3	12799.3	11016.7	9405.49	8126.82	7155.83	6514.84	5960.63	5730.81	5918.96	6437.49	7034.88	7846.65	9027.51	10521.4	12236.8	13887.4	15074.1	15496.4	15736.9	15834.7
16	16063.1	16208.7	16246.7	15766.5	14863.1	13150.7	11215.9	9492.65	8122.15	7099.82	6327.21	5640.88	5384	5598.27	6230.55	6967.39	7821.7	9079.13	10671.6	12533.6	14324.4	15425.1	15913.8	16020.9	16063.1
17	16250.8	16450.1	16627	16144.5	15296.4	13553.9	11432	9584.85	8119.68	7026.58	6075.87	5276.62	4997.22	5251.06	5972.02	6884.29	7810.02	9154.28	10855.8	12858.9	14776.2	15808.8	16302.8	16255.6	16250.8
18	16392.1	16694.5	16971.1	16598.2	15774.2	13958.4	11718	9729.15	8152.68	6937.84	5790.38	4903.55	4584.62	4861.4	5682.1	6777.29	7815.97	9245.06	11069.5	13233.3	15253.2	16209	16637.5	16478.9	16392.1
19	16466.4	16848.3	17306.6	17078.6	16196.5	14403.6	12029.8	9880.48	8188.59	6813.47	5459.25	4476.24	4139.45	4454.45	5361.47	6635.9	7828.59	9357.95	11326.9	13654.2	15721.5	16654.3	16963.1	16636.3	16466.4
20	16556.3	16998.1	17640.1	17544.2	16630.1	14900.8	12419.7	10068.8	8237.6	6672.33	5107.28	4043.24	3677.03	4008.37	5010.48	6458.21	7852.96	9490.18	11627.9	14114.6	16195.8	17124.9	17284.8	16779.3	16556.3
21	16728.4	17183	17923.6	18015.5	17135.8	15462.4	12850.8	10295	8294.7	6470.39	4722.31	3597.72	3219.88	3558	4628.7	6253.12	7890.1	9646.46	11971.3	14607.9	16659.7	17577.4	17583.1	16942.8	16728.4
22	16911.3	17417.7	18204.4	18448.3	17594.5	15996	13289.4	10514.3	8328.6	6267.58	4320.87	3166.11	2802.85	3129.22	4225.48	6026.39	7917.9	9825.89	12350.4	15128.8	17137.7	18019.5	17845.2	17182.4	16911.3
23	16988.4	17613.5	18502.4	18939.8	18164.3	16596.8	13799.2	10803.5	8386.41	6033.57	3911.8	2761.75	2430.99	2729.99	3811.51	5761.22	7932.04	10030.1	12745.4	15682.7	17646.6	18460.2	18125	17431.1	16988.4
24	17003.9	17714.9	18831.6	19384.7	18717.1	17170.6	14291.5	11084.3	8407.49	5743.69	3511.75	2408.64	2097.46	2376.54	3411.79	5467.85	7928.26	10250.6	13185.2	16244.4	18185.9	18923.6	18437.8	17567.1	17003.9
25	17019.4	17754.1	19103.9	19806.5	19312.8	17728.8	14754.3	11358.1	8418.16	5429.95	3130.82	2105.2	1831.43	2073.45	3032.95	5135.92	7894.73	10487	13658.1	16829.2	18728.9	19392.9	18760.9	17618.7	17019.4
26	17046.3	17787.7	19323.5	20254.4	19944.8	18341.9	15249.9	11689.8	8434.4	5085.19	2789.79	1847.44	1619.2	1818.19	2684.88	4785.17	7830.77	10725.3	14110.8	17403.1	19335.8	19829.2	19028.4	17672.7	17046.3
27	17037.6	17775.3	19466.8	20671	20488.7	18881.3	16688.4	11958	8382.91	4741.45	2473.8	1645.85	1455.96	1611.08	2368.5	4422.3	7738.26	10974.9	14559.5	17978	19932.7	20283.3	19224.7	17743.3	17037.6
28	17038.0	17754.6	19606.8	21160.8	21112.9	19487.1	16135.7	12288.8	8341.3	4387.83	2209.52	1490.37	1347.96	1458.81	2099.11	4054.78	7618.96	11212.1	14970.3	18541.3	20539.8	20731.2	19401.2	17777.1	17038.0
29	16917.2	17693.9	19716.4	21588.1	21683.7	20043.9	16552.9	12585.2	8245.86	4047.55	1985.41	1389.69	1292.54	1361.33	1877.23	3705.89	7468	11435.3	15376.1	19096.6	21133.1	21198	19567.1	17803.8	16917.2
30	16672.2	17518.6	19776.7	21995.1	22256.4	20565.5	16928.5	12825	8097.52	3698.71	1791.39	1337.49	1273.49	1314.43	1691.78	3361.05	7288.71	11646.8	15773.7	19650.7	21715	21656.9	19732.3	17736.4	16672.2
31	16325	17244.4	19748.5	22388.8	22873.6	21108.7	17324.2	13099.9	7961.77	3398.26	1653.87	1319.12	1276.94	1300.92	1560.75	3051.9	7079.11	11823.8	16142.2	20178.9	22280.6	22100.9	19858.8	17532.5	16325
32	15792.1	16816.4	19630	22703.2	23394.2	21554.6	17672.8	13287.7	7740.56	3102.65	1560.33	1327.61	1293.59	1309.48	1481.27	2762.48	6829.09	11982.5	16513.9	20694.5	22846.5	22519.8	19914.2	17206.3	15792.1
33	15066.2	16179.9	19416.4	23023.2	23960	22018.5	18002.3	13455.6	7490.64	2840.57	1515.43	1349.73	1317.18	1333.01	1446.36	2512.25	6555.84	12115.4	16870.4	21189.2	23416.7	22923.9	19886.4	16746.4	15066.2
34	14257.7	15432.1	19054.7	23297.8	24432.4	22456.9	18322.1	13596.5	7231.58	2623.7	1504.25	1379.38	1343.01	1363.08	1443.16	2301.68	6258.99	12218.3	17200.5	21661.9	23965.4	23303	19746	16082.8	14257.7
35	13321.2	14541.5	18539.4	23509.8	24895.6	22850	18582.5	13663.9	6902.06	2428.74	1523.44	1415.05	1365.11	1394.26	1465.01	2122.7	5934.44	12301.7	17506.2	22109.2	24488.9	23683.3	19483.1	15285.7	13321.2
36	12371.4	13576.1	17868.2	23661.9	25362.5	23250.8	18852.2	13739.2	6537.61	2263.56	1566.43	1445.97	1382.52	1421.02	1503.58	1991.43	5602.55	12356.6	17794.3	22538.2	24968.2	24043	19074.8	14383.9	12371.4
37	11471.1	12643.2	17034.2	23707.5	25783.8	23604.7	19068.5	13745.4	6225.72	2146.87	1616.41	1473.8	1397.23	1443.58	1552.09	1907.95	5256.56	12374.8	18051.9	22927.7	25410.9	24293.5	18508.5	13462	11471.1
38	10530.3	11687.5	16181.1	23654.3	26201.6	23942.7	19239.3	13716.3	5914.45	2076.61	1674.51	1497.29	1400.17	1461.78	1597.22	1872.49	4910.21	12348.4	18274.4	23272.2	25819.8	24457.2	17		



51	5397.76	5966.27	8547.55	14141	23366.9	23202	17664.9	9611.09	2732.41	2422.55	1521.89	901.02	707.84	838.54	1414.12	2313.01	2613.42	8160.74	17218.4	23126.2	25939.9	16142	9402.01	6232.5	5397.76	
52	4892.29	5529.32	8182.89	13558.1	22176.4	22927.4	17425.4	9075.2	2757.73	2392.87	1448.17	839.49	650.23	779.42	1350.41	2280.39	2667.6	7671.79	17018.5	22939.8	25043.9	15247.7	9134.25	5894.59	4892.29	
53	4317.37	4961.1	7805.44	13047.2	21102.8	22751.4	17261.5	8585.96	2793.44	2344.24	1375.69	772.28	585.56	719.59	1286.6	2229.5	2721.6	7170.98	16807.9	22785.2	23989.1	14498	8806.45	5419.69	4317.37	
54	3711.7	4306.49	7339.93	12475.4	19864.4	22485.4	17050.6	8036.88	2836.64	2281.86	1303.56	698.98	512.9	650.99	1222.05	2166.31	2769.6	6685.68	16598.5	22655.3	22887.3	13893.3	8417.35	4823.35	3711.7	
55	3126.5	3689.66	6702.73	11855.7	18673.4	22222.7	16784.3	7519.72	2876.74	2216.57	1228.46	605.2	434.4	572.87	1150.36	2095.9	2801.87	6188.05	16351	22507.1	21796.3	13315.8	7944.77	4182.44	3126.5	
56	2580.22	3061.05	5898	11155.8	17450.6	21946.7	16472.7	6990.27	2897.15	2141.47	1139.06	510.68	350.07	485.48	1071.51	2022.43	2812.25	5699.59	16074.7	22308.3	20737.6	12697.1	7317.24	3551.74	2580.22	
57	2108.02	2505.13	5091.89	10420.9	16173.7	21440.2	15920.7	6415.59	2885.51	2056.88	1030.78	413.5	266.73	391.86	975.07	1941.7	2799.84	5227.52	15756.5	22056	19645	11999.5	6524.18	2954.17	2108.02	
58	1653.48	2015.56	4278.75	9689.57	15073.9	20931	15343.7	5844.27	2857.74	1964.21	901.83	308.39	204.65	298.5	859.76	1853.5	2777.87	4750.3	15325.6	21690.2	18488.9	11247.7	5629.57	2401.87	1653.48	
59	1357.23	1594.62	3471.46	8720.42	13899.4	20087	14509.7	5272.94	2819.09	1858.04	752.98	224.71	155.45	218.36	724.78	1763.56	2749.2	4313.4	14804.1	21219.3	17248.2	10448.7	4732.4	1908.93	1357.23	
60	1184.76	1337.99	2769.14	7697.04	12895.2	19006.3	13496.5	4676.48	2771.21	1735.62	597.25	160.83	106.99	167.53	578.58	1655.63	2705.11	3904.31	14088.7	20601.9	16015.2	9601.11	3880.43	1610.38	1184.76	
61	1054.03	1188.84	2136.8	6459.09	11889.3	17852.6	12498.8	4154.19	2706.72	1580.27	447.78	118.08	85.13	117.25	431.01	1515.19	2649.49	3515.04	13292.8	19783.4	14771.8	8605.77	3066.9	1403.98	1054.03	
62	937.57	1066.78	1675.09	5366.94	10796.4	16184.2	11161.8	3570.19	2627.21	1394.91	298.32	92.48	72.51	91.83	305.12	1357.44	2591.95	3165.7	12448.2	18792.7	13621.2	7510.89	2360.9	1199.31	937.57	
63	828.69	952.06	1408.53	4276.11	9851.95	14675.5	10000.2	3139.71	2550.56	1195.44	201.68	78.85	63.99	77.61	223.23	1198.64	2531.22	2839.44	11360.3	17540.4	12470.3	6325.95	1816.03	1074.29	828.69	
64	725.51	843.89	1268.11	3250.38	8662.54	12916.6	8708.4	2681.59	2442.35	963.2	138.97	69.64	57.96	68.68	164.83	987.52	2449.14	2555.76	10178.9	16101.7	11324.3	5136.51	1556.47	958.07	725.51	
65	608.39	725.76	1170.07	2481.34	7523.16	11038.7	7281.49	2321.72	2309.47	724.88	106.01	63.85	53.05	62.28	107.63	760.77	2343.18	2304.18	8865.65	14273.1	10170.7	4038.64	1404.09	846.58	608.39	
66	488.38	602.54	1070.34	1892.08	6320.56	9387.06	6130.21	2045.76	2168.03	526.64	88.74	58.83	49.11	57.13	89.28	547.75	2217.12	2097.42	7571.8	12444.4	8953.17	3105.78	1252.54	724.51	488.38	
67	368.36	483.05	950.28	1570.13	5090.77	7505.85	5024.68	1770.8	1986.04	352.8	77.85	54.23	45.98	53.11	77.99	371.34	2047.75	1934.28	6344.6	10600.6	7711.78	2363.91	1164.31	593.21	368.36	
68	282.62	363.55	793.15	1429.29	3861.37	5932.13	3919.15	1570.59	1795.2	213.18	70.49	50.72	43.09	49.63	70.21	263.04	1844.02	1803.9	5187.11	8740.44	6354.81	1828.2	1059.61	461.98	282.62	
69	217.66	279.64	627.25	1334.35	2776.56	4633.24	3088.69	1389.74	1565.39	141.44	65.33	47.17	40.25	46.48	64.23	187.95	1620.92	1668.76	4223.1	7038.27	4938.51	1551.82	912.7	359.11	217.66	
70	166.55	209.33	479.87	1228.88	2067.42	3334.35	2283.28	1210.47	1310.3	109.96	60.88	44.01	37.68	43.43	59.67	114.2	1389.25	1541.73	3389.53	5583	3653.52	1435.87	731.38	271.91	166.55	
71	134.91	159.93	332.78	1047.38	1633.02	2511.8	1740.52	1083.12	1042.76	91.08	56.43	41.11	35.27	40.46	55.67	94.51	1157.27	1415.1	2637.73	4260.78	2581.83	1347.48	557.08	198.78	134.91	
72	115.61	132.31	226.76	801.93	1375.3	1894.62	1314.61	939.43	768.65	78.26	52.52	38.36	32.96	37.76	51.89	81.15	896.94	1288.48	2023.35	3197.53	1823.04	1258.06	399.47	164.94	115.61	
73	100.48	114.27	169.47	596.84	1240.09	1500.63	1027.5	815.59	536.74	70.19	48.88	35.67	30.8	35.25	48.28	72.55	623.48	1152.68	1633.54	2363.67	1529.19	1067.46	267.06	131.45	100.48	
74	87.18	99.35	141.65	420.45	1194.34	1263.77	879.15	707.18	339.85	64.34	45.42	33.22	28.79	32.88	45.04	66.24	392.64	1018.7	1243.74	1830.64	1243.22	808.45	189.71	113.99	87.18	
75	75.57	86.31	122.01	244.07	1090.29	1053.18	775.84	590.66	183.34	58.76	42.19	31.03	26.97	30.78	41.92	60.64	260.87	863.96	955.03	1538.36	1203.53	571.1	161.07	99.58	75.57	
76	66.05	75.29	106	174.03	902.33	908.1	717.4	492.25	124.63	53.18	39.16	28.81	25.24	28.77	39.11	55.5	184.73	717.24	821.39	1320.79	1169.46	373.18	132.54	87.09	66.05	
77	58.42	65.73	91.95	141.56	646.34	786.33	662.04	385.91	96.32	48.45	36.43	26.6	23.38	26.67	36.48	50.93	110.15	563.24	739.44	1136.38	1126.71	231.27	115.16	76.52	58.42	
78	50.8	57.56	79.23	118.76	458.39	655.75	596.42	294.32	77.58	44.5	33.28	24.22	21.51	24.49	34.05	46.59	87.46	429.46	677.87	994.73	953.58	189.47	100.37	67.04	50.8	
79	43.67	49.42	67.8	100.12	271.53	529.84	530.79	228.95	65.43	40.94	29.93	22.02	19.71	22.43	31.36	43.01	72.06	307.92	616.34	854.5	690.89	147.68	87.34	58.22	43.67	
80	37.13	41.47	57.56	83.07	149.73	403.91	437.67	169.48	56.54	36.57	26.71	20	18.01	20.45	28.48	39.6	61.13	224.47	546.18	721.16	454.18	116.76	75.01	50	37.13	
81	31.23	34.53	47.35	68.33	115.11	290.41	352.4	128.9	47.7	31.96	23.86	18.12	16.45	18.71	25.71	36.17	52.7	173.28	468.84	584.59	302	98.38	63.39	42.24	31.23	
82	25.74	28.04	37.77	55.54	87.95	198.6	271.13	95.42	39.83	27.65	21.4	16.45	14.93	17.1	23.23	32.31	45.73	122.61	393.16	450.31	208.74	81.97	52.48	35.06	25.74	
83	20.26	21.67	29.15	42.8	66.01	121.11	186.7	67.53	32.24	24.01	19.09	14.83	13.35	15.36	20.94	28.47	39.78	93.49	311.54	311.37	116.96	66.68	42.57	28.14	20.26	
84	15.63	16.55	21.58	30.89	49.79	82.9	129.6	51.5	25.9	20.74	16.83	13	11.76	13.53	18.93	25.21	34.23	70.64	234.7	217.61	89.71	52.99	33.3	21.76	15.63	
85	11.61	11.96	14.91	20.86	33.67	56.52	78.78	35.65	19.46	17.4	14.27	10.9	9.86	11.7	16.66	22.11	28.46	55.24	172.31	143.86	68.05	40.5	24.76	16.58	11.61	
86	7.66	7.45	9.07	12.82	19.85	36.53	47.04	22.76	14.78	13.56	11	8.72	8.01	9.69	13.7	19.14	23.29	42.23	109.95	85.57	49.68	28.93	17.98	11.41	7.66	
87	4.34	4.15	5.03	6.16	9.95	16.54	25.26	14.37	10.2	9.16	7.64	6.72	6.09	7.41	10.73	15	18.49	31.19	67.3	55.3	33.34	20.05	11.2	6.52	4.34	
88	1.04	0.86	2.02	3.39	4.86	5.83	8.6	7.56	6.49	6.13	5.4	5.01	4.58	5.45	7.72	10.86	13.69	22.37	37.53	36.91	22.11	11.18	5.24	2.59	1.04	
89	0.17	0.25	0.42	0.64	2.36	3.69	2.26	5.03	4.26	3.68	3.17	3.31	3.2	3.8	5.18	7.05	8.91	14.56	24.25	23.06	10.88	4.1	1.31	0.2	0.17	
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	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	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	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	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	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	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	0
97	0	0	0	0																						



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	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	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	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	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	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	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	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	0
169	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
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	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	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	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	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
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	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	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	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	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

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	ALEDLAT/480	Sample ID.	R1
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° C ± 1° 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
480.00	60	0.569	262.9	0.963	4.43%

5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2020/12/26	2021/12/25
DLF108	Auxiliary Lamp	2020/12/26	2021/12/25
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-derectional	2020/12/26	2021/12/25
DLF116	AC Power Source	2020/12/26	2021/12/25
DLF113	Power Meter	2020/12/26	2021/12/25
DLF112	Temperature Recorder	2020/12/26	2021/12/25
DLF114	Temperature & Humidity Datalogger	2020/12/26	2021/12/25
DLF101	Goniophotometer	2020/12/26	2021/12/25
DLF125	Standard Lamp Standard Lamp Type: 76.58 V, 6.7875 A, Tungsten, Omni-derectional	2020/12/26	2021/12/25
DLF104	AC Power Source	2020/12/26	2021/12/25
DLF507	DC Power Source	2020/12/26	2021/12/25
DLF102	Power Meter	2020/12/26	2021/12/25
DLF111	Temperature & Humidity Datalogger	2020/12/26	2021/12/25
DLF119	Power Meter	2020/12/26	2021/12/25
DLF031	Temperature data logger	2020/12/26	2021/12/25
DLF022	Digital power meter	2020/12/26	2021/12/25
DLF003	Temperature & Humidity Datalogger	2020/12/26	2021/12/25

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