

# Photometric Test Report

## Relevant Standards

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

## Prepared For

**RAB Lighting Inc.**

Room 6A33, No.1388, Wuzhong road, Shanghai, China

Xiao Xiang, 15921313292, Gary.Xiao@rabweb.com

## Prepared By

**Deliver Co., Ltd.**

Block 11, 78 Keling Road, SSTP, Suzhou, China

0512-66801950, kevin.jia@szdeliver.com

## Project Number

**DLF2207109**

## Report Number

**DLF2207109-5a**

## 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		10616
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	129.5
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		82.0
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	2.22%
		20.00%	277V	7.07%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.999
		0.9	277V	0.966
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3985±275	3851
		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		6
Minimum Rf (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥70		84
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%		2.03%
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		0.685
(Goniophotometer - Section 4.2)		Non-Worst Case		0.299
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		82.0
(Goniophotometer - Section 4.2)		Non-Worst Case		79.9

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2022/7/29	ALEDS4TN	E1
2	Goniophotometer Test	2022/7/29	ALEDS4TN	E1
3	THD and PF Test	2022/7/29	ALEDS4TN	E1

### 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.

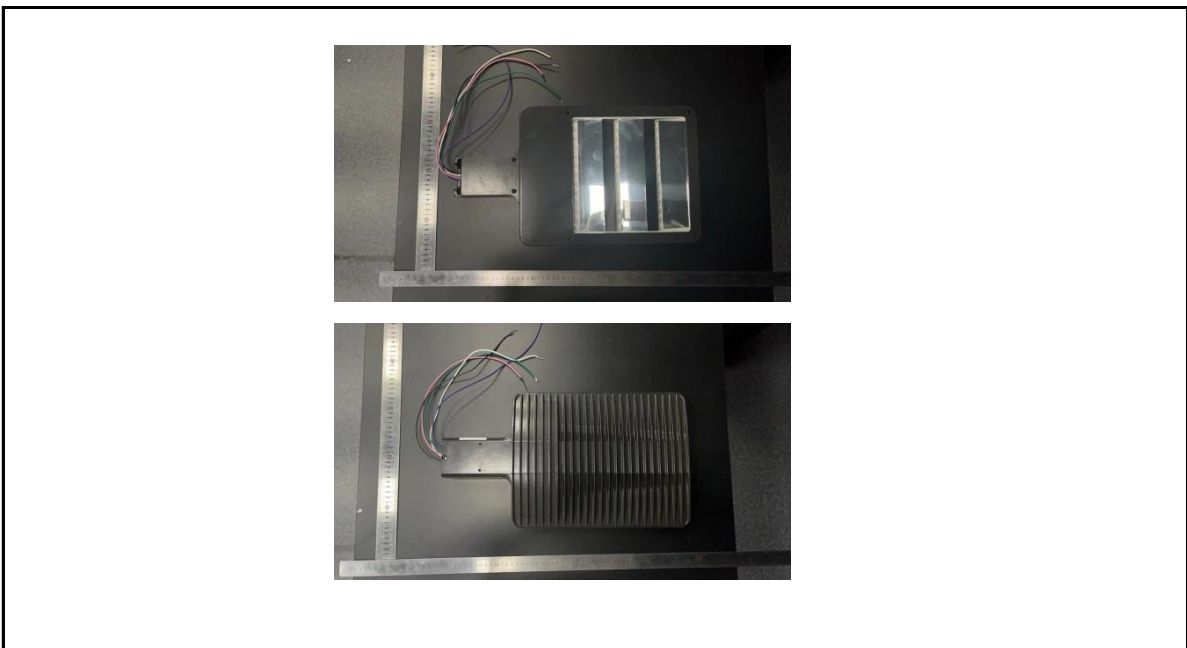
## 3.0 Production Description

**Luminaire Description:** ALEDS4TN

**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.	ALEDS4TN	Sample ID.	E1
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
120.04	60	0.682	81.8	0.999
277.01	60	0.298	79.7	0.966

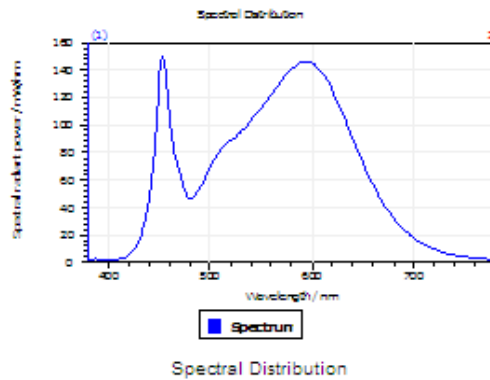
#### Test Result

CCT (K)	CRI	R9	Duv
3851	83	6	0.0012

Rf	Rg	IES Rcs,h1
84	93	-13%

## 4.1 Integrating Sphere Test

### Results

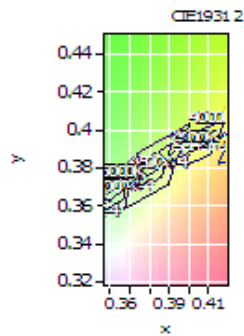


#### Spectral values

DominantWavelength 579.05 nm  
Purity 0.318  
PeakWavelength 453.51 nm  
Radiant Power 24.67 W  
Width50%:

#### Color Coordinates

Correlated Color Temperat 3851 K  
x: 0.3882 u: 0.2273 u': 0.2273  
y: 0.3840 v: 0.3373 v': 0.5059  
CRI01 80.7 CRI09 5.7  
CRI02 90.3 CRI10 76.8  
CRI03 98.2 CRI11 79.1  
CRI04 80.5 CRI12 61.6  
CRI05 81.1 CRI13 83.1  
CRI06 88.5 CRI14 98.3  
CRI07 85.1 CRI15 74.3  
CRI08 62.6 CRI16 71.2  
ResultsCRI 82.9



PlanckDistance 1.2E-003

## 4.1 Integrating Sphere Test

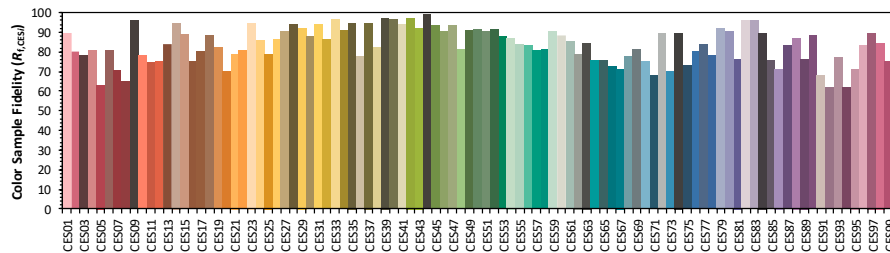
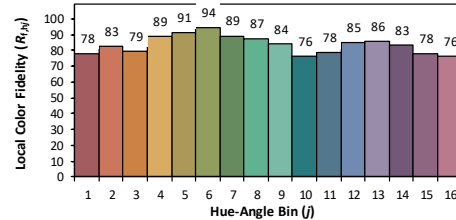
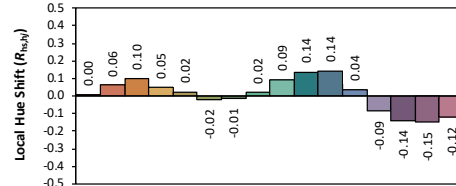
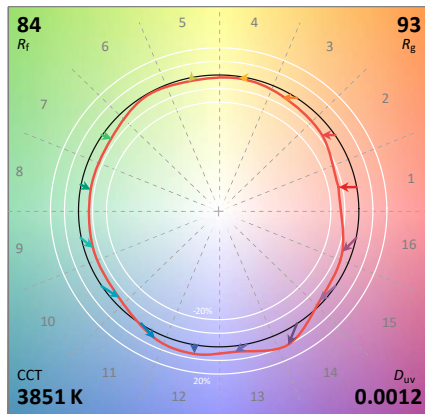
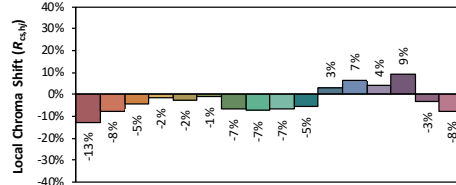
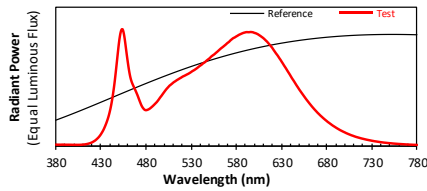
### IES TM-30-18 Color Rendition Report

Source: DLF2207109-5a

Manufacturer: RAB Lighting Inc.

Date: 2022/7/29

Model: ALED54TN



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

$x$  0.3882  
 $y$  0.3840  
 $u'$  0.2273  
 $v'$  0.5059

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.	ALEDS4TN	Sample ID.	E1
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	119.96	60	0.685	82.0	0.998
NON-WORST CASE	277.01	60	0.299	79.9	0.966

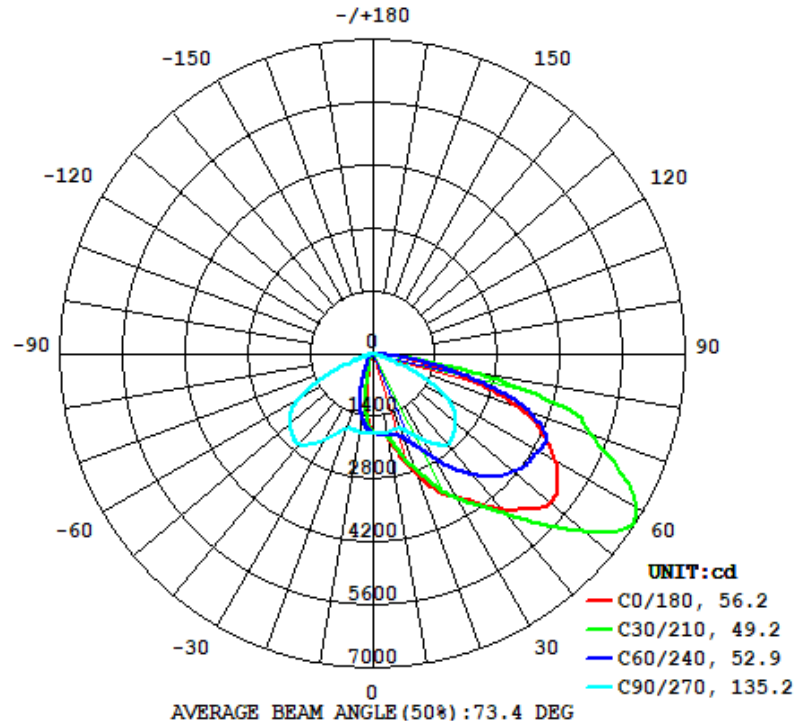
#### Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
10616	96.3	147.9	56.2	135.2	129.5

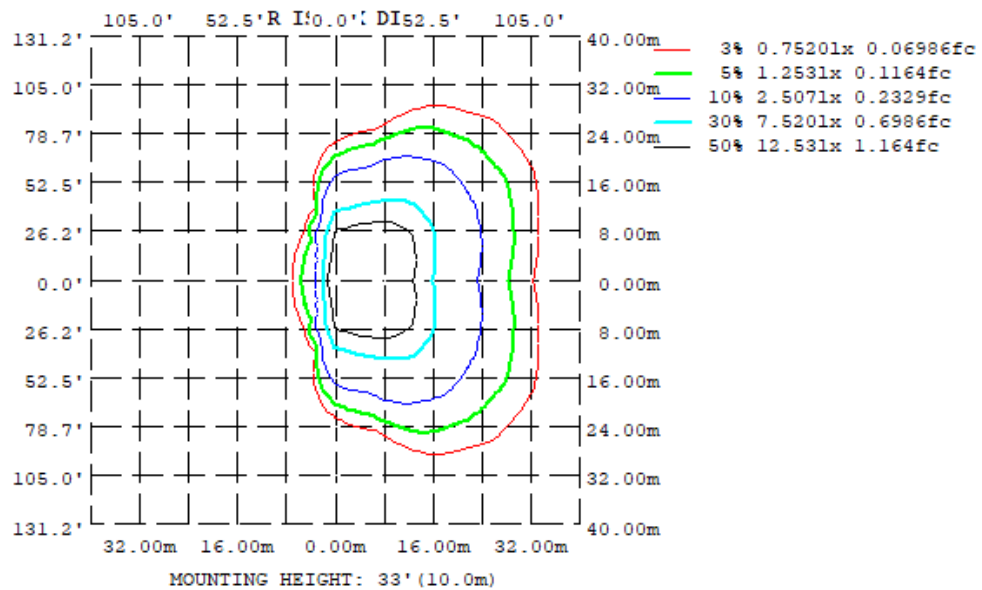
Zonal Lumen Requirement ( $0^{\circ}$ - $90^{\circ}$ )	Zonal Lumen Requirement ( $80^{\circ}$ - $90^{\circ}$ )	BUG rating
100.00%	2.03%	B1-U0-G2

## 4.2 Goniophotometer Test

### Light Distrubtion Curve



### Isolux Plot





## 4.2 Goniophotometer Test

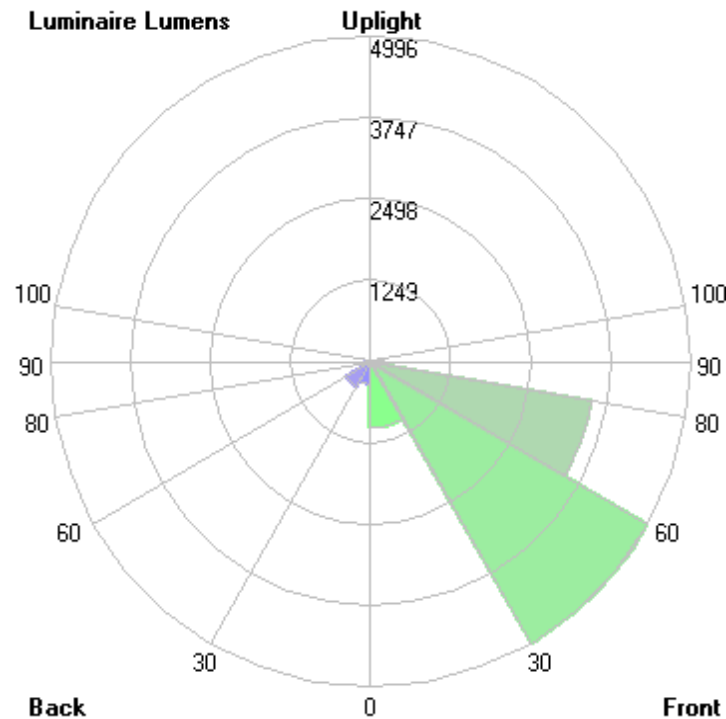
### Zonal Lumen Summary

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315
10	1872	1867	1792	1247	901.6	1247	1792	1867
20	2818	2365	1782	444.8	260.7	444.8	1782	2365
30	3705	3252	2207	235.5	172.3	235.5	2207	3252
40	4540	4259	2631	169.8	95.64	169.8	2631	4259
50	5172	5416	2430	97.59	34.81	97.59	2430	5416
60	4699	6346	1883	49.52	26.04	49.52	1883	6346
70	3480	5204	531.9	33.87	18.55	33.87	531.9	5204
80	1107	2155	76.19	14.91	9.598	14.91	76.19	2155
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	158.46	0 - 10	158.46	1.49%
10-20	427.21	0 - 20	585.67	5.52%
20-30	778.61	0 - 30	1364.28	12.85%
30-40	1279.55	0 - 40	2643.83	24.90%
40-50	1842.05	0 - 50	4485.88	42.26%
50-60	2310.52	0 - 60	6796.40	64.02%
60-70	2233.56	0 - 70	9029.96	85.06%
70-80	1370.77	0 - 80	10400.73	97.97%
80-90	215.31	0 - 90	10616.04	100.00%
90-100	0.00	0 - 100	10616.04	100.00%
100-110	0.00	0 - 110	10616.04	100.00%
110-120	0.00	0 - 120	10616.04	100.00%
120-130	0.00	0 - 130	10616.04	100.00%
130-140	0.00	0 - 140	10616.04	100.00%
140-150	0.00	0 - 150	10616.04	100.00%
150-160	0.00	0 - 160	10616.04	100.00%
160-170	0.00	0 - 170	10616.04	100.00%
170-180	0.00	0 - 180	10616.04	100.00%

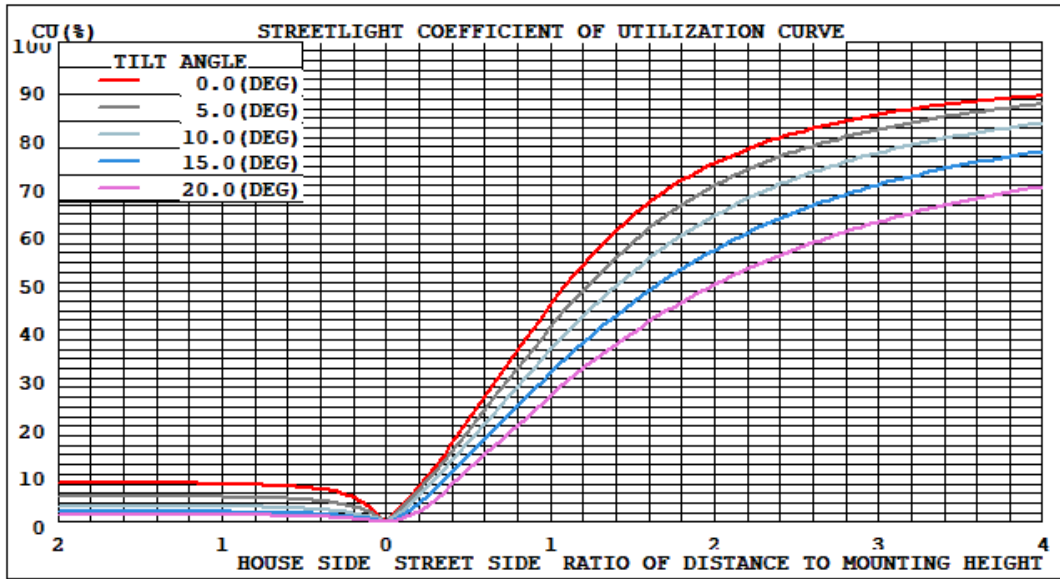
## 4.2 Goniophotometer Test

LCS/BUG

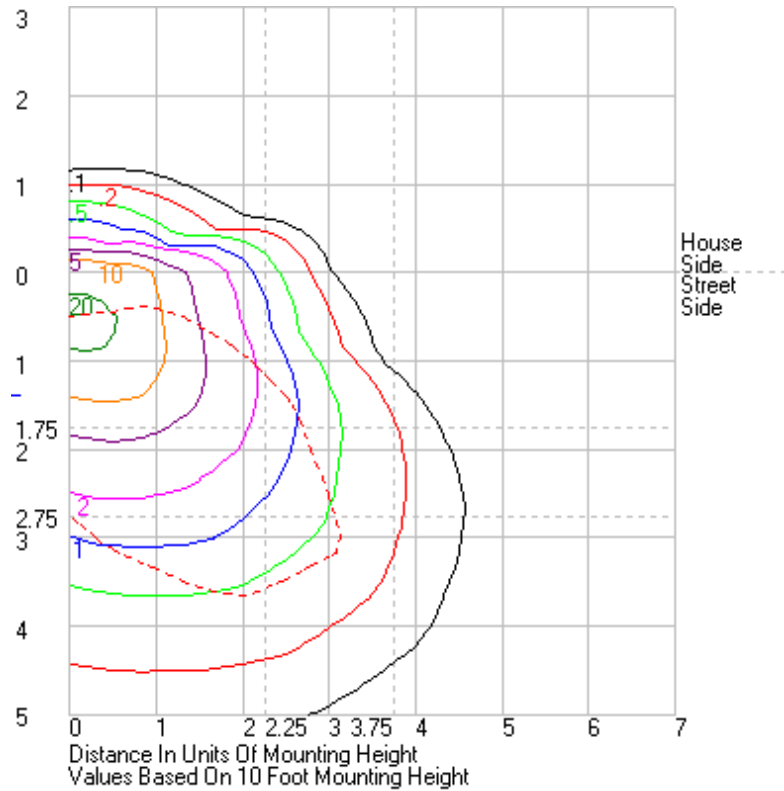


	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	1017.4	N.A.	9.6
FM - Front-Medium (30-60)	4995.9	N.A.	47.1
FH - Front-High (60-80)	3505.6	N.A.	33.0
FVH - Front-Very High (80-90)	210.4	N.A.	2.0
BL - Back-Low (0-30)	346.8	N.A.	3.3
BM - Back-Medium (30-60)	436.2	N.A.	4.1
BH - Back-High (60-80)	98.7	N.A.	0.9
BVH - Back-Very High (80-90)	4.9	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	10615.9	N.A.	100.0
BUG Rating	B1-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	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09	1778.09
1	1789.85	1789.44	1787.85	1785.98	1785.42	1781.48	1776.51	1772.68	1768.67	1762.11	1757.25	1753.83	1752.41	1753.83	1757.25	1762.11	1768.67	1772.68	1776.51	1781.48	1785.42	1785.98	1787.85	1789.44	1789.85
2	1793.62	1791.53	1792.9	1793.38	1792.52	1788.07	1780.19	1769.74	1755.32	1736.83	1720.38	1709.45	1704.43	1709.45	1720.38	1736.83	1755.32	1769.74	1780.19	1788.07	1792.52	1793.38	1792.9	1791.53	1793.62
3	1789.65	1788.77	1791.92	1795.93	1799.24	1795.05	1784.76	1767.1	1736.9	1703.17	1670.95	1647.34	1638.43	1647.34	1670.95	1703.17	1736.9	1767.1	1784.76	1795.05	1799.24	1795.93	1791.92	1788.77	1789.65
4	1789.2	1788.41	1793.14	1799.2	1804.27	1802.16	1788.55	1761.3	1712.72	1658.91	1607.34	1568.54	1552.87	1568.54	1607.34	1658.91	1712.72	1761.3	1788.55	1802.16	1804.27	1799.2	1793.14	1788.41	1789.2
5	1788.73	1791.06	1797.33	1804.21	1808.17	1810.1	1793.16	1754.08	1685.09	1604.59	1529.23	1478.66	1459	1478.66	1529.23	1604.59	1685.09	1754.08	1793.16	1810.1	1808.17	1804.21	1797.33	1791.06	1788.73
6	1794.86	1796.1	1805.03	1811.6	1815.43	1816.36	1796.57	1743.35	1650.98	1542.16	1445.77	1379.78	1356.66	1379.78	1445.77	1542.16	1650.98	1743.35	1796.57	1816.36	1815.43	1811.6	1805.03	1796.1	1794.86
7	1803.46	1807.68	1816.89	1822.38	1823.7	1820.17	1798.2	1728.95	1611.79	1473.76	1353.97	1277.77	1254.02	1277.77	1353.97	1473.76	1611.79	1728.95	1798.2	1820.17	1823.7	1822.38	1816.89	1807.68	1803.46
8	1814.57	1819.87	1831.46	1836.41	1831.39	1824.05	1797.81	1714.96	1566.9	1400.97	1263.16	1167.87	1140.08	1167.87	1263.16	1400.97	1566.9	1714.96	1797.81	1824.05	1831.39	1836.41	1831.46	1819.87	1814.57
9	1833.26	1840.05	1850.17	1851.02	1838.75	1825.12	1794.85	1696.62	1517.76	1324.91	1163.1	1056.24	1020.1	1056.24	1163.1	1324.91	1517.76	1696.62	1794.85	1825.12	1838.75	1851.02	1850.17	1840.05	1833.26
10	1871.63	1874.35	1874.33	1867.14	1844.27	1822.7	1792.16	1675.19	1466.07	1247.38	1060.81	940.82	901.63	940.82	1060.81	1247.38	1466.07	1675.19	1792.16	1822.7	1844.27	1867.14	1874.33	1874.35	1871.63
11	1929.52	1928.48	1912.14	1884.77	1850.31	1820.45	1785.99	1653.1	1410.26	1163.55	957.55	825.72	785.93	825.72	957.55	1163.55	1410.26	1653.1	1785.99	1820.45	1850.31	1884.77	1912.14	1928.48	1929.52
12	2008.1	2000.12	1962.51	1905.39	1856.43	1818.01	1780.41	1626.41	1352.91	1077.12	853.84	718.1	673.83	718.1	853.84	1077.12	1352.91	1626.41	1780.41	1818.01	1856.43	1905.39	1962.51	2000.12	2008.1
13	2109.21	2094.51	2032.2	1932.57	1861.67	1813.38	1773.73	1599.2	1293.91	988.97	751.45	612.81	567.34	612.81	751.45	988.97	1293.91	1599.2	1773.73	1813.38	1861.67	1932.57	2032.2	2094.51	2109.21
14	2208.83	2199.49	2114.67	1965.96	1867.48	1808.61	1767.01	1569.6	1230.47	899.75	653.81	518.53	472.5	518.53	653.81	899.75	1230.47	1569.6	1767.01	1808.61	1867.48	1965.96	2114.67	2199.49	2208.83
15	2332.81	2316.04	2210.89	2013.04	1876.05	1806.4	1761.97	1539.28	1164.53	812.56	565.79	433.51	397.94	433.51	565.79	812.56	1164.53	1539.28	1761.97	1806.4	1876.05	2013.04	2210.89	2316.04	2332.81
16	2437.93	2434.87	2316.74	2070.05	1887.73	1807.08	1758.48	1508.07	1098.68	729.85	484.18	366.26	339.61	366.26	484.18	729.85	1098.68	1508.07	1758.48	1807.08	1887.73	2070.05	2316.74	2434.87	2437.93
17	2530.67	2534.16	2424.17	2135.28	1906.64	1810.93	1757.82	1478.13	1033.76	648.12	412.09	323.4	304.88	323.4	412.09	648.12	1033.76	1478.13	1757.82	1810.93	1906.64	2135.28	2424.17	2534.16	2530.67
18	2620.19	2623.45	2533.09	2208.15	1930.01	1818.53	1759.78	1449.98	968.85	574.35	358.58	295.05	284.6	295.05	358.58	574.35	968.85	1449.98	1759.78	1818.53	1930.01	2208.15	2533.09	2623.45	2620.19
19	2713.38	2717.98	2623.51	2286.51	1960.1	1830.44	1768.72	1422.61	905.09	504.72	322.4	279.36	272.65	279.36	322.4	504.72	905.09	1422.61	1768.72	1830.44	1960.1	2286.51	2623.51	2717.98	2713.38
20	2817.61	2824.02	2711.16	2365.41	1995.39	1847.87	1782.33	1399.49	843.76	444.79	297.59	267.66	260.75	267.66	297.59	444.79	843.76	1399.49	1782.33	1847.87	1995.39	2365.41	2711.16	2824.02	2817.61
21	2918.69	2926.2	2802.4	2451.15	2036.59	1871.97	1802.11	1378.17	786.61	392.11	282.25	256.59	250.81	256.59	282.25	392.11	786.61	1378.17	1802.11	1871.97	2036.59	2451.15	2802.4	2926.2	2918.69
22	3023.7	3029.89	2896.76	2532.63	2083.98	1900.75	1827.28	1359.39	732.43	351.91	271.17	246.37	240.12	246.37	271.17	351.91	732.43	1359.39	1827.28	1900.75	2083.98	2532.63	2896.76	3029.89	3023.7
23	3144.88	3147.95	2998.01	2617	2138.56	1935.74	1862.38	1343.29	679.33	321.56	260.15	236.05	230.27	236.05	260.15	321.56	679.33	1343.29	1862.38	1935.74	2138.56	2617	2998.01	3147.95	3144.88
24	3240.26	3261.06	3096.53	2700.99	2193.38	1977.49	1901.17	1330.11	626.44	299.72	250.23	226.55	220.31	226.55	250.23	299.72	626.44	1330.11	1901.17	1977.49	2193.38	2700.99	3096.53	3261.06	3240.26
25	3344.55	3366.18	3204.79	2790.02	2256.64	2026.73	1944.69	1318.37	576.16	284.39	240.31	217.54	211.09	217.54	240.31	284.39	576.16	1318.37	1944.69	2026.73	2256.64	2790.02	3204.79	3366.18	3344.55
26	3429.78	3465.55	3318.03	2874.81	2325.81	2078.4	1992.28	1307.61	527.66	273.02	231.08	209	202.68	209	231.08	273.02	527.66	1307.61	1992.28	2078.4	2325.81	2874.81	3318.03	3465.55	3429.78
27	3504.75	3557.48	3423.23	2959.81	2400.02	2137.47	2043.27	1294.5	481.15	263.25	222.61	201.63	195.2	201.63	222.61	263.25	481.15	1294.5	2043.27	2137.47	2400.02	2959.81	3423.23	3557.48	3504.75
28	3570.24	3642.5	3525.49	3053.25	2481.1	2200.25	2095.33	1281.34	435.66	252.95	214.32	194.36	188.17	194.36	214.32	252.95	435.66	1281.34	2095.33	2200.25	2481.1	3053.25	3525.49	3642.5	3570.24
29	3639.21	3714.82	3619.07	3149.03	2564.68	2266.11	2150.44	1265.14	394.2	243.98	207.19	187.66	180.34	187.66	207.19	243.98	394.2	1265.14	2150.44	2266.11	2564.68	3149.03	3619.07	3714.82	3639.21
30	3705.11	3793.21	3705.84	3252.15	2651.86	2336.19	2206.98	1247.69	359.41	235.48	200.38	180.27	172.3	180.27	200.38	235.48	359.41	1247.69	2206.98	2336.19	2651.86	3252.15	3705.84	3793.21	3705.11
31	3768.08	3869.25	3795.42	3355.19	2742.73	2405.24	2262.7	1226.49	329.66	227.53	193.8	172.12	164.13	172.12	193.8	227.53	329.66	1226.49	2262.7	2405.24	2742.73	3355.19	3795.42	3869.25	3768.08
32	3824.37	3944.58	3877.54	3453.5	2833.92	2478.67	2319.56	1203.24	305.47	220.48	187.45	164.48	155.6	164.48	187.45	220.48	305.47	1203.24	2319.56	2478.67	2833.92	3453.5	3877.54	3944.58	3824.37
33	3892.58	4016.43	3963.11	3552.97	2930.28	2550.13	2373.46	1175.12	287.05	213.57	180.44	156.11	147.33	156.11	180.44	213.57	287.05	1175.12	2373.46	2550.13	2930.28	3552.97	3963.11	4016.43	3892.58
34	3967.53	4088.78	4048.95	3648.89	3018.23	2618.71	2426.51	1144.26	273.84	207.61	173.19	148.12	139.07	148.12	173.19	207.61	273.84	1144.26	2426.51	2618.71	3018.23	3648.89	4048.95	4088.78	3967.53
35	4068.8	4180.4	4132.74	3748.7	3108.24	2689.75	2475.65	1110.44	262.72	201.54	165.58	140.3	131.59	140.3	165.58	201.54	262.72	1110.44	2475.65	2689.75	3108.24	3748.7	4132.74	4180.4	4068.8
36	4174.33	4302.49	4219.4	3848.35	3195.62	2755.91	2520.67	1073.6	252.51	195.64	157.67	132.82	124.5	132.82	157.67	195.64	252.51	1073.6	2520.67	2755.91	3195.62	3848.35	4219.4	4302.49	4174.33
37	4266.56	4417.19	4309.59	3949.42	3281.06	2816.77	2559.14	1031.89	243.66	189.82	150.29	126.16	117.49	126.16	150.29	189.82	243.66	1031.89	2559.14	2816.77	3281.06	3949.42	4309.59	4417.19	4266.56
38	4357.19	4530.23	4418.34	4053.16	3366.38	2873.71	2594.54	983.45	235.81	183.42	142.71	119.28	110.8	119.28	142.71	183.42	235.81	983.45	2594.54	2873.71	3366.38	4053.16	4418.34	4530.23	4357.19
39	4445.62	4642	4545.7	4154.31	3450.9	2926.45	2618.04	928.99	228																



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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
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
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.	ALEDS4TN	Sample ID.	E1
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
120.04	60	0.682	81.8	0.999	2.22%
277.01	60	0.298	79.7	0.966	7.07%



## 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\*\*\*\*\*