

Photometric Test Report

Relevant Standards

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

Prepared For

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2023/2/7

Prepared By



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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		10433
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	130.7
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		79.8
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	2.32%
		20.00%	277V	6.65%
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	3045±175	2933
		4 step	3045±100	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥70		82
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥-40		4
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		94
Minimum 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%		1.09%
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		0.666
(Goniophotometer - Section 4.2)		Non-Worst Case		0.291
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		79.8
(Goniophotometer - Section 4.2)		Non-Worst Case		77.9

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2023/2/6	ALEDS3TY	AW1
2	Goniophotometer Test	2023/2/6	ALEDS3TY	AW1
3	THD and PF Test	2023/2/6	ALEDS3TY	AW1

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: ALEDS3TY

Description: 80W @ 3000K

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.	ALEDS3TY	Sample ID.	AW1
Opreate 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 paramters 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
120.00	60	0.666	79.8	0.999
277.00	60	0.291	77.9	0.966

Test Result

CCT (K)	CRI	R9	Duv
2933	82	4	0.0012

Rf	Rg	IES Rcs,h1
84	94	-12%

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	ALEDS3TY	Sample ID.	AW1
Opreate 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 paramters 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 ± 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	120.00	60	0.666	79.8	0.999
NON-WROST CASE	277.00	60	0.291	77.9	0.966

Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
10433	91.2	164.2	37.0	152.5	130.7

Zonal Lumen Requirement (0° - 90°)	Zonal Lumen Requirement (80° - 90°)	BUG rating
100.00%	1.09%	B1-U0-G2

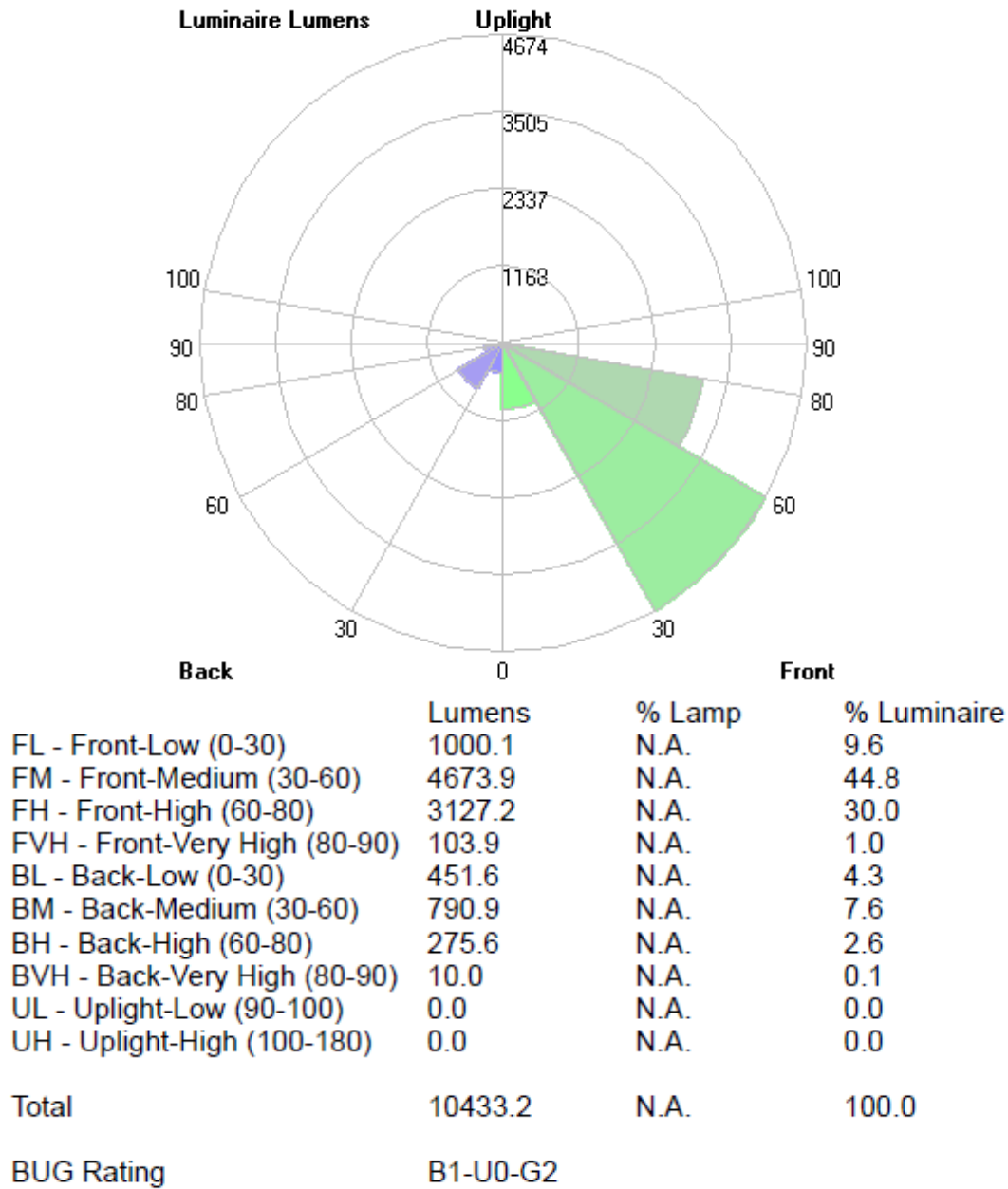
4.2 Goniophotometer Test

Zonal Lumen Summary

	Zonal (lm)		Total (lm)	Percent
0-10	164.70	0 - 10	164.70	1.58%
10-20	461.66	0 - 20	626.36	6.00%
20-30	825.30	0 - 30	1451.66	13.91%
30-40	1384.59	0 - 40	2836.25	27.19%
40-50	1860.01	0 - 50	4696.26	45.01%
50-60	2220.22	0 - 60	6916.48	66.29%
60-70	2249.93	0 - 70	9166.41	87.86%
70-80	1152.86	0 - 80	10319.27	98.91%
80-90	113.87	0 - 90	10433.14	100.00%
90-100	0.00	0 - 100	10433.14	100.00%
100-110	0.00	0 - 110	10433.14	100.00%
110-120	0.00	0 - 120	10433.14	100.00%
120-130	0.00	0 - 130	10433.14	100.00%
130-140	0.00	0 - 140	10433.14	100.00%
140-150	0.00	0 - 150	10433.14	100.00%
150-160	0.00	0 - 160	10433.14	100.00%
160-170	0.00	0 - 170	10433.14	100.00%
170-180	0.00	0 - 180	10433.14	100.00%

4.2 Goniophotometer Test

LCS/BUG





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	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15	1747.15
1	1772.88	1770.23	1767.36	1763.51	1758.67	1752.93	1746.71	1740.38	1734.63	1729.29	1724.63	1722.08	1723.16	1722.08	1724.63	1729.29	1734.63	1740.38	1746.71	1752.93	1758.67	1763.51	1767.36	1770.23	1772.88
2	1800.15	1796.21	1792.04	1784.36	1774.82	1762.82	1750.18	1737.95	1725.84	1715.08	1705.53	1698.76	1698.15	1698.76	1705.53	1715.08	1725.84	1737.95	1750.18	1762.82	1774.82	1784.36	1792.04	1796.21	1800.15
3	1833.23	1828.51	1821.88	1809.34	1794.84	1776.38	1756.98	1737.58	1718.26	1696.48	1677.02	1663.04	1659.65	1663.04	1677.02	1696.48	1718.26	1737.58	1756.98	1776.38	1794.84	1809.34	1821.88	1828.51	1833.23
4	1863.68	1859.42	1851.13	1837.16	1816.53	1791.12	1764.72	1737.96	1708.14	1675.14	1642.8	1617.84	1606.93	1617.84	1642.8	1675.14	1708.14	1737.96	1764.72	1791.12	1816.53	1837.16	1851.13	1859.42	1863.68
5	1893.53	1888.04	1881.59	1865.98	1841.14	1808.66	1773.67	1739.72	1697.59	1647.01	1592.51	1548.87	1533.74	1548.87	1592.51	1647.01	1697.59	1739.72	1773.67	1808.66	1841.14	1865.98	1881.59	1888.04	1893.53
6	1921	1916.91	1910.45	1896.6	1867.06	1826.66	1783.66	1741.27	1684.03	1607.5	1522.68	1461.72	1435.78	1461.72	1522.68	1607.5	1684.03	1741.27	1783.66	1826.66	1867.06	1896.6	1910.45	1916.91	1921
7	1945.68	1942.03	1938.43	1925.55	1894.97	1846.93	1794.93	1743.6	1667.78	1557.45	1447.12	1367.17	1333.17	1367.17	1447.12	1557.45	1667.78	1743.6	1794.93	1846.93	1894.97	1925.55	1938.43	1942.03	1945.68
8	1973.74	1970.4	1967.6	1954.88	1923.2	1868.69	1807.83	1745.53	1645.71	1497.99	1354.54	1252.77	1214.79	1252.77	1354.54	1497.99	1645.71	1745.53	1807.83	1868.69	1923.2	1954.88	1967.6	1970.4	1973.74
9	1997.71	1997.36	1996.3	1983.7	1950.67	1891.73	1822.54	1748.06	1615.15	1430.9	1256.74	1148.16	1100.98	1148.16	1256.74	1430.9	1615.15	1748.06	1822.54	1891.73	1950.67	1983.7	1996.3	1997.36	1997.71
10	2016.29	2018.63	2025.65	2013.1	1980.47	1917.88	1841.07	1751.93	1581.7	1354.14	1163.53	1034.57	986.967	1034.57	1163.53	1354.14	1581.7	1751.93	1841.07	1917.88	1980.47	2013.1	2025.65	2018.63	2016.29
11	2030.08	2035.65	2052	2045.06	2010.75	1948.34	1864.49	1758.73	1542.41	1273.52	1057.81	916.592	860.489	916.592	1057.81	1273.52	1542.41	1758.73	1864.49	1948.34	2010.75	2045.06	2052	2035.65	2030.08
12	2038.15	2047.29	2072	2076.23	2045.35	1984.55	1893.83	1767.9	1499.92	1195.33	961.157	810.777	754.552	810.777	961.157	1195.33	1499.92	1767.9	1893.83	1984.55	2045.35	2076.23	2072	2047.29	2038.15
13	2043.85	2055.15	2089.04	2107.21	2085.74	2028.75	1933.21	1781.65	1455.34	1111.75	857.283	701.078	648.62	701.078	857.283	1111.75	1455.34	1781.65	1933.21	2028.75	2085.74	2107.21	2089.04	2055.15	2043.85
14	2043.91	2060.89	2102.83	2135.81	2131.76	2084.49	1984.48	1800.88	1405.88	1027.78	762.22	602.595	550.329	602.595	762.22	1027.78	1405.88	1800.88	1984.48	2084.49	2131.76	2135.81	2102.83	2060.89	2043.91
15	2033.52	2058.38	2115.61	2165.15	2185.61	2152.42	2048	1827.08	1361.99	944.298	670.021	520.138	478.938	520.138	670.021	944.298	1361.99	1827.08	2048	2152.42	2185.61	2165.15	2115.61	2058.38	2033.52
16	2015.35	2046.42	2125.2	2196.37	2251.3	2233.38	2122.71	1862.7	1319.24	860.505	580.066	452.311	417.994	452.311	580.066	860.505	1319.24	1862.7	2122.71	2233.38	2251.3	2196.37	2125.2	2046.42	2015.35
17	2000.46	2034.43	2128.64	2228.22	2327.68	2323.65	2207.48	1902	1280.23	784.775	514.623	408.306	382.71	408.306	514.623	784.775	1280.23	1902	2207.48	2323.65	2327.68	2228.22	2128.64	2034.43	2000.46
18	1984.54	2022.68	2128	2267.07	2412.93	2423.53	2296.58	1945.2	1246.17	709.323	460.717	378.371	358.915	378.371	460.717	709.323	1246.17	1945.2	2296.58	2423.53	2412.93	2267.07	2128	2022.68	1984.54
19	1968.97	2012	2128.35	2310.29	2501.73	2526.39	2385.33	1986.23	1203.66	642.464	422.723	358.311	340.437	358.311	422.723	642.464	1203.66	1986.23	2385.33	2526.39	2501.73	2310.29	2128.35	2012	1968.97
20	1956.86	2003.41	2129.81	2356.28	2601.62	2628.66	2471.42	2025.07	1161.16	584.261	399.943	343.371	325.811	343.371	399.943	584.261	1161.16	2025.07	2471.42	2628.66	2601.62	2356.28	2129.81	2003.41	1956.86
21	1941.38	1996.23	2134.28	2406.94	2703.76	2727.26	2554.16	2053.6	1115.56	536.094	381.727	328.793	311.635	328.793	381.727	536.094	1115.56	2053.6	2554.16	2727.26	2703.76	2406.94	2134.28	1996.23	1941.38
22	1925.82	1987.96	2141.92	2461.78	2800.83	2822.07	2633.98	2076.92	1062	499.036	368.293	316.252	299.531	316.252	368.293	499.036	1062	2076.92	2633.98	2822.07	2800.83	2461.78	2141.92	1987.96	1925.82
23	1910.21	1976.99	2155.16	2525.81	2895.91	2917.76	2720.14	2094.16	1006.12	472.494	356.735	304.528	288.673	304.528	356.735	472.494	1006.12	2094.16	2720.14	2917.76	2895.91	2525.81	2155.16	1976.99	1910.21
24	1899.95	1968.92	2170.03	2592.84	2985.05	3017.71	2809.55	2111	943.775	456.981	346.069	294.38	278.83	294.38	346.069	456.981	943.775	2111	2809.55	3017.71	2985.05	2592.84	2170.03	1968.92	1899.95
25	1899.79	1969.4	2184.87	2663.53	3077.03	3125.18	2910.19	2127.51	884.028	445.856	336.958	286.488	270.975	286.488	336.958	445.856	884.028	2127.51	2910.19	3125.18	3077.03	2663.53	2184.87	1969.4	1899.79
26	1909.65	1976.83	2201.98	2733.85	3167.19	3249.98	3019.6	2146.28	825.237	436.937	328.275	278.563	263.12	278.563	328.275	436.937	825.237	2146.28	3019.6	3249.98	3167.19	2733.85	2201.98	1976.83	1909.65
27	1934.69	1996.24	2225.52	2803.15	3263.69	3382.31	3135.9	2165.04	769.172	429.772	321.895	272.087	255.805	272.087	321.895	429.772	769.172	2165.04	3135.9	3382.31	3263.69	2803.15	2225.52	1996.24	1934.69
28	1974.52	2031.23	2261.28	2871.59	3364.08	3524.38	3256.82	2183.16	720.123	429.772	316.971	265.674	249.152	265.674	316.971	429.772	720.123	2183.16	3256.82	3524.38	3364.08	2871.59	2261.28	2031.23	1974.52
29	2033.54	2088.73	2303.81	2930.27	3483.11	3671.47	3381.4	2197.27	674.755	416.851	312.196	259.347	242.258	259.347	312.196	416.851	674.755	2197.27	3381.4	3671.47	3483.11	2930.27	2303.81	2088.73	2033.54
30	2093.71	2158.57	2362.52	2986.58	3610.59	3826.58	3505.25	2204.5	633.647	411.87	308.605	253.437	235.702	253.437	308.605	411.87	633.647	2204.5	3505.25	3826.58	3610.59	2986.58	2362.52	2158.57	2093.71
31	2178.21	2243.27	2435.41	3038.32	3741.87	3981.56	3620.11	2203.67	605.465	406.912	305.073	246.48	229.102	246.48	305.073	406.912	605.465	2203.67	3620.11	3981.56	3741.87	3038.32	2435.41	2243.27	2178.21
32	2274.7	2343.77	2528.04	3087.89	3875.85	4129.55	3725.79	2191.54	584.507	403.834	301.781	239.982	222.45	239.982	301.781	403.834	584.507	2191.54	3725.79	4129.55	3875.85	3087.89	2528.04	2343.77	2274.7
33	2379.64	2449.67	2631.46	3146.92	4011.22	4271.15	3818.78	2160.64	574.456	401.402	298.351	233.356	216.411	233.356	298.351	401.402	574.456	2160.64	3818.78	4271.15	4011.22	3146.92	2631.46	2449.67	2379.64
34	2511.47	2572.07	2741.2	3211.36	4135.88	4398.85	3894.82	2112.56	569.229	399.906	294.193	226.217	206.825	226.217	294.193	399.906	569.229	2112.56	3894.82	4398.85	4135.88	3211.36	2741.2	2572.07	2511.47
35	2634.01	2692.95	2860.33	3289	4255.81	4513.65	3954.39	2047.21	566.29	399.981	290.88	217.94	195.219	217.94	290.88	399.981	566.29	2047.21	3954.39	4513.65	4255.81	3289	2860.33	2692.95	2634.01
36	2768.02	2827.94	2991.34	3380.9	4362.71	4610.1	3995.67	1969.66	565.665	401.167	287.439	205.371	179.583	205.371	287.439	401.167	565.665	1969.66	3995.67	4610.1	4362.71	3380.9	2991.34	2827.94	2768.02
37	2893.54	2965.23	3124.81	3485.06	4450.84	4686.83	4013.64	1880.2	565.222	402.818	283.025	190.067	161.639	190.067	283.025	402.818	565.222	1880.2	4013.64	4686.83	4450.84	3485.06	3124.81	2965.23	2893.54
38	3000.59	3086	3264.18	3598.6	4515.5	4741.45	4012.4	1776.48	565.975	404.518	276.078	173.7	145.16	173.7	276.078	404.518	565.975								

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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.	ALEDS3TY	Sample ID.	AW1
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
120.00	60	0.666	79.8	0.999	2.32%
277.00	60	0.291	77.9	0.966	6.65%

5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2022/12/26	2023/12/25
DLF108	Auxiliary Lamp	2022/12/26	2023/12/25
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-derectional	2022/12/26	2023/12/25
DLF116	AC Power Source	2022/12/26	2023/12/25
DLF113	Power Meter	2022/12/26	2023/12/25
DLF112	Temperature Recorder	2022/12/26	2023/12/25
DLF114	Temperature & Humidity Datalogger	2022/12/26	2023/12/25
DLF101	Goniophotometer	2022/12/26	2023/12/25
DLF125	Standard Lamp Standard Lamp Type: 76.58 V, 6.7875 A, Tungsten, Omni-derectional	2022/12/26	2023/12/25
DLF104	AC Power Source	2022/12/26	2023/12/25
DLF507	DC Power Source	2022/12/26	2023/12/25
DLF102	Power Meter	2022/12/26	2023/12/25
DLF111	Temperature & Humidity Datalogger	2022/12/26	2023/12/25
DLF119	Power Meter	2022/12/26	2023/12/25
DLF031	Temperature data logger	2022/12/26	2023/12/25
DLF022	Digital power meter	2022/12/26	2023/12/25
DLF003	Temperature & Humidity Datalogger	2022/12/26	2023/12/25

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