

Photometric Test Report

Relevant Standards

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

Prepared For

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Issue Date

2023/1/14

Prepared By



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Approved By



Kevin Jia

The results contained in this report pertain only to the tested sample.

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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		5468
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	135.3
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		40.4
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	5.21%
		20.00%	277V	10.32%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.995
		0.9	277V	0.870
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3045±175	2899
		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		3
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%		2.05%
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		0.338
(Goniophotometer - Section 4.2)		Non-Worst Case		0.165
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		40.4
(Goniophotometer - Section 4.2)		Non-Worst Case		39.7

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2023/1/10	ALEDS4TY	B1
2	Goniophotometer Test	2023/1/10	ALEDS4TY	B1
3	THD and PF Test	2023/1/10	ALEDS4TY	B1

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.

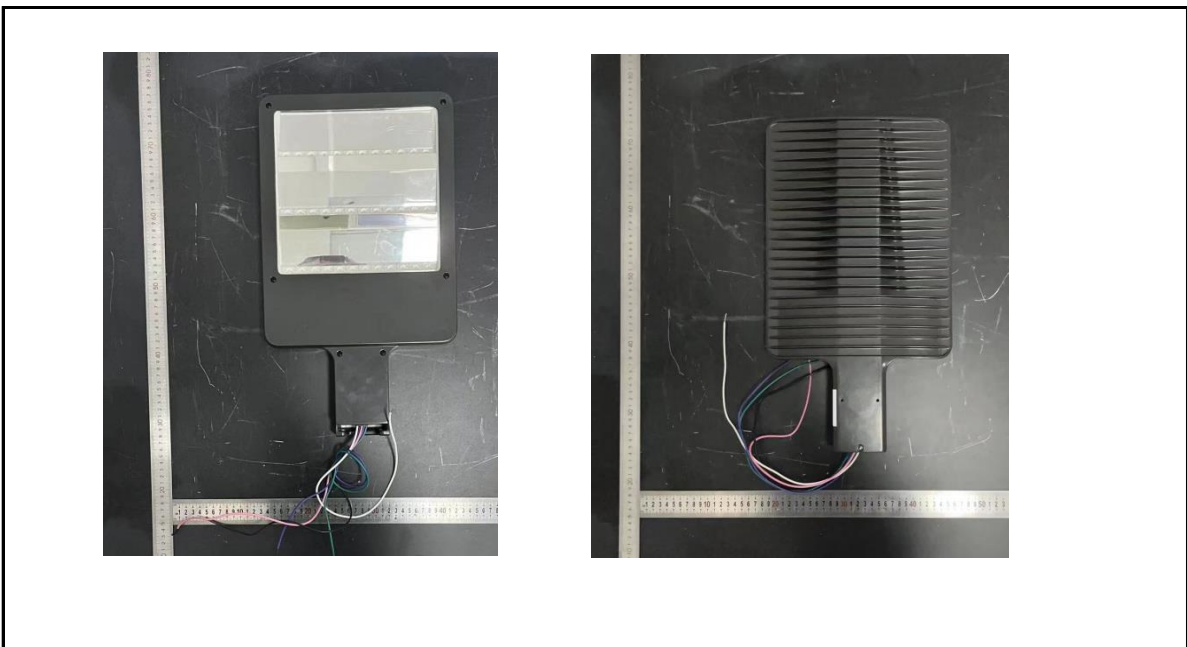
3.0 Production Description

Luminaire Description: ALEDS4TY

Description: 40W @ 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.	ALEDS4TY	Sample ID.	B1
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	0.338	40.4	0.995
277.00	60	0.165	39.7	0.870

Test Result

CCT (K)	CRI	R9	Duv
2899	82	3	0.00095

Rf	Rg	IES Rcs,h1
84	94	-12%

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	ALEDS4TY	Sample ID.	B1
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 ± 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	0.338	40.4	0.995
NON-WROST CASE	277.00	60	0.165	39.7	0.870

Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
5468	96.4	148.2	48.5	135.4	135.3

Zonal Lumen Requirement (0° - 90°)	Zonal Lumen Requirement (80° - 90°)	BUG rating
100.00%	2.05%	B1-U0-G2

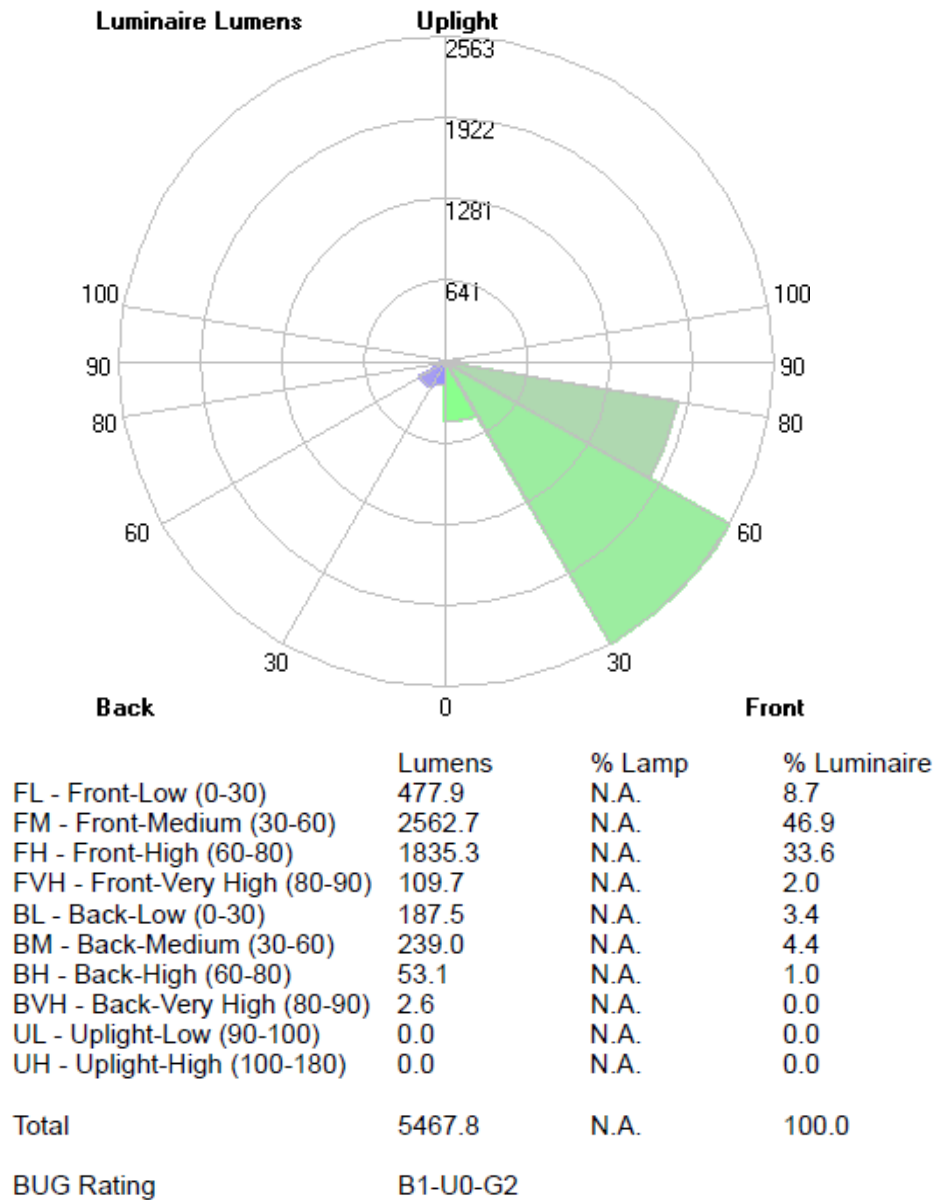
4.2 Goniophotometer Test

Zonal Lumen Summary

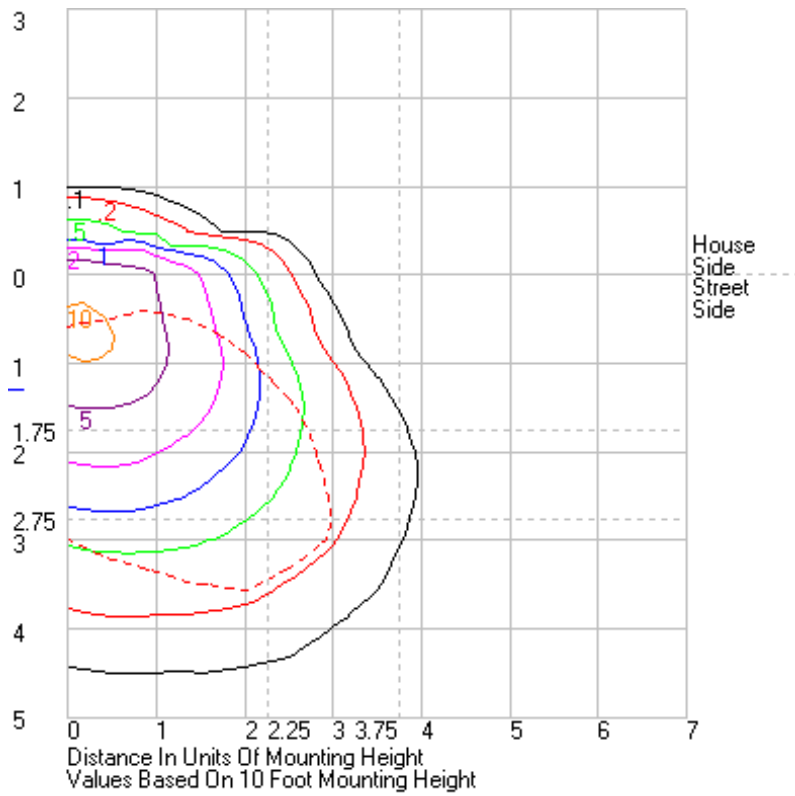
	Zonal (lm)		Total (lm)	Percent
0-10	82.23	0 - 10	82.23	1.50%
10-20	213.32	0 - 20	295.55	5.41%
20-30	369.85	0 - 30	665.40	12.17%
30-40	636.04	0 - 40	1301.44	23.80%
40-50	957.61	0 - 50	2259.05	41.32%
50-60	1208.02	0 - 60	3467.07	63.41%
60-70	1184.4	0 - 70	4651.47	85.07%
70-80	704.02	0 - 80	5355.49	97.95%
80-90	112.33	0 - 90	5467.82	100.00%
90-100	0.00	0 - 100	5467.82	100.00%
100-110	0.00	0 - 110	5467.82	100.00%
110-120	0.00	0 - 120	5467.82	100.00%
120-130	0.00	0 - 130	5467.82	100.00%
130-140	0.00	0 - 140	5467.82	100.00%
140-150	0.00	0 - 150	5467.82	100.00%
150-160	0.00	0 - 160	5467.82	100.00%
160-170	0.00	0 - 170	5467.82	100.00%
170-180	0.00	0 - 180	5467.82	100.00%

4.2 Goniophotometer Test

LCS/BUG



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	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827	911.827
1	912.047	910.488	910.601	911.047	911.638	910.929	910.838	910.16	908.472	907.258	906.134	905.124	905.602	905.124	906.134	907.258	908.472	910.16	910.838	910.929	911.638	911.047	910.601	910.488	912.047
2	909.44	908.795	909.451	911.106	912.536	913.337	912.015	909.687	906.36	901.087	897.013	892.611	892.928	892.611	897.013	901.087	906.36	909.687	912.015	913.337	912.536	911.106	909.451	908.795	909.44
3	907.043	906.919	908.8	911.536	913.579	915.267	914.304	909.956	902.42	891.718	879.743	871.637	869.417	871.637	879.743	891.718	902.42	909.956	914.304	915.267	913.579	911.536	908.8	906.919	907.043
4	906.032	906.317	909.537	913.369	916.17	918.755	916.901	909.763	896.239	876.028	855.635	839.193	833.92	839.193	855.635	876.028	896.239	909.763	916.901	918.755	916.17	913.369	909.537	906.317	906.032
5	904.86	905.903	911.036	915.804	919.685	921.733	919.325	908.779	887.176	855.668	822.826	798.299	793.107	798.299	822.826	855.668	887.176	908.779	919.325	921.733	919.685	915.804	911.036	905.903	904.86
6	905.382	906.419	913.315	920.126	924.017	924.824	920.894	906.285	874.233	828.953	783.313	751.627	741.646	751.627	783.313	828.953	874.233	906.285	920.894	924.824	924.017	920.126	913.315	906.419	905.382
7	907.376	909.838	917.626	925.764	928.855	926.968	921.19	902.178	857.753	797.59	740.549	700.585	690.19	700.585	740.549	797.59	857.753	902.178	921.19	926.968	928.855	925.764	917.626	909.838	907.376
8	911.16	915.17	925.022	931.198	932.574	928.457	921.437	896.303	838.763	763.081	694.587	647.807	635.326	647.807	694.587	763.081	838.763	896.303	921.437	928.457	932.574	931.198	925.022	915.17	911.16
9	917.653	923.044	934.23	939.53	936.477	929.312	919.868	887.762	816.386	725.574	645.544	588.837	573.142	588.837	645.544	725.574	816.386	887.762	919.868	929.312	936.477	939.53	934.23	923.044	917.653
10	924.442	933.295	946.12	947.265	939.444	928.366	916.981	879.581	792.005	686.642	593.099	530.108	513.811	530.108	593.099	686.642	792.005	879.581	916.981	928.366	939.444	947.265	946.12	933.295	924.442
11	936.461	945.593	958.751	955.978	941.637	926.092	913.498	868.831	765.85	645.426	540.004	470.456	450.53	470.456	540.004	645.426	765.85	868.831	913.498	926.092	941.637	955.978	958.751	945.593	936.461
12	952.554	962.782	973.947	964.691	942.76	923.781	910.365	857.678	737.34	600.678	484.544	410.292	389.168	410.292	484.544	600.678	737.34	857.678	910.365	923.781	942.76	964.691	973.947	962.782	952.554
13	973.791	982.74	992.012	974.199	943.69	921.271	906.666	846.379	708.051	556.188	429.906	352.058	330.719	352.058	429.906	556.188	708.051	846.379	906.666	921.271	943.69	974.199	992.012	982.74	973.791
14	998.054	1009.56	1012.14	984.208	944.717	918.583	902.388	833.248	677.897	509.425	377.112	298.641	274.27	298.641	377.112	509.425	677.897	833.248	902.388	918.583	944.717	984.208	1012.14	1009.56	998.054
15	1028.52	1040.98	1036.43	994.528	946.313	916.696	899.448	819.654	644.974	462.871	326.881	248.244	228.34	248.244	326.881	462.871	644.974	819.654	899.448	916.696	946.313	994.528	1036.43	1040.98	1028.52
16	1062.57	1075.27	1065.44	1006.98	949.194	915.406	897.314	805.711	611.041	417.425	278.72	206.877	189.628	206.877	278.72	417.425	611.041	805.711	897.314	915.406	949.194	1006.98	1065.44	1075.27	1062.57
17	1101.58	1116.8	1098.46	1021.23	954.075	916.503	896.142	793.773	577.786	373.44	235.053	175.481	162.849	175.481	235.053	373.44	577.786	793.773	896.142	916.503	954.075	1021.23	1098.46	1116.8	1101.58
18	1139.11	1156.66	1134.21	1038.95	959.713	917.691	897.319	780.884	544.734	332.224	200.282	146.514	146.514	146.514	200.282	332.224	544.734	780.884	897.319	917.691	959.713	1038.95	1134.21	1156.66	1139.11
19	1172.69	1196.37	1173.14	1060.92	968.007	921.679	901.716	770.284	512.5	292.422	174.427	142.064	137.398	142.064	174.427	292.422	512.5	770.284	901.716	921.679	968.007	1060.92	1173.14	1196.37	1172.69
20	1208.8	1235.88	1213.68	1083.98	977.489	928.371	908.919	761.743	481.706	256.129	155.572	134.738	132.163	134.738	155.572	256.129	481.706	761.743	908.919	928.371	977.489	1083.98	1213.68	1235.88	1208.8
21	1246.35	1275.67	1252.76	1109.85	989.545	938.148	918.965	754.116	451.637	224.206	143.945	129.422	126.535	129.422	143.945	224.206	451.637	754.116	918.965	938.148	989.545	1109.85	1252.76	1275.67	1246.35
22	1289.95	1319.15	1291.12	1138.98	1004.1	951.495	931.978	747.478	422.956	197.169	136.667	124.509	121.601	124.509	136.667	197.169	422.956	747.478	931.978	951.495	1004.1	1138.98	1291.12	1319.15	1289.95
23	1338.6	1364.31	1330.53	1169.78	1022.21	967.996	948.764	742.092	395.5	176.018	131.244	119.725	117.043	119.725	131.244	176.018	395.5	742.092	948.764	967.996	1022.21	1169.78	1330.53	1364.31	1338.6
24	1386.36	1416.39	1371.83	1204.07	1043.74	988.11	968.464	736.996	368.399	159.533	126.691	115.226	112.813	115.226	126.691	159.533	368.399	736.996	968.464	988.11	1043.74	1204.07	1371.83	1416.39	1386.36
25	1439.32	1471.45	1418.26	1240.75	1070.2	1013.69	991.039	732.648	340.926	147.632	122.106	111.211	108.459	111.211	122.106	147.632	340.926	732.648	991.039	1013.69	1240.75	1418.26	1471.45	1439.32	1439.32
26	1493.28	1527.57	1467.3	1278.94	1099.9	1040.2	1016.53	728.67	313.986	139.532	117.973	107.507	104.325	107.507	117.973	139.532	313.986	728.67	1016.53	1040.2	1099.9	1278.94	1467.3	1527.57	1493.28
27	1548.64	1586.76	1519.75	1320.35	1133.71	1071.51	1043.67	724.413	287.374	133.808	114.043	103.825	100.654	103.825	114.043	133.808	287.374	724.413	1043.67	1071.51	1133.71	1320.35	1519.75	1586.76	1548.64
28	1608.35	1647.88	1575.78	1363.05	1170.6	1103.5	1071.88	720.177	260.854	129.196	110.437	100.423	96.983	100.423	110.437	129.196	260.854	720.177	1071.88	1103.5	1170.6	1363.05	1575.78	1647.88	1608.35
29	1666.68	1712.13	1631.34	1405.88	1210.31	1136.93	1101.1	715.92	236.607	125.17	107.179	96.902	93.199	96.902	107.179	125.17	236.607	715.92	1101.1	1136.93	1210.31	1405.88	1631.34	1712.13	1666.68
30	1725.85	1775.94	1691.75	1455.77	1253.07	1171.56	1131.61	709.782	213.633	121.262	103.713	93.269	89.555	93.269	103.713	121.262	213.633	709.782	1131.61	1171.56	1253.07	1455.77	1691.75	1775.94	1725.85
31	1782.83	1839.72	1751.7	1505.4	1298.62	1205.75	1162.96	703.364	193.305	117.548	100.568	89.608	85.722	89.608	100.568	117.548	193.305	703.364	1162.96	1205.75	1298.62	1505.4	1751.7	1839.72	1782.83
32	1837.4	1906.77	1812.63	1560.07	1343.56	1243.24	1193.96	696.317	175.75	114.162	97.3	85.889	81.642	85.889	97.3	114.162	175.75	696.317	1193.96	1243.24	1343.56	1560.07	1812.63	1906.77	1837.4
33	1898.99	1974.62	1875.89	1616.99	1390.49	1280.58	1225.42	686.395	161.119	110.942	93.935	81.911	77.568	81.911	93.935	110.942	161.119	686.395	1225.42	1280.58	1390.49	1616.99	1875.89	1974.62	1898.99
34	1954.74	2041.26	1939.34	1675.62	1437.36	1317.71	1255.26	675.091	149.401	107.744	90.511	77.944	73.547	77.944	90.511	107.744	149.401	675.091	1255.26	1317.71	1437.36	1675.62	1939.34	2041.26	1954.74
35	2012.84	2106.45	2005.91	1737.44	1484.42	1353.14	1282.73	660.885	139.914	104.771	86.872	73.94	69.436	73.94	86.872	104.771	139.914	660.885	1282.73	1353.14	1484.42	1737.44	2005.91	2106.45	2012.84
36	2077.77	2170.98	2076.36	1800.61	1531.67	1387.57	1307.05	643.254	133.19	101.751	83.185	70.005	65.582	70.005	83.185	101.751	133.19	643.254	1307.05	1387.57	1531.67	1800.61	2076.36	2170.98	2077.77
37	2138.45	2241.33	2146.65	1866.68	1579.16	1420.48	1330.6	622.48	127.761	98.671	79.288	66.162	61.862	66.162	79.288	98.671	127.761	622.48	1330.6	1420.48	1579.16	1866.68	2146.65	2241.33	2138.45
38	2213.59	2314.88	2218.28	1933.26	1627.31	1452.34	1349.12	600.872	123.488	95.548	75.343	62.561	58.175	62.561	75.343	95.548	123.488								

Page 10 of 14

Page 11 of 14



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.	ALEDS4TY	Sample ID.	B1
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	0.338	40.4	0.995	5.21%
277.00	60	0.165	39.7	0.870	10.32%

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*****