

Photometric Test Report

Relevant Standards

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

Prepared For

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Project Number

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Report Number

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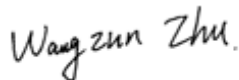
Test Date

2023/2/6

Issue Date

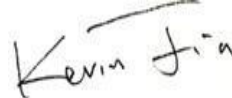
2023/2/7

Prepared By



Wangzun Zhu

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		5608
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	140.9
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		39.8
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	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		0.333
(Goniophotometer - Section 4.2)		Non-Worst Case		0.163
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		39.8
(Goniophotometer - Section 4.2)		Non-Worst Case		39.3

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.

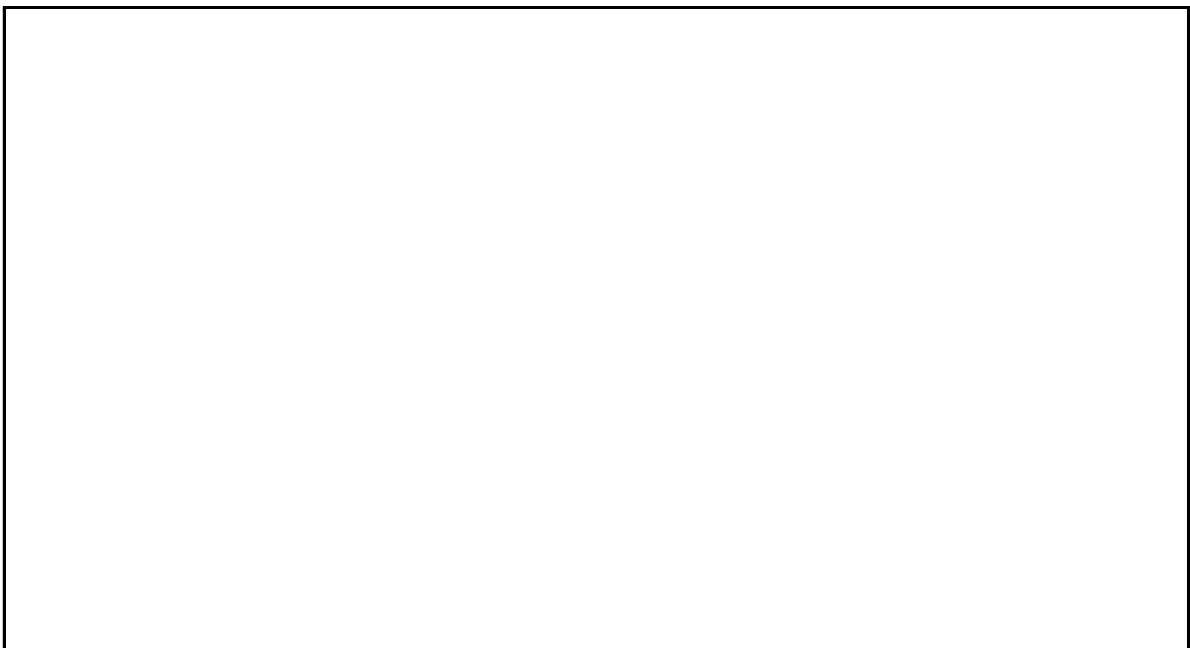
3.0 Production Description

Luminaire Description: ALEDS3TY

Description: 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.	ALEDS3TY	Sample ID.	AW1
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
120.00	60	0.333	39.8	0.995
277.00	60	0.163	39.3	0.870

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	0.333	39.8	0.995
NON-WROST CASE	277.00	60	0.163	39.3	0.870

Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
5608	91.2	164.2	37.0	152.5	140.9

Zonal Lumen Requirement (0° - 90°)	Zonal Lumen Requirement (80° - 90°)	BUG rating
100.00%	1.09%	B1-U0-G1

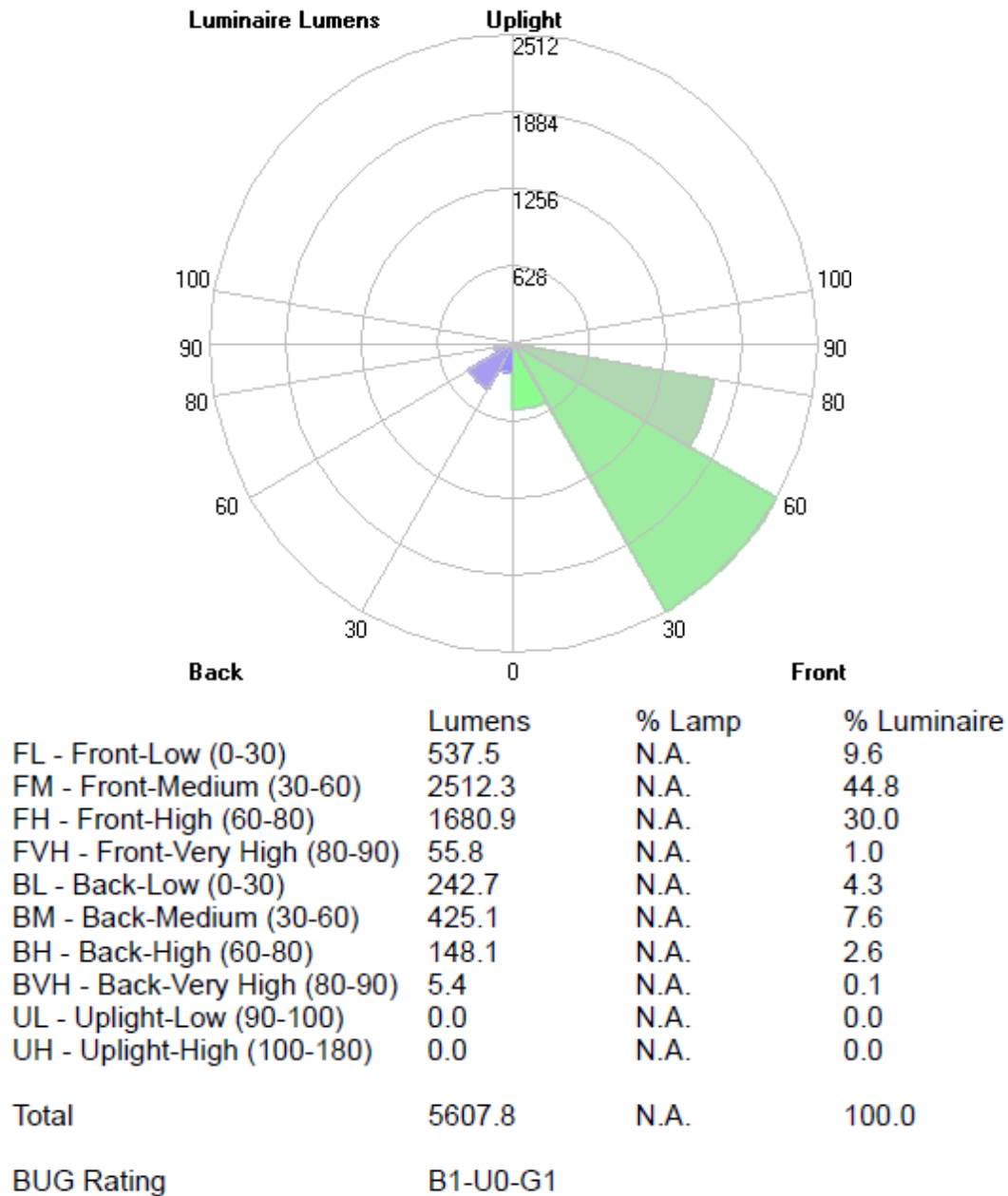
4.2 Goniophotometer Test

Zonal Lumen Summary

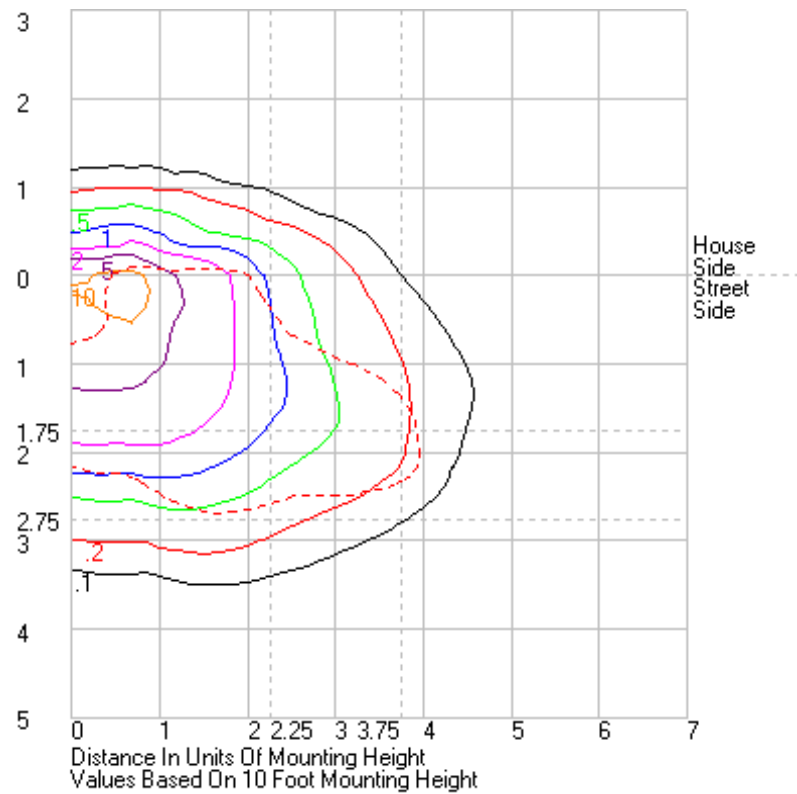
	Zonal (lm)		Total (lm)	Percent
0-10	88.53	0 - 10	88.53	1.58%
10-20	248.15	0 - 20	336.68	6.00%
20-30	443.61	0 - 30	780.29	13.91%
30-40	744.23	0 - 40	1524.52	27.19%
40-50	999.77	0 - 50	2524.29	45.01%
50-60	1193.39	0 - 60	3717.68	66.29%
60-70	1209.36	0 - 70	4927.04	87.86%
70-80	619.67	0 - 80	5546.71	98.91%
80-90	61.21	0 - 90	5607.92	100.00%
90-100	0.00	0 - 100	5607.92	100.00%
100-110	0.00	0 - 110	5607.92	100.00%
110-120	0.00	0 - 120	5607.92	100.00%
120-130	0.00	0 - 130	5607.92	100.00%
130-140	0.00	0 - 140	5607.92	100.00%
140-150	0.00	0 - 150	5607.92	100.00%
150-160	0.00	0 - 160	5607.92	100.00%
160-170	0.00	0 - 170	5607.92	100.00%
170-180	0.00	0 - 180	5607.92	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	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	939.114	
1	952.943	951.519	949.976	947.905	945.303	942.221	938.875	935.474	932.381	929.514	927.01	925.637	926.22	925.637	927.01	929.514	932.381	935.474	938.875	942.221	945.303	947.905	949.976	951.519	952.943
2	967.601	965.481	963.24	959.113	953.983	947.535	940.739	934.167	927.659	921.877	916.741	913.102	912.772	913.102	916.741	921.877	927.659	934.167	940.739	947.535	953.983	959.113	963.24	965.481	967.601
3	985.383	982.844	979.282	972.541	964.748	954.825	944.398	933.966	923.583	911.876	901.418	893.904	892.08	893.904	901.418	911.876	923.583	933.966	944.398	954.825	964.748	972.541	979.282	982.844	985.383
4	1001.75	999.457	995.005	987.494	976.407	962.749	948.558	934.17	918.143	900.407	883.024	869.608	863.745	869.608	883.024	900.407	918.143	934.17	948.558	962.749	976.407	987.494	995.005	999.457	1001.75
5	1017.79	1014.84	1011.38	1002.98	989.631	972.173	953.366	935.121	912.473	885.287	855.99	832.536	824.404	832.536	855.99	885.287	912.473	935.121	953.366	972.173	989.631	1002.98	1011.38	1014.84	1017.79
6	1032.56	1030.36	1026.89	1019.44	1003.57	981.853	958.737	935.954	905.184	864.047	818.456	785.689	771.75	785.689	818.456	864.047	905.184	935.954	958.737	981.853	1003.57	1019.44	1026.89	1030.36	1032.56
7	1045.82	1043.86	1041.93	1035.01	1018.57	992.744	964.797	937.203	896.449	837.148	777.842	734.867	716.594	734.867	777.842	837.148	896.449	937.203	964.797	992.744	1018.57	1035.01	1041.93	1043.86	1045.82
8	1060.91	1059.11	1057.61	1050.77	1033.74	1004.44	971.731	938.24	884.589	805.189	728.08	673.378	652.965	673.378	728.08	805.189	884.589	938.24	971.731	1004.44	1033.74	1050.77	1057.61	1059.11	1060.91
9	1073.79	1073.6	1073.03	1066.26	1048.51	1016.83	979.638	939.602	868.16	769.125	675.509	617.151	591.791	617.151	675.509	769.125	868.16	939.602	979.638	1016.83	1048.51	1066.26	1073.03	1073.6	1073.79
10	1083.78	1085.04	1088.81	1082.06	1064.53	1030.88	989.596	941.681	850.18	727.868	625.411	556.095	530.506	556.095	625.411	727.868	850.18	941.681	989.596	1030.88	1064.53	1082.06	1088.81	1085.04	1083.78
11	1091.19	1094.19	1102.97	1099.25	1080.8	1047.25	1002.18	945.338	829.063	684.531	568.586	492.678	462.523	492.678	568.586	684.531	829.063	945.338	1002.18	1047.25	1080.8	1099.25	1102.97	1094.19	1091.19
12	1095.53	1100.44	1113.72	1116	1099.4	1066.72	1017.96	950.264	806.226	642.501	516.633	435.802	405.58	435.802	516.633	642.501	806.226	950.264	1017.96	1066.72	1099.4	1116	1113.72	1100.44	1095.53
13	1098.59	1104.67	1122.88	1132.65	1121.11	1090.48	1039.12	957.657	782.26	597.576	460.799	376.837	348.64	376.837	460.799	597.576	782.26	957.657	1039.12	1090.48	1121.11	1132.65	1122.88	1104.67	1098.59
14	1098.62	1107.75	1130.29	1148.02	1145.85	1120.44	1066.68	967.991	755.674	552.442	409.702	323.902	295.808	323.902	409.702	552.442	755.674	967.991	1066.68	1120.44	1145.85	1148.02	1130.29	1107.75	1098.62
15	1093.04	1106.4	1137.16	1163.79	1174.79	1156.95	1100.82	982.074	732.084	507.571	360.144	279.58	257.435	279.58	360.144	507.571	732.084	982.074	1100.82	1156.95	1174.79	1163.79	1137.16	1106.4	1093.04
16	1083.28	1099.97	1142.32	1180.57	1210.1	1200.47	1140.98	1001.22	709.109	462.531	311.792	243.122	224.677	243.122	311.792	462.531	709.109	1001.22	1140.98	1200.47	1210.1	1180.57	1142.32	1099.97	1083.28
17	1075.27	1093.53	1144.17	1197.69	1251.15	1248.99	1186.55	1022.35	688.138	421.826	276.616	219.469	205.711	219.469	276.616	421.826	688.138	1022.35	1186.55	1248.99	1251.15	1197.69	1144.17	1093.53	1075.27
18	1066.71	1087.22	1143.82	1218.58	1296.98	1302.67	1234.44	1045.57	669.828	381.269	247.64	203.379	192.921	203.379	247.64	381.269	669.828	1045.57	1234.44	1302.67	1296.98	1218.58	1143.82	1087.22	1066.71
19	1058.34	1081.47	1144.02	1241.81	1344.71	1357.96	1282.14	1067.62	646.979	345.332	227.219	192.596	182.989	192.596	227.219	345.332	646.979	1067.62	1282.14	1357.96	1344.71	1241.81	1144.02	1081.47	1058.34
20	1051.83	1076.86	1144.8	1266.53	1398.4	1412.93	1328.42	1088.5	624.139	314.047	214.974	184.566	175.127	184.566	214.974	314.047	624.139	1088.5	1328.42	1412.93	1398.4	1266.53	1144.8	1076.86	1051.83
21	1043.51	1073	1147.2	1293.76	1453.3	1465.93	1372.89	1103.83	599.627	288.156	205.183	176.73	167.507	176.73	205.183	288.156	599.627	1103.83	1372.89	1465.93	1453.3	1293.76	1147.2	1073	1043.51
22	1035.15	1068.55	1151.3	1323.24	1505.48	1516.9	1415.8	1116.37	570.835	268.237	197.962	169.989	161.002	169.989	197.962	268.237	570.835	1116.37	1415.8	1516.9	1505.48	1323.24	1151.3	1068.55	1035.15
23	1026.76	1062.66	1158.43	1357.65	1556.59	1568.33	1462.11	1125.63	540.8	253.971	191.749	163.687	155.165	163.687	191.749	253.971	540.8	1125.63	1462.11	1568.33	1556.59	1357.65	1158.43	1062.66	1026.76
24	1021.25	1058.32	1166.42	1393.68	1604.5	1622.05	1510.16	1134.69	507.29	245.633	186.016	158.233	149.874	158.233	186.016	245.633	507.29	1134.69	1510.16	1622.05	1604.5	1393.68	1166.42	1058.32	1021.25
25	1021.16	1058.57	1174.4	1431.68	1653.94	1679.82	1564.26	1143.56	475.175	239.653	181.119	153.99	145.652	153.99	181.119	239.653	475.175	1143.56	1564.26	1679.82	1653.94	1431.68	1174.4	1058.57	1021.16
26	1026.46	1062.57	1183.59	1469.48	1702.4	1746.9	1623.07	1153.65	443.574	234.859	176.451	149.731	141.43	149.731	176.451	234.859	443.574	1153.65	1623.07	1746.9	1702.4	1469.48	1183.59	1062.57	1026.46
27	1039.92	1073	1196.24	1506.72	1754.27	1818.03	1685.58	1163.73	413.439	231.007	173.022	146.25	137.498	146.25	173.022	231.007	413.439	1163.73	1685.58	1818.03	1754.27	1506.72	1196.24	1073	1039.92
28	1061.33	1091.81	1215.47	1543.51	1808.23	1894.4	1750.58	1173.48	387.074	227.101	170.729	142.803	133.922	142.803	170.729	227.101	387.074	1173.48	1750.58	1894.4	1808.23	1543.51	1215.47	1091.81	1061.33
29	1093.05	1122.71	1238.33	1575.05	1872.21	1973.46	1817.54	1181.06	362.689	224.062	167.809	139.402	130.217	139.402	167.809	224.062	362.689	1181.06	1817.54	1973.46	1872.21	1575.05	1238.33	1122.71	1093.05
30	1125.39	1160.26	1269.88	1605.32	1940.73	2056.83	1884.11	1184.94	340.592	221.385	165.879	136.225	126.692	136.225	165.879	221.385	340.592	1184.94	1884.11	2056.83	1940.73	1605.32	1269.88	1160.26	1125.39
31	1170.81	1205.79	1309.06	1633.13	2011.3	2140.13	1945.85	1184.5	325.444	218.72	163.98	132.486	123.145	132.486	163.98	218.72	325.444	1184.5	1945.85	2140.13	2011.3	1633.13	1309.06	1205.79	1170.81
32	1222.68	1259.8	1358.85	1659.78	2083.31	2219.68	2002.65	1177.98	314.179	217.065	162.211	128.993	119.569	128.993	162.211	217.065	314.179	1177.98	2002.65	2219.68	2083.31	1659.78	1358.85	1259.8	1222.68
33	1279.09	1316.72	1414.44	1691.51	2156.08	2295.79	2052.64	1161.37	308.776	215.758	160.367	125.432	116.324	125.432	160.367	215.758	308.776	1161.37	2052.64	2295.79	2156.08	1691.51	1414.44	1316.72	1279.09
34	1349.94	1382.52	1473.43	1726.14	2223.08	2364.43	2093.51	1135.52	305.967	214.954	158.132	121.594	111.171	121.594	158.132	214.954	305.967	1135.52	2093.51	2364.43	2223.08	1726.14	1473.43	1382.52	1349.94
35	1415.81	1447.49	1537.46	1767.88	2287.54	2426.14	2125.53	1100.4	304.388	214.994	156.351	117.145	104.932	117.145	156.351	214.994	304.388	1100.4	2125.53	2426.14	2287.54	1767.88	1537.46	1447.49	1415.81
36	1487.84	1520.05	1607.88	1817.27	2345	2477.98	2147.72	1058.71	304.052	215.632	154.502	110.389	96.528	110.389	154.502	215.632	304.052	1058.71	2147.72	2477.98	2345	1817.27	1607.88	1520.05	1487.84
37	1555.31	1593.84	1679.62	1873.26	2392.38	2519.23	2157.38	1010.63	303.813	216.519	152.129	102.163	86.883	102.163	152.129	216.519	303.813	1010.63	2157.38	2519.23	2392.38	1873.26	1679.62	1593.84	1555.31
38	1612.85	1658.76	1754.53	1934.29	2427.13	2548.58	2156.71	954.876	304.218	217.433	148.395	93.366	78.025	93.366	148.395	217.433									

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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
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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	0.333	39.8	0.995	5.21%
277.00	60	0.163	39.3	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*****