Photometric Test Report

Relevant Standards

☑IES LM-79-2008

☑ANSI C82.77:2014

Prepared For

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2019/6/3

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Prepared By	**Approved By**
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1.0 Test Summary

DLC Technical Requirements v4.4

Outdoor - Architectural Flood and Spot Luminaires				
Requirement Category (Test Data Source)	**Test Method**	**Requirements**		**Test value**
Luminaire Output (lm) (Goniophotometer - Section 4.2)	IES LM-79-2008	1000		14029
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	standard 97.0	Premium 116.4	128.2
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Wrost Case		109.4
Total Harmonic Distortion (A%) (THD & PF - Section 4.3)	ANSI C82.77:2014	25.00%	120V	7.19%
	ANSI C82.77:2014	25.00%	277V	6.58%
Power Factor (THD & PF - Section 4.3)	ANSI C82.77:2014	0.873	120V	0.998
	ANSI C82.77:2014	0.873	277V	0.931
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	5700		4844
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	63		72
Zonal Lumen Requirement (0°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	⩾82%		100.00%
Input Voltage (V)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Wrost Case		120
(THD & PF - section 4.3)		Non-Wrost Case		277
Input Current (A)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Wrost Case		0.914
(THD & PF - section 4.3)		Non-Wrost Case		0.416
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Wrost Case		109.4
(THD & PF - section 4.3)		Non-Wrost Case		107.3

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2019/6/3	FXLED105SF	F1
2	Goniophotometer Test	2019/6/3	FXLED105SF	F1
3	THD and PF Test	2019/6/3	FXLED105SF	F1

Remark(If any)

1、This report shall not be used by the client to claim product endorsement by NVLAP, NIST or any agency of the US government.

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: FXLED105SF

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.	FXLED105SF	Sample ID.	F1
Opreate time (Min.)	10	Stabilization time (Min.)	30
Temperature (°C)	25.3	Humidity (%RH)	53.0

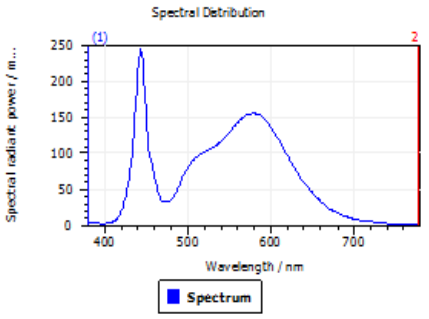
Test Method
The samples were tested according to the IES LM-79-2008.
Photometric paramters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25º C ± 1º C.
The sample measurements were made using a spectroradiometer 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 (V)	CCT (K)	CRI	Duv
120.02	4844	72	2.3E-03

4.1 Integrating Sphere Test

Results



Spectral values

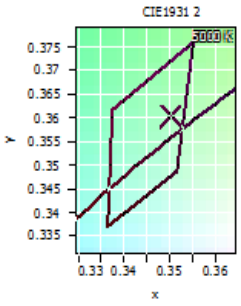
DominantWavelength	572.51 nm
Purity	0.132
PeakWavelength	443.05 nm
Radiant Power	25.51 W
Width50%:	17.28 nm

Color Coordinates

Correlated Color Temperatu 4844 K

x:	0.3502	u:	0.2115	u':	0.2115
y:	0.3602	v:	0.3264	v':	0.4896

ResultsCRICRI01	66.8	ResultsCRICRI09	-49.4
ResultsCRICRI02	78.3	ResultsCRICRI10	51.4
ResultsCRICRI03	89.0	ResultsCRICRI11	69.4
ResultsCRICRI04	71.3	ResultsCRICRI12	54.2
ResultsCRICRI05	69.6	ResultsCRICRI13	68.7
ResultsCRICRI06	71.8	ResultsCRICRI14	94.0
ResultsCRICRI07	78.9	ResultsCRICRI15	57.1
ResultsCRICRI08	48.6	ResultsCRICRI16	58.2
ResultsCRI	71.8		



PlanckDistance	2.3E-003

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	FXLED105SF	Sample ID.	F1
Opreate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.3	Humidity (%RH)	55.0

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° 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^{o} vertical intervals and 10^{o} horizontal intervals.

Test Conditions

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
120.04	60	0.914	109.4	0.997	Light Down

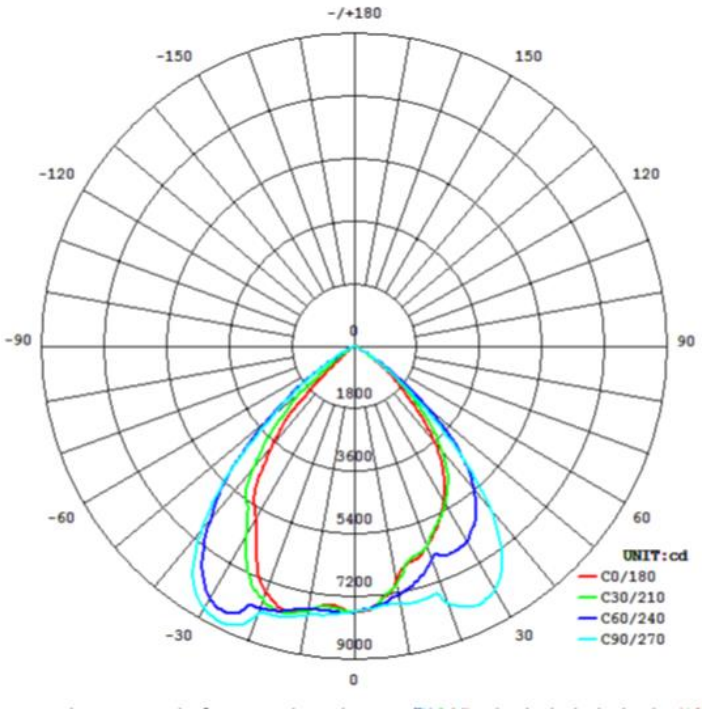
Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
14029	119.0	105.4	91.0	70.9	128.2

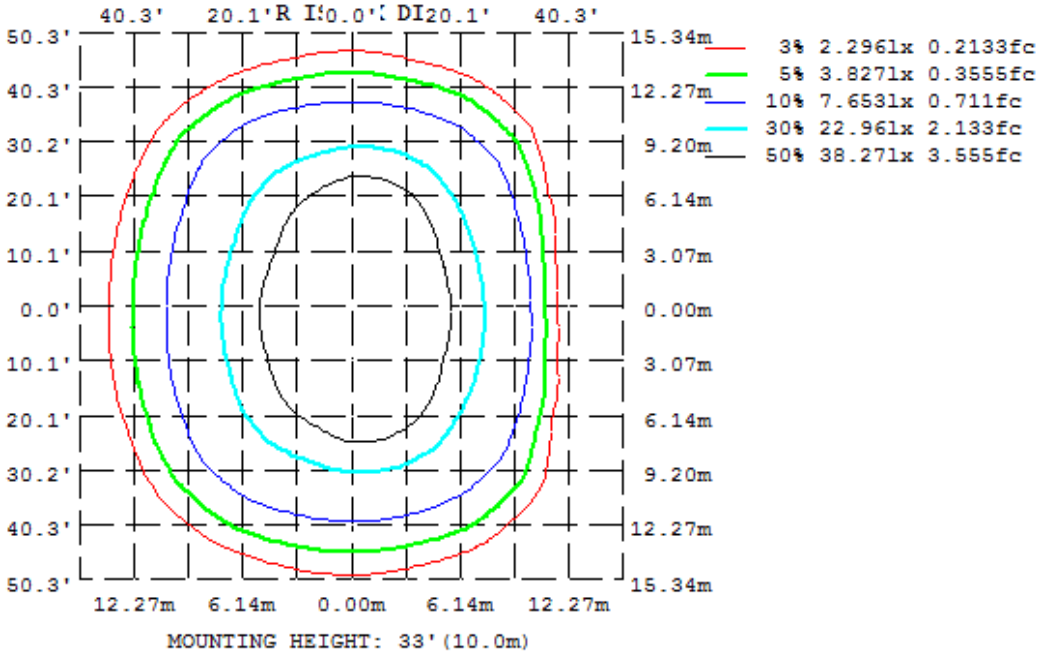
Zonal Lumen Requirement (0°-90°)
100.00%

4.2 Goniophotometer Test

Light Distrubtion Curve



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	7682	7641	7840	7311	6909	7043	7507	7479
20	7517	7979	8156	6574	6111	6183	7832	7569
30	5686	7290	8687	6254	5171	5759	8077	6804
40	3708	5376	6867	5252	3610	4768	6075	4975
50	672.2	2960	3054	3002	1618	2671	2287	2484
60	125.7	402.0	777.3	818.5	268.5	642.8	574.9	281.2
70	42.19	56.32	83.90	53.94	75.85	48.55	69.38	42.62
80	0.2138	0.2576	19.10	44.55	69.58	38.16	14.75	0.1682
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							

4.2 Goniophotometer Test

ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0-10	719.10	0 - 10	719.10	5.13%
10-20	2082.12	0 - 20	2801.21	19.97%
20-30	3238.11	0 - 30	6039.32	43.05%
30-40	3734.94	0 - 40	9774.26	69.67%
40-50	2858.58	0 - 50	12632.85	90.05%
50-60	1140.48	0 - 60	13773.32	98.18%
60-70	206.40	0 - 70	13979.72	99.65%
70-80	39.64	0 - 80	14019.37	99.93%
80-90	9.56	0 - 90	14028.93	100.00%
90-100	0.00	0 - 100	14028.93	100.00%
100-110	0.00	0 - 110	14028.93	100.00%
110-120	0.00	0 - 120	14028.93	100.00%
120-130	0.00	0 - 130	14028.93	100.00%
130-140	0.00	0 - 140	14028.93	100.00%
140-150	0.00	0 - 150	14028.93	100.00%
150-160	0.00	0 - 160	14028.93	100.00%
160-170	0.00	0 - 170	14028.93	100.00%
170-180	0.00	0 - 180	14028.93	100.00%

4.3 Goniophotometer Test

Axial Candela

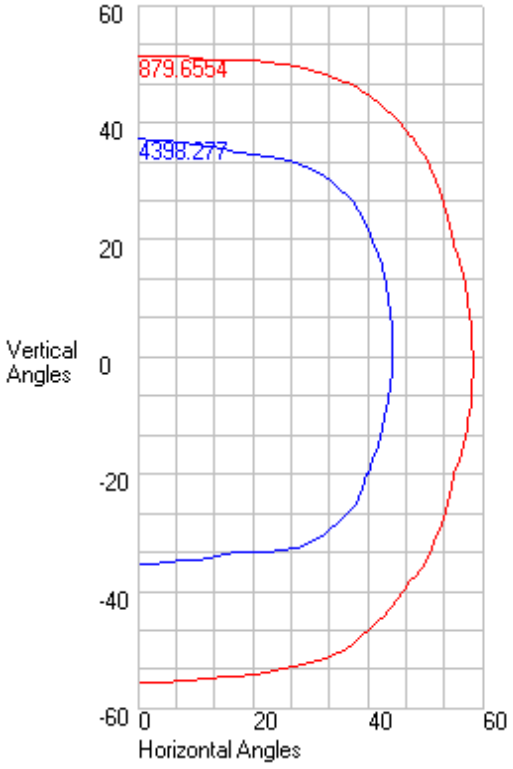
DEG.	HOR.	DEG.	VERT.
90	0.004	90	0
85	1.83	85	0.2
75	36.14	75	0.36
65	191.09	65	78.08
55	1219.49	55	325.14
47.5	3211.97	47.5	1491.26
42.5	5106.035	42.5	3009.345
37.5	6753.955	37.5	4345.085
33	7690.32	33	5263.416
29	8107.502	29	5884.874
25.5	8215.239	25.5	6581.388
22.5	8031.475	22.5	7098.885
19.5	7803.141	19.5	7552.499
17	7657.246	17	7730.594
15	7540.53	15	7873.07
13	7526.934	13	7796.474
11	7513.338	11	7719.878
9	7507.708	9	7636.644
7	7510.044	7	7546.772
5	7512.38	5	7456.9
3	7559.14	3	7525.852
1	7605.901	1	7594.805
0	7629.281	0	7629.281
-1	7648.453	-1	7591.095
-3	7686.796	-3	7514.722
-5	7725.14	-5	7438.35
-7	7771.224	-7	7226.598
-9	7817.308	-9	7014.846
-11	7878.26	-11	6805.826
-13	7954.08	-13	6599.538
-15	8029.9	-15	6393.25
-17	8080.164	-17	6280.418
-19.5	8142.994	-19.5	6139.378
-22.5	8482.13	-22.5	5902.495
-25.5	8796.554	-25.5	5641.518
-29	8711.532	-29	5275.404
-33	8342.696	-33	4769.22
-37.5	7489.785	-37.5	4055.51
-42.5	5965.795	-42.5	3052.55
-47.5	4059.47	-47.5	2056.745
-55	1674.24	-55	919.25
-65	279.13	-65	100.02
-75	44.53	-75	81.98
-85	4.51	-85	12.5
-90	0.009	-90	0.025

4.3 Goniophotometer Test

Characteristics

NEMA Type	6 H x 6 V
Maximum Candela	8796.554
Maximum Candela Angle	-25.5 H 0 V
Horizontal Beam Angle (50%)	91.0
Vertical Beam Angle (50%)	70.9
Horizontal Field Angle (10%)	119.0
Vertical Field Angle (10%)	105.4
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	10534
Beam Efficiency	N.A.
Field Lumens	13544
Field Efficiency	N.A.
Spill Lumens	485
Luminaire Lumens	14029
Total Efficiency	N.A.
Total Luminaire Watts	109.41
Ballast Factor	1

ISOCANDELA CURVES



Deliver

NVLAP TESTING NVLAP LAB CODE 201074-0

ilac-MRA

Axial Candela

	0	1	3	5	7	9	11	13	15	17	19.5	22.5	25.5	29	33	37.5	42.5	47.5	55	65	75	85	90
90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
85	0.2	0.198	0.194	0.19	0.186	0.182	0.178	0.169	0.164	0.163	0.16	0.157	0.153	0.149	0.139	0.127	0.113	0.099	0.078	0.099	0.115	0.119	0
75	0.36	0.357	0.352	0.346	0.337	0.33	0.322	0.313	0.348	0.51	0.693	0.879	1.023	1.127	3.059	4.051	3.331	0.765	0.99	1.434	0.373	0.357	0.001
65	78.08	78.303	78.749	78.435	78.129	77.552	76.694	75.547	74.161	72.633	70.553	67.86	65.019	62.022	55.138	42.262	33.56	26.161	10.639	6.352	3.057	0.595	0.002
55	325.14	328.661	335.7	336.476	337.371	336.105	332.635	329.101	327.859	323.841	314.785	297.824	276.23	242.852	216.434	184.716	134.693	103.127	52.608	17.839	7.78	0.831	0.002
47.5	1491.26	1500.98	1504.77	1487.86	1450.52	1393.10	1316.04	1306.42	1292.60	1268.34	1270.65	1237.79	1190.28	1088.68	940.222	732.782	367.509	276.207	112.69	31.829	11.354	1.005	0.002
42.5	3009.34	3014.89	3010.38	2985.79	2942.05	2880.15	2826.12	2797.60	2752.43	2685.65	2568.95	2446.13	2341.04	2180.64	1952.67	1429.29	910.557	470.486	156.157	40.974	14.982	1.117	0.003
37.5	4345.08	4341.94	4318.82	4274.26	4209.55	4126.10	4086.53	4044.23	3992.45	3902.43	3770.57	3679.61	3547.75	3333.49	2960.91	2296.45	1500.47	893.96	297.981	47.811	18.466	1.227	0.003
33	5263.41	5254.01	5224.24	5180.59	5124.03	5076.11	5052.47	4997.91	4898.07	4792.68	4753.06	4701.94	4572.27	4314.92	3891.14	3134.45	2162.49	1207.2	413.934	66.06	21.452	1.322	0.003
29	5884.87	5870.74	5823.53	5750.97	5653.27	5613.19	5588.4	5545.42	5484.72	5500.5	5524.55	5456.77	5339.03	5209.87	4714.61	3957.53	2663.60	1566.45	514.503	88.227	23.964	1.403	0.003
25.5	6581.38	6568.68	6521.21	6444.27	6355.99	6305.54	6227.00	6121.93	6075.02	6125.77	6157.50	6100.91	6049.78	5877.30	5450.49	4631.90	3183.48	1875.45	657.623	106.443	26.036	1.471	0.003
22.5	7098.88	7083.36	7031.96	6955.00	6898.01	6860.03	6815.55	6711.31	6650.25	6640.53	6705.23	6708.63	6660.42	6520.86	6063.14	5073.80	3597.37	2101.60	760.397	121.065	27.707	1.526	0.003
19.5	7552.49	7534.11	7487.38	7418.69	7346.94	7269.27	7190.21	7125.37	7061.57	7009.21	7068.94	7234.01	7218.24	7149.37	6533.18	5526.45	3977.43	2290.85	865.11	134.667	29.271	1.579	0.003
17	7730.59	7708.76	7653.76	7591.39	7543.47	7502.91	7475.80	7388.37	7306.29	7265.16	7376.14	7529.63	7648.35	7433.87	6873.25	5906.31	4264.86	2456.37	942.676	145.152	30.485	1.62	0.004
15	7873.07	7849.96	7784.14	7706.55	7631.78	7574.70	7550.58	7550.40	7475.68	7454.53	7585.64	7763.62	7839.08	7599.68	7120.92	6204.54	4475.30	2637.46	998.19	152.939	31.394	1.651	0.004
13	7796.47	7775.57	7741.38	7705.56	7675.97	7622.21	7583.71	7572.37	7542.64	7535.85	7696.80	7937.75	7926.85	7757.13	7345.83	6409.04	4660.17	2794.24	1047.76	160.158	32.245	1.681	0.004
11	7719.87	7700.32	7669.21	7629.85	7606.22	7598.33	7585.24	7569.17	7536.81	7504.51	7715.62	8020.35	8013.47	7905.24	7499.49	6554.85	4810.62	2926.44	1091.28	166.778	33.034	1.741	0.004
9	7636.64	7617.27	7586.97	7552.19	7540.10	7537.04	7567.92	7578.90	7540.31	7534.21	7704.03	8017.49	8098.76	8043.00	7586.86	6633.37	4931.69	3033.87	1128.67	172.767	33.758	1.757	0.004
7	7546.77	7524.28	7495.54	7487.00	7477.46	7489.82	7528.52	7578.34	7570.83	7589.53	7706.95	8028.13	8171.02	8092.18	7631.47	6695.25	5022.99	3116.48	1159.85	178.094	34.415	1.773	0.004
5	7456.9	7424.54	7420.77	7453.42	7447.35	7438.73	7505.02	7542.91	7568.33	7620.67	7719.68	8017.06	8186.52	8099.51	7664.29	6738.61	5084.26	3174.31	1184.77	182.728	35.245	1.79	0.004
3	7525.85	7490.42	7464.77	7462.23	7479.48	7493.32	7518.62	7530.62	7552.34	7633.39	7745.32	8009.32	8200.26	8104.85	7684.60	6761.60	5115.43	3207.55	1210.49	187.519	35.603	1.806	0.004
1	7594.80	7574.41	7557.17	7524.25	7515.67	7510.00	7514.58	7527.70	7540.74	7647.21	7781.84	8020.12	8211.19	8107.46	7691.80	6762.41	5116.61	3216.49	1216.49	189.899	35.961	1.83	0.004
0	7629.28	7605.90	7559.14	7512.38	7510.04	7507.70	7513.33	7526.93	7540.53	7657.24	7803.14	8031.47	8215.23	8107.50	7690.32	6753.95	5106.03	3211.97	1219.49	191.09	36.14	1.83	0.004
-1	7591.09	7592.85	7545.18	7506.61	7487.94	7477.21	7477.25	7486.28	7496.56	7580.00	7693.53	7917.70	8101.82	8003.84	7600.55	6689.22	5079.62	3210.40	1218.69	190.418	35.979	1.829	0.004
-3	7514.72	7507.12	7520.01	7431.68	7403.51	7394.22	7402.33	7403.82	7407.54	7424.11	7475.11	7699.26	7872.09	7793.90	7411.44	6542.91	5006.49	3189.9	1217.09	189.075	35.656	1.828	0.004
-5	7438.35	7433.44	7373.51	7311.76	7262.35	7251.34	7240.98	7249.75	7251.8	7241.76	7253.34	7491.20	7639.30	7581.00	7210.94	6376.96	4909.42	3146.91	1195.62	185.252	35.335	1.826	0.004
-7	7226.59	7216.82	7179.14	7127.42	7055.94	7046.77	7046.73	7052.54	7018.07	6994.17	7043.06	7285.66	7404.37	7365.75	7000.74	6194.82	4792.19	3082.31	1174.86	181.532	34.556	1.825	0.004
-9	7014.84	7008.18	6974.43	6924.29	6856.47	6805.81	6814.97	6808.31	6753.08	6720.85	6833.57	7073.03	7170.64	7137.11	6782.51	5999.84	4658.54	2997.06	1147.64	177.024	33.954	1.823	0.004
-11	6805.82	6798.16	6754.24	6689.31	6608.64	6578.82	6563.11	6565.39	6530.03	6478.01	6625.53	6863.44	6949.95	6915.13	6588.05	5795.24	4512.08	2892.16	1113.97	171.734	33.294	1.822	0.004
-13	6599.53	6588.68	6542.38	6467.09	6351.83	6366.9	6375.54	6339.3	6317.60	6341.50	6445.68	6629.80	6745.90	6700.59	6408.70	5622.45	4356.25	2768.63	1073.88	165.668	32.583	1.773	0.004
-15	6393.25	6383.44	6345.73	6297.75	6252.68	6230.87	6230.69	6185.05	6125.11	6159.02	6257.28	6427.58	6560.56	6496.64	6195.80	5476.14	4209.57	2627.52	1027.41	158.834	31.824	1.757	0.004
-17	6280.41	6265.84	6226.06	6180.60	6156.46	6135.48	6111.60	6039.81	5963.90	5932.50	6059.81	6251.69	6376.01	6305.68	5989.79	5285.36	4068.88	2469.89	974.634	151.243	31.023	1.738	0.004
-19.5	6139.37	6122.02	6078.25	6018.67	5992.59	5953.01	5898.09	5839.54	5775.45	5749.03	5856.65	6056.74	6105.14	6075.48	5746.00	5041.11	3839.60	2330.98	899.904	140.704	29.97	1.711	0.003
-22.5	5902.49	5882.08	5830.25	5763.2	5717.26	5683.79	5636.40	5593.08	5588.34	5613.87	5690.39	5761.68	5790.82	5719.00	5463.87	4747.94	3532.61	2156.54	797.668	126.553	28.641	1.675	0.003
-25.5	5641.51	5621.17	5570.62	5509.62	5452.78	5429.83	5396.18	5352.63	5348.56	5391.86	5420.92	5452.30	5465.29	5338.93	5064.87	4459.85	3194.72	1940.89	692.195	110.806	27.256	1.634	0.003
-29	5275.40	5267.05	5241.60	5206.40	5163.76	5131.25	5088.14	5039.44	4987.01	4998.76	5047.09	5043.72	5007.84	4921.99	4536.66	3925.97	2766.41	1638.30	543.148	90.49	25.588	1.582	0.003
-33	4769.22	4767.82	4754.69	4728.58	4690.55	4655.39	4637.37	4602.99	4536.29	4458.58	4449.97	4456.18	4411.50	4261.81	3919.10	3217.73	2276.48	1275.97	437.654	64.826	23.636	1.514	0.003
-37.5	4055.51	4058.85	4053.67	4033.21	3998.19	3949.46	3922.24	3888.08	3842.65	3765.12	3659.83	3643.52	3592.47	3447.47	3098.62	2462.29	1631.17	943.158	316.933	43.846	21.411	1.43	0.003
-42.5	3052.55	3061.46	3066.90	3056.41	3030.78	2990.86	2952.13	2925.85	2888.13	2839.46	2754.82	2660.79	2589.38	2444.76	2195.66	1651.09	1076.49	529.479	170.35	39.408	18.938	1.327	0.003
-47.5	2056.74	2066.69	2077.97	2077.51	2065.02	2040.28	2003.14	1980.56	1946.06	1896.62	1833.44	1747.62	1688.25	1555.60	1322.13	1033.91	583.329	333.67	118.622	33.615	16.491	1.214	0.002
-55	919.25	924.284	934.347	924.506	915.463	900.091	878.439	856.923	842.402	820.135	781.189	717.886	637.014	529.477	457.174	342.966	157.386	113.584	51.73	24.924	12.159	1.028	0.002
-65	100.02	100.477	101.39	101.749	102.08	102.17	101.998	101.54	100.531	98.975	96.34	92.072	86.486	79.212	67.542	52.366	45.062	39.999	26.911	17.106	5.535	0.756	0.002
-75	81.98	82.327	83.021	83.716	84.113	84.607	85.047	85.431	84.907	81.748	77.848	73.274	68.855	63.951	56.8	48.966	40.689	33.1	16.48	5.664	1.309	0.462	0.001
-85	12.5	12.489	12.466	12.443	12.42	12.398	12.375	12.035	11.909	12.195	12.505	12.827	13.088	13.311	11.005	7.777	4.511	2.679	1.63	0.832	0.439	0.156	0
-90	0.025	0.025	0.025	0.025	0.025	0.025	0.024	0.024	0.024	0.024	0.025	0.026	0.026	0.027	0.022	0.016	0.009	0.005	0.003	0.002	0.001	0	0

Deliver

TESTING
NVLAP LAB CODE 201074-0

LUMEN TABULATION

	0	1	3	5	7	9	11	13	15	17	20	23	26	29	33	38	43	48	55	65	75	85	90	Total
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
85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.4	0.3	0.3	0.2	0.2	0.1	0	0	0	0	0
65	0.6	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.5	1.8	1.6	1.7	1.7	1.6	1.3	0.9	0.8	0.4	0.1	0	0	0	0
55	2.09 *	4.23 *	4.25 *	4.21 *	4.1	4	3.8	3.8	3.8	4.7	5.5	5.2	5.6	5.6	5.1	3.6	2.1	1.8	0.7	0.2	0	0	0	0
47.5	3.44 *	6.93 *	6.94 *	6.87 *	6.74 *	6.56 *	6.43 *	6.34 *	6.21 *	7.54 *	8.66 *	8.19 *	8.85 *	8.96 *	8.04 *	5.9	3.2	2.2	0.8	0.2	0	0	0	0
42.5	5.61 *	11.25 *	11.23 *	11.14 *	10.97 *	10.80 *	10.65 *	10.49 *	10.25 *	12.34 *	14.11 *	13.39 *	14.55 *	14.81 *	13.39 *	10.23 *	5.99 *	3.9	1.3	0.2	0	0	0	0
37.5	6.59 *	13.18 *	13.14 *	13.03 *	12.88 *	12.73 *	12.57 *	12.34 *	12.04 *	14.63 *	17.00 *	16.29 *	17.79 *	18.23 *	16.83 *	13.35 *	8.12 *	5.4	1.7	0.2	0	0	0	0
33	6.79 *	13.57 *	13.50 *	13.36 *	13.23 *	13.12 *	12.99 *	12.76 *	12.52 *	15.42 *	18.12 *	17.45 *	19.26 *	19.99 *	18.86 *	15.30 *	9.38 *	6.30 *	2	0.3	0	0	0	0
29	6.65 *	13.27 *	13.19 *	13.03 *	12.89 *	12.77 *	12.60 *	12.41 *	12.30 *	15.28 *	17.99 *	17.41 *	19.40 *	20.34 *	19.52 *	16.05 *	9.91 *	6.80 *	2.2	0.3	0	0	0	0
25.5	6.25 *	12.49 *	12.41 *	12.30 *	12.19 *	12.08 *	11.89 *	11.70 *	11.58 *	14.40 *	17.03 *	16.58 *	18.54 *	19.55 *	18.82 *	15.61 *	9.77 *	6.78 *	2.3	0.3	0	0	0	0
22.5	6.69 *	13.37 *	13.29 *	13.18 *	13.07 *	12.94 *	12.77 *	12.58 *	12.41 *	15.39 *	18.37 *	18.05 *	20.30 *	21.41 *	20.52 *	17.16 *	10.83 *	7.56 *	2.6	0.3	0	0	0	0
19.5	5.82 *	11.61 *	11.55 *	11.46 *	11.36 *	11.25 *	11.12 *	10.97 *	10.82 *	13.43 *	16.12 *	16.01 *	18.07 *	18.99 *	18.27 *	15.45 *	9.79 *	6.85 *	2.4	0.3	0	0	0	0
17	4.75 *	9.47 *	9.42 *	9.35 *	9.27 *	9.20 *	9.13 *	9.02 *	8.91 *	11.10 *	13.35 *	13.30 *	14.98 *	15.75 *	15.34 *	13.08 *	8.32 *	5.86 *	2.1	0.2	0	0	0	0
15	4.77 *	9.52 *	9.48 *	9.43 *	9.36 *	9.28 *	9.22 *	9.15 *	9.06 *	11.31 *	13.67 *	13.59 *	15.28 *	16.19 *	15.90 *	13.62 *	8.73 *	6.20 *	2.2	0.2	0	0	0	0
13	4.73 *	9.44 *	9.42 *	9.40 *	9.36 *	9.30 *	9.24 *	9.17 *	9.10 *	11.38 *	13.83 *	13.77 *	15.51 *	16.56 *	16.33 *	14.02 *	9.08 *	6.50 *	2.3	0.3	0	0	0	0
11	4.68 *	9.35 *	9.33 *	9.31 *	9.28 *	9.25 *	9.22 *	9.16 *	9.08 *	11.37 *	13.84 *	13.86 *	15.73 *	16.85 *	16.59 *	14.31 *	9.35 *	6.74 *	2.4	0.3	0	0	0	0
9	4.62 *	9.25 *	9.24 *	9.21 *	9.19 *	9.19 *	9.19 *	9.15 *	9.09 *	11.34 *	13.79 *	13.90 *	15.89 *	17.02 *	16.75 *	14.51 *	9.57 *	6.94 *	2.4	0.3	0	0	0	0
7	4.57 *	9.15 *	9.16 *	9.15 *	9.13 *	9.14 *	9.16 *	9.14 *	9.09 *	11.32 *	13.75 *	13.92 *	15.96 *	17.09 *	16.85 *	14.66 *	9.74 *	7.09 *	2.5	0.3	0	0	0	0
5	4.56 *	9.13 *	9.15 *	9.16 *	9.15 *	9.15 *	9.15 *	9.13 *	9.10 *	11.34 *	13.74 *	13.93 *	15.98 *	17.12 *	16.91 *	14.75 *	9.84 *	7.20 *	2.5	0.3	0	0	0	0
3	4.60 *	9.21 *	9.21 *	9.21 *	9.20 *	9.19 *	9.17 *	9.15 *	9.13 *	11.39 *	13.78 *	13.96 *	16.01 *	17.14 *	16.94 *	14.78 *	9.88 *	7.25 *	2.6	0.3	0	0	0	0
1	2.32 *	4.64 *	4.63 *	4.62 *	4.61 *	4.60 *	4.60 *	4.58 *	4.58 *	5.72 *	6.91 *	6.99 *	8.01 *	8.58 *	8.47 *	7.39 *	4.94 *	3.63 *	1.3	0.1	0	0	0	0
0																								

	2.32 *	4.64 *	4.63 *	4.62 *	4.61 *	4.60 *	4.59 *	4.58 *	4.57 *	5.70 *	6.88 *	6.95 *	7.96 *	8.52 *	8.42 *	7.35 *	4.93 *	3.63 *	1.3	0.1	0	0	0
-1	4.61 *	9.24 *	9.22 *	9.18 *	9.15 *	9.13 *	9.11 *	9.08 *	9.04 *	11.22 *	13.51 *	13.64 *	15.62 *	16.73 *	16.55 *	14.48 *	9.76 *	7.23 *	2.6	0.3	0	0	0
-3	4.56 *	9.14 *	9.11 *	9.06 *	9.03 *	9.00 *	8.98 *	8.94 *	8.88 *	10.97 *	13.18 *	13.29 *	15.20 *	16.30 *	16.12 *	14.16 *	9.60 *	7.15 *	2.5	0.3	0	0	0
-5	4.47 *	8.95 *	8.91 *	8.85 *	8.82 *	8.79 *	8.77 *	8.72 *	8.64 *	10.68 *	12.86 *	12.93 *	14.78 *	15.85 *	15.67 *	13.79 *	9.39 *	7.02 *	2.5	0.3	0	0	0
-7	4.34 *	8.70 *	8.67 *	8.61 *	8.55 *	8.52 *	8.50 *	8.44 *	8.34 *	10.35 *	12.51 *	12.56 *	14.34 *	15.37 *	15.18 *	13.38 *	9.15 *	6.86 *	2.4	0.3	0	0	0
-9	4.22 *	8.44 *	8.41 *	8.33 *	8.26 *	8.23 *	8.20 *	8.14 *	8.04 *	10.01 *	12.14 *	12.18 *	13.89 *	14.90 *	14.69 *	12.95 *	8.87 *	6.65 *	2.4	0.3	0	0	0
-11	4.09 *	8.17 *	8.12 *	8.03 *	7.97 *	7.95 *	7.92 *	7.86 *	7.79 *	9.72 *	11.77 *	11.79 *	13.46 *	14.45 *	14.24 *	12.52 *	8.56 *	6.41 *	2.3	0.3	0	0	0
-13	3.96 *	7.90 *	7.86 *	7.80 *	7.75 *	7.74 *	7.70 *	7.61 *	7.56 *	9.45 *	11.41 *	11.43 *	13.05 *	14.01 *	13.83 *	12.14 *	8.23 *	6.14 *	2.2	0.2	0	0	0
-15	3.86 *	7.71 *	7.69 *	7.66 *	7.63 *	7.60 *	7.53 *	7.42 *	7.33 *	9.16 *	11.07 *	11.11 *	12.67 *	13.57 *	13.40 *	11.77 *	7.90 *	5.83 *	2.1	0.2	0	0	0
-17	4.73 *	9.46 *	9.43 *	9.39 *	9.34 *	9.27 *	9.15 *	9.01 *	8.88 *	11.08 *	13.43 *	13.45 *	15.31 *	16.38 *	16.14 *	14.12 *	9.41 *	6.87 *	2.5	0.3	0	0	0
-20	5.50 *	11.00 *	10.96 *	10.89 *	10.81 *	10.69 *	10.56 *	10.43 *	10.34 *	12.91 *	15.57 *	15.47 *	17.54 *	18.79 *	18.48 *	16.00 *	10.56 *	7.64 *	2.7	0.3	0	0	0
-23	5.27 *	10.53 *	10.47 *	10.40 *	10.32 *	10.22 *	10.10 *	10.00 *	9.97 *	12.46 *	14.89 *	14.70 *	16.57 *	17.68 *	17.42 *	14.91 *	9.67 *	6.91 *	2.4	0.3	0	0	0
-26	5.82 *	11.63 *	11.59 *	11.52 *	11.43 *	11.33 *	11.18 *	11.04 *	10.97 *	13.69 *	16.31 *	16.03 *	18.02 *	19.04 *	18.59 *	15.75 *	10.02 *	6.97 *	2.3	0.3	0	0	0
-29	6.12 *	12.26 *	12.25 *	12.19 *	12.10 *	11.99 *	11.85 *	11.65 *	11.47 *	14.20 *	16.89 *	16.54 *	18.52 *	19.39 *	18.53 *	15.42 *	9.65 *	6.50 *	2.1	0.2	0	0	0
-33	6.06 *	12.14 *	12.14 *	12.08 *	11.98 *	11.86 *	11.74 *	11.56 *	11.31 *	13.80 *	16.23 *	15.85 *	17.61 *	18.27 *	17.07 *	13.78 *	8.45 *	5.6	1.8	0.2	0	0	0
-38	5.42 *	10.89 *	10.91 *	10.86 *	10.75 *	10.62 *	10.49 *	10.34 *	10.12 *	12.25 *	14.18 *	13.67 *	15.07 *	15.48 *	14.16 *	11.01 *	6.48 *	4.2	1.3	0.2	0	0	0
-43	3.90 *	7.86 *	7.89 *	7.87 *	7.80 *	7.68 *	7.57 *	7.44 *	7.27 *	8.79 *	10.04 *	9.53 *	10.37 *	10.48 *	9.44 *	7.11 *	4	2.4	0.8	0.2	0	0	0
-48	3.41 *	6.89 *	6.93 *	6.91 *	6.85 *	6.73 *	6.60 *	6.47 *	6.30 *	7.56 *	8.55 *	7.93 *	8.38 *	8.21 *	7.3	5.2	2.8	1.9	0.7	0.2	0	0	0
-55	1.6	3.2	3.2	3.2	3.1	3.1	3	2.9	2.9	3.4	3.8	3.4	3.4	3.3	2.9	2	1.1	0.9	0.5	0.2	0	0	0
-65	0.3	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.7	0.8	0.7	0.7	0.7	0.7	0.6	0.5	0.5	0.3	0.1	0	0	0
-75	0.1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.4	0.4	0.4	0.4	0.3	0.3	0.2	0.1	0	0	0	0
-85	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0	0	0	0	0	0	0	0	0
-90																							
Total	175	350	349	347	345	342	339	335	331	410	488	481	541	570	551	464	299	214	74	9	1	0	7014

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	FXLED105SF	Sample ID.	F1
Temperature (°C)	25.3	Humidity (%RH)	53.0

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 25º C ± 1º 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							
Wrost Case			Non-Wrost Case				
Voltage (Vac)	Power Factor	THD	Voltage (Vac)	Current	Wattage	Power Factor	THD
120.02	0.998	7.19%	277.05	0.416	107.3	0.931	6.58%

5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2018/12/26	2019/12/25
DLF108	Auxiliary Lamp	2018/12/26	2019/12/25
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-derectional	2018/12/26	2019/12/25
DLF116	AC Power Source	2018/12/26	2019/12/25
DLF113	Power Meter	2018/12/26	2019/12/25
DLF112	Temperature Recorder	2018/12/26	2019/12/25
DLF114	Temperature & Humidity Datalogger	2018/12/26	2019/12/25
DLF101	Goniophotometer	2018/12/26	2019/12/25
DLF125	Standard Lamp Standard Lamp Type: 76.58 V, 6.7875 A, Tungsten, Omni-derectional	2018/12/26	2019/12/25
DLF104	AC Power Source	2018/12/26	2019/12/25
DLF507	DC Power Source	2018/12/26	2019/12/25
DLF102	Power Meter	2018/12/26	2019/12/25
DLF111	Temperature & Humidity Datalogger	2018/12/26	2019/12/25
DLF119	Power Meter	2018/12/26	2019/12/25
DLF031	Temperature data logger	2018/12/26	2019/12/25
DLF022	Digital power meter	2018/12/26	2019/12/25
DLF003	Temperature & Humidity Datalogger	2018/12/26	2019/12/25

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