

# Photometric Test Report

## Relevant Standards

- ☒ IES LM-79-2008
- ☒ ANSI C82.77:2014
- ☒ UL1598-2008

## Prepared For

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## Project Number

**DLF1804109**

## Report Number

**DLF20180416001-6a**

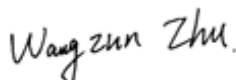
## Test Date

**2018/4/16**

## Issue Date

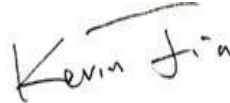
**2018/4/16**

## Prepared By



Wangzun Zhu

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Kevin Jia

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## 1.0 Test Summary

DLC Technical Requirements v4.3

Outdoor - Architectural Flood and Spot Luminaires				
Requirement Category	Test Method	Requirements	Test value	Results (Fail/Pass)
Lamp Output (lm)	IES LM-79-2008	1000	2504	P
Zonal Lumen Requirement (0°-90°)	IES LM-79-2008	≥85%	100.00%	P
Minimum Luminaire Efficacy (lm/W)	IES LM-79-2008	90	92.0	P
Allowable CCTs* (K)	IES LM-79-2008	5700	3065	P
Minimum CRI	IES LM-79-2008 CIE 13.3-1995	65	69.8	P
Power Factor	ANSI C82.77:2014	0.873	0.924	P
Total Harmonic Distortion (A%)	ANSI C82.77:2014	25.00%	8.76%	P

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2018/4/16	HSLED26Y/480	F1
2	Goniophotometer Test	2018/4/16	HSLED26Y/480	F1
3	THD and PF Test	2018/4/16	HSLED26Y/480	F1

### 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:**

**Electrical Specification:** 347V-480V,50/60HZ

**Light source:** LL725F1212-XXC

**Manufacturer Of Light Source:** Lustrous International Technology Company

#### Photos of Luminaire Characteristics



## 4.0 LM-79 Measurement and Test Results

### 4.1 Integrating Sphere Test

Model No.	HSLED26Y/480	Sample ID.	F1
Operate time (Min.)	90	Stabilization time (Min.)	45

#### 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 Conditions

Temperature ( $^{\circ}\text{C}$ )	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
25.1	479.93	60	0.061	27.19	0.924

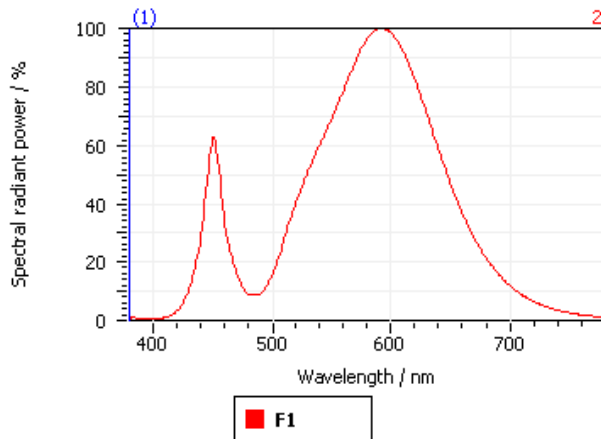
#### Test Result

CCT (K)	CRI (Ra)	Duv
3065	69.8	1.4E-03

## 4.1 Integrating Sphere Test

### Spectroradiometric Parameters

#### Results



#### Spectral values

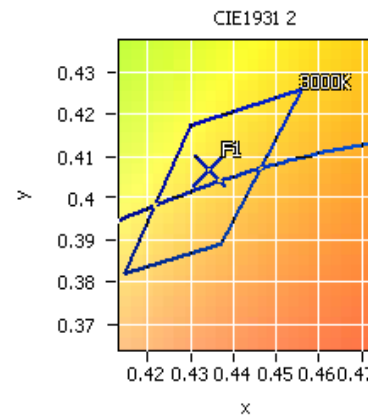
DominantWavelength	582.05 nm
Purity	0.525
PeakWavelength	592.34 nm
Width50%	118.13 nm

#### Color Coordinates

Correlated Color Temperature 3065 K

x: 0.4344 u: 0.2478 u': 0.2478  
y: 0.4068 v: 0.3480 v': 0.5221

ResultsCRICRI01	65.9	ResultsCRICRI09	-35.3
ResultsCRICRI02	79.8	ResultsCRICRI10	52.5
ResultsCRICRI03	91.2	ResultsCRICRI11	57.4
ResultsCRICRI04	64.8	ResultsCRICRI12	39.8
ResultsCRICRI05	63.9	ResultsCRICRI13	68.3
ResultsCRICRI06	70.4	ResultsCRICRI14	94.8
ResultsCRICRI07	78.4	ResultsCRICRI15	58.8
ResultsCRICRI08	43.6	ResultsCRICRI16	58.6
ResultsCRI	69.8		



Nominal CCT: 3000K

PlanckDistance 1.4E-003

## 4.0 LM-79 Measurement and Test Results

### 4.3 Goniophotometer Test

Model No.	HSLED26Y/480	Sample ID.	F1
Operate time (Min.)	90	Stabilization time (Min.)	45

#### 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

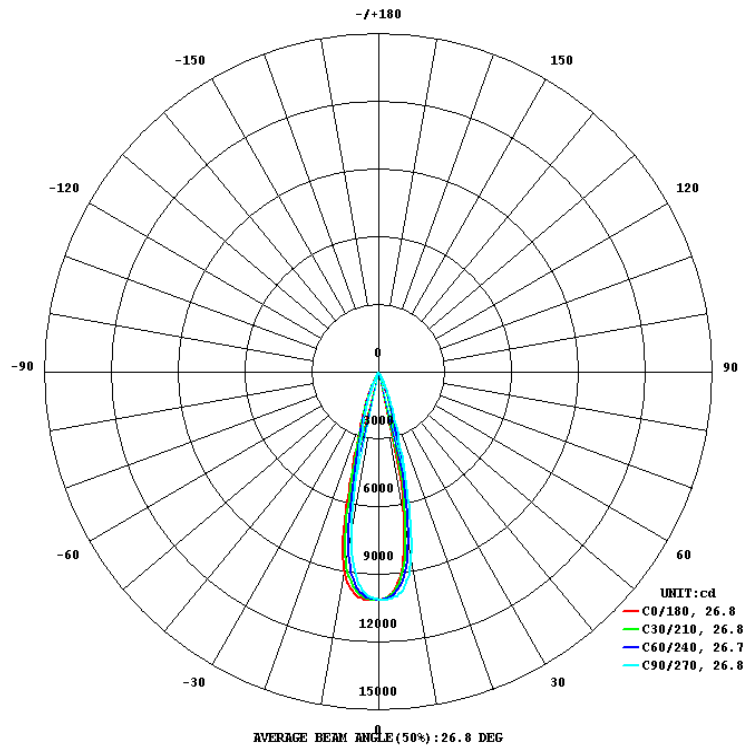
Temperature ( $^{\circ}\text{C}$ )	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.1	479.84	60	0.062	27.22	0.920	Light Down

#### Test Result

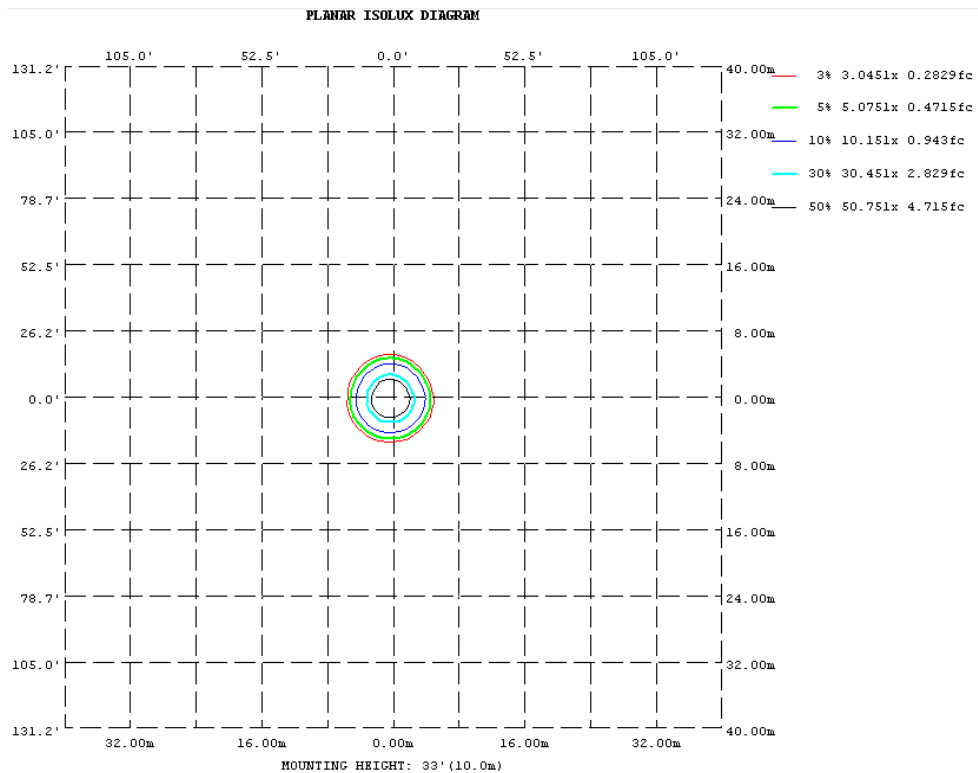
Flux(lm)	Zonal Lumen Requirement ( $0^{\circ}$ - $90^{\circ}$ )	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
		Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
2504	100.00%	47.8	47.7	26.8	26.8	92.0

### 4.3 Goniophotometer Test

#### Light Distrubtion Curve



#### Isolux Plot



### 4.3 Goniophotometer Test

#### Zonal Lumen Summary

°	C0	C45	C90	C135	C180	C225	C270	C315
10	675.6	744.1	848.0	918.1	896.6	832.5	718.7	612.8
20	149.0	168.6	209.2	252.1	226.1	202.1	163.5	136.3
30	10.56	15.70	27.29	41.80	33.00	26.15	15.98	8.954
40	2.256	2.607	3.087	3.381	3.143	2.991	2.597	2.185
50	1.281	1.383	1.503	1.554	1.503	1.485	1.391	1.270
60	0.9641	1.015	1.058	1.070	1.058	1.063	1.023	0.9619
70	0.6775	0.7095	0.7636	0.8070	0.7949	0.7739	0.7065	0.6543
80	0.1809	0.1979	0.2288	0.3243	0.2975	0.2543	0.1612	0.1493
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: *10cd Less than 35% Percent = 3.1 %							



### 4.3 Goniophotometer Test

#### ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0 - 10	860.66	0 - 10	860.66	34.37%
10 - 20	1145.24	0 - 20	2005.90	80.11%
20 - 30	404.75	0 - 30	2410.65	96.27%
30 - 40	52.77	0 - 40	2463.43	98.38%
40 - 50	15.17	0 - 50	2478.59	98.99%
50 - 60	10.71	0 - 60	2489.30	99.41%
60 - 70	8.71	0 - 70	2498.02	99.76%
70 - 80	5.07	0 - 80	2503.09	99.96%
80 - 90	0.89	0 - 90	2503.98	100.00%
90 - 100	0.00	0 - 100	2503.98	100.00%
100 - 110	0.00	0 - 110	2503.98	100.00%
110 - 120	0.00	0 - 120	2503.98	100.00%
120 - 130	0.00	0 - 130	2503.98	100.00%
130 - 140	0.00	0 - 140	2503.98	100.00%
140 - 150	0.00	0 - 150	2503.98	100.00%
150 - 160	0.00	0 - 160	2503.98	100.00%
160 - 170	0.00	0 - 170	2503.98	100.00%
170 - 180	0.00	0 - 180	2503.98	100.00%

### 4.3 Goniophotometer Test

#### Axial Candela

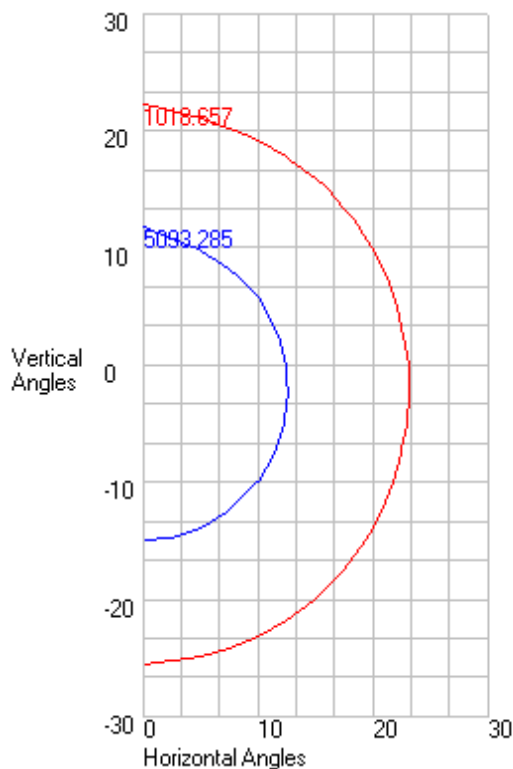
DEG.	HOR.	DEG.	VERT.
90	0	90	0
85	0.04	85	0.21
75	4.35	75	4.37
65	8.91	65	8.48
55	11.66	55	10.87
47.5	15.65	47.5	14.24
42.5	21.27	42.5	18.83
37.5	33.2	37.5	28.27
33	65.36	33	53.21
29	211.11	29	149.52
25.5	592.67	25.5	486.3
22.5	1116.64	22.5	979.43
19.5	1750.62	19.5	1603
17	2444.85	17	2231.49
15	3302.58	15	2970.7
13	4601	13	4113.97
11	6338.25	11	5804.24
9	7910.02	9	7605.95
7	8965.93	7	8790.09
5	9583.27	5	9506.24
3	9920.9	3	9900.73
1	10076.6	1	10079.37
0	10111.68	0	10111.68
-1	10119.9	-1	10144.14
-3	10076.2	-3	10139.52
-5	9941.2	-5	10043.9
-7	9614.36	-7	9812.13
-9	8961.99	-9	9327.26
-11	7866.79	-11	8478.55
-13	6226.56	-13	7009.28
-15	4521.57	-15	5089.44
-17	3246.02	-17	3563.36
-19.5	2241.35	-19.5	2421.17
-22.5	1480.38	-22.5	1616.24
-25.5	877.51	-25.5	994.33
-29	381.11	-29	444.56
-33	104.04	-33	126.44
-37.5	41.8	-37.5	43.37
-42.5	24.42	-42.5	24.62
-47.5	17.21	-47.5	17.21
-55	12.22	-55	12.27
-65	9.3	-65	9.39
-75	5.22	-75	5.72
-85	0.3	-85	0.73
-90	0.01	-90	0

### 4.3 Goniophotometer Test

#### Characteristics

NEMA Type	4 H x 4 V
Maximum Candela	10186.57
Maximum Candela Angle	-1 H -3 V
Horizontal Beam Angle (50%)	27
Vertical Beam Angle (50%)	27.2
Horizontal Field Angle (10%)	48
Vertical Field Angle (10%)	47.9
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	1389
Beam Efficiency	N.A.
Field Lumens	2256
Field Efficiency	N.A.
Spill Lumens	248
Luminaire Lumens	2504
Total Efficiency	N.A.
Total Luminaire Watts	27.2218
Ballast Factor	1

#### ISOCANDELA CURVES



# 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	0.21	0.2	0.18	0.17	0.15	0.13	0.11	0.09	0.07	0.06	0.06	0.05	0.04	0.03	0.02	0.01	0	0	0	0	0	0	0
75	4.37	4.34	4.27	4.21	4.08	3.98	3.86	3.74	3.63	3.55	3.45	3.32	3.16	2.95	2.68	2.36	1.95	1.52	0.91	0.27	0.01	0	0
65	8.48	8.46	8.43	8.36	8.3	8.23	8.15	8.05	7.97	7.9	7.79	7.63	7.45	7.16	6.82	6.33	5.67	4.92	3.57	1.63	0.26	0	0
55	10.87	10.85	10.81	10.72	10.64	10.55	10.45	10.36	10.28	10.19	10.08	9.92	9.75	9.55	9.29	8.93	8.43	7.76	6.33	3.61	0.94	0.01	0
47.5	14.24	14.19	14.08	13.86	13.64	13.4	13.15	12.97	12.78	12.55	12.23	11.86	11.51	11.11	10.66	10.21	9.68	9.1	7.86	5.08	1.58	0.01	0
42.5	18.83	18.72	18.5	18.02	17.56	17.05	16.58	16.26	15.84	15.32	14.72	14.08	13.39	12.69	11.87	11.14	10.44	9.78	8.62	5.94	2.03	0.01	0
37.5	28.27	28	27.2	26.22	25.19	23.86	23	22.11	21.15	20.18	19.09	17.6	16.32	14.97	13.59	12.4	11.29	10.44	9.21	6.66	2.47	0.01	0
33	53.21	52.1	48.98	45.34	41.32	38.2	35.84	33.07	30.61	28.29	25.71	22.89	20.44	17.99	15.8	13.84	12.23	11.03	9.65	7.2	2.85	0.01	0
29	149.52	143.66	126.15	106.39	87.69	76.39	66.71	58.35	50.16	43.75	37.1	31.16	26.1	22.15	18.43	15.54	13.22	11.62	10	7.61	3.16	0.01	0
25.5	486.3	468.17	413.24	346.09	277.76	229.3	191.55	150.66	104.69	78.27	58.72	43.63	34.15	26.88	21.39	17.25	14.17	12.19	10.28	7.94	3.41	0.01	0
22.5	979.43	948.84	853.05	740.39	640.68	550.25	449.57	346.31	252.96	188.9	105.3	64.79	45.32	33.03	24.5	18.96	15.14	12.72	10.52	8.14	3.61	0.02	0
19.5	1603 *	1562.74	1436.03	1281.26	1168.84	1026.64	858.7	695.82	536.07	386.35	236.9	117.58	64.26	40.73	28.36	21.03	16.07	13.21	10.73	8.32	3.78	0.02	0
17	2231.49	2171.36	1986.25	1800.64	1662.68	1487 *	1297.66	1081.35	853.5	635.97	408.28	210.95	91.82	50.35	32.18	22.64	16.91	13.6	10.91	8.45	3.91	0.03	0
15	2970.7	2867.11	2555.26	2306.38	2115.2	1886.68	1655.46	1404.57	1163.48	881.77	581.84	301.96	142.04	60.48	35.66	24.08	17.68	13.93	11.04	8.55	4.02	0.03	0
13	4113.97	3932.98	3386.77	3036.55	2703.36	2364.73	2038.64	1729.46	1437.14	1142.12	774.32	424.15	197.49	74.57	39.56	25.56	18.34	14.26	11.16	8.63	4.09	0.03	0
11	5804.24	5487.42	4580.07	4157.88	3572.53	3008.65	2505.69	2089.18	1731.58	1391.48	980.28	556.96	258.74	91.01	44.29	27.05	18.91	14.56	11.28	8.7	4.16	0.04	0
9	7605.95	7257.66	6360.68	5628.21	4762.6	3871.87	3120.77	2502.91	2022.68	1626.03	1185.21	691.22	334.32	115.9	48.76	28.53	19.51	14.85	11.38	8.76	4.21	0.04	0
7	8790.09	8519.55	7930.67	7353.9	6242.61	4999.91	3872.9	2991.31	2347.33	1859.39	1362.71	821.14	410.56	146.91	52.99	30.1	20.04	15.1	11.47	8.81	4.26	0.04	0
5	9506.24	9292.73	8914.19	8411.77	7585.33	6193.65	4776.04	3526.76	2667.79	2070.25	1509.96	940.48	481.3	172.88	57.54	31.19	20.52	15.31	11.54	8.85	4.34	0.04	0
3	9900.73	9728.48	9495.97	9051.63	8331.05	7158.37	5532.98	4044.22	2978.29	2260.03	1635.3	1031.28	539.36	192.86	61.48	32.2	21.03	15.54	11.62	8.89	4.34	0.04	0
1	10079.3	10007.8	9824.34	9484.49	8844.59	7774.16	6184.89	4490.17	3238.14	2409.04	1728.65	1100.4	582.15	207.43	64.53	32.98	21.19	15.61	11.65	8.9	4.35	0.04	0
0	10111.6	10076.6	9920.9	9583.27	8965.93	7910.02	6338.25	4601 *	3302.58	2444.85	1750.62	1116.64	592.67	211.11	65.36	33.2	21.27	15.65	11.66	8.91	4.35	0.04	0
-1	10144.1	10105.1	9971.35	9675.08	9080.96	8054.12	6496.66	4731.01	3380.29	2487.82	1774.64	1134.04	604.44	216.56	66.35	33.41	21.34	15.69	11.67	8.92	4.36	0.04	0
-3	10139.5	10101.1	9957.22	9646.03	9053.59	8033.08	6459.09	4719.88	3373.88	2484.37	1769.37	1130.73	604.72	218.85	66.7	33.44	21.49	15.76	11.7	8.93	4.37	0.04	0
-5	10043.9	10003.0	9803.98	9462.24	8867.18	7756.84	6230.06	4503.79	3243.66	2410.63	1720.86	1101.94	585.71	212.03	65.54	33.16	21.27	15.67	11.68	8.92	4.38	0.04	0
-7	9812.13	9759.48	9508.11	9116.83	8379.71	7178.67	5599.69	4098.53	3007.84	2272.57	1631.63	1033.79	545.94	199.49	62.91	32.7	21.06	15.58	11.66	8.9	4.33	0.04	0
-9	9327.26	9273.66	8989.26	8467.33	7580.02	6268.56	4811.79	3575.5	2691.77	2084.32	1512.03	940.14	489.09	183.18	59.92	31.64	20.76	15.45	11.62	8.88	4.29	0.04	0
-11	8478.55	8422.87	8070.81	7451.98	6383.35	5120.41	3949.2	3021.84	2372.32	1867.29	1365.01	832.81	421.83	160.13	55.66	30.54	20.37	15.28	11.56	8.84	4.25	0.04	0
-13	7009.28	6951.7	6517.61	5797.72	4910.65	3985.94	3164.93	2536.64	2046.78	1635.17	1187.44	705.55	348.69	133.7	50.32	29.21	19.99	15.07	11.49	8.8	4.2	0.03	0
-15	5089.44	5051.17	4731.48	4241.49	3653.59	3058.99	2552.77	2115.47	1761.76	1403.32	991.7	574.86	271.93	100.09	45.63	27.8	19.43	14.82	11.41	8.75	4.15	0.03	0
-17	3563.36	3544.42	3362.89	3085.89	2742.95	2395.26	2061.56	1746.45	1449.66	1152.42	795.61	444.43	208.69	79.87	41.27	26.34	18.69	14.55	11.31	8.68	4.06	0.03	0
-19.5	2421.17	2412.15	2325.08	2190.65	2003.49	1793.04	1564.83	1330.98	1080.96	838.15	562.24	293.47	145.73	61.81	36.28	24.64	17.86	14.15	11.18	8.59	3.95	0.02	0
-22.5	1616.24	1609.9	1555.68	1477.21	1360.68	1211.01	1036.53	858.69	677.73	508.14	317.56	173.61	81.34	47.87	31.14	22.29	16.92	13.64	11	8.43	3.79	0.02	0
-25.5	994.33	990.03	951.34	889.85	808.9	704.52	593.15	474.68	357.33	253.68	166.24	85.68	54.89	37.25	26.89	20.28	15.86	13.16	10.79	8.28	3.62	0.01	0
-29	444.56	442.28	421.27	387.59	342.86	288.74	230.76	188.32	141.06	98.66	70.29	51.06	38.27	29.6	22.85	18.21	14.75	12.59	10.53	8	3.38	0.01	0
-33	126.44	126	118.74	106.83	93.83	84.5	73.77	62.95	54.4	47.29	39.83	32.97	27.79	23.2	19.24	16.05	13.6	11.93	10.21	7.65	3.09	0.01	0
-37.5	43.37	43.3	42.55	41.31	39.88	37.7	35.48	33.15	30.87	28.67	26.3	23.31	20.88	18.53	16.17	14.13	12.51	11.29	9.81	7.17	2.72	0.01	0
-42.5	24.62	24.6	24.56	24.04	23.54	22.94	22.24	21.57	20.75	19.74	18.66	17.47	16.23	14.96	13.71	12.54	11.47	10.58	9.29	6.51	2.28	0.01	0
-47.5	17.21	17.2	17.18	16.97	16.76	16.5	16.2	15.86	15.48	15.09	14.57	13.96	13.36	12.74	12.01	11.33	10.59	9.91	8.61	5.7	1.82	0.01	0
-55	12.27	12.26	12.25	12.17	12.1	12.01	11.92	11.81	11.68	11.54	11.37	11.13	10.9	10.63	10.3	9.91	9.38	8.69	7.23	4.26	1.14	0.01	0
-65	9.39	9.39	9.39	9.37	9.34	9.31	9.27	9.22	9.16	9.09	9	8.85	8.7	8.44	8.09	7.6	6.93	6.1	4.56	2.18	0.37	0	0
-75	5.72	5.72	5.71	5.7	5.63	5.58	5.52	5.45	5.38	5.27	5.13	4.95	4.74	4.48	4.12	3.67	3.12	2.5	1.54	0.5	0.01	0	0
-85	0.73	0.73	0.73	0.72	0.72	0.72	0.72	0.67	0.66	0.63	0.59	0.54	0.49	0.43	0.34	0.24	0.12	0.04	0	0	0	0	0
-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	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	
85		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
75		0	0	0	0	0	0	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	0	0	
65		0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
55		0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
47.5		0	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
42.5		0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
37.5		0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
33		0.1	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
29		0.3	0.7	0.6	0.5	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
25.5		0.7	1.3	1.2	1.1	0.9	0.8	0.6	0.5	0.4	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	0	
22.5		1.17 *	2.27 *	2.11 *	1.9	1.7	1.5	1.2	1	0.8	0.7	0.5	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0	0	0	0	
19.5		1.45 *	2.81 *	2.64 *	2.44 *	2.22 *	1.96 *	1.7	1.4	1.1	1	0.7	0.4	0.2	0.1	0.1	0.1	0	0	0	0	0	0	
17		1.58 *	3.04 *	2.83 *	2.61 *	2.37 *	2.10 *	1.81 *	1.51 *	1.2	1.1	0.8	0.4	0.2	0.1	0.1	0.1	0	0	0	0	0	0	
15		2.14 *	4.08 *	3.76 *	3.42 *	3.04 *	2.65 *	2.27 *	1.90 *	1.54 *	1.4	1.1	0.6	0.3	0.1	0.1	0.1	0	0	0	0	0	0	
13		2.99 *	5.63 *	5.13 *	4.60 *	3.98 *	3.37 *	2.81 *	2.32 *	1.88 *	1.79 *	1.4	0.8	0.4	0.2	0.1	0.1	0	0	0	0	0	0	
11		4.04 *	7.64 *	6.97 *	6.19 *	5.25 *	4.32 *	3.49 *	2.80 *	2.24 *	2.14 *	1.7	1	0.5	0.2	0.1	0.1	0	0	0	0	0	0	
9		4.95 *	9.52 *	8.88 *	7.99 *	6.80 *	5.51 *	4.32 *	3.35 *	2.61 *	2.48 *	2	1.2	0.6	0.3	0.1	0.1	0	0	0	0	0	0	
7		5.54 *	10.81 *	10.32 *	9.55 *	8.32 *	6.81 *	5.28 *	3.97 *	3.01 *	2.80 *	2.29 *	1.4	0.8	0.3	0.1	0.1	0	0	0	0	0	0	
5		5.88 *	11.57 *	11.19 *	10.55 *	9.48 *	7.96 *	6.20 *	4.59 *	3.39 *	3.09 *	2.51 *	1.5	0.9	0.3	0.1	0.1	0	0	0	0	0	0	
3		6.07 *	12.00 *	11.70 *	11.17 *	10.24 *	8.80 *	6.95 *	5.14 *	3.73 *	3.34 *	2.69 *	1.6	0.9	0.4	0.1	0.1	0	0	0	0	0	0	
1		3.07 *	6.10 *	5.98 *	5.74 *	5.31 *	4.62 *	3.69 *	2.72 *	1.96 *	1.74 *	1.40 *	0.8	0.5	0.2	0.1	0	0	0	0	0	0	0	
0																								

-1	3.08 *	6.13 *	6.02 *	5.80 *	5.38 *	4.70 *	3.77 *	2.79 *	2.00 *	1.77 *	1.42 *	0.9	0.5	0.2	0.1	0	0	0	0	0	0	0	
-3	6.18 *	12.29 *	12.09 *	11.64 *	10.82 *	9.48 *	7.62 *	5.64 *	4.04 *	3.56 *	2.85 *	1.7	1	0.4	0.1	0.1	0	0	0	0	0	0	
-5	6.15 *	12.24 *	12.02 *	11.55 *	10.70 *	9.34 *	7.48 *	5.52 *	3.96 *	3.50 *	2.81 *	1.7	1	0.4	0.1	0.1	0	0	0	0	0	0	
-7	6.06 *	12.04 *	11.78 *	11.25 *	10.30 *	8.87 *	7.02 *	5.17 *	3.74 *	3.34 *	2.70 *	1.6	0.9	0.4	0.1	0.1	0	0	0	0	0	0	
-9	5.84 *	11.62 *	11.31 *	10.65 *	9.58 *	8.05 *	6.26 *	4.63 *	3.41 *	3.11 *	2.52 *	1.5	0.9	0.4	0.1	0.1	0	0	0	0	0	0	
-11	5.44 *	10.85 *	10.49 *	9.69 *	8.47 *	6.92 *	5.33 *	4.00 *	3.03 *	2.82 *	2.30 *	1.4	0.8	0.3	0.1	0.1	0	0	0	0	0	0	
-13	4.74 *	9.48 *	9.08 *	8.20 *	6.97 *	5.61 *	4.37 *	3.38 *	2.63 *	2.50 *	2.03 *	1.2	0.7	0.3	0.1	0.1	0	0	0	0	0	0	
-15	3.72 *	7.45 *	7.10 *	6.34 *	5.36 *	4.38 *	3.52 *	2.83 *	2.27 *	2.16 *	1.7	1	0.5	0.2	0.1	0.1	0	0	0	0	0	0	
-17	2.66 *	5.36 *	5.15 *	4.66 *	4.02 *	3.40 *	2.83 *	2.35 *	1.91 *	1.81 *	1.4	0.8	0.4	0.2	0.1	0.1	0	0	0	0	0	0	
-20	2.30 *	4.62 *	4.51 *	4.19 *	3.73 *	3.25 *	2.78 *	2.33 *	1.89 *	1.8	1.4	0.7	0.4	0.2	0.1	0.1	0.1	0.1	0	0	0	0	
-23	1.86 *	3.73 *	3.67 *	3.48 *	3.17 *	2.80 *	2.41 *	2	1.6	1.4	1.1	0.6	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0	0	0	
-26	1.20 *	2.41 *	2.37 *	2.26 *	2.06 *	1.8	1.5	1.2	1	0.8	0.6	0.3	0.2	0.1	0.1	0.1	0.1	0.1	0	0	0	0	
-29	0.8	1.6	1.5	1.5	1.3	1.1	0.9	0.7	0.5	0.5	0.3	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
-33	0.4	0.7	0.7	0.7	0.6	0.5	0.4	0.3	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
-38	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
-43	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
-48	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
-55	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
-65	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0	
-75	0	0.1	0.1	0.1	0.1	0.1	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	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	
-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total	91	179	172	161	144	122	98	75	57	52	42	25	14	7	3.8	2.7	2	2.1	1.7	0.7	0.1	0	1252

## 5.0 THD and PF Test

Model No.	HSLED26Y/480	Sample ID.	F1
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### 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

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
25.1	479.93	60	0.061	27.19	0.924	3.56%
25.1	347.01	60	0.078	26.98	0.995	8.76%

## 6.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last	Calibration Due
DLF107	Integrating Sphere System	2017/12/28	2018/12/27
DLF108	Auxiliary Lamp	2017/12/28	2018/12/27
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-directional	2017/12/28	2018/12/27
DLF116	AC Power Source	2017/12/28	2018/12/27
DLF113	Power Meter	2017/12/28	2018/12/27
DLF112	Temperature Recorder	2017/12/28	2018/12/27
DLF114	Temperature & Humidity Datalogger	2017/12/28	2018/12/27
DLF101	Goniophotometer	2017/12/28	2018/12/27
DLF125	Standard Lamp Standard Lamp Type: 76.58 V, 6.7875 A, Tungsten, Omni-directional	2017/12/28	2018/12/27
DLF104	AC Power Source	2017/12/28	2018/12/27
DLF507	DC Power Source	2017/12/28	2018/12/27
DLF102	Power Meter	2017/12/28	2018/12/27
DLF111	Temperature & Humidity Datalogger	2017/12/28	2018/12/27
DLF119	Power Meter	2017/12/28	2018/12/27
DLF031	Temperature data logger	2017/12/28	2018/12/27
DLF022	Digital power meter	2017/12/28	2018/12/27
DLF003	Temperature & Humidity Datalogger	2017/12/28	2018/12/27

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