

Photometric Test Report

Relevant Standards

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

Prepared For

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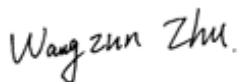
Test Date

2018/4/16

Issue Date

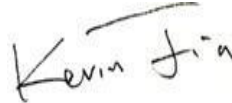
2018/4/16

Prepared By



Wangzun Zhu

Approved By



Kevin Jia

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1.0 Test Summary

DLC Technical Requirements v4.3

Outdoor Pole/Arm-Mounted Area and Roadway Luminaires				
Requirement Category	Test Method	Requirements	Test value	Results (Fail/Pass)
Lamp Output (lm)	IES LM-79-2008	1000	3265	P
Zonal Lumen Requirement (0°-90°)	IES LM-79-2008	≥99%	99.90%	P
Minimum Luminaire Efficacy (lm/W)	IES LM-79-2008	110	110.7	P
Allowable CCTs* (K)	IES LM-79-2008	5700	3150	P
Minimum CRI	IES LM-79-2008 CIE 13.3-1995	65	70.3	P
Power Factor	ANSI C82.77:2014	0.873	0.930	P
Total Harmonic Distortion (A%)	ANSI C82.77:2014	25.00%	10.34%	P

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2018/4/16	WPLED26Y	T1
2	Goniophotometer Test	2018/4/16	WPLED26Y	T1
3	THD and PF Test	2018/4/16	WPLED26Y	T1

Remark(If any)

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3.0 Production Description

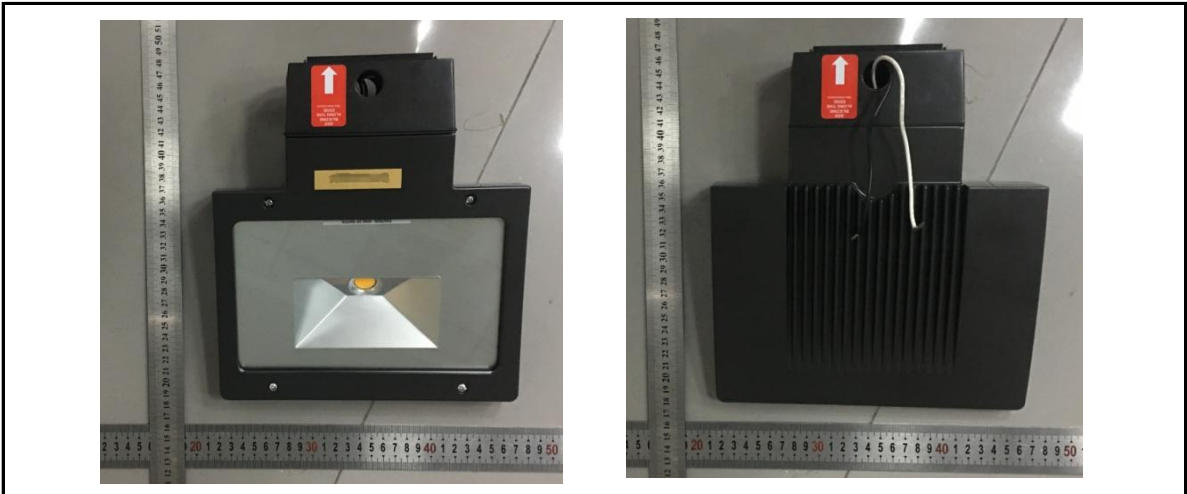
Luminaire Description:

Electrical Specification: 120V-277V,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.	WPLED26Y	Sample ID.	T1
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 ± 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 Conditions

Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
25.1	276.99	60	0.115	29.55	0.930

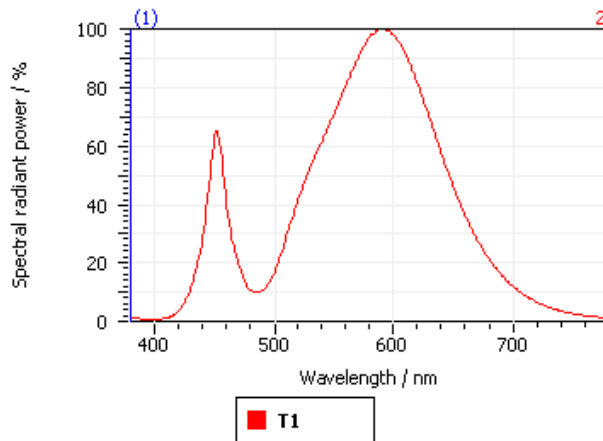
Test Result

CCT (K)	CRI (Ra)	Duv
3150	70.3	1.3E-03

4.1 Integrating Sphere Test

Spectroradiometric Parameters

Results



Spectral values

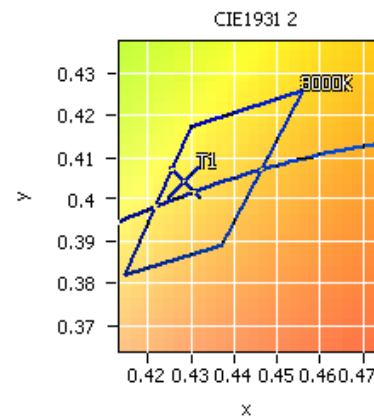
DominantWavelength	581.71 nm
Purity	0.499
PeakWavelength	590.90 nm
Width50%:	118.76 nm

Color Coordinates

Correlated Color Temperature 3151 K

x: 0.4284 u: 0.2450 u': 0.2450
y: 0.4042 v: 0.3468 v': 0.5202

ResultsCRICRI01	66.5	ResultsCRICRI09	-33.8
ResultsCRICRI02	80.2	ResultsCRICRI10	52.8
ResultsCRICRI03	91.1	ResultsCRICRI11	57.7
ResultsCRICRI04	65.3	ResultsCRICRI12	39.9
ResultsCRICRI05	64.5	ResultsCRICRI13	68.9
ResultsCRICRI06	70.4	ResultsCRICRI14	94.7
ResultsCRICRI07	79.0	ResultsCRICRI15	59.7
ResultsCRICRI08	45.0	ResultsCRICRI16	59.5
ResultsCRI	70.3		



Nominal CCT: 3000K

PlanckDistance 1.3E-003

4.0 LM-79 Measurement and Test Results

4.3 Goniophotometer Test

Model No.	WPLED26Y	Sample ID.	T1
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 ± 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

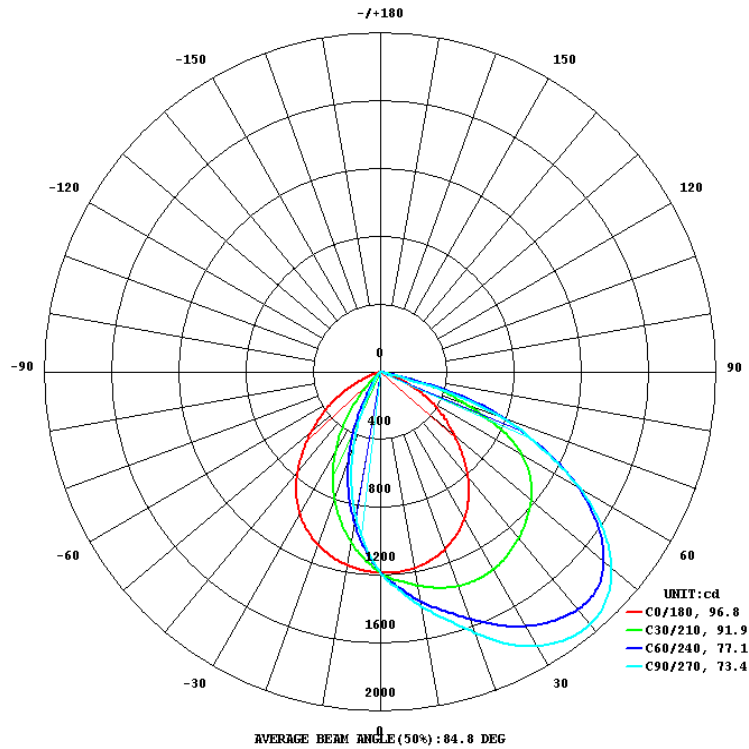
Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.1	276.92	60	0.115	29.49	0.926	Light Down

Test Result

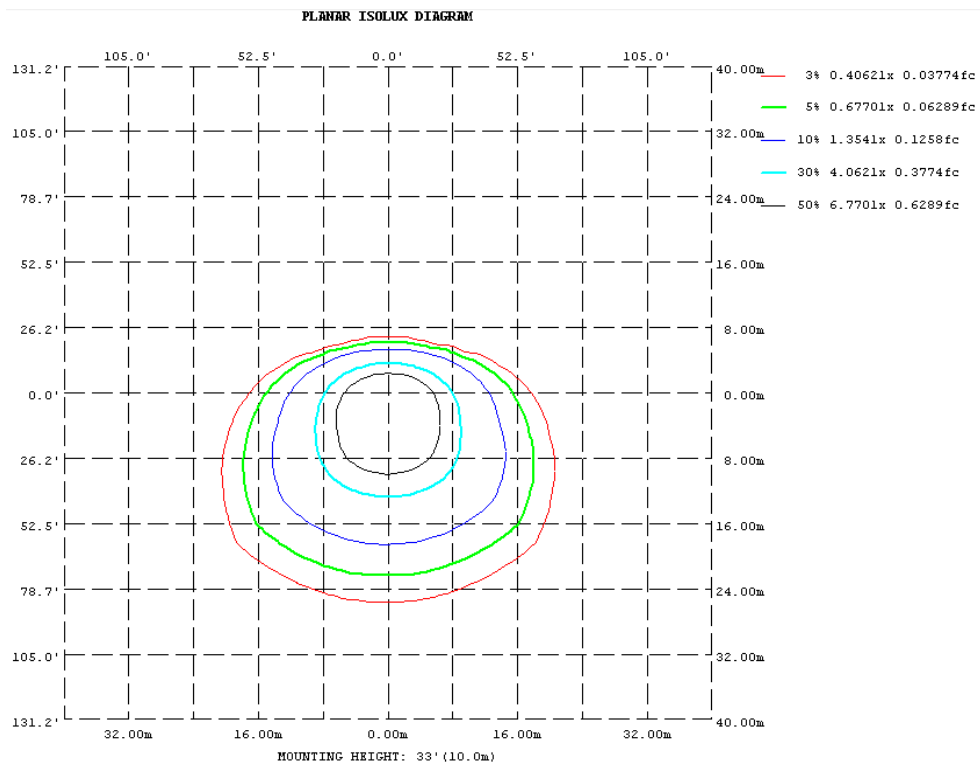
Flux(lm)	Zonal Lumen Requirement (0° - 90°)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
		Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
3265	99.90%	102.9	137.5	73.4	96.8	110.7

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	1173	1331	1403	1322	1157	954.8	863.3	962.7	0 - 10
20	1115	1453	1632	1438	1088	668.2	479.3	682.9	10 - 20
30	1003	1553	1865	1529	963.7	353.3	135.8	370.0	20 - 30
40	817.1	1571	1940	1541	769.6	72.68	44.06	79.99	30 - 40
50	577.0	1532	1801	1490	535.5	16.57	14.32	14.85	40 - 50
60	350.4	1325	1372	1306	302.9	5.560	6.977	4.968	50 - 60
70	111.2	774.1	748.3	834.1	76.88	2.029	2.888	1.779	60 - 70
80	1.294	50.13	7.525	164.8	0.7833	0.9124	1.560	0.7533	70 - 80
90	0.0274	0.0121	0.0122	0.0183	0.0369	0.0890	0.0875	0.0862	80 - 90
100	0.0816	0.0087	0.0060	0.0307	0.2483	0.5270	0.5565	0.3993	90 - 100
110	0.2273	0.0299	0.0066	0.0726	0.5314	1.041	1.041	0.7373	100 - 110
120	0.3405	0.0865	0.0265	0.1263	0.7698	1.403	1.475	1.139	110 - 120
130	0.5194	0.1881	0.1052	0.2361	1.031	1.595	1.803	1.452	120 - 130
140	0.7200	0.3462	0.2549	0.4233	1.339	1.893	2.111	1.866	130 - 140
150	0.9347	0.6122	0.4616	0.6577	1.655	2.174	2.204	2.127	140 - 150
160	1.115	0.8545	0.7077	0.8532	1.837	1.968	2.032	2.004	150 - 160
170	1.191	1.048	0.9345	0.9612	1.742	1.642	1.446	1.450	160 - 170
180	1.532	1.348	1.175	1.224	1.530	1.387	1.209	1.215	170 - 180
DEG	LUMINOUS INTENSITY:cd less than 35% Percent = 6.8 %								

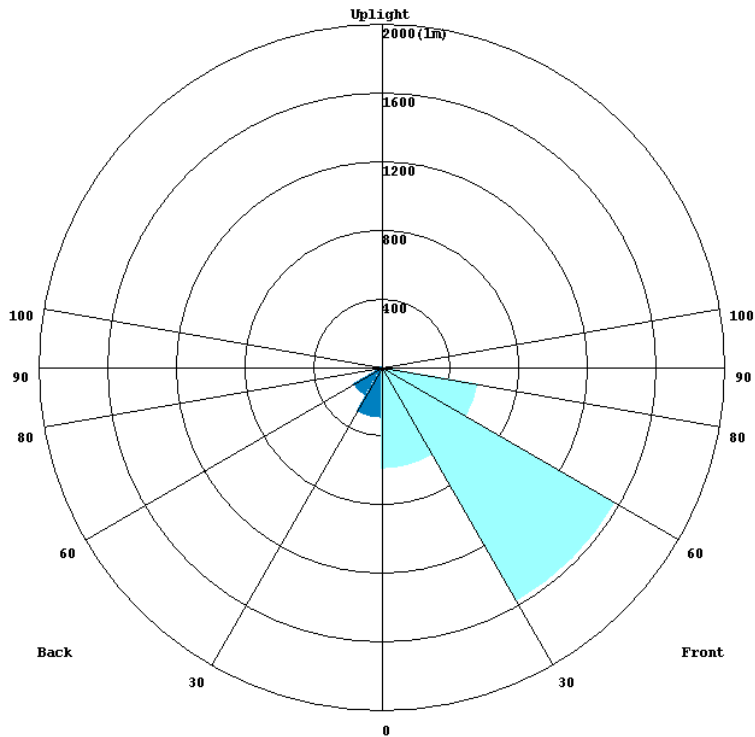
4.3 Goniophotometer Test

ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0 - 10	110.89	0 - 10	110.89	3.40%
10 - 20	313.24	0 - 20	424.13	12.99%
20 - 30	471.56	0 - 30	895.69	27.44%
30 - 40	573.45	0 - 40	1469.14	45.00%
40 - 50	618.30	0 - 50	2087.44	63.94%
50 - 60	583.84	0 - 60	2671.28	81.83%
60 - 70	431.08	0 - 70	3102.36	95.03%
70 - 80	155.02	0 - 80	3257.38	99.78%
80 - 90	2.67	0 - 90	3260.05	99.86%
90 - 100	0.13	0 - 100	3260.18	99.87%
100 - 110	0.38	0 - 110	3260.56	99.88%
110 - 120	0.56	0 - 120	3261.12	99.90%
120 - 130	0.69	0 - 130	3261.81	99.92%
130 - 140	0.78	0 - 140	3262.59	99.94%
140 - 150	0.78	0 - 150	3263.37	99.96%
150 - 160	0.65	0 - 160	3264.02	99.98%
160 - 170	0.38	0 - 170	3264.40	100.00%
170 - 180	0.12	0 - 180	3264.52	100.00%

3.2 Goniophotometer Test

LCS Graph



BUG-Rating

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	595.48	18.2
FM - Front-Medium(30-60)	1581.9	48.5
FH - Front-High(60-80)	573.67	17.6
FVH - Front-Very High(80-90)	2.3883	0.1
Total Forward Light	2754.2	84.4

BL - Back-Low(0-30)	300.21	9.2
BM - Back-Medium(30-60)	193.73	5.9
BH - Back-High(60-80)	12.424	0.4
BVH - Back-Very High(80-90)	0.27916	0.0
Total Back Light	510.27	15.6

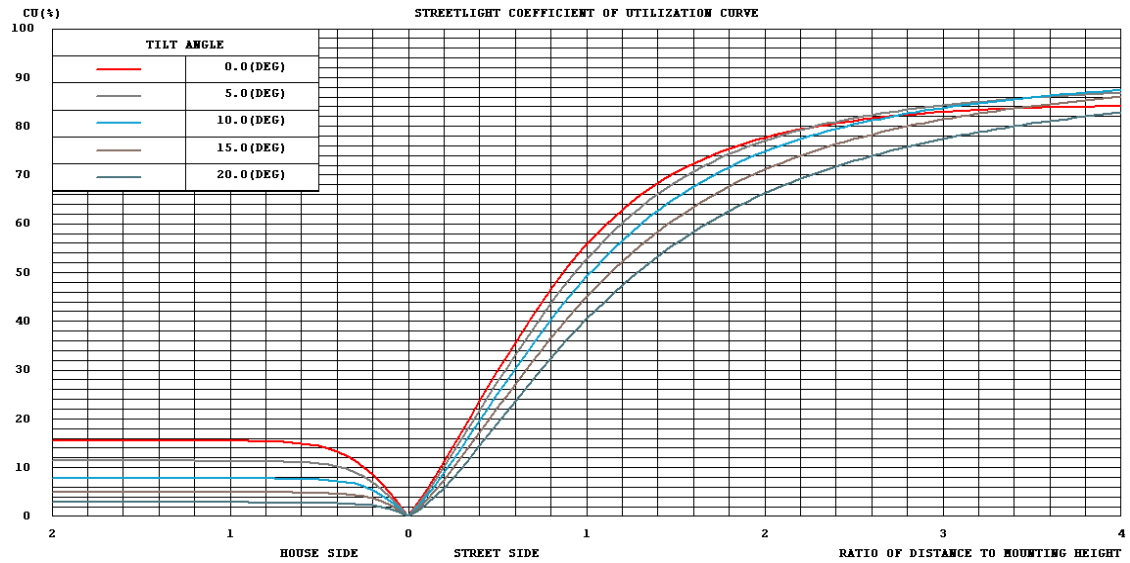
UL - Uplight-Low(90-100)	0.12774	0.0
UH - Uplight-High(100-180)	4.3298	0.1
Total Up Light	4.4576	0.1

BUG(Back,Up,Glare) Rating	B1-U1-G0
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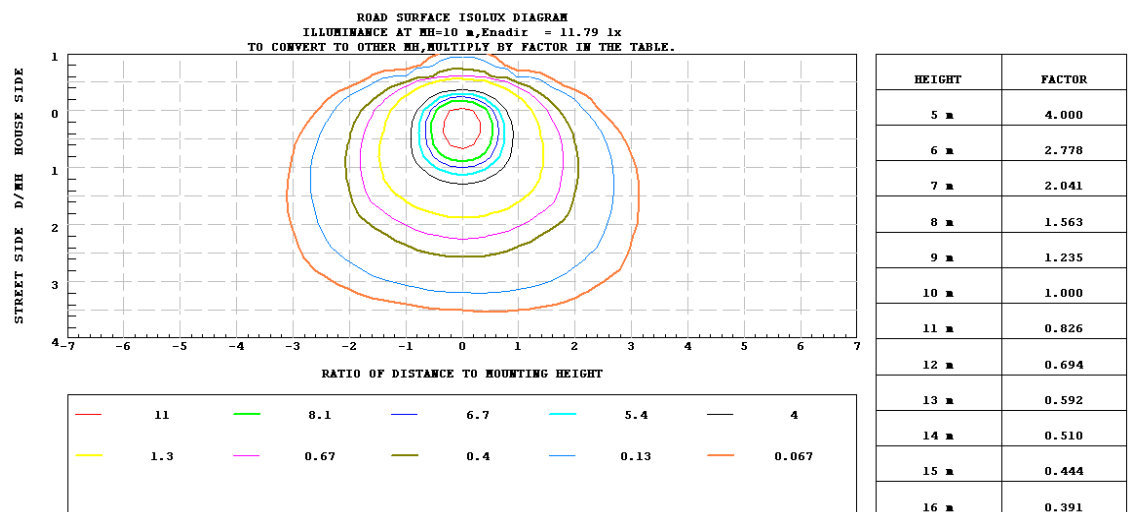
Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	506.64	3.6246	510.27
Street Side	2753.4	0.83294	2754.2

3.2 Goniophotometer Test

Coefficients of Utilization

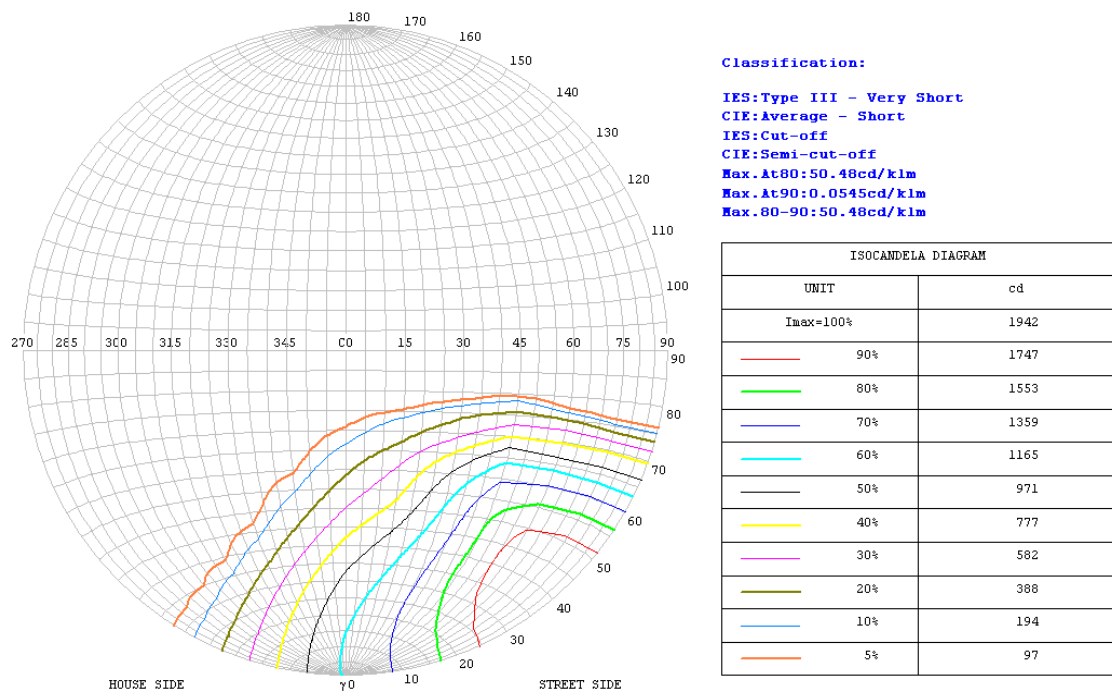


Iso-footcandle Lines of Horizontal Illumination

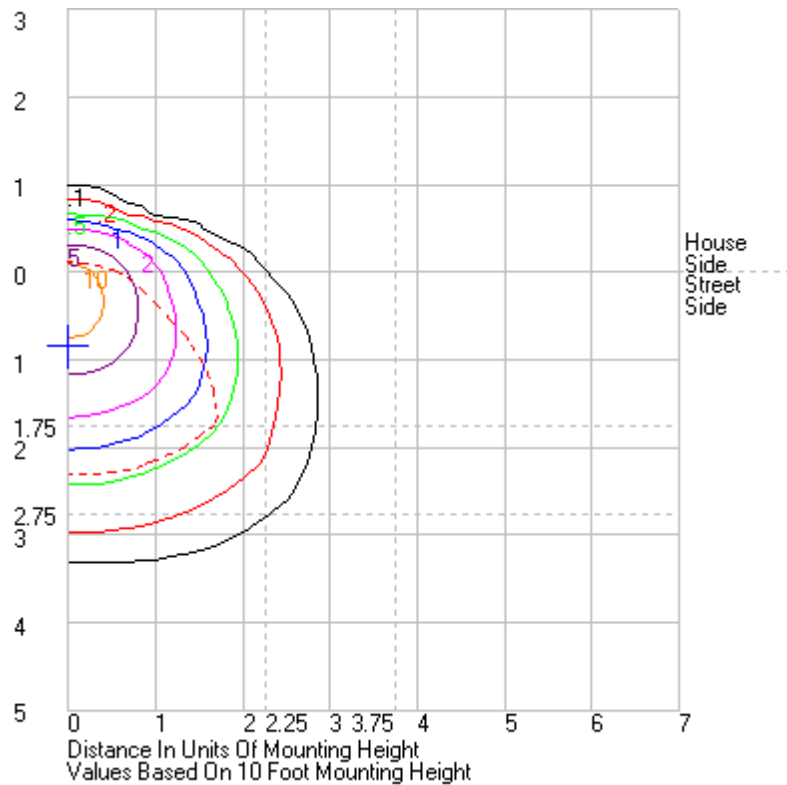


3.2 Goniophotometer Test

STREETLIGHT ISOCANDELA DIAGRAM



ROAD ISOCANDELA REPORT



5.0 THD and PF Test

Model No.	WPLED26Y	Sample ID.	T1
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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	276.99	60	0.115	29.55	0.930	10.34%
25.1	120.01	60	0.245	29.20	0.994	9.16%

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-derectional	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-derectional	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*****