

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

Room 6A33, No.1388, Wuzhong road, Shanghai, China

Xiao Xiang, 15921313292, gary@rabweb.com

Prepared By

Deliver Co., Ltd.

Block 11, 78 Keling Road, SSTP, Suzhou, China

0512-66801950, kevin.jia@szdeliver.com

Project Number

DLF1804109

Report Number

DLF20180416001-18a

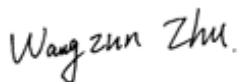
Test Date

2018/4/16

Issue Date

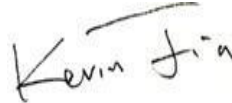
2018/4/16

Prepared By



Wangzun Zhu

Approved By



Kevin Jia

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

This report shall not be reproduced, except in full, without written approval of Deliver Co., Ltd.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP.

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	3483	P
Zonal Lumen Requirement (0°-90°)	IES LM-79-2008	≥99%	99.90%	P
Minimum Luminaire Efficacy (lm/W)	IES LM-79-2008	110	119.5	P
Allowable CCTs* (K)	IES LM-79-2008	5700	5263	P
Minimum CRI	IES LM-79-2008 CIE 13.3-1995	65	72.1	P
Power Factor	ANSI C82.77:2014	0.873	0.935	P
Total Harmonic Distortion (A%)	ANSI C82.77:2014	25.00%	11.91%	P

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2018/4/16	WPLED26	R1
2	Goniophotometer Test	2018/4/16	WPLED26	R1
3	THD and PF Test	2018/4/16	WPLED26	R1

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

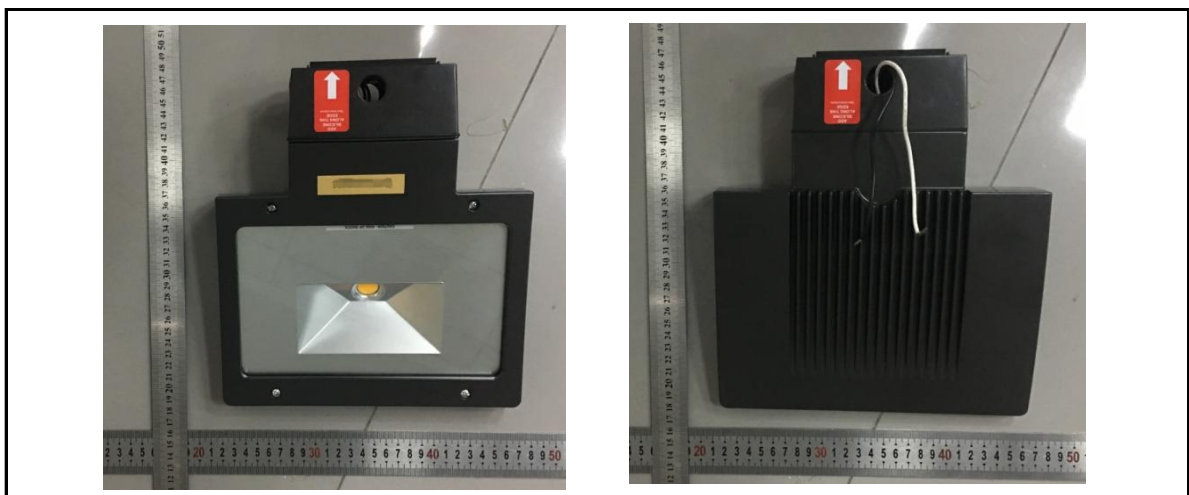
Luminaire Description:

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.	WPLED26	Sample ID.	R1
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	277	60	0.113	29.18	0.935

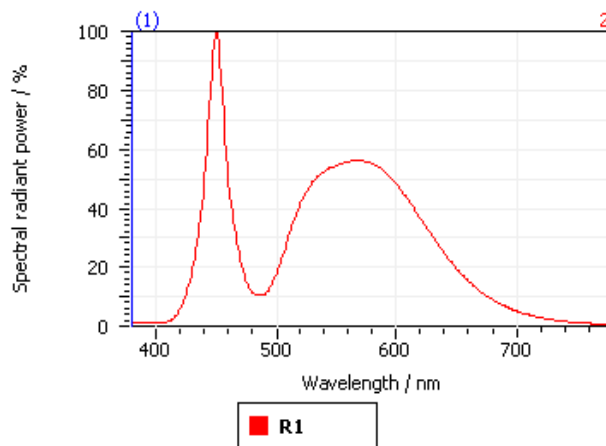
Test Result

CCT (K)	CRI (Ra)	Duv
5263	72.1	2.0E-03

4.1 Integrating Sphere Test

Spectroradiometric Parameters

Results



Spectral values

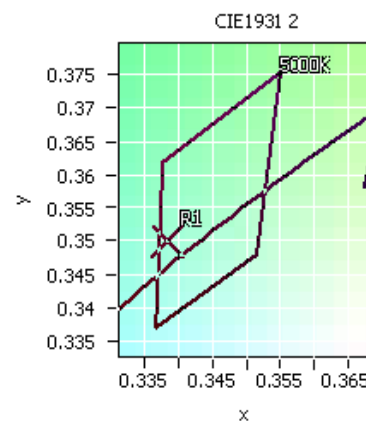
DominantWavelength	565.22 nm
Purity	0.065
PeakWavelength	450.26 nm
Width50%:	19.75 nm

Color Coordinates

Correlated Color Temperature 5263 K

x: 0.3383 u: 0.2075 u': 0.2075
y: 0.3500 v: 0.3219 v': 0.4829

ResultsCRICRI01	69.7	ResultsCRICRI09	-28.6
ResultsCRICRI02	76.8	ResultsCRICRI10	43.3
ResultsCRICRI03	80.3	ResultsCRICRI11	68.5
ResultsCRICRI04	72.6	ResultsCRICRI12	39.7
ResultsCRICRI05	70.2	ResultsCRICRI13	70.6
ResultsCRICRI06	67.2	ResultsCRICRI14	88.8
ResultsCRICRI07	81.6	ResultsCRICRI15	64.4
ResultsCRICRI08	57.9	ResultsCRICRI16	66.4
ResultsCRI	72.1		



Nominal CCT: 5000K

PlanckDistance 2.0E-003

4.0 LM-79 Measurement and Test Results

4.3 Goniophotometer Test

Model No.	WPLED26	Sample ID.	R1
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

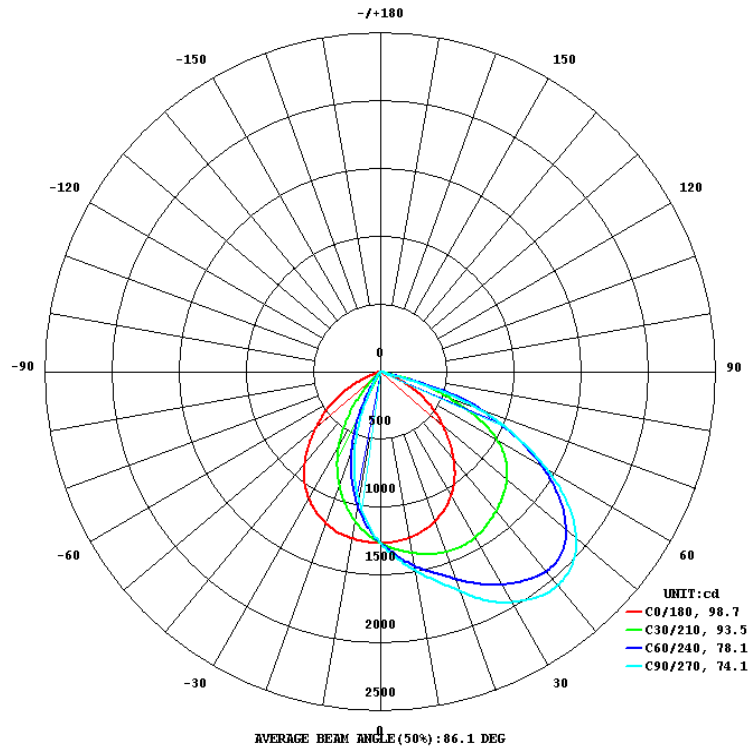
Temperature ($^{\circ}\text{C}$)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.1	276.94	60	0.113	29.14	0.931	Light Down

Test Result

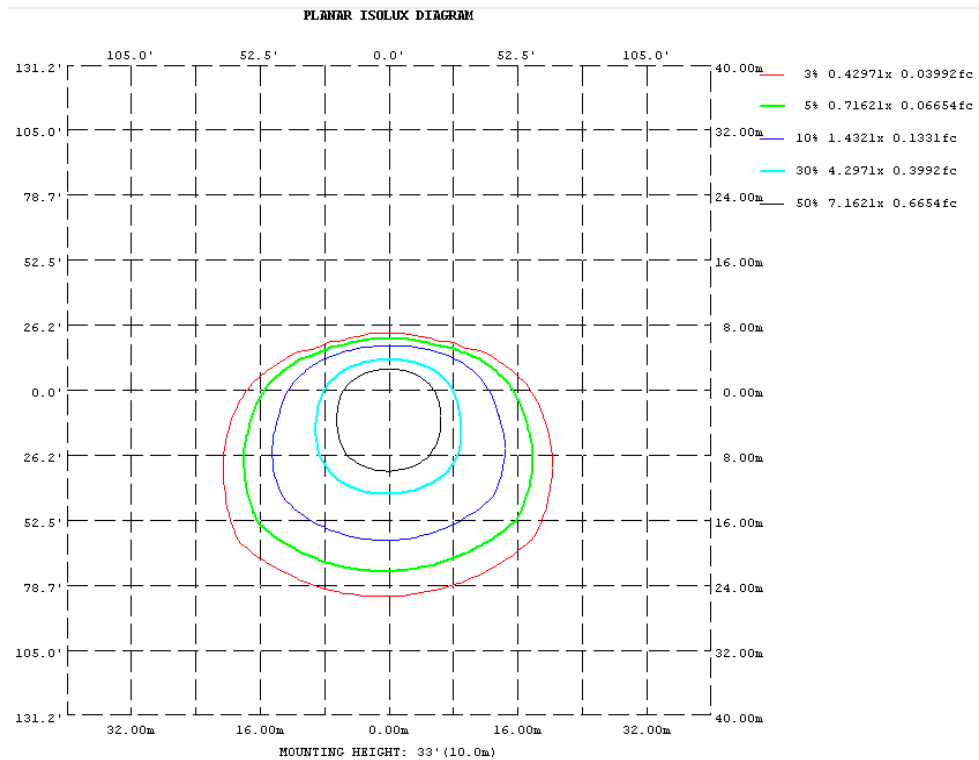
Flux(lm)	Zonal Lumen Requirement (0° - 90°)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
		Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
3483	99.90%	103.1	137.8	74.1	98.7	119.5

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	1242	1410	1488	1416	1248	1052	957.3	1052	0- 10
20	1178	1525	1719	1537	1194	758.7	553.6	766.5	10- 20
30	1058	1623	1961	1638	1075	413.6	164.1	428.3	20- 30
40	858.2	1640	2054	1668	883.4	92.97	48.76	97.37	30- 40
50	603.5	1609	1907	1638	627.7	20.13	15.76	14.86	40- 50
60	361.1	1369	1431	1442	369.0	6.807	7.642	5.099	50- 60
70	100.9	772.8	741.6	898.5	102.2	2.387	3.159	1.743	60- 70
80	0.8054	30.62	6.553	153.2	1.269	0.9904	1.797	0.6975	70- 80
90	0.0334	0.0162	0.0153	0.0215	0.0426	0.1951	0.0884	0.0928	80- 90
100	0.1001	0.0123	0.0094	0.0362	0.2552	0.5292	0.5705	0.4204	90-100
110	0.2621	0.0380	0.0093	0.0812	0.5623	1.071	1.154	0.7916	100-110
120	0.3857	0.1036	0.0330	0.1408	0.7979	1.476	1.553	1.206	110-120
130	0.5814	0.2170	0.1241	0.2616	1.095	1.666	1.893	1.539	120-130
140	0.7902	0.3905	0.2894	0.4666	1.433	2.004	2.227	1.977	130-140
150	1.018	0.6818	0.5147	0.7186	1.748	2.300	2.331	2.258	140-150
160	1.197	0.9369	0.7788	0.9225	1.960	2.116	2.186	2.150	150-160
170	1.274	1.136	1.012	1.037	1.868	1.775	1.583	1.579	160-170
180	1.664	1.483	1.289	1.330	1.664	1.511	1.326	1.325	170-180
DEG	LUMINOUS INTENSITY:cd Less than 35% Percent = 6.7 %								

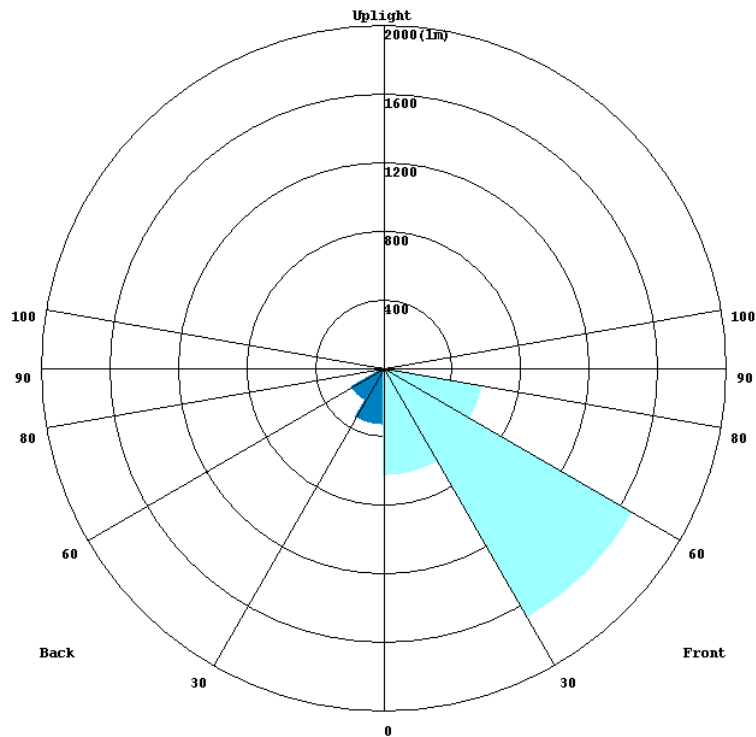
4.3 Goniophotometer Test

ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0 - 10	119.12	0 - 10	119.12	3.42%
10 - 20	337.78	0 - 20	456.90	13.12%
20 - 30	508.37	0 - 30	965.27	27.71%
30 - 40	616.84	0 - 40	1582.11	45.43%
40 - 50	664.97	0 - 50	2247.08	64.52%
50 - 60	624.54	0 - 60	2871.62	82.45%
60 - 70	452.51	0 - 70	3324.13	95.44%
70 - 80	151.77	0 - 80	3475.90	99.80%
80 - 90	2.25	0 - 90	3478.15	99.86%
90 - 100	0.13	0 - 100	3478.28	99.87%
100 - 110	0.40	0 - 110	3478.68	99.88%
110 - 120	0.60	0 - 120	3479.28	99.90%
120 - 130	0.73	0 - 130	3480.01	99.92%
130 - 140	0.83	0 - 140	3480.84	99.94%
140 - 150	0.83	0 - 150	3481.67	99.96%
150 - 160	0.69	0 - 160	3482.36	99.98%
160 - 170	0.41	0 - 170	3482.77	100.00%
170 - 180	0.13	0 - 180	3482.90	100.00%

3.2 Goniophotometer Test

LCS Graph



BUG-Rating

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	630.98	18.1
FM - Front-Medium(30-60)	1682.7	48.3
FH - Front-High(60-80)	589.05	16.9
FVH - Front-Very High(80-90)	1.9286	0.1
Total Forward Light	2905.6	83.4

BL - Back-Low(0-30)	334.29	9.6
BM - Back-Medium(30-60)	223.66	6.4
BH - Back-High(60-80)	15.236	0.4
BVH - Back-Very High(80-90)	0.32575	0.0
Total Back Light	577.35	16.6

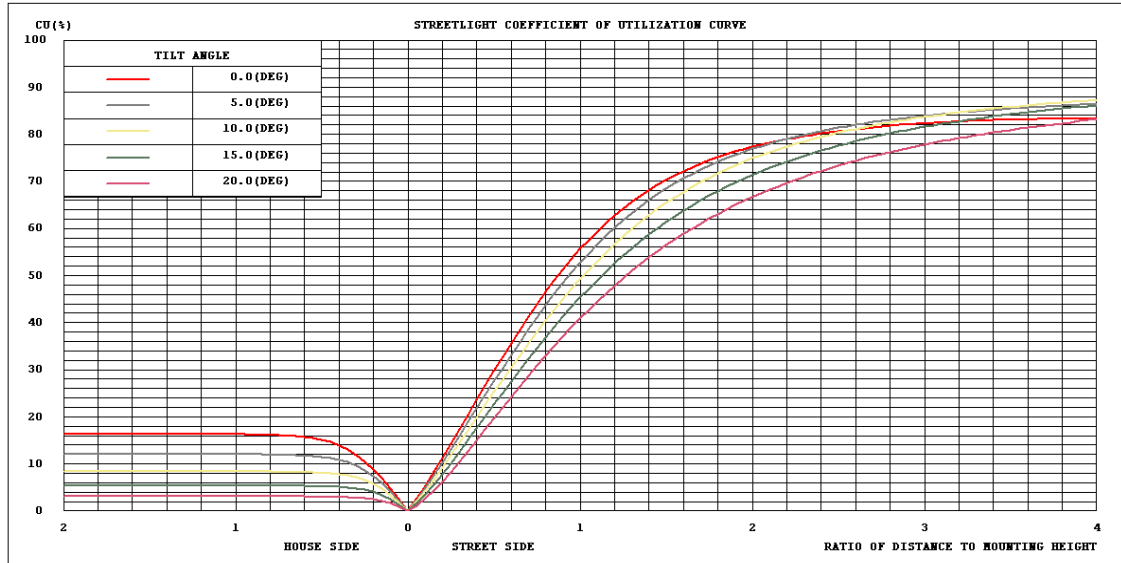
UL - Uplight-Low(90-100)	0.13234	0.0
UH - Uplight-High(100-180)	4.6216	0.1
Total Up Light	4.7539	0.1

BUG(Back,Up,Glare) Rating	B1-U1-G0
----------------------------------	-----------------

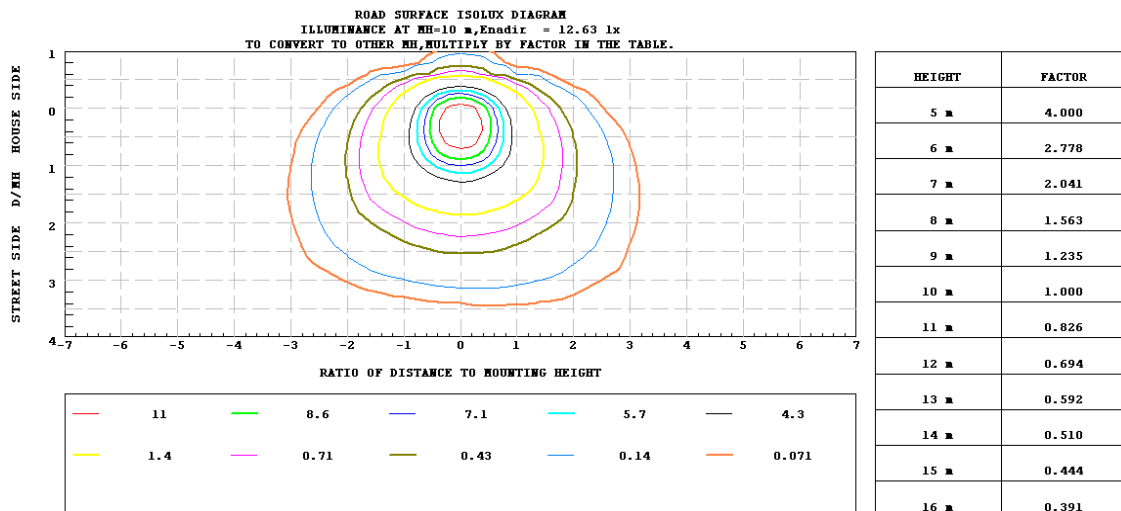
Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	573.52	3.8319	577.35
Street Side	2904.6	0.92203	2905.6

3.2 Goniophotometer Test

Coefficients of Utilization

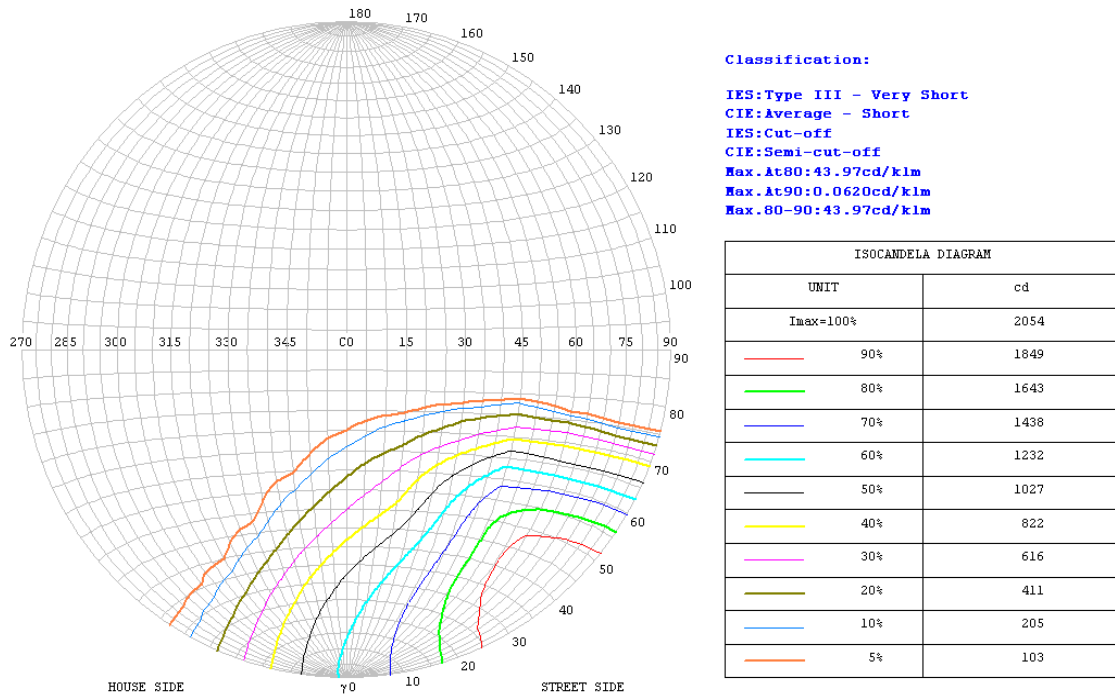


Iso-footcandle Lines of Horizontal Illumination

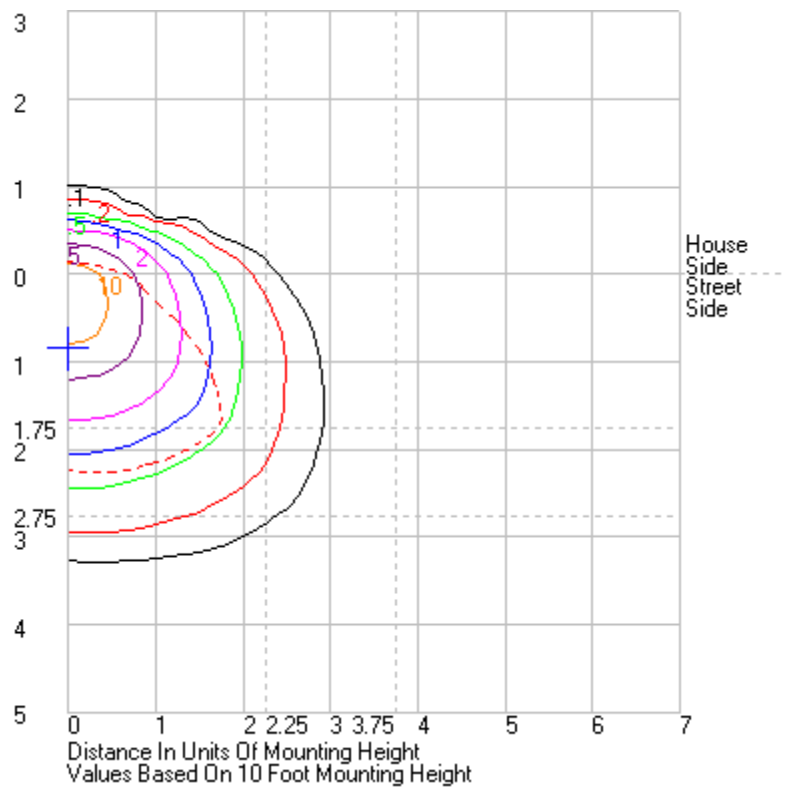


3.2 Goniophotometer Test

STREETLIGHT ISOCANDELA DIAGRAM



ROAD ISOCANDELA REPORT



5.0 THD and PF Test

Model No.	WPLED26	Sample ID.	R1
-----------	---------	------------	----

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	277.00	60	0.113	29.18	0.935	9.68%
25.1	119.99	60	0.243	28.90	0.991	11.91%

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*****