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.xiao@rabweb.com

Prepared By

Deliver Co.， Ltd.
Block 11, 78 Keling Road, SSTP, Suzhou, China
0512-66801950,kevin.jia@szdeliver.com

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Prepared By	**Approved By**
Wangzun Zhu	Kevin Jia

1.0 Test Summary

DLC Technical Requirements v4.3

Outdoor - Hight output 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	10000	11359	P
Minimum Luminaire Efficacy (lm/W)	IES LM-79-2008	100	118.2	P
Zonal Lumen Requirement (0°-90°)	IES LM-79-2008	⩾99%	100.00%	P
Zonal Lumen Requirement (80°-90°)	IES LM-79-2008	⩽10%	3.41%	P
Alowable CCTs* (K)	IES LM-79-2008	⩽5700	4977	P
Minimum CRI	IES LM-79-2008 CIE 13.3-1995	⩾65	75	P
Power Factor	ANSI C82.77:2014	0.873	0.968	P
Total Harmonic Distortion (A%)	ANSI C82.77:2014	25.00%	7.42%	P

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2018/10/24	IVAT3-100L750U	N1
2	Goniophotometer Test	2018/10/24	IVAT3-100L750U	N1
3	THD and PF Test	2018/10/24	IVAT3-100L750U	N1

Remark(If any)
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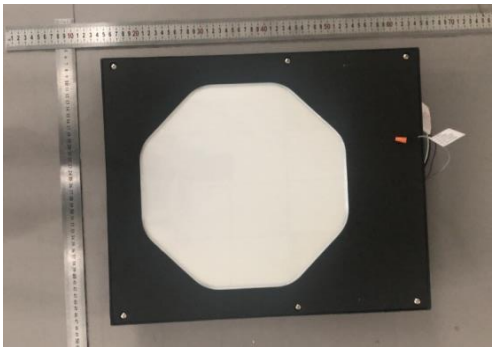
2、The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing 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.

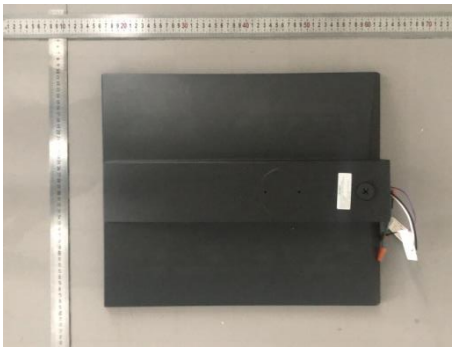
3.0 Production Description

Luminaire Description: IVAT3-100L750U

Electrical Specification: 120V-277V,50/60HZ, 100W

Photos of Luminaire Characteristics





4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	IVAT3-100L750U	Sample ID.	N1
Opreate time (Min.)	90	Stabilization time (Min.)	45

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 Conditions

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
25.3	119.97	60	0.826	98.9	0.999

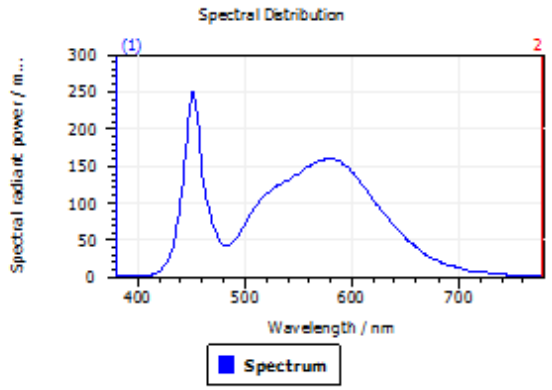
Test Result

CCT (K)	CRI (Ra)	Duv
4977	74.6	3.3E-03

4.1 Integrating Sphere Test

Spectroradiometric Parameters

Results



Spectral values

DominantWavelength	570.13 nm
Purity	0.118
PeakWavelength	451.26 nm
Radiant Power	27.36 W
Width50%:	19.80 nm

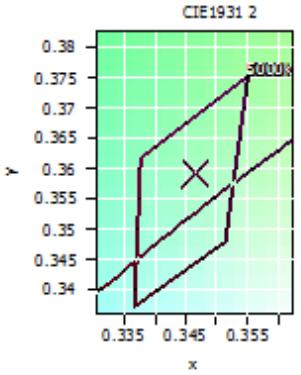
Color Coordinates

Correlated Color Temperatu 4977 K

x:	0.3465	u:	0.2094	u':	0.2094
y:	0.3593	v:	0.3257	v':	0.4886

ResultsCRICRI01	70.7	ResultsCRICRI09	-34.4
ResultsCRICRI02	81.5	ResultsCRICRI10	56.6
ResultsCRICRI03	89.4	ResultsCRICRI11	70.8
ResultsCRICRI04	73.5	ResultsCRICRI12	48.9
ResultsCRICRI05	72.4	ResultsCRICRI13	73.1
ResultsCRICRI06	74.5	ResultsCRICRI14	94.3
ResultsCRICRI07	81.7	ResultsCRICRI15	63.1
ResultsCRICRI08	53.5	ResultsCRICRI16	62.6

ResultsCRI 74.6



PlanckDistance 3.3E-003

4.0 LM-79 Measurement and Test Results

4.3 Goniophotometer Test

Model No.	IVAT3-100L750U	Sample ID.	N1
Opreate time (Min.)	90	Stabilization time (Min.	45

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

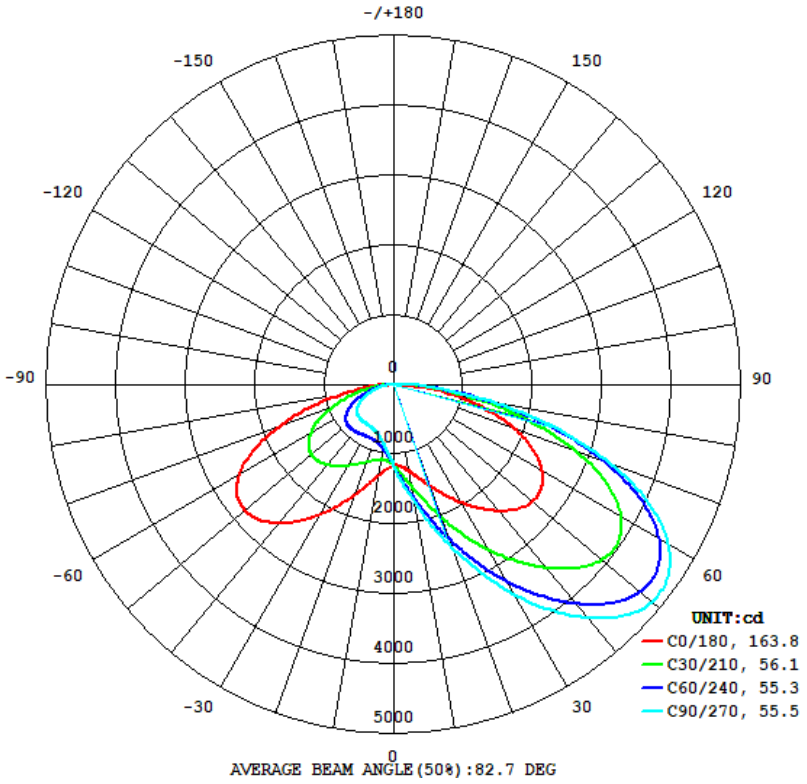
Temperature (° C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.1	119.95	60	0.803	96.1	0.998	Light Down

Test Result

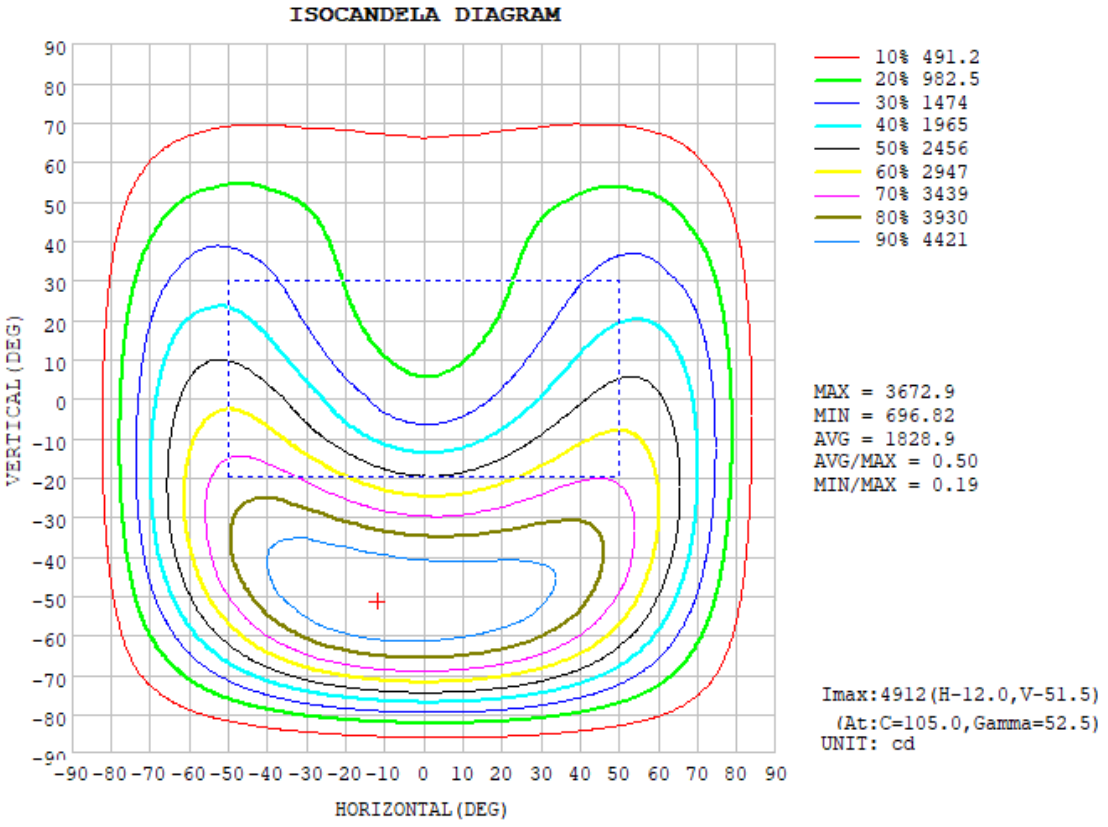
Flux (lm)	Zonal Lumen Requirement (0°-90°)	Zonal Lumen Requirement (80°-90°)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
			Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
11359	100.00%	3.41%	176.7	152.3	163.8	55.5	118.2

4.3 Goniophotometer Test

Light Distrubtion Curve



Isolux Plot



4.3 Goniophotometer Test

Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	1256	1551	1688	1586	1325	1007	872.1	983.6
20	1553	2204	2490	2291	1682	995.9	741.3	955.7
30	1961	3017	3465	3180	2151	1056	699.3	1000
40	2369	3815	4363	4059	2599	1136	698.4	1071
50	2610	4339	4845	4624	2807	1152	682.6	1092
60	2474	4187	4567	4342	2569	1015	593.5	977.9
70	1854	3064	3323	3058	1772	698.2	398.1	688.5
80	852.6	1318	1424	1224	689.8	273.7	157.8	284.7
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

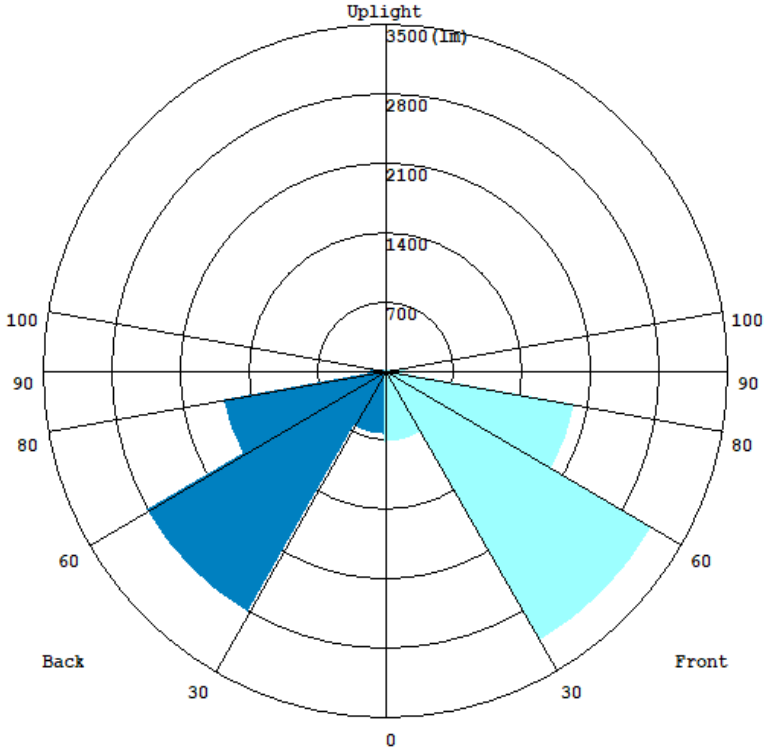
4.3 Goniophotometer Test

ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0-10	116.78	0 - 10	116.78	1.03%
10-20	411.52	0 - 20	528.30	4.65%
20-30	855.03	0 - 30	1383.33	12.18%
30-40	1446.76	0 - 40	2830.09	24.91%
40-50	2064.83	0 - 50	4894.92	43.09%
50-60	2437.58	0 - 60	7332.50	64.55%
60-70	2240.24	0 - 70	9572.74	84.27%
70-80	1399.40	0 - 80	10972.14	96.59%
80-90	387.31	0 - 90	11359.45	100.00%
90-100	0.00	0 - 100	11359.45	100.00%
100-110	0.00	0 - 110	11359.45	100.00%
110-120	0.00	0 - 120	11359.45	100.00%
120-130	0.00	0 - 130	11359.45	100.00%
130-140	0.00	0 - 140	11359.45	100.00%
140-150	0.00	0 - 150	11359.45	100.00%
150-160	0.00	0 - 160	11359.45	100.00%
160-170	0.00	0 - 170	11359.45	100.00%
170-180	0.00	0 - 180	11359.45	100.00%

3.2 Goniophotometer Test

LCS Graph



BUG-Rating

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	737.27	6.5
FM - Front-Medium(30-60)	3158.6	27.8
FH - Front-High(60-80)	1976.2	17.4
FVH - Front-Very High(80-90)	217.63	1.9
Total Forward Light	6089.7	53.5

BL - Back-Low(0-30)	647.4	5.7
BM - Back-Medium(30-60)	2808.2	24.7
BH - Back-High(60-80)	1673.5	14.7
BVH - Back-Very High(80-90)	160.38	1.4
Total Back Light	5289.5	46.5

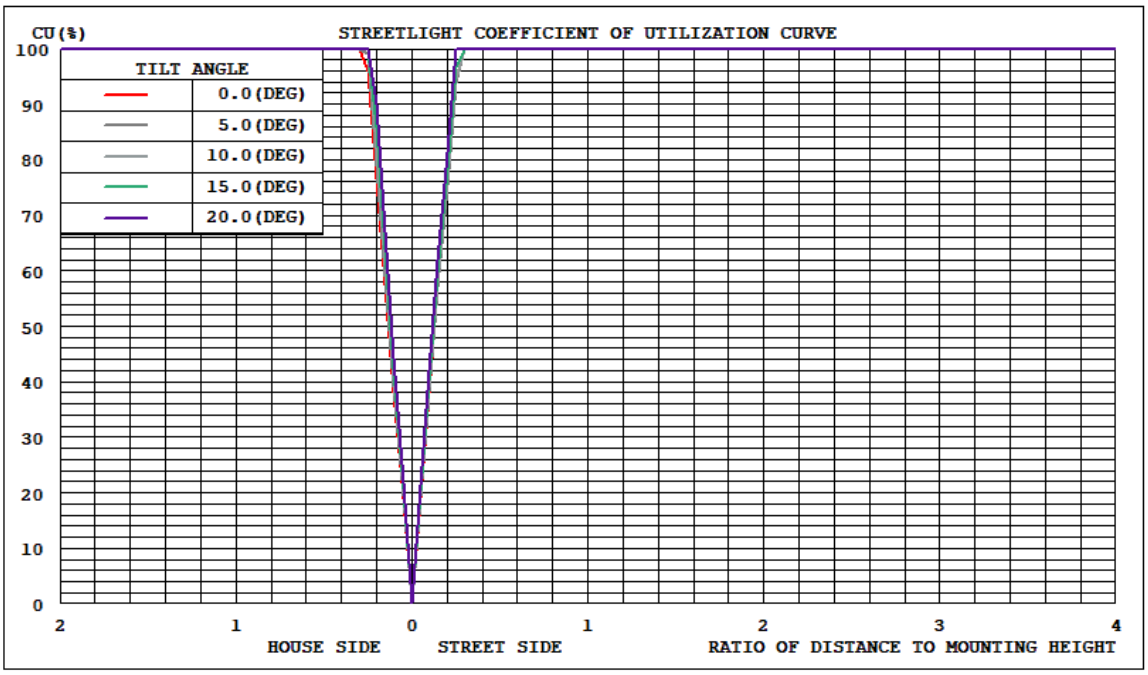
UL - Uplight-Low(90-100)	0	0.0
UH - Uplight-High(100-180)	0	0.0
Total Up Light	0	0.0

BUG(Back,Up,Glare) Rating	B3-U0-G3

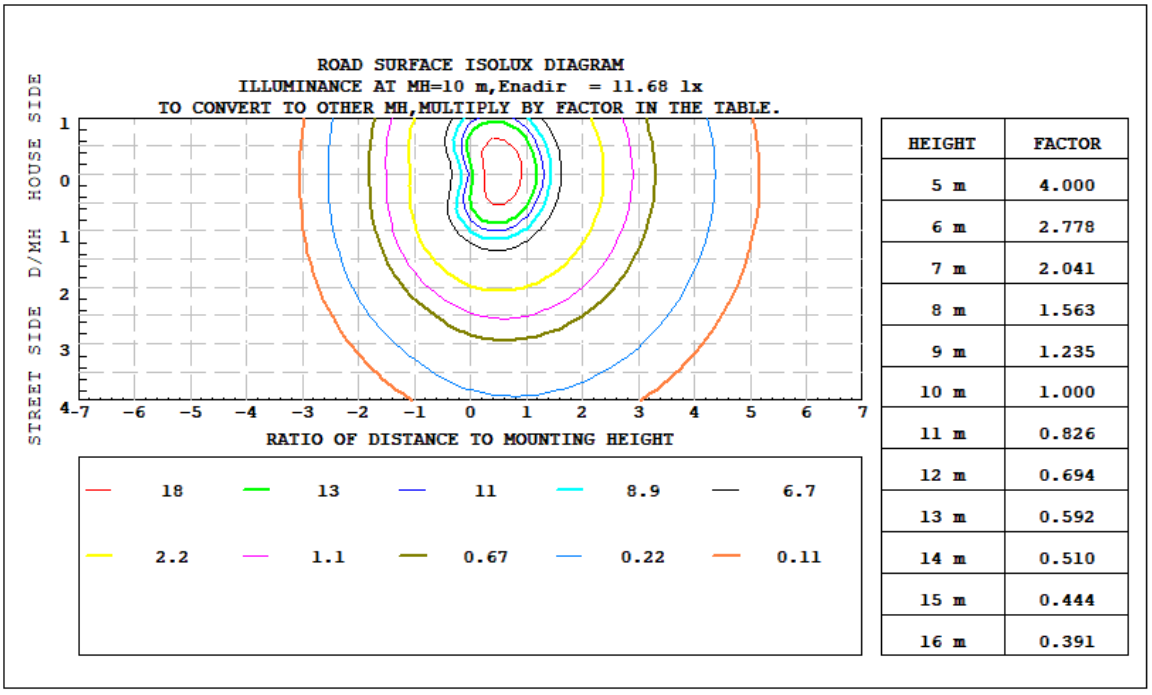
Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	5289.5	0	5289.5
Street Side	6089.7	0	6089.7

3.2 Goniophotometer Test

Coefficients of Utilization



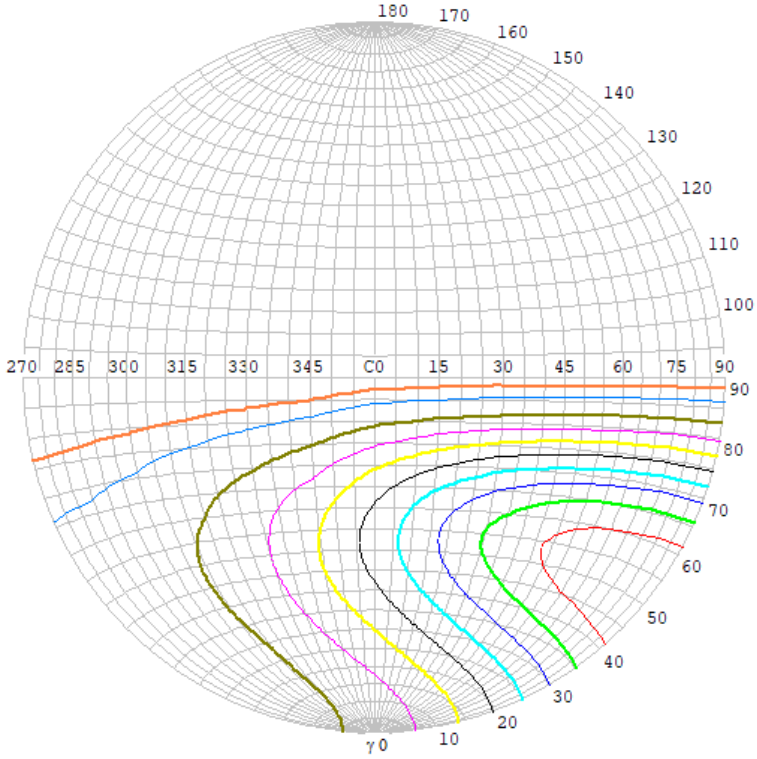
Iso-footcandle Lines of Horizontal Illumination



HEIGHT	FACTOR
5 m	4.000
6 m	2.778
7 m	2.041
8 m	1.563
9 m	1.235
10 m	1.000
11 m	0.826
12 m	0.694
13 m	0.592
14 m	0.510
15 m	0.444
16 m	0.391

3.2 Goniophotometer Test

STREETLIGHT ISOCANDELA DIAGRAM

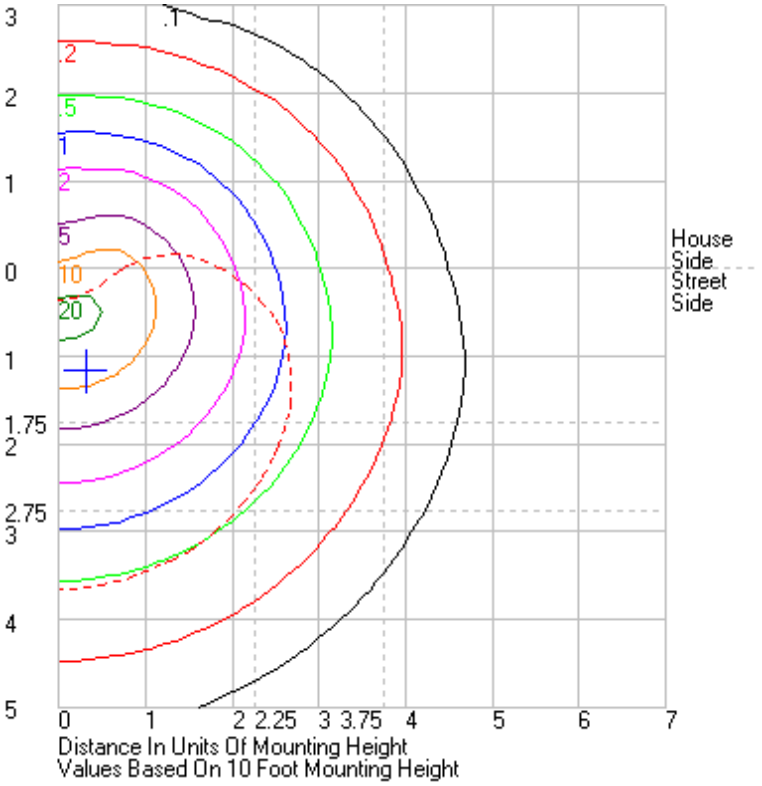


Classification:

IES:Type III - Very Short
CIE:Narrow - Short
IES:None cut-off
CIE:Non-cut-off
Max.At80:1424cd/klm
Max.At90:0cd/klm
Max.80-90:1424cd/klm

ISOCANDELA DIAGRAM	
UNIT	cd
Imax=100%	4930
90%	4437
80%	3944
70%	3451
60%	2958
50%	2465
40%	1972
30%	1479
20%	986
10%	493
5%	247

ROAD ISOCANDELA REPORT



5.0 THD and PF Test

Model No.	IVAT3-100L750U	Sample ID.	N1

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

Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
25.1	276.92	60	0.356	95.4	0.968	7.42%
25.1	119.97	60	0.826	98.9	0.999	4.06%

6.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration	Calibration Due Date
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**********