Photometric Test Report

Relevant Standards

☑IES LM-79-2008
☑ANSI C82.77:2014

Prepared For

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Project Number
DLF1810114

Data Number
DLF1810114-24a

Test Date
2018/10/24

Issue Date
2018/10/25

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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	13357	P
Minimum Luminaire Efficacy (lm/W)	IES LM-79-2008	100	116.3	P
Zonal Lumen Requirement (0°-90°)	IES LM-79-2008	⩾99%	100.00%	P
Zonal Lumen Requirement (80°-90°)	IES LM-79-2008	⩽10%	3.67%	P
Alowable CCTs* (K)	IES LM-79-2008	⩽5700	3917	P
Minimum CRI	IES LM-79-2008 CIE 13.3-1995	⩾65	72	P
Power Factor	ANSI C82.77:2014	0.873	0.969	P
Total Harmonic Distortion (A%)	ANSI C82.77:2014	25.00%	6.58%	P

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2018/10/24	IVAT5S-130L740U	X1
2	Goniophotometer Test	2018/10/24	IVAT5S-130L740U	X1
3	THD and PF Test	2018/10/24	IVAT5S-130L740U	X1

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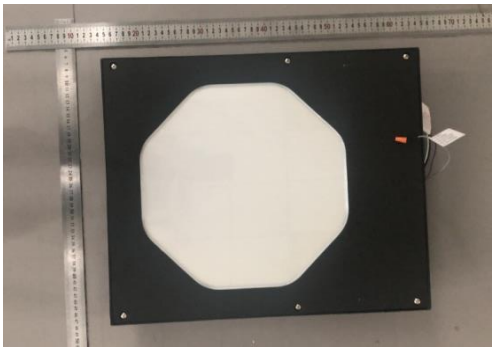
2、The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing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

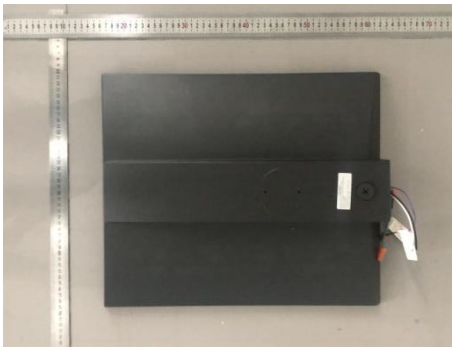
3.0 Production Description

Luminaire Description: IVAT5S-130L740U

Electrical Specification: 120V-277V,50/60HZ, 130W

Photos of Luminaire Characteristics





4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	IVAT5S-130L740U	Sample ID.	X1
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	0.980	117.4	0.999

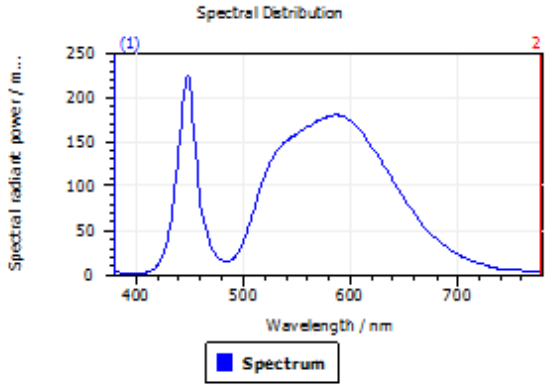
Test Result

CCT (K)	CRI (Ra)	Duv
3917	72.1	2.4E-04

4.1 Integrating Sphere Test

Spectroradiometric Parameters

Results



Spectral values

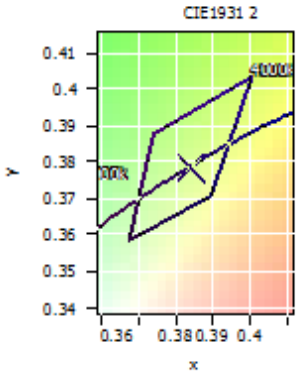
DominantWavelength	579.51 nm
Purity	0.288
PeakWavelength	447.93 nm
Radiant Power	30.27 W
Width50%:	19.59 nm

Color Coordinates

Correlated Color Temperatu 3917 K

x:	0.3840	u:	0.2268	u':	0.2268
y:	0.3784	v:	0.3352	v':	0.5029

ResultsCRICRI01	70.6	ResultsCRICRI09	-16.9
ResultsCRICRI02	77.5	ResultsCRICRI10	45.3
ResultsCRICRI03	81.4	ResultsCRICRI11	67.6
ResultsCRICRI04	72.3	ResultsCRICRI12	37.8
ResultsCRICRI05	69.4	ResultsCRICRI13	71.1
ResultsCRICRI06	67.6	ResultsCRICRI14	89.0
ResultsCRICRI07	81.3	ResultsCRICRI15	65.3
ResultsCRICRI08	57.1	ResultsCRICRI16	67.6
ResultsCRI	72.1		



PlanckDistance 2.4E-004

4.0 LM-79 Measurement and Test Results

4.3 Goniophotometer Test

Model No.	IVAT5S-130L740U	Sample ID.	X1
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

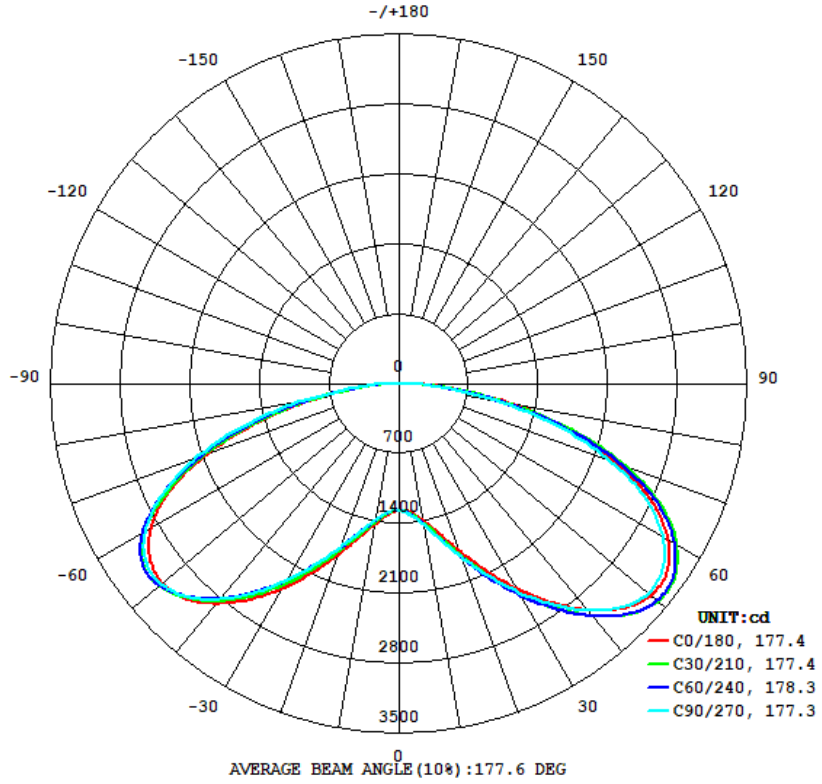
Temperature (° C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.1	120.06	60	0.959	114.9	0.998	Light Down

Test Result

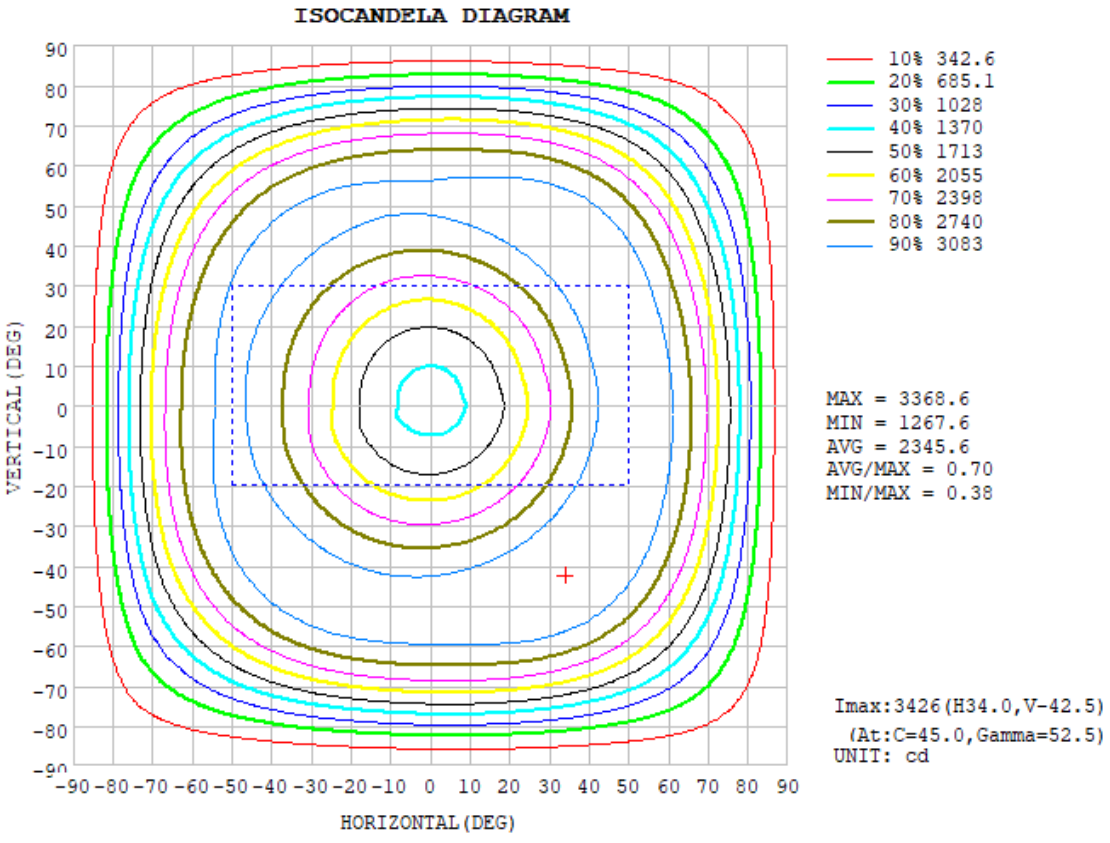
Flux (lm)	Zonal Lumen Requirement (0°-90°)	Zonal Lumen Requirement (80°-90°)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
			Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
13357	100.00%	3.67%	177.8	177.3	165.6	165.9	116.3

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	DEG
10	1389	1421	1434	1421	1422	1391	1379	1393	LUMINOUS INTENSITY:cd
20	1779	1843	1844	1815	1819	1756	1739	1782	
30	2364	2444	2409	2362	2365	2285	2270	2355	
40	2957	3048	2963	2917	2875	2824	2817	2950	
50	3299	3408	3268	3241	3108	3162	3123	3297	
60	3128	3250	3066	3098	2876	2972	2945	3143	
70	2341	2430	2263	2235	2061	2117	2173	2324	
80	1113	1081	1005	941.3	846.9	885.6	976.6	1011	
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	

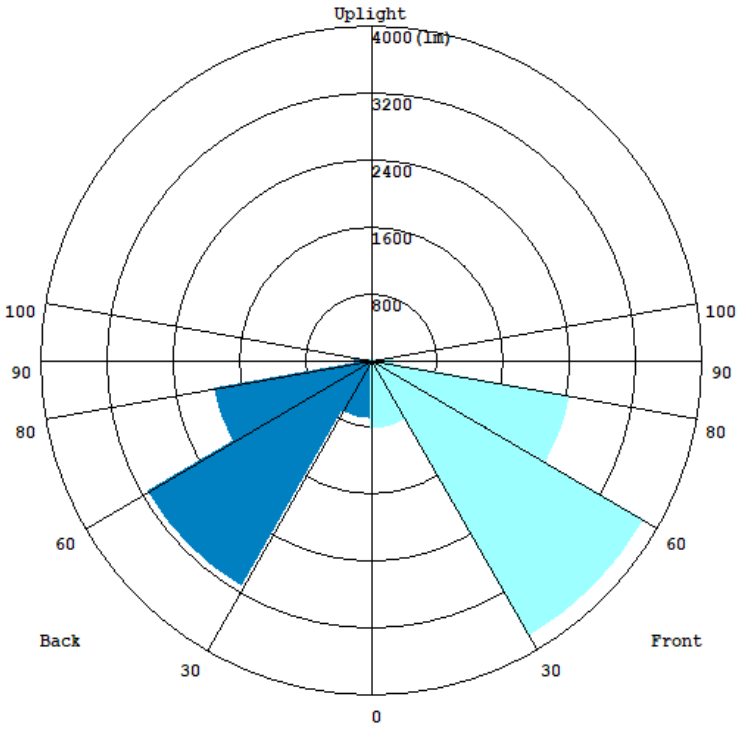
4.3 Goniophotometer Test

ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0-10	127.74	0 - 10	127.74	0.96%
10-20	454.53	0 - 20	582.27	4.36%
20-30	964.93	0 - 30	1547.20	11.58%
30-40	1667.11	0 - 40	3214.31	24.07%
40-50	2406.45	0 - 50	5620.76	42.08%
50-60	2860.82	0 - 60	8481.58	63.50%
60-70	2670.45	0 - 70	11152.03	83.49%
70-80	1714.86	0 - 80	12866.89	96.33%
80-90	489.67	0 - 90	13356.56	100.00%
90-100	0.00	0 - 100	13356.56	100.00%
100-110	0.00	0 - 110	13356.56	100.00%
110-120	0.00	0 - 120	13356.56	100.00%
120-130	0.00	0 - 130	13356.56	100.00%
130-140	0.00	0 - 140	13356.56	100.00%
140-150	0.00	0 - 150	13356.56	100.00%
150-160	0.00	0 - 160	13356.56	100.00%
160-170	0.00	0 - 170	13356.56	100.00%
170-180	0.00	0 - 180	13356.56	100.00%

3.2 Goniophotometer Test

LCS Graph



BUG-Rating

IESNA Luminaire Flux Distribution Table:

Zone	Lumens	Luminaire %
FL - Front-Low(0-30)	842.82	6.3
FM - Front-Medium(30-60)	3828.9	28.6
FH - Front-High(60-80)	2458.2	18.4
FVH - Front-Very High(80-90)	280.94	2.1
Total Forward Light	7410.9	55.4

BL - Back-Low(0-30)	705.63	5.3
BM - Back-Medium(30-60)	3126.4	23.4
BH - Back-High(60-80)	1941.3	14.5
BVH - Back-Very High(80-90)	204.91	1.5
Total Back Light	5978.2	44.6

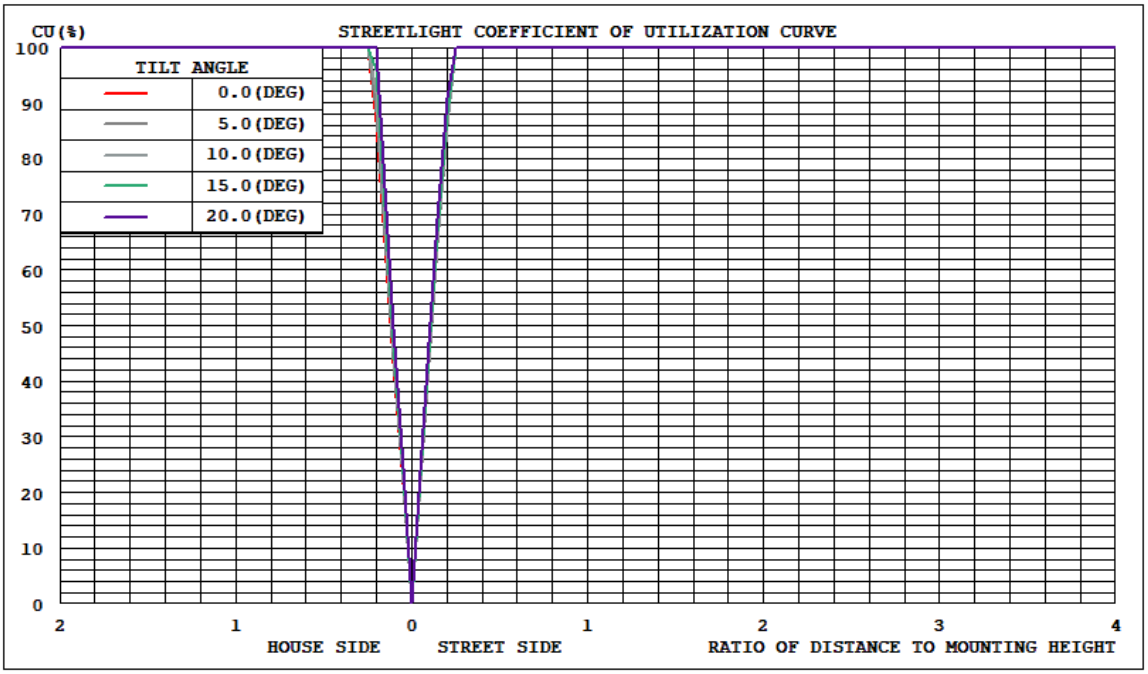
UL - Uplight-Low(90-100)	0	0.0
UH - Uplight-High(100-180)	0	0.0
Total Up Light	0	0.0

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

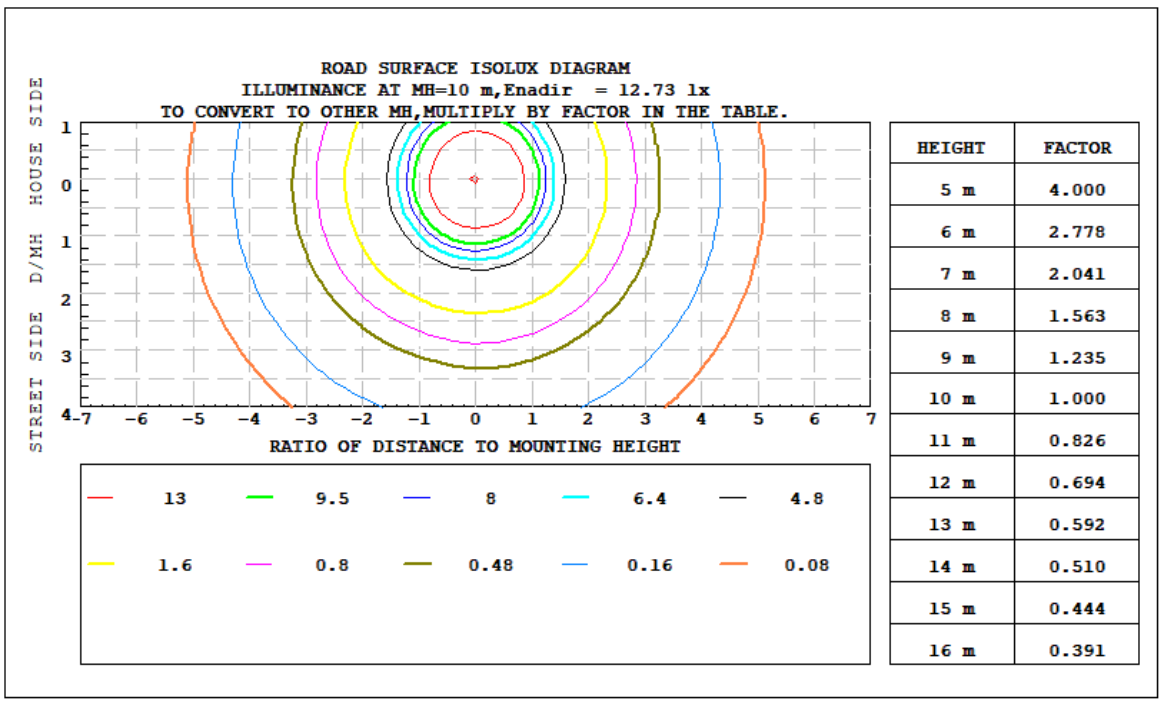
Zone	Downward Lumens	Upward Lumens	Total Lumens
House Side	5978.2	0	5978.2
Street Side	7410.9	0	7410.9

3.2 Goniophotometer Test

Coefficients of Utilization



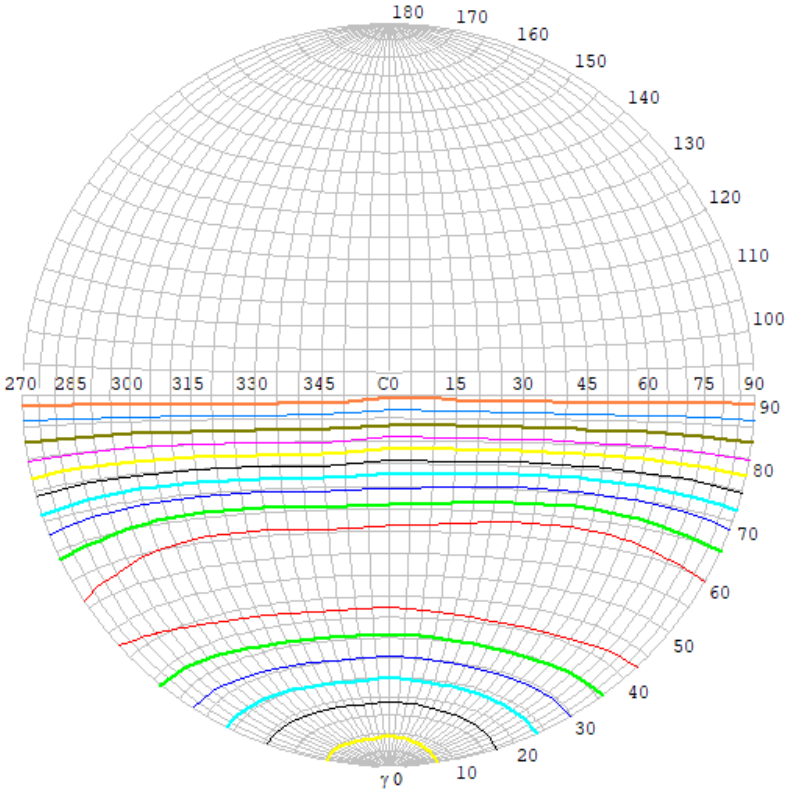
Iso-footcandle Lines of Horizontal Illumination



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

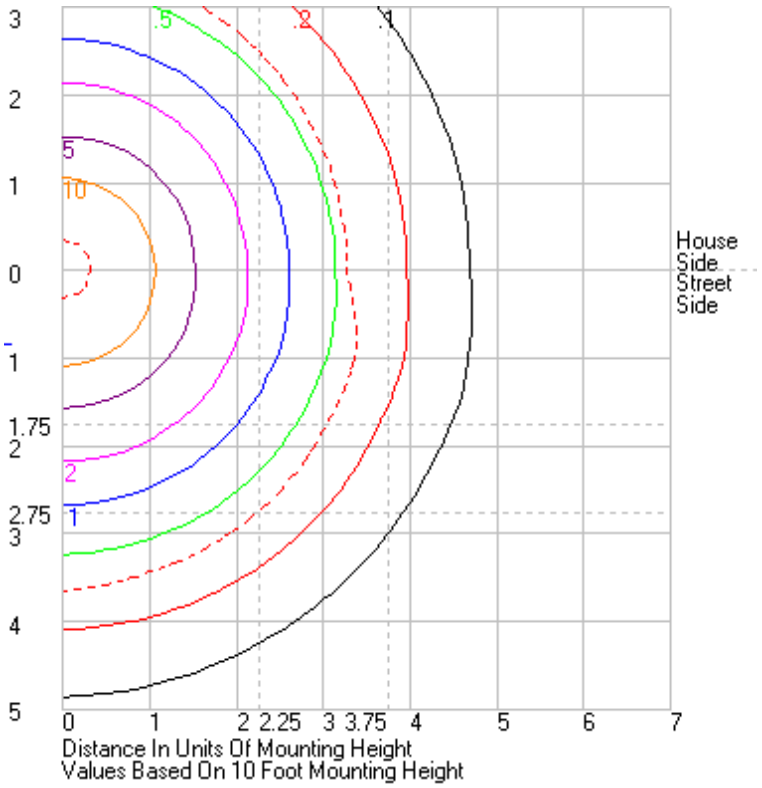


Classification:

IES:Type V - Very Short
CIE:Broad - Short
IES:None cut-off
CIE:Non-cut-off
Max.At80:1113cd/klm
Max.At90:0cd/klm
Max.80-90:1113cd/klm

ISOCANDELA DIAGRAM	
UNIT	cd
Imax=100%	3423
90%	3081
80%	2739
70%	2396
60%	2054
50%	1712
40%	1369
30%	1027
20%	685
10%	342
5%	171

ROAD ISOCANDELA REPORT



5.0 THD and PF Test

Model No.	IVAT5S-130L740U	Sample ID.	X1

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	277	60	0.421	112.9	0.969	6.58%
25.1	119.97	60	0.980	117.4	0.999	4.52%

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**********