Photometric Test Report

Relevant Standards

☑IES LM-79-2008
☑ANSI C82.77:2014

Prepared For

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2018/12/15

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1.0 Test Summary

DLC Technical Requirements v4.4

Outdoor - Low Output Parking Garage Luminaire			
Requirement Category	**Test Method**	**Requirements**	**Test value**
Lamp Output (lm)	IES LM-79-2008	2000	3772
Minimum Luminaire Efficacy (lm/W)	IES LM-79-2008	90	122.4
Zonal Lumen Requirement (60°-80°)	IES LM-79-2008	⩾30%	40.24%
Zonal Lumen Requirement (70°-80°)	IES LM-79-2008	⩽25%	16.66%
Power (Input Wattage)	IES LM-79-2008	Wrost Case	30.8
Input Voltage	IES LM-79-2008	Wrost Case	480
Input Current	IES LM-79-2008	Wrost Case	0.067
Alowable CCTs* (K)	IES LM-79-2008	⩽5700	3060
Minimum CRI	IES LM-79-2008 CIE 13.3-1995	⩾65	71
Power Factor	ANSI C82.77:2014	0.873	0.968
Total Harmonic Distortion (A%)	ANSI C82.77:2014	25.00%	25.01%

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2018/12/14	IVGT5U-30L730W4	C1
2	Goniophotometer Test	2018/12/14	IVGT5U-30L730W4	C1
3	THD and PF Test	2018/12/14	IVGT5U-30L730W4	C1

Remark(If any)
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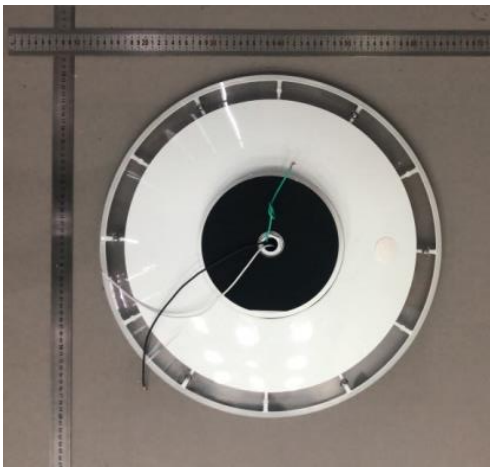
2、The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing 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: IVGT5U-30L730W4

Electrical Specification: 480V,50/60HZ, 30W

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	IVGT5U-30L730W4	Sample ID.	C1
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	480.04	60	0.066	30.9	0.968

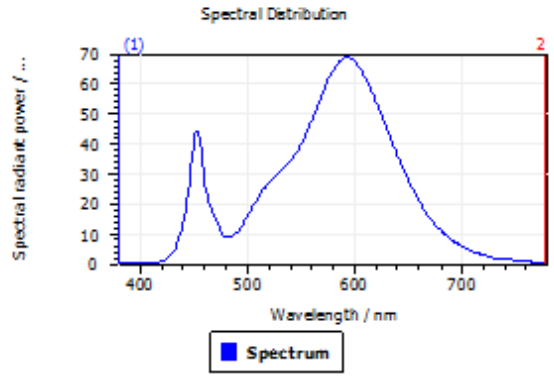
Test Result

CCT (K)	CRI (Ra)	Duv
3060	71.4	4.7E-04

4.1 Integrating Sphere Test

Spectroradiometric Parameters

Results



Spectral Distribution

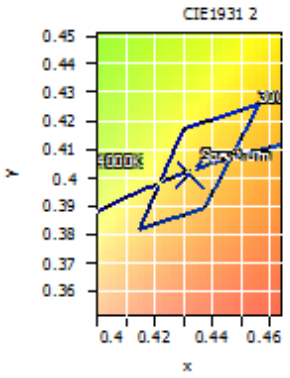
Spectral values

DominantWavelength	582.74 nm
Purity	0.501
PeakWavelength	592.98 nm
Width50%:	102.21 nm

Color Coordinates

Correlated Color Temperatu		3060 K			
x:	0.4321	u:	0.2487	u':	0.2487
y:	0.4012	v:	0.3463	v':	0.5195

CRI01	67.6	CRI09	-41.2
CRI02	84.3	CRI10	65.0
CRI03	93.4	CRI11	61.1
CRI04	65.5	CRI12	53.2
CRI05	67.4	CRI13	71.2
CRI06	78.8	CRI14	96.8
CRI07	74.9	CRI15	58.4
CRI08	38.9	CRI16	55.9
ResultsCRI	71.4		



PlanckDistance 4.7E-004

4.0 LM-79 Measurement and Test Results

4.3 Goniophotometer Test

Model No.	IVGT5U-30L730W4	Sample ID.	C1
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

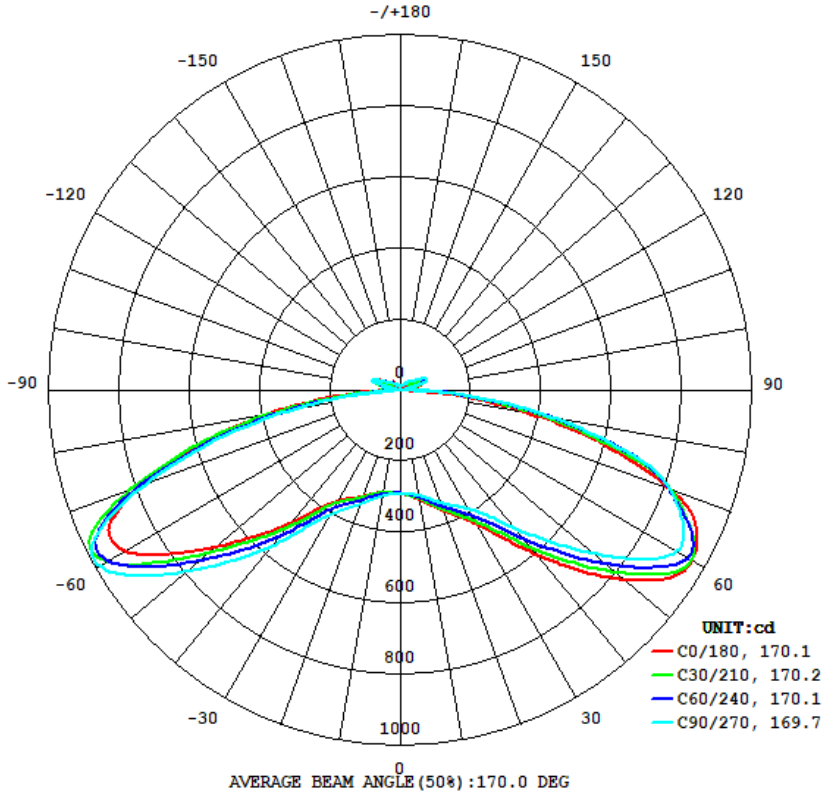
Temperature (°C)	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	Orientation
25.1	480.01	60	0.067	30.8	0.966	Light Down

Test Result

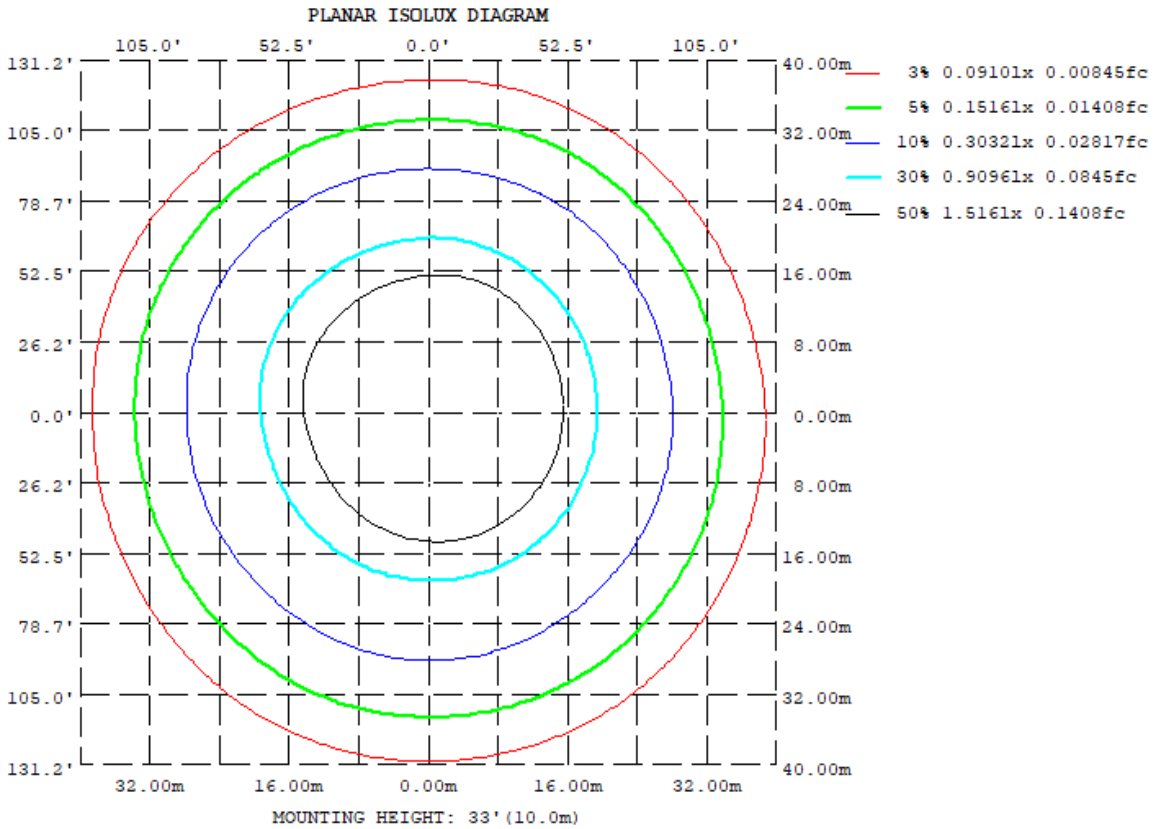
Flux (lm)	Zonal Lumen Requirement (60°-80°)	Zonal Lumen Requirement (70°-80°)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
			Horizontal Spread	Vertical Spread	Horizontal Spread	Vertical Spread	
3772	40.24%	16.66%	282.9	272	170.1	169.7	122.4

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	312.9	308.6	302.3	296.3	293.9	296.3	303.3	311.3
20	362.1	354.7	338.7	324.3	318.9	325.3	341.7	357.2
30	436.8	420.4	387.7	366.0	361.3	373.7	405.0	430.6
40	606.0	563.0	506.8	473.4	486.1	518.2	572.5	615.3
50	829.8	779.6	715.2	664.3	685.3	727.8	793.3	857.1
60	958.2	953.8	907.9	864.7	905.7	968.2	988.7	1003
70	817.6	808.4	814.9	771.2	785.4	809.3	770.2	807.1
80	366.2	415.9	433.2	414.0	375.8	343.2	298.6	320.9
90	5.784	16.76	31.68	33.08	18.12	2.901	2.124	0.6538
100	15.01	16.56	14.96	15.03	10.35	30.72	38.01	30.67
110	75.42	46.37	66.80	47.70	76.50	61.95	85.09	58.78
120	56.76	56.25	65.34	45.85	54.88	48.00	50.99	42.87
130	20.40	42.63	42.12	39.13	19.92	36.32	33.94	35.33
140	30.78	29.85	27.06	29.53	32.83	27.05	25.77	25.04
150	18.34	20.45	20.99	20.03	19.20	19.03	17.88	17.83
160	13.03	15.09	16.97	14.36	12.98	14.06	15.58	13.41
170	9.967	10.98	11.15	9.527	9.187	9.291	10.56	10.43
180	9.481	6.334	5.707	5.815	9.241	8.803	7.919	8.136
DEG	LUMINOUS INTENSITY:cd							

4.3 Goniophotometer Test

ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0-10	28.40	0 - 10	28.40	0.75%
10-20	91.18	0 - 20	119.58	3.17%
20-30	170.41	0 - 30	289.99	7.69%
30-40	291.64	0 - 40	581.63	15.42%
40-50	503.10	0 - 50	1084.73	28.76%
50-60	773.41	0 - 60	1858.14	49.26%
60-70	889.53	0 - 70	2747.67	72.84%
70-80	628.31	0 - 80	3375.98	89.50%
80-90	184.53	0 - 90	3560.51	94.39%
90-100	13.00	0 - 100	3573.51	94.74%
100-110	46.79	0 - 110	3620.30	95.98%
110-120	63.20	0 - 120	3683.50	97.65%
120-130	36.65	0 - 130	3720.15	98.63%
130-140	24.88	0 - 140	3745.03	99.29%
140-150	14.67	0 - 150	3759.70	99.67%
150-160	7.79	0 - 160	3767.49	99.88%
160-170	3.66	0 - 170	3771.15	99.98%
170-180	0.82	0 - 180	3771.97	100.00%

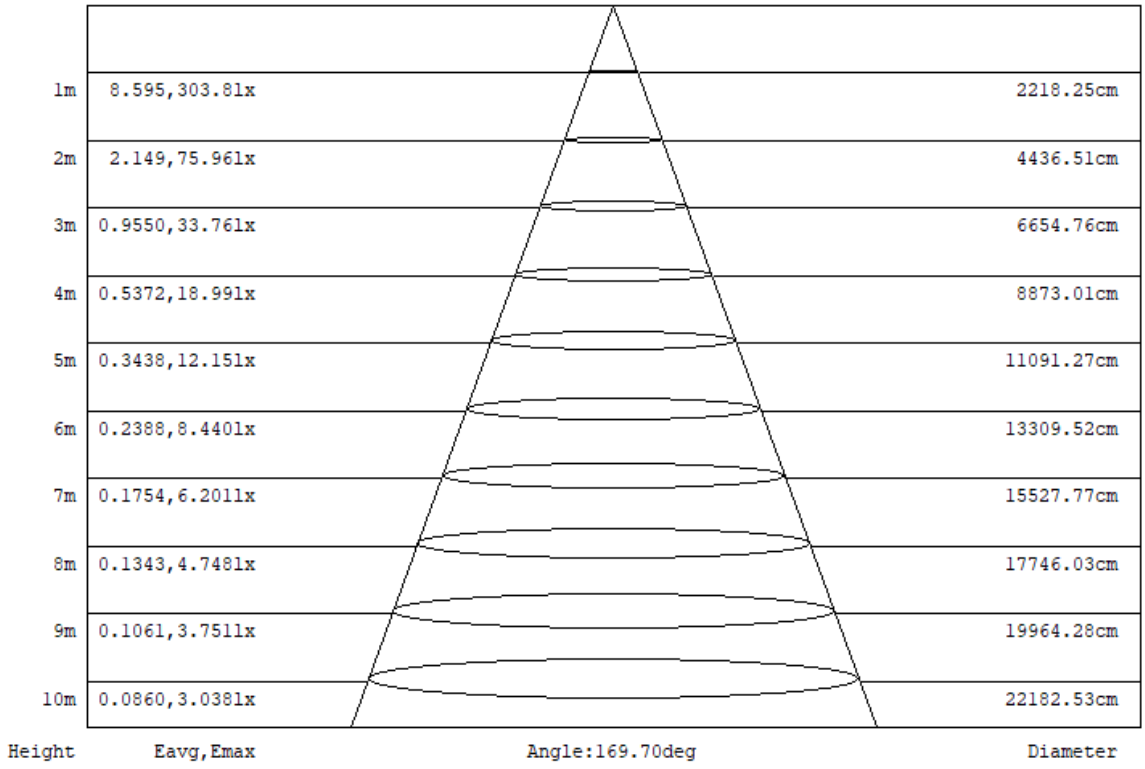
3.2 Goniophotometer Test

COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

Coefficients Of Utilization - Zonal Cavity Method
Effective Floor Cavity Reflectance 0.20

RC	80				70				50			30			10			0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
0	118	118	118	118	114	114	114	114	108	108	108	102	102	102	97	97	97	94
1	103	96	90	85	99	93	88	83	88	83	79	83	79	76	78	75	72	69
2	90	79	70	62	86	76	68	61	72	64	58	67	61	56	63	58	54	51
3	79	66	55	47	76	64	54	46	59	51	44	56	49	42	52	46	41	38
4	71	56	45	36	68	54	44	36	50	41	34	47	39	33	44	38	32	29
5	64	48	37	29	61	46	36	28	43	34	27	41	33	26	38	31	26	23
6	58	42	31	24	56	41	31	23	38	29	22	36	28	22	33	26	21	18
7	53	37	27	20	51	36	26	19	34	25	19	32	24	18	30	23	17	15
8	49	33	23	17	47	32	23	16	30	22	16	29	21	15	27	20	15	13
9	45	30	21	14	44	29	20	14	28	19	14	26	19	13	24	18	13	11
10	42	27	18	12	41	27	18	12	25	17	12	24	17	12	22	16	11	9

CONE OF LIGHT DIAGRAM



5.0 THD and PF Test

Model No.	IVGT5U-30L730W4	Sample ID.	C1

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	480.04	60	0.066	30.9	0.968	25.01%

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**********