



Photometric Test Report

Relevant Standards

- ☒ IES LM-79-2008
- ☒ ANSI C82.77:2017

Prepared For

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Project Number

DLF2108105

Report Number

DLF2108105-10a

Test Date

2021/9/10

Issue Date

2021/9/22

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1.0 Test Summary

DLC Technical Requirements v5.1

Retrofit Kits for Direct Linear Ambient Luminaires				
Requirement Category	Test Method	Requirements		Test value
Luminaire Output (lm) (Goniophotometer - Section 4.2)	IES LM-79-2008	1500		3115
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 115	Premium 130	135.7
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		23.0
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	13.43%
		20.00%	277V	18.04%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.986
		0.9	277V	0.893
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3045±175	3012
		4 step	3045±100	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥80		84
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥0		10
Minimum Rf (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥70		86
Minimum Rg (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥89		96
Minimum IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-12%≤IES Rcs,h1≤+23%		-11%
Zonal Lumen Requirement (0°-60°) (Goniophotometer - Section 4.2)	IES LM-79-2008	≥40%		71.00%
Corrected UGR (X=4H, Y=8H, 70/50/20%) (Goniophotometer - Section 4.2)	CIE 190-2010	<22		23.9

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2021/9/10	VEKM-L41F/HO/830	J1
2	Goniophotometer Test	2021/9/10	VEKM-L41F/HO/830	J1

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.

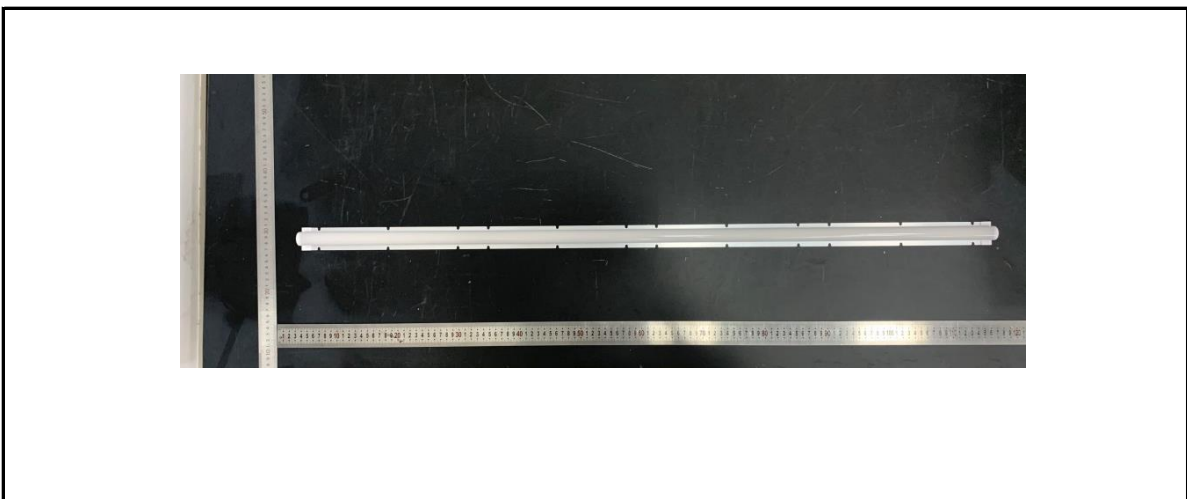
3.0 Production Description

Tested Model: VEKM-L41F/HO/830

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

Test in Fixture: Lithonia C2 32 MVOLT GEB10IS

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	VEKM-L41F/HO/830	Sample ID.	J1
Operate time (Min.)	90	Stabilization time (Min.)	70
Temperature (°C)	25.1	Humidity (%RH)	52.0

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 Result

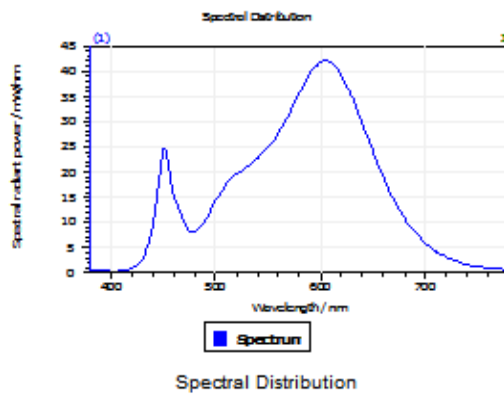
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
120.01	60	0.189	22.35	0.986	13.43%
276.98	60	0.092	22.80	0.893	18.04%

CCT (K)	CRI	R9	Duv	Light Output (lm)	Efficacy (lm/W)
3012	83.7	9.7	0.0013	3130	137.3

Rf	Rg	IES Rcs,h1
86	96	-11%

4.1 Integrating Sphere Test

Results



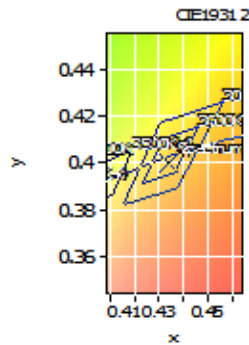
Spectral values

DominantWavelength 583.24 nm
Purity 0.504
PeakWavelength 604.75 nm
Radiant Power 6.208 W
Width50%:

Color Coordinates

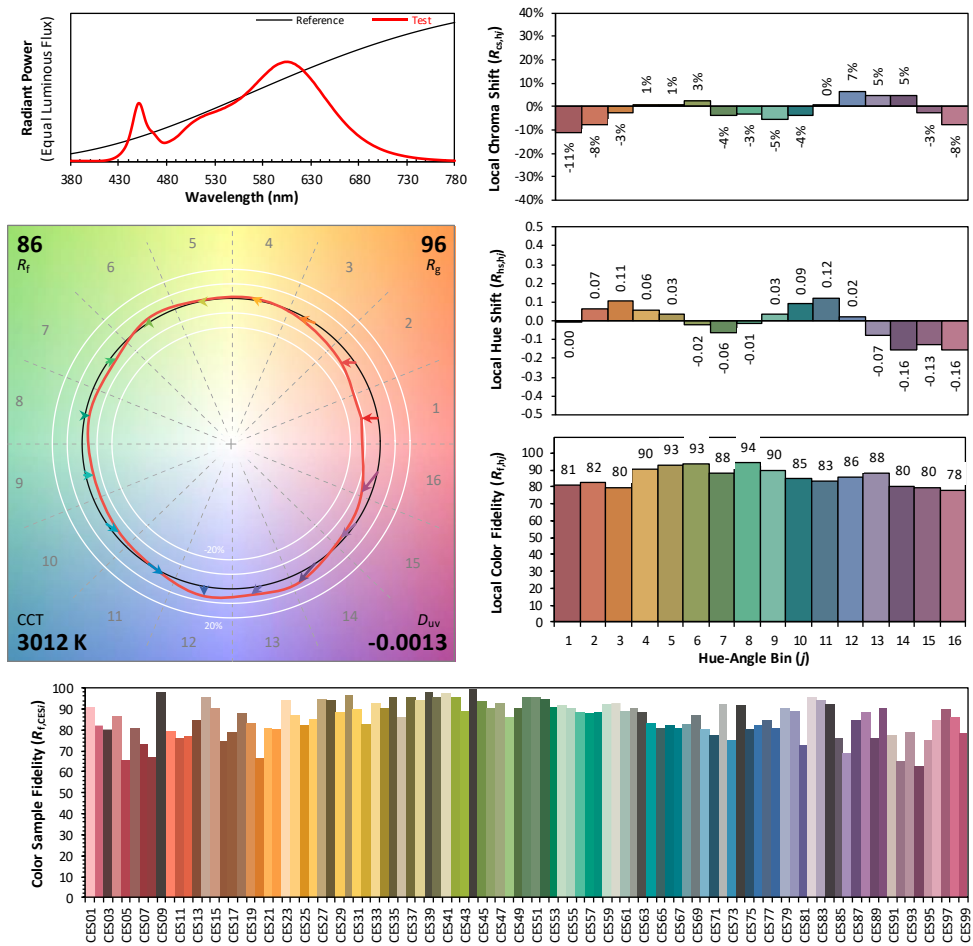
Correlated Color Temperat 3012 K
x: 0.4342 u: 0.2506 u': 0.2506
y: 0.4000 v: 0.3462 v': 0.5194

CRI01	82.7	CRI09	9.7
CRI02	92.6	CRI10	83.5
CRI03	95.3	CRI11	82.7
CRI04	82.2	CRI12	75.4
CRI05	83.5	CRI13	85.3
CRI06	91.7	CRI14	98.2
CRI07	82.0	CRI15	74.9
CRI08	59.3	CRI16	71.9
ResultsCRI	83.7		



PlanckDistance 1.3E-003

4.1 Integrating Sphere Test



lors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	VEKM-L41F/HO/830	Sample ID.	J1
Operate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.3	Humidity (%RH)	54.0

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

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WROST CASE	277.02	60	0.092	23.0	0.899

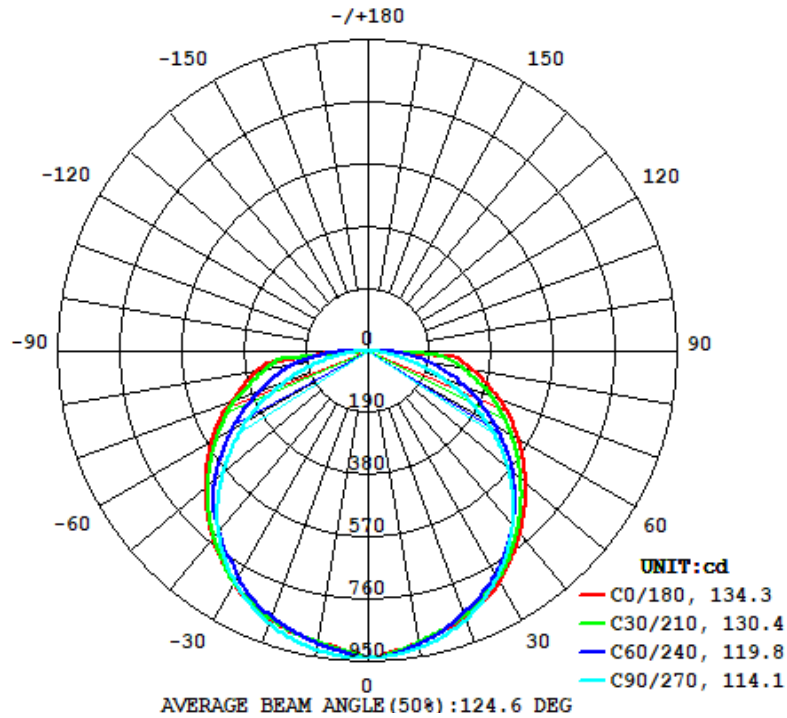
Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
3115	173.6	160.1	134.3	114.1	135.7

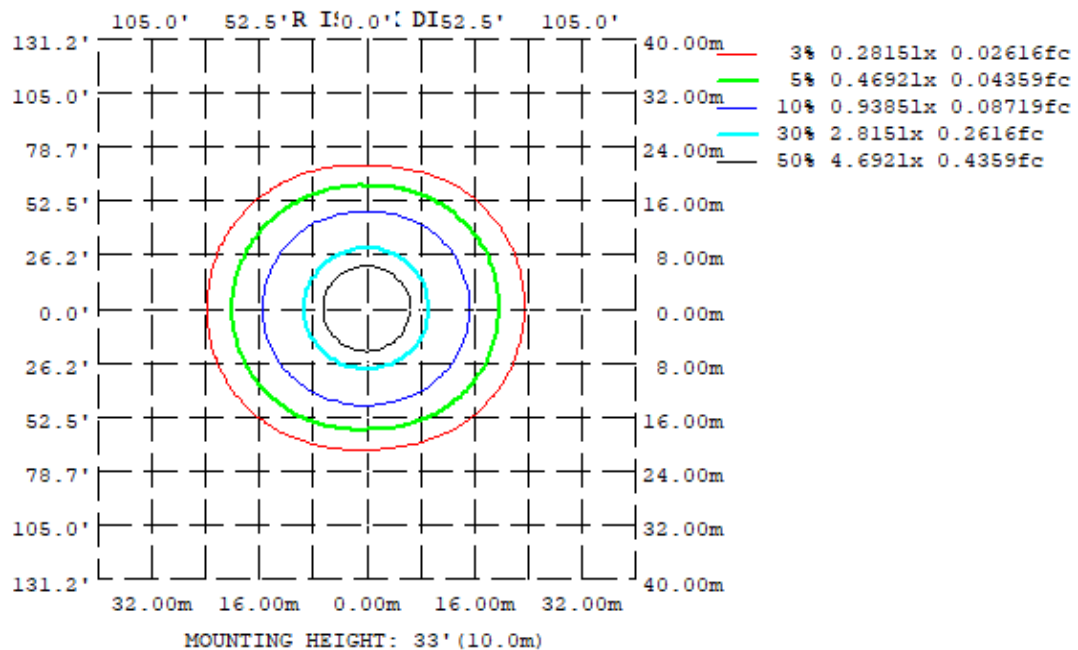
Zonal Lumen Requirement (0° - 60°)	UGR (X=4H, Y=8H, 70/50/20%)	Length (ft)	Lumen (lm/ft)
71.00%	23.9	4	779

4.2 Goniophotometer Test

Light Distrubtion Curve



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	901.1	905.4	920.2	899.4	903.6	903.2	926.7	910.1
20	866.1	856.6	873.5	862.1	873.6	868.6	886.9	865.6
30	811.8	792.7	796.8	802.1	820.6	809.2	817.1	805.9
40	727.6	709.2	693.6	718.7	742.6	733.3	715.3	723.9
50	633.2	597.6	565.5	614.7	650.9	628.3	581.6	620.2
60	533.0	482.6	413.7	501.8	554.6	514.9	434.1	507.7
70	428.6	368.6	243.2	391.4	445.1	403.6	273.2	395.1
80	324.7	245.5	79.84	260.8	343.3	283.2	111.3	280.7
90	4.134	3.492	0.3048	0.3892	0.3321	0.3658	0.4644	8.978
100	0.8359	0.4468	0.3055	0.6120	0.3684	0.4429	0.3540	0.3961
110	0.4532	0.4138	0.3340	0.3470	0.4951	0.4724	0.4332	0.4768
120	0.3771	0.4046	0.3553	0.3297	0.3481	0.4827	0.4828	0.2971
130	0.4018	0.4756	0.3951	0.3463	0.4468	0.4793	0.5247	0.4610
140	0.4167	0.5127	0.4403	0.3940	0.5618	0.5497	0.5579	0.6214
150	0.4021	0.5198	0.4474	0.4052	0.6071	0.6086	0.5336	0.5904
160	0.4236	0.4624	0.4797	0.3868	0.5182	0.5503	0.5004	0.4763
170	0.3817	0.4832	0.4937	0.4001	0.4684	0.4160	0.4314	0.4664
180	0.5025	0.4993	0.4718	0.4690	0.4926	0.4760	0.4708	0.4701
DEG	LUMINOUS INTENSITY:cd							

UGR Table - Corrected

UGR Table - Corrected

Reflectances										
Ceiling Cavity	70	70	50	50	30	70	70	50	50	30
Walls	50	30	50	30	30	50	30	50	30	30
Floor Cavity	20	20	20	20	20	20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise			
X=2H	Y=2H	14.9	16.6	15.2	16.9	17.2	16.2	18.0	16.6	18.3
	3H	16.6	18.2	17.0	18.5	18.9	18.9	20.5	19.3	20.8
	4H	17.3	18.8	17.7	19.1	19.5	20.2	21.7	20.6	22.1
	6H	17.6	19.0	18.1	19.4	19.8	21.6	23.0	22.1	23.4
	8H	17.7	19.1	18.2	19.5	19.9	22.4	23.7	22.8	24.1
	12H	17.8	19.1	18.2	19.4	19.9	22.8	24.1	23.3	24.5
4H	2H	15.9	17.4	16.3	17.7	18.1	17.0	18.4	17.3	18.8
	3H	18.0	19.3	18.4	19.7	20.1	19.9	21.2	20.3	21.6
	4H	18.8	20.0	19.2	20.4	20.8	21.4	22.6	21.9	23.0
	6H	19.3	20.4	19.8	20.8	21.3	23.1	24.1	23.5	24.5
	8H	19.5	20.5	19.9	20.9	21.4	23.9	24.9	24.4	25.4
	12H	19.6	20.4	20.0	20.9	21.4	24.5	25.3	24.9	25.8
8H	4H	19.7	20.7	20.1	21.1	21.6	21.9	22.9	22.3	23.3
	6H	20.5	21.4	21.0	21.8	22.3	23.8	24.6	24.3	25.1
	8H	20.8	21.6	21.3	22.1	22.5	24.9	25.6	25.4	26.1
	12H	21.0	21.6	21.5	22.1	22.7	25.5	26.2	26.0	26.7
12H	4H	19.9	20.8	20.4	21.3	21.8	22.0	22.8	22.4	23.3
	6H	21.0	21.7	21.5	22.2	22.7	23.9	24.7	24.5	25.1
	8H	21.4	22.1	21.9	22.5	23.1	25.1	25.8	25.6	26.3

Maximum UGR = 27.2

4.2 Goniophotometer Test

ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0-10	87.67	0 - 10	87.67	2.81%
10-20	251.22	0 - 20	338.89	10.88%
20-30	386.83	0 - 30	725.72	23.29%
30-40	477.86	0 - 40	1203.58	38.63%
40-50	513.97	0 - 50	1717.55	55.13%
50-60	494.57	0 - 60	2212.12	71.00%
60-70	428.32	0 - 70	2640.44	84.75%
70-80	324.24	0 - 80	2964.68	95.16%
80-90	147.85	0 - 90	3112.53	99.91%
90-100	0.65	0 - 100	3113.18	99.93%
100-110	0.43	0 - 110	3113.61	99.94%
110-120	0.41	0 - 120	3114.02	99.95%
120-130	0.37	0 - 130	3114.39	99.97%
130-140	0.37	0 - 140	3114.76	99.98%
140-150	0.32	0 - 150	3115.08	99.99%
150-160	0.23	0 - 160	3115.31	99.99%
160-170	0.13	0 - 170	3115.44	100.00%
170-180	0.04	0 - 180	3115.48	100.00%

5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2020/12/26	2021/12/25
DLF108	Auxiliary Lamp	2020/12/26	2021/12/25
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-derectional	2020/12/26	2021/12/25
DLF116	AC Power Source	2020/12/26	2021/12/25
DLF113	Power Meter	2020/12/26	2021/12/25
DLF112	Temperature Recorder	2020/12/26	2021/12/25
DLF114	Temperature & Humidity Datalogger	2020/12/26	2021/12/25
DLF101	Goniophotometer	2020/12/26	2021/12/25
DLF125	Standard Lamp Standard Lamp Type: 76.58 V, 6.7875 A, Tungsten, Omni-derectional	2020/12/26	2021/12/25
DLF104	AC Power Source	2020/12/26	2021/12/25
DLF507	DC Power Source	2020/12/26	2021/12/25
DLF102	Power Meter	2020/12/26	2021/12/25
DLF111	Temperature & Humidity Datalogger	2020/12/26	2021/12/25
DLF119	Power Meter	2020/12/26	2021/12/25
DLF031	Temperature data logger	2020/12/26	2021/12/25
DLF022	Digital power meter	2020/12/26	2021/12/25
DLF003	Temperature & Humidity Datalogger	2020/12/26	2021/12/25

***** End of Test Report*****