



Photometric Test Report

Relevant Standards

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

Prepared For

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1.0 Test Summary

U-Bend Lamps Internal Driver/Line Voltage Lamp-Style Retrofit Kits (UL Type B)				
Requirement Category	Test Method	Requirements		Test value
Goniophotometer				
Luminaire Output (lm)	IES LM-79-2008	-		1951
Luminaire Efficacy (lm/W)	IES LM-79-2008	-		146.58
Beam Angle	IES LM-79-2008	-		16540.0%
Integrating Sphere				
Lamp light output (lm)	IES LM-79-2008	-		1935
Lamp Efficacy (lm/W)	IES LM-79-2008	-		145.49
Allowable CCTs* (K)	IES LM-79-2008 CIE 13.3-1995	7 step	3465±245	3417
Minimum CRI	IES LM-79-2008 CIE 13.3-1995	-		85
Minimum R9	IES LM-79-2008 CIE 13.3-1995	-		16

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2020/9/16	LB48T8U6/835/13P-AB/LB48T8U6/835/13P-ID DE	B1
2	Goniophotometer Test	2020/9/16	LB48T8U6/835/13P-AB/LB48T8U6/835/13P-ID DE	B1

Remark(If any)

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3.0 Production Description

Luminaire Description: LB48T8U6/835/13P-AB/LB48T8U6/835/13P-ID DE

Electrical Specification: 120-277V,60HZ

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test - Bare Lamp

Model No.	LB48T8U6/835/13P-AB/LB48T8U6/835/13P-ID DE	Sample ID.	B1
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

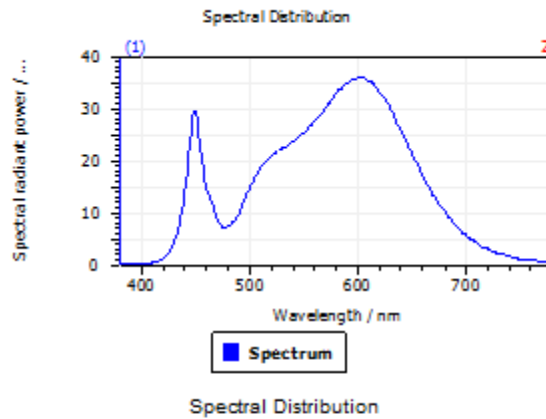
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
120.02	60	0.114	13.30	0.976	19.43%
276.97	60	0.051	12.91	0.917	18.24%

Test Result

CCT (K)	CRI	R9	Duv	Lamp Light Output (lm)	Lamp Efficacy (lm/W)
3417	85	16	0.00011	1935	145.49

4.1 Integrating Sphere Test

Results

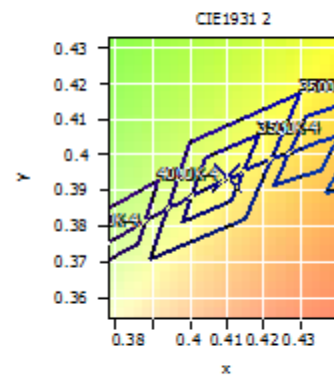


Spectral values

DominantWavelength	581.14 nm
Purity	0.412
PeakWavelength	601.80 nm
Radiant Power	5.942 W
Width50%:	
Luminous Flux	1.935 klm

Color Coordinates

Correlated Color Temperatu		3417 K
x: 0.4101	u: 0.2378	u': 0.2378
y: 0.3933	v: 0.3420	v': 0.5131
CRI01	83.0	CRI09
CRI02	90.2	CRI10
CRI03	96.2	CRI11
CRI04	84.2	CRI12
CRI05	83.4	CRI13
CRI06	87.7	CRI14
CRI07	85.8	CRI15
CRI08	65.3	CRI16
ResultsCRI	84.5	



PlanckDistance 1.1E-004

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test - Bare Lamp

Model No.	LB48T8U6/835/13P-AB/LB48T8U6/835/13P-ID DE	Sample ID.	B1
Opreate 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 paramters 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

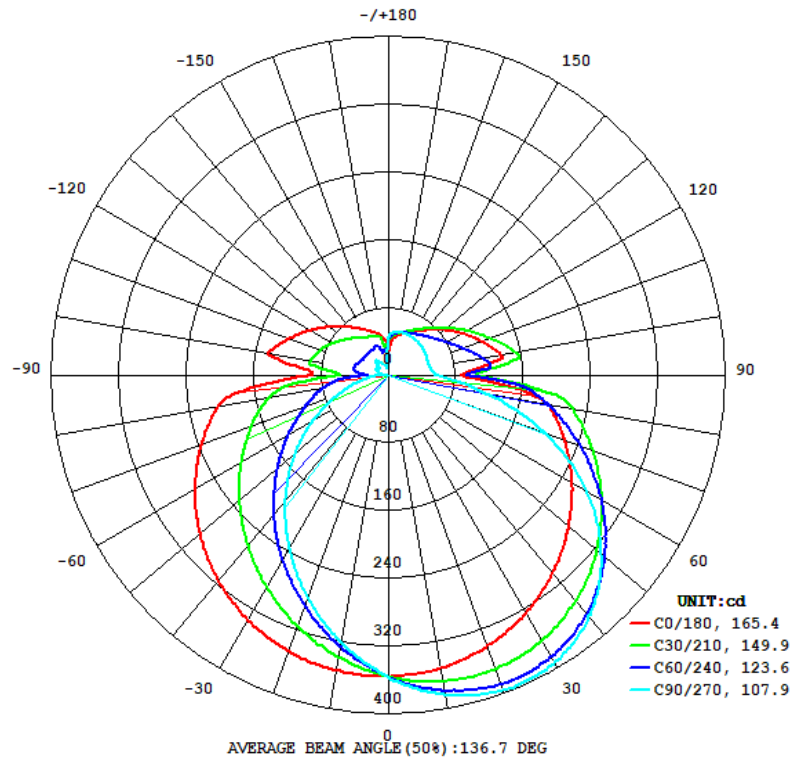
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
119.98	60	0.114	13.31	0.974	19.37%
277.00	60	0.051	12.94	0.915	18.15%

Test Result

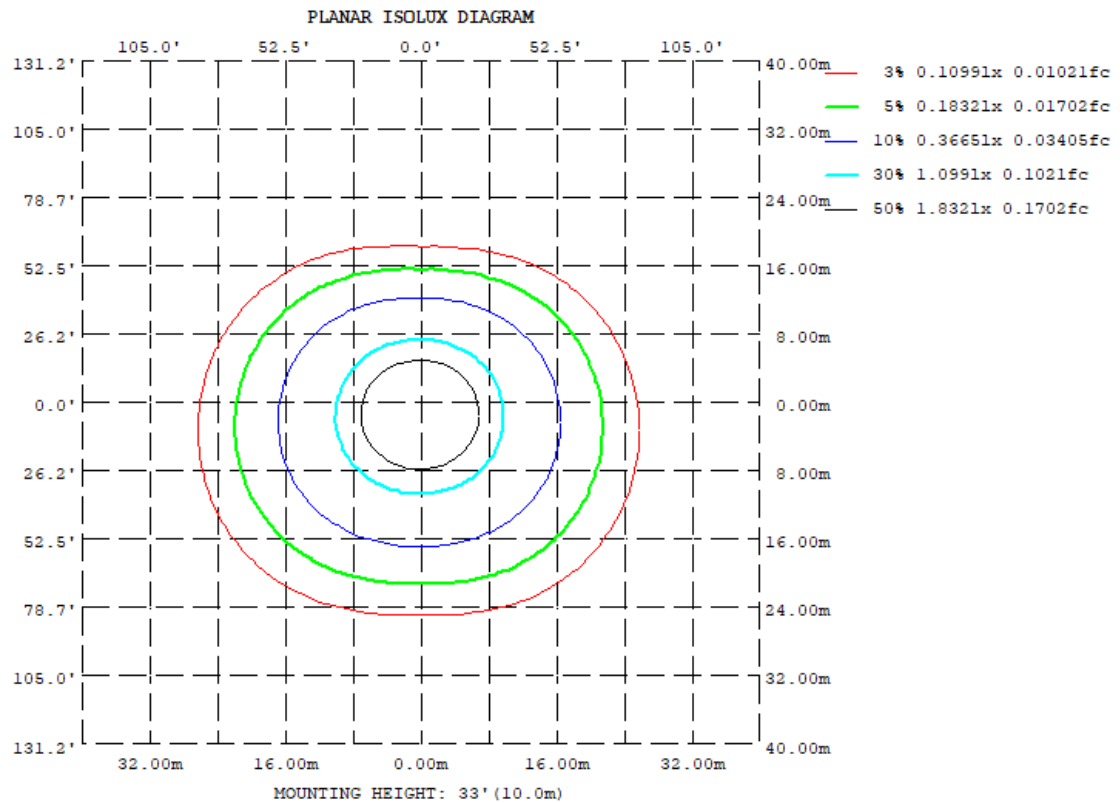
Flux (lm)	Luminous Efficacy (lm/W)	Beam Angle
1951	146.6	165.4

4.2 Goniophotometer Test

Distribution



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	351.2	373.4	382.5	376.1	354.3	331.8	321.1	330.5
20	340.8	380.2	395.6	385.2	346.8	301.9	280.2	298.6
30	325.2	375.9	392.3	383.0	333.8	268.8	236.0	263.9
40	303.9	359.7	370.8	368.9	315.2	234.3	190.5	228.6
50	279.6	333.3	330.1	342.6	291.8	200.3	145.8	193.5
60	252.0	298.2	270.7	307.0	265.2	167.6	102.4	159.3
70	223.3	257.7	195.6	265.5	236.3	138.2	62.15	130.6
80	191.3	214.7	114.2	221.0	204.5	109.5	28.69	99.70
90	87.32	106.0	58.45	107.7	92.71	42.28	3.188	39.53
100	137.4	143.4	52.10	147.0	145.3	66.47	11.55	64.77
110	119.1	118.3	50.99	121.5	127.5	64.05	13.10	59.73
120	100.7	97.51	52.08	100.4	107.7	56.94	17.07	52.59
130	84.28	81.26	53.42	83.98	89.97	50.59	16.93	46.64
140	70.50	69.09	54.26	71.62	75.31	47.04	24.43	42.03
150	59.92	60.49	54.51	62.77	63.73	45.30	17.98	40.10
160	52.79	54.80	54.05	56.69	55.15	44.30	13.68	15.32
170	45.75	50.76	52.30	51.96	47.15	35.30	17.43	20.35
180	33.81	40.61	41.42	39.27	35.54	39.56	40.96	40.44
DEG	LUMINOUS INTENSITY:cd							

Zonal Lumen Summary

Zone	Lumens	%Lamp	%Fixt
0-20	137.85	N.A.	7.10
0-30	298.00	N.A.	15.30
0-40	500.72	N.A.	25.70
0-60	957.90	N.A.	49.10
0-80	1360.86	N.A.	69.80
0-90	1489.27	N.A.	76.30
10-90	1453.99	N.A.	74.50
20-40	362.87	N.A.	18.60
20-50	589.52	N.A.	30.20
40-70	673.10	N.A.	34.50
60-80	402.96	N.A.	20.70
70-80	187.04	N.A.	9.60
80-90	128.41	N.A.	6.60
90-110	193.52	N.A.	9.90
90-120	275.17	N.A.	14.10
90-130	339.00	N.A.	17.40
90-150	422.71	N.A.	21.70
90-180	461.41	N.A.	23.70
110-180	267.89	N.A.	13.70
0-180	1950.68	N.A.	100.00

Zonal Lumen Summary

Zone	Lumens
0-10	35.29
10-20	102.56
20-30	160.16
30-40	202.72
40-50	226.64
50-60	230.54
60-70	215.92
70-80	187.04
80-90	128.41
90-100	93.02
100-110	100.50
110-120	81.65
120-130	63.83
130-140	48.51
140-150	35.20
150-160	22.81
160-170	12.03
170-180	3.86

Total Luminaire Efficiency = N.A. %

5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2019/12/26	2020/12/25
DLF108	Auxiliary Lamp	2019/12/26	2020/12/25
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-derectional	2019/12/26	2020/12/25
DLF116	AC Power Source	2019/12/26	2020/12/25
DLF113	Power Meter	2019/12/26	2020/12/25
DLF112	Temperature Recorder	2019/12/26	2020/12/25
DLF114	Temperature & Humidity Datalogger	2019/12/26	2020/12/25
DLF101	Goniophotometer	2019/12/26	2020/12/25
DLF125	Standard Lamp Standard Lamp Type: 76.58 V, 6.7875 A, Tungsten, Omni-derectional	2019/12/26	2020/12/25
DLF104	AC Power Source	2019/12/26	2020/12/25
DLF507	DC Power Source	2019/12/26	2020/12/25
DLF102	Power Meter	2019/12/26	2020/12/25
DLF111	Temperature & Humidity Datalogger	2019/12/26	2020/12/25
DLF119	Power Meter	2019/12/26	2020/12/25
DLF031	Temperature data logger	2019/12/26	2020/12/25
DLF022	Digital power meter	2019/12/26	2020/12/25
DLF003	Temperature & Humidity Datalogger	2019/12/26	2020/12/25

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