

Photometric Test Report

Relevant Standards

- ☒ IES LM-79-2019
- ☒ ANSI C82.77:2014

Prepared For

RAB Lighting Inc.

408 W 14th St, New York, NY 10014 United States

Xiao Xiang, 15921313292, Gary.Xiao@rablighting.com

Prepared By

Deliver Co., Ltd.

Block 11, 78 Keling Road, SSTP, Suzhou, China

0512-66801950, kevin.jia@szdeliver.com

Project Number

DLF2501116

Report Number

DLF2501116-9a

Test Date

2025/1/17

Issue Date

2025/1/17

Test By

Hengshan Li

Hengshan Li

Prepared By

Wangzun Zhu

Wangzun Zhu

Approved By

Kevin Jia

Kevin Jia

The results contained in this report pertain only to the tested sample.

This report shall not be reproduced, except in full, without written approval of Deliver Co., Ltd.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP.

1.0 Test Summary

DLC Technical Requirements v5.1

Indoor - High Bay Luminaires (Commercial and Industrial)				
Requirement Category	Test Method	Requirements		Test value
Luminaire Output (lm) (Goniophotometer - Section 4.2)	IES LM-79-2019	10000		22090
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2019	Standard 120	Premium 135	144.4
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2019	Worst Case		153.0
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%		9.70%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9		0.942
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2019	7 step	5029±283	5090
		4 step	5029±220	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2019 CIE 13.3-1995	≥70		81
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2019 CIE 13.3-1995	≥-40		-8
Minimum Rf (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥70		82
Minimum Rg (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥89		95
Minimum IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-15%
Zonal Lumen Requirement (20°-50°) (Goniophotometer - Section 4.2)	IES LM-79-2019	≥30%		64.54%
Corrected UGR (X=4H, Y=8H, 70/50/20%) (Goniophotometer - Section 4.2)	CIE 190-2010	<28		26.6
Input Voltage (V)				
(Goniophotometer - Section 4.2)	IES LM-79-2019	Worst Case		480
Input Current (A)				
(Goniophotometer - Section 4.2)	IES LM-79-2019	Worst Case		0.338
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2019	Worst Case		153.0

2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2025/1/17	H17/480 @ 150W/5000K	N/A	DLF2501116-I1
2	Goniophotometer Test	2025/1/17	H17/480 @ 150W/5000K	N/A	DLF2501116-I1
3	THD and PF Test	2025/1/17	H17/480 @ 150W/5000K	N/A	DLF2501116-I1

Remark(If any)

1. This report shall not be used by the client to claim product endorsement by NVLAP, NIST or any agency of the US government.

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.

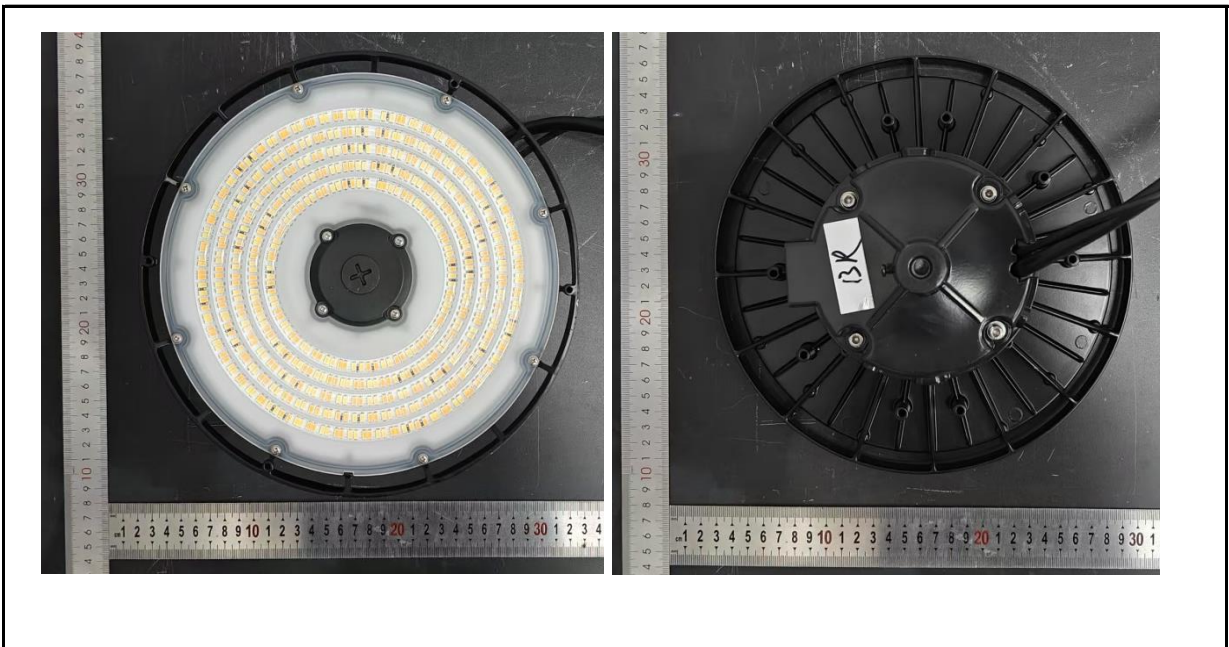
3.0 Production Description

Luminaire Description: H17/480 @ 150W/5000K

Electrical Specification: 480V,50/60HZ

Sample Received Date: 2025/1/16

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	H17/480 @ 150W/5000K	Sample ID.	DLF2501116-I1
Operate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.3	Humidity (%RH)	56.0

Test Method

The samples were tested according to the IES LM-79-2019.

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature and relative humidity condition inside the sphere was maintained at 25° C ± 1.2° C and 10% - 65% RH.

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
480.06	60	0.337	152.4	0.942

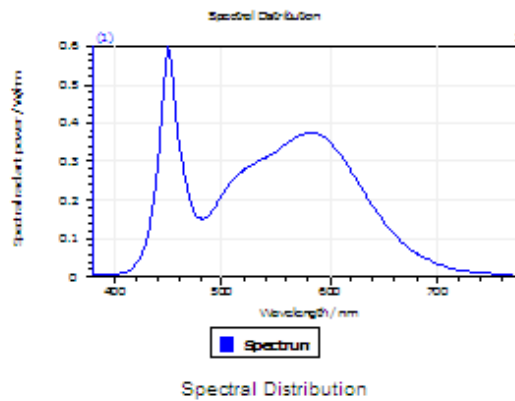
Test Result

CCT (K)	CRI	R9	Duv
5090	81	-8	0.00031

Rf	Rg	IES Rcs,h1
82	95	-15%

4.1 Integrating Sphere Test

Results



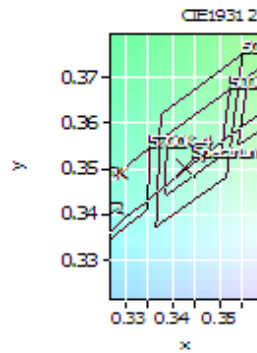
Spectral values

DominantWavelength 571.08 nm
Purity 0.079
PeakWavelength 450.31 nm
Radiant Power 69.42 W
Width50%:

Color Coordinates

Correlated Color Temperat 5090 K
x: 0.3427 u: 0.2103 u': 0.2103
y: 0.3503 v: 0.3225 v': 0.4837
CRI01 78.5 CRI09 -8.3
CRI02 87.3 CRI10 69.7
CRI03 92.7 CRI11 78.9
CRI04 79.9 CRI12 61.9
CRI05 79.8 CRI13 80.8
CRI06 81.8 CRI14 96.3
CRI07 84.2 CRI15 72.2
CRI08 61.6 CRI16 70.6

ResultsCRI 80.7



PlandDistance 3.1E-004

4.1 Integrating Sphere Test

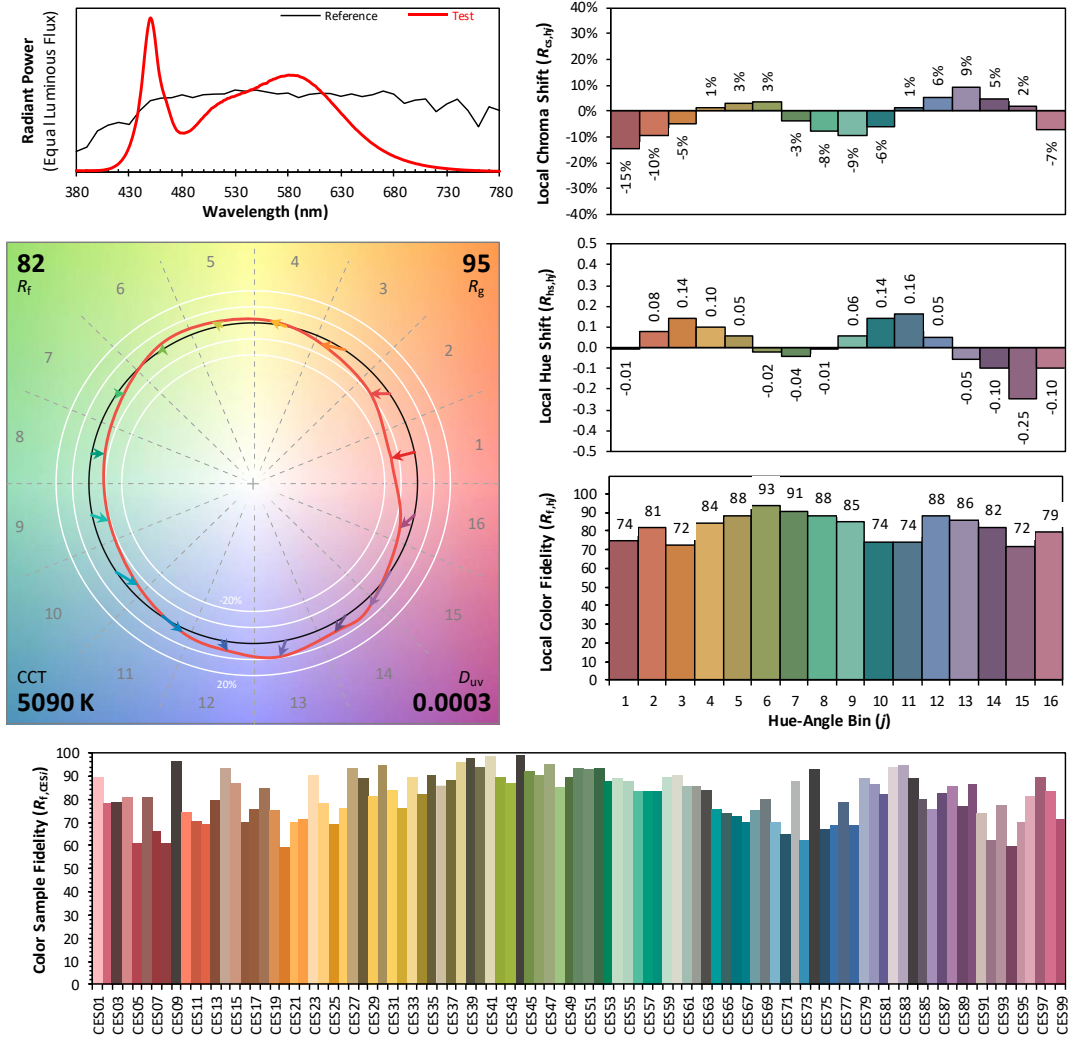
IES TM-30-18 Color Rendition Report

Source: DLF2501116-9a

Manufacturer: RAB Lighting Inc.

Date: 2025/1/17

Model: H17/480 @ 150W/5000K



Notes: This is a recommended method for displaying IES TM-30-18 information.

x 0.3427
 y 0.3503
 u' 0.2103
 v' 0.4837

CIE 13.3-1995
(CRI)

R_a 81
 R_g -2

4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength							
WL (nm)	Radiant (Watts/nm)	WL (nm)	Radiant (Watts/nm)	WL (nm)	Radiant (Watts/nm)	WL (nm)	Radiant (Watts/nm)
380	5.56E-03	485	1.55E-01	590	3.71E-01	695	3.92E-02
385	5.58E-03	490	1.68E-01	595	3.63E-01	700	3.38E-02
390	5.82E-03	495	1.89E-01	600	3.51E-01	705	2.90E-02
395	6.04E-03	500	2.12E-01	605	3.35E-01	710	2.48E-02
400	6.40E-03	505	2.33E-01	610	3.17E-01	715	2.12E-02
405	7.77E-03	510	2.52E-01	615	2.97E-01	720	1.82E-02
410	1.16E-02	515	2.66E-01	620	2.74E-01	725	1.58E-02
415	1.93E-02	520	2.78E-01	625	2.52E-01	730	1.37E-02
420	3.26E-02	525	2.87E-01	630	2.28E-01	735	1.17E-02
425	5.67E-02	530	2.94E-01	635	2.06E-01	740	1.01E-02
430	9.77E-02	535	3.02E-01	640	1.83E-01	745	8.67E-03
435	1.66E-01	540	3.09E-01	645	1.63E-01	750	7.47E-03
440	2.81E-01	545	3.18E-01	650	1.44E-01	755	6.55E-03
445	4.67E-01	550	3.26E-01	655	1.26E-01	760	5.55E-03
450	5.96E-01	555	3.37E-01	660	1.10E-01	765	4.94E-03
455	4.93E-01	560	3.43E-01	665	9.54E-02	770	4.31E-03
460	3.46E-01	565	3.56E-01	670	8.28E-02	775	3.80E-03
465	2.74E-01	570	3.65E-01	675	7.16E-02	780	3.26E-03
470	2.06E-01	575	3.70E-01	680	6.18E-02		
475	1.61E-01	580	3.75E-01	685	5.35E-02		
480	1.51E-01	585	3.74E-01	690	4.55E-02		

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	H17/480 @ 150W/5000K	Sample ID.	DLF2501116-I1
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-79-2019.

Photometric parameters were measured using a type C goniophotometer and software.

The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$ and 10% - 65% RH, 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.

Airflow for the instantaneous tangential velocity of any point on the DUT shall be less than an upper tolerance limit of 0.20 m/s.

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
WORST CASE	480.07	60	0.338	153.0	0.942

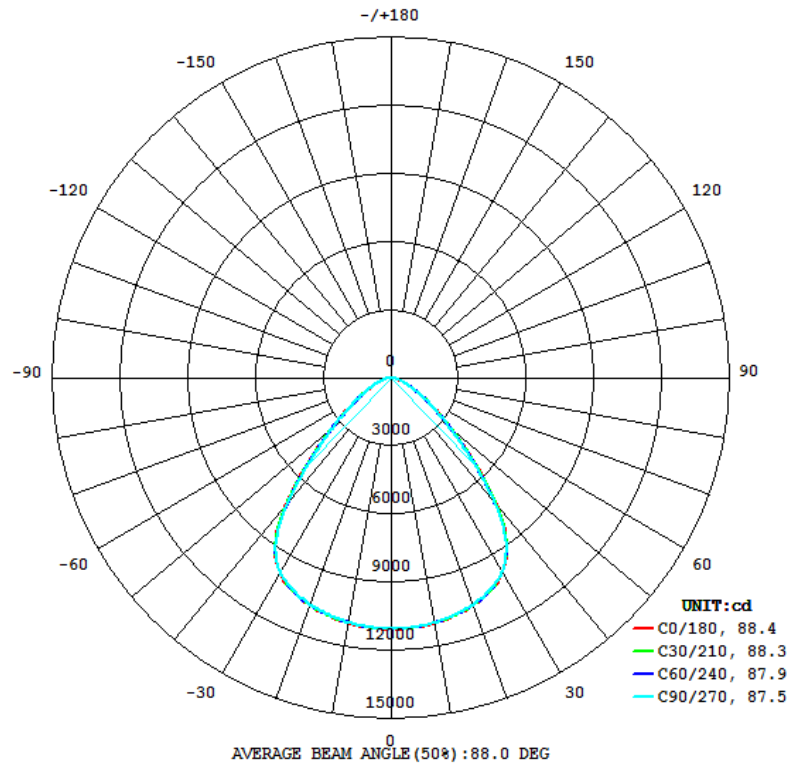
Test Result

Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
22090	128.9	129.2	88.4	87.5	144.4

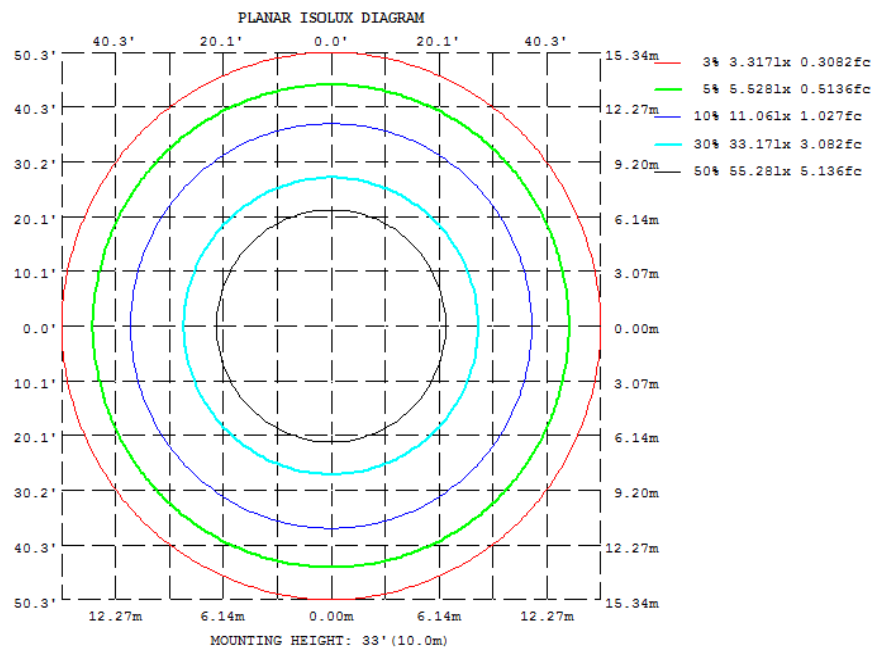
Zonal Lumen Requirement (20° - 50°)	UGR (X=4H, Y=8H, 70/50/20%)
64.54%	26.6

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	1095	1095	1094	1095	1095	1095	1094	1095
20	1063	1062	1061	1062	1063	1062	1061	1062
30	986.9	987.0	986.6	987.0	986.9	987.0	986.6	987.0
40	731.1	724.1	716.1	724.1	731.1	724.1	716.1	724.1
50	348.2	347.3	341.2	347.3	348.2	347.3	341.2	347.3
60	158.7	158.4	159.7	158.4	158.7	158.4	159.7	158.4
70	68.14	67.86	68.92	67.86	68.14	67.86	68.92	67.86
80	20.45	20.26	20.52	20.26	20.45	20.26	20.52	20.26
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:X10cd							

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											
X=2H Y=2H	UGR Viewed Crosswise					UGR Viewed Endwise					
3H	24.7	26.1	25.1	26.4	26.7	24.7	26.1	25.1	26.4	26.7	
4H	25.6	26.8	26.0	27.1	27.5	25.6	26.8	25.9	27.1	27.5	
6H	25.8	27.0	26.2	27.3	27.7	25.8	26.9	26.2	27.3	27.7	
8H	25.9	27.0	26.4	27.4	27.8	25.9	27.0	26.3	27.3	27.7	
12H	26.0	26.9	26.4	27.3	27.7	25.9	26.9	26.4	27.3	27.7	
4H	26.0	26.9	26.4	27.3	27.7	25.9	26.9	26.4	27.2	27.7	
2H	25.0	26.1	25.4	26.5	26.9	25.0	26.1	25.4	26.5	26.9	
3H	26.0	27.0	26.4	27.4	27.8	26.0	26.9	26.4	27.3	27.7	
4H	26.3	27.2	26.8	27.6	28.0	26.3	27.1	26.7	27.6	28.0	
6H	26.5	27.3	27.0	27.7	28.2	26.5	27.2	27.0	27.7	28.1	
8H	26.6	27.2	27.0	27.7	28.1	26.5	27.2	27.0	27.7	28.1	
12H	26.6	27.2	27.0	27.6	28.1	26.5	27.1	27.0	27.6	28.1	
8H	26.4	27.1	26.9	27.5	28.0	26.4	27.0	26.9	27.5	28.0	
6H	26.6	27.2	27.1	27.7	28.2	26.6	27.2	27.1	27.7	28.1	
8H	26.7	27.2	27.2	27.7	28.2	26.7	27.2	27.2	27.7	28.2	
12H	26.7	27.2	27.2	27.6	28.2	26.7	27.1	27.2	27.6	28.2	
12H	26.4	27.0	26.9	27.5	27.9	26.4	26.9	26.8	27.4	27.9	
6H	26.6	27.1	27.2	27.6	28.1	26.6	27.1	27.1	27.6	28.1	
8H	26.7	27.1	27.2	27.6	28.2	26.7	27.1	27.2	27.6	28.2	
Maximum UGR = 28.2											

4.2 Goniophotometer Test

ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0-10	1050.40	0 - 10	1050.40	4.76%
10-20	3057.91	0 - 20	4108.31	18.60%
20-30	4762.79	0 - 30	8871.10	40.16%
30-40	5501.26	0 - 40	14372.36	65.06%
40-50	3992.88	0 - 50	18365.24	83.14%
50-60	2138.03	0 - 60	20503.27	92.82%
60-70	1064.16	0 - 70	21567.43	97.64%
70-80	440.16	0 - 80	22007.59	99.63%
80-90	81.94	0 - 90	22089.53	100.00%
90-100	0.00	0 - 100	22089.53	100.00%
100-110	0.00	0 - 110	22089.53	100.00%
110-120	0.00	0 - 120	22089.53	100.00%
120-130	0.00	0 - 130	22089.53	100.00%
130-140	0.00	0 - 140	22089.53	100.00%
140-150	0.00	0 - 150	22089.53	100.00%
150-160	0.00	0 - 160	22089.53	100.00%
160-170	0.00	0 - 170	22089.53	100.00%
170-180	0.00	0 - 180	22089.53	100.00%

4.2 Goniophotometer Test

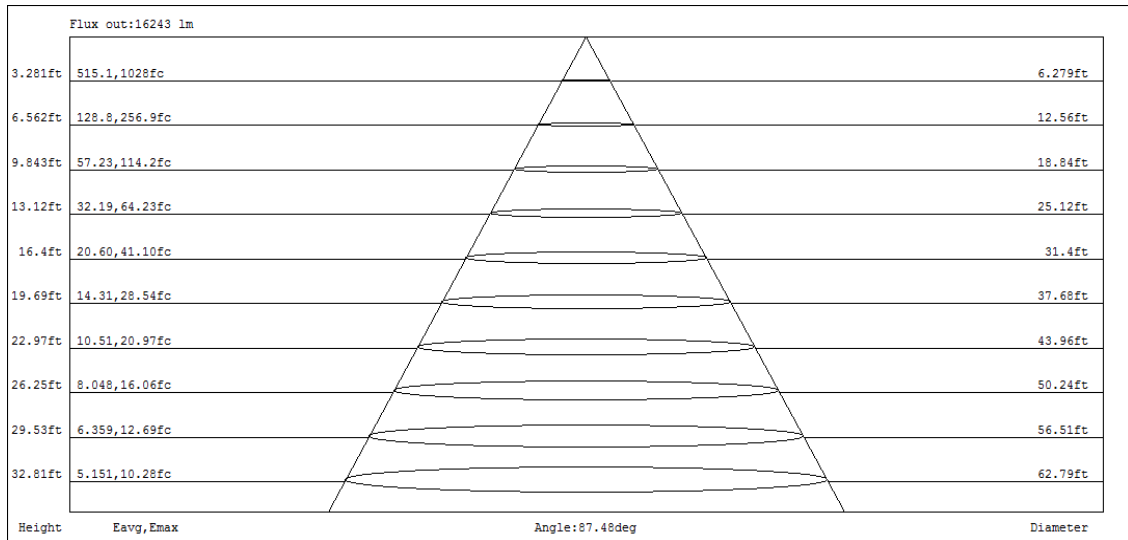
COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

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	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	111	108	104	101	109	105	102	100	101	99	97	98	96	94	94	92	91	89
2	103	97	91	87	101	95	90	86	92	88	84	89	85	82	86	83	80	78
3	96	87	81	75	94	86	80	75	83	78	74	80	76	72	78	74	71	69
4	89	79	72	66	87	78	71	66	76	70	65	73	68	64	71	67	63	61
5	83	72	64	59	81	71	64	58	69	63	58	67	62	57	65	60	57	55
6	77	66	58	52	75	65	57	52	63	57	52	62	56	51	60	55	51	49
7	72	60	52	47	71	59	52	47	58	51	47	57	51	46	55	50	46	44
8	67	55	48	43	66	55	48	43	54	47	42	52	46	42	51	46	42	40
9	63	51	44	39	62	51	44	39	50	43	39	49	43	38	48	42	38	37
10	60	48	40	36	58	47	40	35	46	40	35	45	39	35	44	39	35	33

CONE OF LIGHT DIAGRAM



4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	H17/480 @ 150W/5000K	Sample ID.	DLF2501116-I1
Temperature (°C)	25.3	Humidity (%RH)	56.0

Test Method

The samples were tested according to the ANSI C82.77:2014.

The total harmonic distortion shall be measured 2 to 50 magnitude orders for a 100-kHz meter, and 2 to 100 magnitude orders for a 1-MHz meter.

The ambient temperature shall be maintained at $25^{\circ}\text{C} \pm 1.0^{\circ}\text{C}$ and 10% - 65% RH. 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

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
480.06	60	0.337	152.4	0.942	9.70%

5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2024/12/24	2025/12/23
DLF108	Auxiliary Lamp	2024/12/24	2025/12/23
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-directional	2024/12/24	2025/12/23
DLF116	AC Power Source	2024/12/16	2025/12/15
DLF516	Power Meter	2024/12/16	2025/12/15
DLF112	Temperature Recorder	2024/12/28	2025/12/27
DLF114	Temperature & Humidity Datalogger	2024/12/28	2025/12/27
DLF101	Goniophotometer	2024/12/24	2025/12/23
DLF511	AC Power Source	2024/12/16	2025/12/15
DLF512	AC Power Source	2024/12/16	2025/12/15
DLF513	AC Power Source	2024/12/16	2025/12/15
DLF507	DC Power Source	2024/12/16	2025/12/15
DLF111	Temperature & Humidity Datalogger	2024/12/28	2025/12/27
DLF119	Power Meter	2024/12/16	2025/12/15

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