



# Photometric Test Report

## Relevant Standards

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

## Prepared For

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## Project Number

**DLF2501116**

## Report Number

**DLF2501116-14a**

## Test Date

**2025/1/16**

## Issue Date

**2025/1/16**

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## 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		30781
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)		IES LM-79-2019	Standard 120	Premium 135	161.4
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)		IES LM-79-2019	Worst Case		190.7
Total Harmonic Distortion (A%) (THD & PF - section 4.3)		ANSI C82.77:2014	20.00%		10.55%
Power Factor (THD & PF - section 4.3)		ANSI C82.77:2014	0.9		0.947
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)		IES LM-79-2019	7 step	3985±275	3867
			4 step	3985±154	
Minimum CRI (Integrating Sphere - Section 4.1)		IES LM-79-2019 CIE 13.3-1995	≥70		83
Minimum R9 (Integrating Sphere - Section 4.1)		IES LM-79-2019 CIE 13.3-1995	≥-40		5
Minimum Rf (Integrating Sphere - Section 4.1)		ANSI/IES TM-30-18	≥70		83
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%		-13%
Zonal Lumen Requirement (20°-50°) (Goniophotometer - Section 4.2)		IES LM-79-2019	≥30%		62.43%
Corrected UGR (X=4H, Y=8H, 70/50/20%) (Goniophotometer - Section 4.2)		CIE 190-2010	<28		27.4
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		0.420
Power (Input Wattage - W)					
(Goniophotometer - Section 4.2)		IES LM-79-2019	Worst Case		190.7

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2025/1/16	H17XL/480 @ 200W/4000K	N/A	DLF2501116-N1
2	Goniophotometer Test	2025/1/16	H17XL/480 @ 200W/4000K	N/A	DLF2501116-N1
3	THD and PF Test	2025/1/16	H17XL/480 @ 200W/4000K	N/A	DLF2501116-N1

### 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.

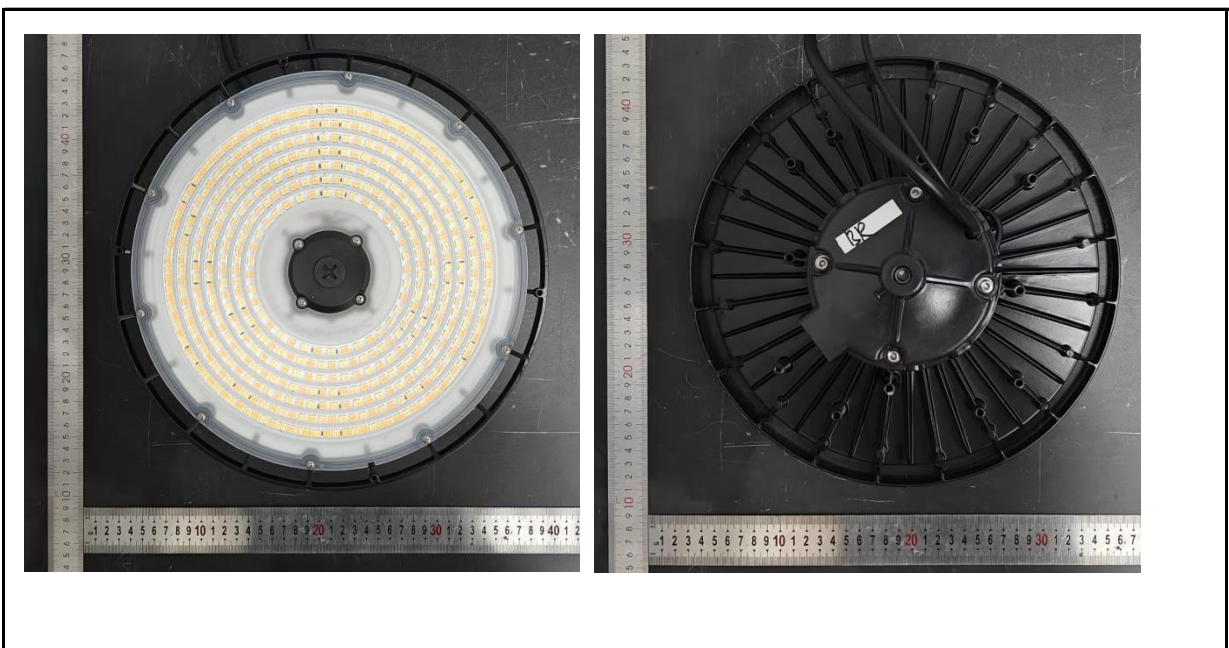
## 3.0 Production Description

**Luminaire Description:** H17XL/480 @ 200W/4000K

**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.	H17XL/480 @ 200W/4000K	Sample ID.	DLF2501116-N1
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  $25^{\circ}\text{C} \pm 1.2^{\circ}\text{C}$  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  $\pm 0.2$  percent under load.

The sample was measured using  $4\pi$  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
479.93	60	0.416	189.2	0.947

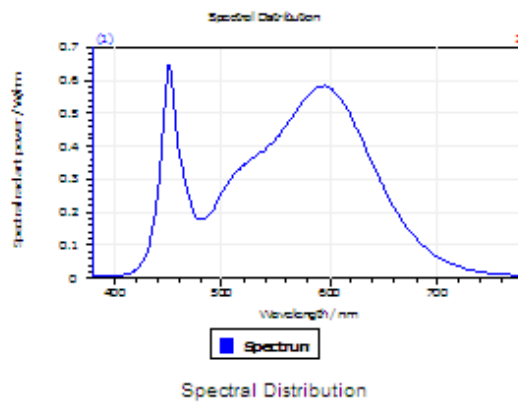
#### Test Result

CCT (K)	CRI	R9	Duv
3867	83	5	-0.003

Rf	Rg	IES Rcs,h1
83	95	-13%

## 4.1 Integrating Sphere Test

### Results



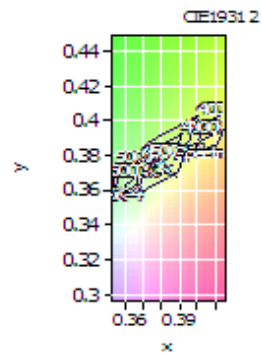
#### Spectral values

DominantWavelength 581.30 nm  
Purity 0.271  
PeakWavelength 451.08 nm  
Radiant Power 98.72 W  
Width50%:

#### Color Coordinates

Correlated Color Temperat 3887 K  
x: 0.3841 u: 0.2293 u': 0.2293  
y: 0.3725 v: 0.3335 v': 0.5003

CRI01	81.3	CRI09	4.5
CRI02	90.6	CRI10	77.7
CRI03	95.4	CRI11	80.1
CRI04	81.1	CRI12	65.2
CRI05	82.2	CRI13	83.7
CRI06	88.8	CRI14	98.1
CRI07	83.7	CRI15	75.2
CRI08	61.7	CRI16	72.4
ResultsCRI	82.9		



PlanckDistance 3.0E-003

## 4.1 Integrating Sphere Test

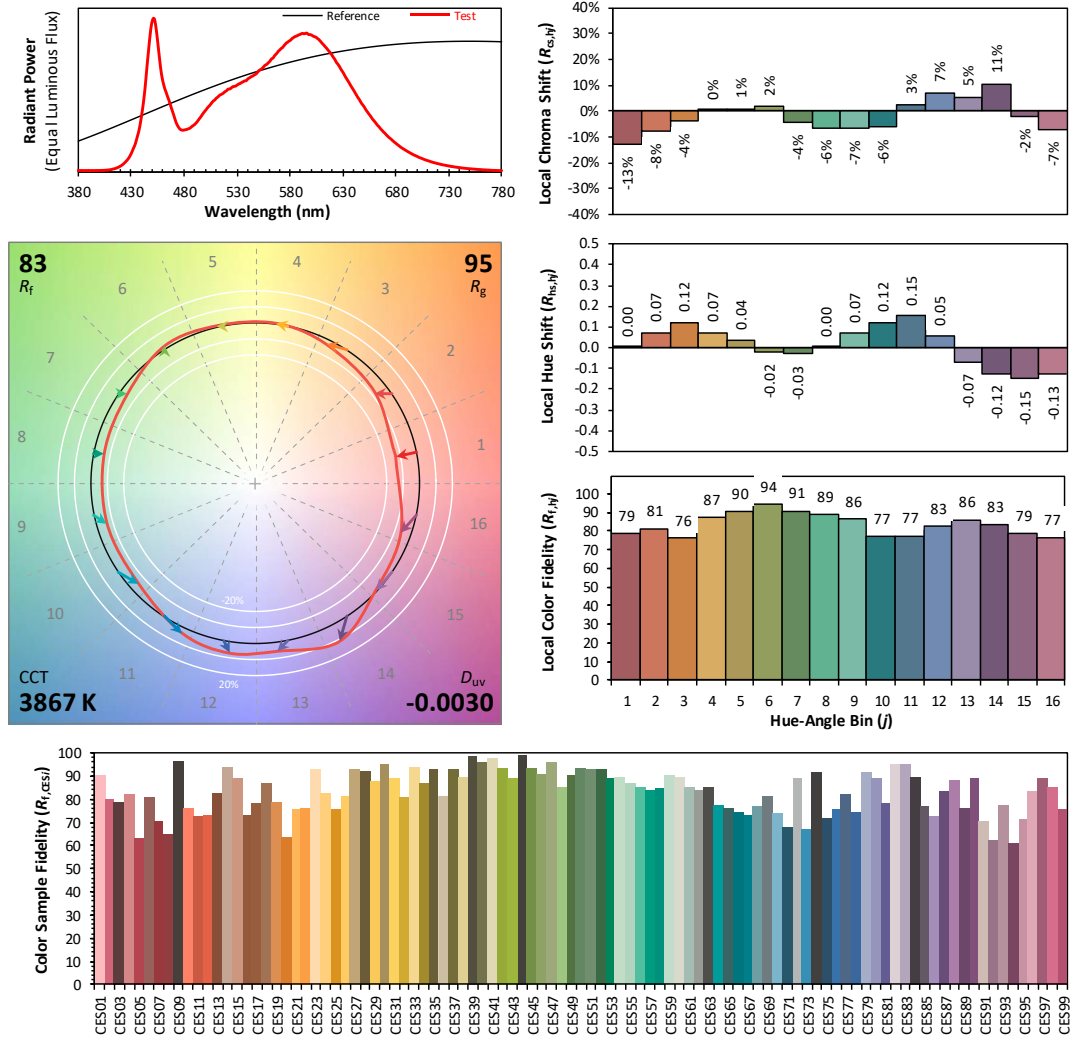
### IES TM-30-18 Color Rendition Report

Source: DLF2501116-14a

Manufacturer: RAB Lighting Inc.

Date: 2025/1/16

Model: H17XL/480 @ 200W/4000K



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

$x$  0.3841  
 $y$  0.3725  
 $u'$  0.2293  
 $v'$  0.5003

CIE 13.3-1995  
(CRI)

$R_a$  83  
 $R_g$  7



#### 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	6.66E-03	485	1.84E-01	590	5.80E-01	695	7.72E-02
385	6.63E-03	490	2.01E-01	595	5.84E-01	700	6.65E-02
390	6.40E-03	495	2.28E-01	600	5.77E-01	705	5.69E-02
395	6.64E-03	500	2.59E-01	605	5.66E-01	710	4.86E-02
400	6.99E-03	505	2.85E-01	610	5.44E-01	715	4.14E-02
405	7.80E-03	510	3.09E-01	615	5.19E-01	720	3.56E-02
410	1.01E-02	515	3.27E-01	620	4.90E-01	725	3.04E-02
415	1.55E-02	520	3.42E-01	625	4.56E-01	730	2.60E-02
420	2.59E-02	525	3.56E-01	630	4.20E-01	735	2.23E-02
425	4.49E-02	530	3.66E-01	635	3.83E-01	740	1.90E-02
430	7.81E-02	535	3.79E-01	640	3.46E-01	745	1.64E-02
435	1.37E-01	540	3.91E-01	645	3.09E-01	750	1.42E-02
440	2.44E-01	545	4.05E-01	650	2.75E-01	755	1.23E-02
445	4.48E-01	550	4.23E-01	655	2.42E-01	760	1.08E-02
450	6.37E-01	555	4.42E-01	660	2.13E-01	765	9.22E-03
455	5.49E-01	560	4.62E-01	665	1.86E-01	770	7.93E-03
460	3.81E-01	565	4.87E-01	670	1.62E-01	775	7.06E-03
465	3.10E-01	570	5.12E-01	675	1.41E-01	780	6.17E-03
470	2.42E-01	575	5.35E-01	680	1.22E-01		
475	1.87E-01	580	5.53E-01	685	1.04E-01		
480	1.77E-01	585	5.70E-01	690	8.99E-02		

## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

Model No.	H17XL/480 @ 200W/4000K	Sample ID.	DLF2501116-N1
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  $\pm 0.2$  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  $0.5^{\circ}$  vertical intervals and  $10^{\circ}$  horizontal intervals.

#### Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	480.02	60	0.420	190.7	0.947

#### Test Result

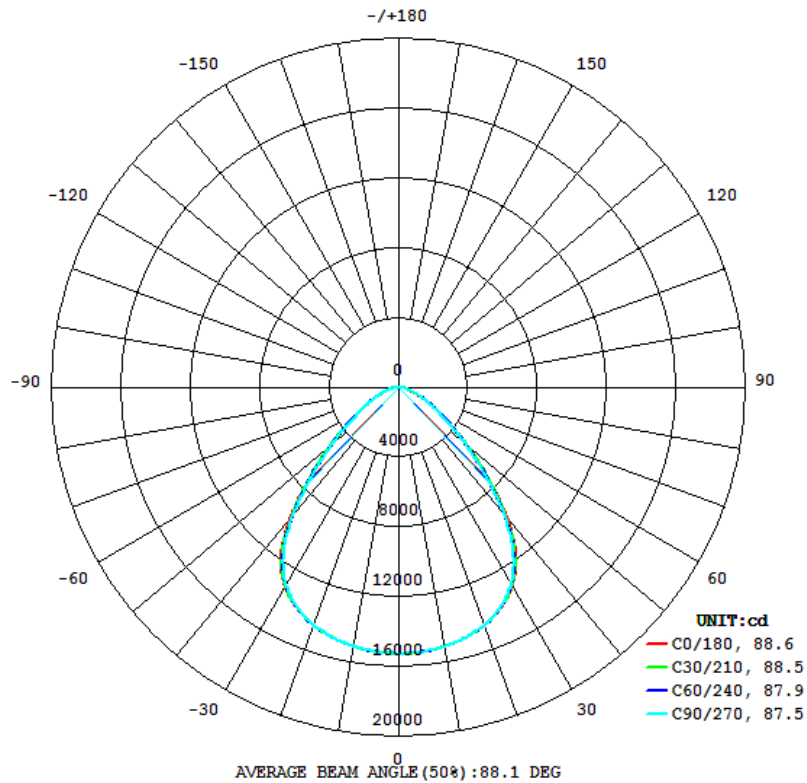
Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
30781	132.7	133.2	88.6	87.5	161.4

Zonal Lumen Requirement ( $20^{\circ}$ - $50^{\circ}$ )	UGR (X=4H, Y=8H, 70/50/20%)
62.43%	27.4

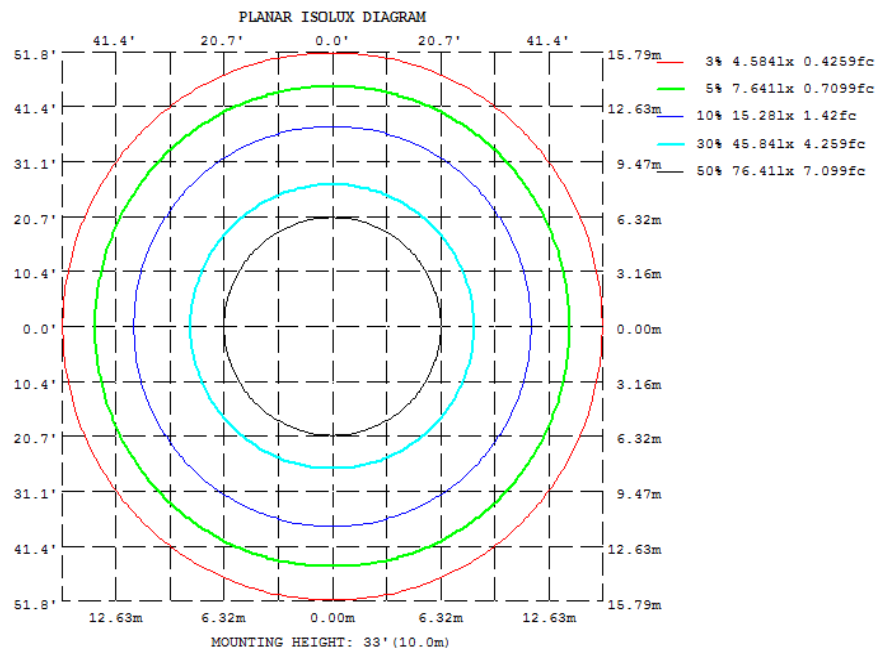


## 4.2 Goniophotometer Test

### Light Distrubtion Curve



### Isolux Plot



## 4.2 Goniophotometer Test

### Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	1509	1507	1509	1507	1509	1507	1509	1507
20	1450	1447	1449	1447	1450	1447	1449	1447
30	1316	1308	1305	1308	1316	1308	1305	1308
40	977.7	963.7	948.3	963.7	977.7	963.7	948.3	963.7
50	514.4	514.6	502.2	514.6	514.4	514.6	502.2	514.6
60	247.6	250.5	247.8	250.5	247.6	250.5	247.8	250.5
70	113.9	115.9	117.2	115.9	113.9	115.9	117.2	115.9
80	37.44	38.06	38.81	38.06	37.44	38.06	38.81	38.06
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

<b>UGR Table - Corrected</b>											
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	25.1	26.5	25.5	26.8	27.1	25.1	26.5	25.4	26.8	27.1	
4H	26.1	27.3	26.5	27.7	28.0	26.0	27.3	26.4	27.6	28.0	
6H	26.4	27.6	26.8	27.9	28.3	26.3	27.5	26.7	27.8	28.2	
8H	26.6	27.7	27.0	28.0	28.4	26.5	27.6	26.9	27.9	28.3	
12H	26.6	27.6	27.1	28.0	28.4	26.5	27.5	27.0	27.9	28.3	
4H 2H	25.4	26.6	25.8	26.9	27.3	25.4	26.6	25.8	26.9	27.3	
4H 3H	26.6	27.6	27.0	28.0	28.4	26.5	27.5	27.0	27.9	28.3	
4H 4H	27.0	27.9	27.5	28.3	28.7	26.9	27.8	27.4	28.2	28.6	
4H 6H	27.3	28.0	27.8	28.5	28.9	27.2	27.9	27.6	28.4	28.8	
4H 8H	27.4	28.0	27.8	28.5	29.0	27.2	27.9	27.7	28.4	28.8	
4H 12H	27.4	28.0	27.9	28.5	28.9	27.3	27.9	27.7	28.4	28.8	
8H 4H	27.1	27.8	27.6	28.3	28.7	27.0	27.7	27.5	28.2	28.6	
8H 6H	27.5	28.0	28.0	28.5	29.0	27.4	27.9	27.9	28.4	28.9	
8H 8H	27.6	28.1	28.1	28.6	29.1	27.5	28.0	28.0	28.5	29.0	
8H 12H	27.6	28.1	28.1	28.6	29.1	27.5	28.0	28.0	28.5	29.0	
12H 4H	27.1	27.7	27.6	28.2	28.7	27.0	27.6	27.5	28.1	28.6	
12H 6H	27.5	28.0	28.0	28.4	29.0	27.4	27.9	27.9	28.3	28.9	
12H 8H	27.6	28.0	28.1	28.5	29.1	27.5	27.9	28.0	28.4	29.0	
Maximum UGR = 29.1											

## 4.2 Goniophotometer Test

### ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0-10	1447.84	0 - 10	1447.84	4.70%
10-20	4190.69	0 - 20	5638.53	18.32%
20-30	6405.25	0 - 30	12043.78	39.13%
30-40	7236.46	0 - 40	19280.24	62.64%
40-50	5575.51	0 - 50	24855.75	80.75%
50-60	3253.44	0 - 60	28109.19	91.32%
60-70	1733.20	0 - 70	29842.39	96.95%
70-80	777.33	0 - 80	30619.72	99.48%
80-90	160.93	0 - 90	30780.65	100.00%
90-100	0.00	0 - 100	30780.65	100.00%
100-110	0.00	0 - 110	30780.65	100.00%
110-120	0.00	0 - 120	30780.65	100.00%
120-130	0.00	0 - 130	30780.65	100.00%
130-140	0.00	0 - 140	30780.65	100.00%
140-150	0.00	0 - 150	30780.65	100.00%
150-160	0.00	0 - 160	30780.65	100.00%
160-170	0.00	0 - 170	30780.65	100.00%
170-180	0.00	0 - 180	30780.65	100.00%

## 4.2 Goniophotometer Test

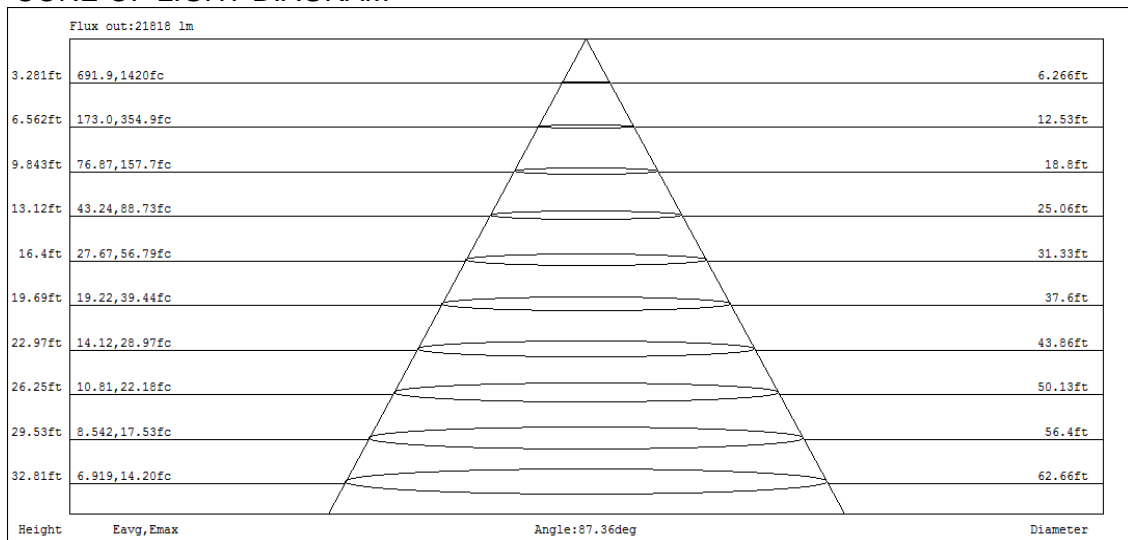
### COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

#### 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	107	104	101	108	105	102	99	101	98	96	97	95	93	94	92	90	89
2	103	96	91	86	100	94	89	85	91	87	83	88	84	81	85	82	79	77
3	95	87	80	74	93	85	79	74	82	77	72	80	75	71	77	73	70	68
4	88	78	71	65	86	77	70	65	75	69	64	72	67	63	70	66	62	60
5	82	71	63	57	80	70	63	57	68	61	57	66	60	56	64	59	55	54
6	76	65	57	51	75	64	56	51	62	56	51	61	55	50	59	54	50	48
7	71	59	51	46	70	59	51	46	57	50	46	56	50	45	54	49	45	43
8	67	55	47	42	65	54	47	42	53	46	41	51	45	41	50	45	41	39
9	63	50	43	38	61	50	43	38	49	42	38	48	42	37	47	41	37	36
10	59	47	40	35	58	46	39	35	45	39	34	44	39	34	44	38	34	33

### CONE OF LIGHT DIAGRAM



## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

Model No.	H17XL/480 @ 200W/4000K	Sample ID.	DLF2501116-N1
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
479.93	60	0.416	189.2	0.947	10.55%

## 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\*\*\*\*\*