

# Photometric Test Report

## Relevant Standards

- ☒ IES LM-79-2019
- ☒ ANSI C82.77-10:2014

## Prepared For

**RAB Lighting Inc.**

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## Project Number

**DLF2509110**

## Report Number

**DLF2509110-40a**

## Test Date

**2025/10/9**

## Issue Date

**2025/10/10**

### Test By

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## 1.0 Test Summary

DLC Technical Requirements v5.1

Indoor - Linear Ambient - Linear Ambient Luminaires (Indirect Component)				
Requirement Category	Test Method	Requirements		Test value
Luminaire Output (lm) (Goniophotometer - Section 4.2)	IES LM-79-2019	1500		4025
Lumen/ft (Goniophotometer - Section 4.2)	IES LM-79-2019	≥500		1342
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2019	Standard 115	Premium 130	133.3
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2019	Wrosted Case		30.2
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77-10: 2014	20.00%	120V	3.35%
		20.00%	277V	9.42%
Power Factor (THD & PF - section 4.3)	ANSI C82.77-10: 2014	0.9	120V	0.995
		0.9	277V	0.909
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2019	7 step	3045±175	2998
		4 step	3045±100	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2019 CIE 13.3-1995	≥80		94
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2019 CIE 13.3-1995	≥0		60
Minimum Rf (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥70		91
Minimum Rg (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥89		100
Minimum IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-12%≤IES Rcs,h1≤+23%		-5%
Zonal Lumen Requirement (90°-150°) (Goniophotometer - Section 4.2)	IES LM-79-2019	≥35%		28.18%
Corrected UGR (X=4H, Y=8H, 70/50/20%) (Goniophotometer - Section 4.2)	CIE 190-2010	<22		26.0
Input Voltage (V)				
(Goniophotometer - Section 4.2)	IES LM-79-2019	Worst Case		120
(Goniophotometer - Section 4.2)		Non-Worst Case		277
Input Current (A)				
(Goniophotometer - Section 4.2)	IES LM-79-2019	Worst Case		0.253
(Goniophotometer - Section 4.2)		Non-Worst Case		0.120
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2019	Worst Case		30.2
(Goniophotometer - Section 4.2)		Non-Worst Case		30.2

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2025/10/9	BOAE3PU @ 30W/3000K/60%/40%	N/A	DLF2509110-AN1
2	Goniophotometer Test	2025/10/9	BOAE3PU @ 30W/3000K/60%/40%	N/A	DLF2509110-AN1
3	THD and PF Test	2025/10/9	BOAE3PU @ 30W/3000K/60%/40%	N/A	DLF2509110-AN1

### 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.

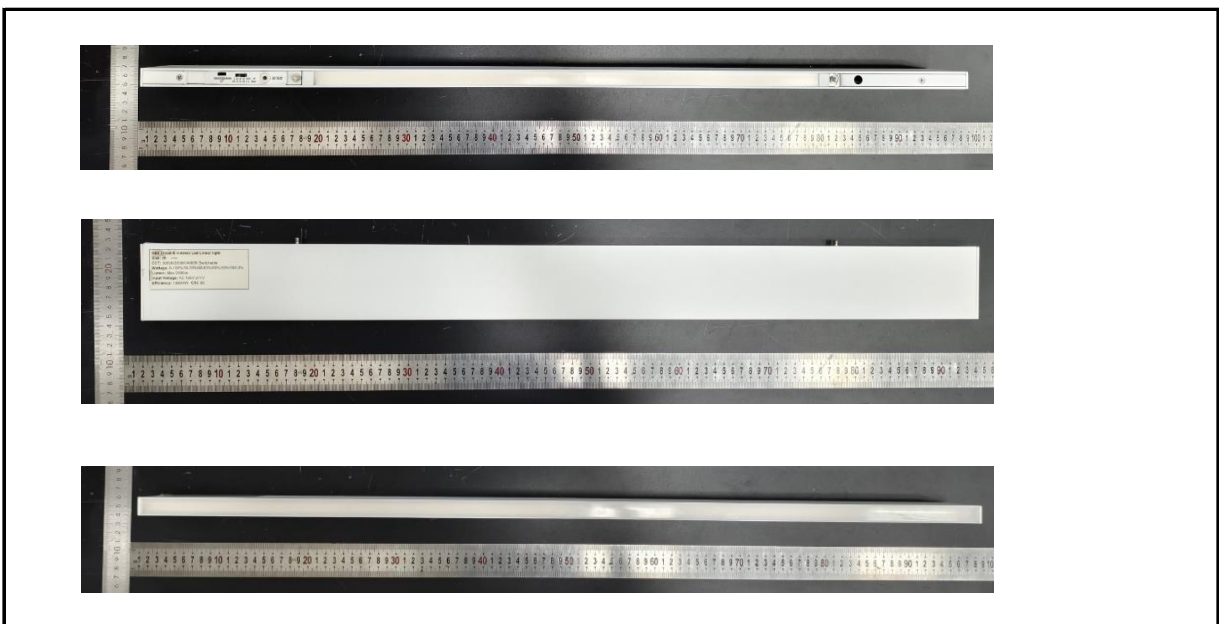
## 3.0 DUT Description

**Model Number:** BOAE3PU @ 30W/3000K/60%/40%

**Electrical Rating:** 120V-277V,50/60HZ

**Received Date:** 2025/10/9

### Photos of Luminaire Characteristics



## 4.0 LM-79 Measurement and Test Results

### 4.1 Integrating Sphere Test

Model No.	BOAE3PU @ 30W/3000K/60%/40%	Sample ID.	DLF2509110-AN1
Operate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.2	Humidity (%RH)	55.2

#### 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

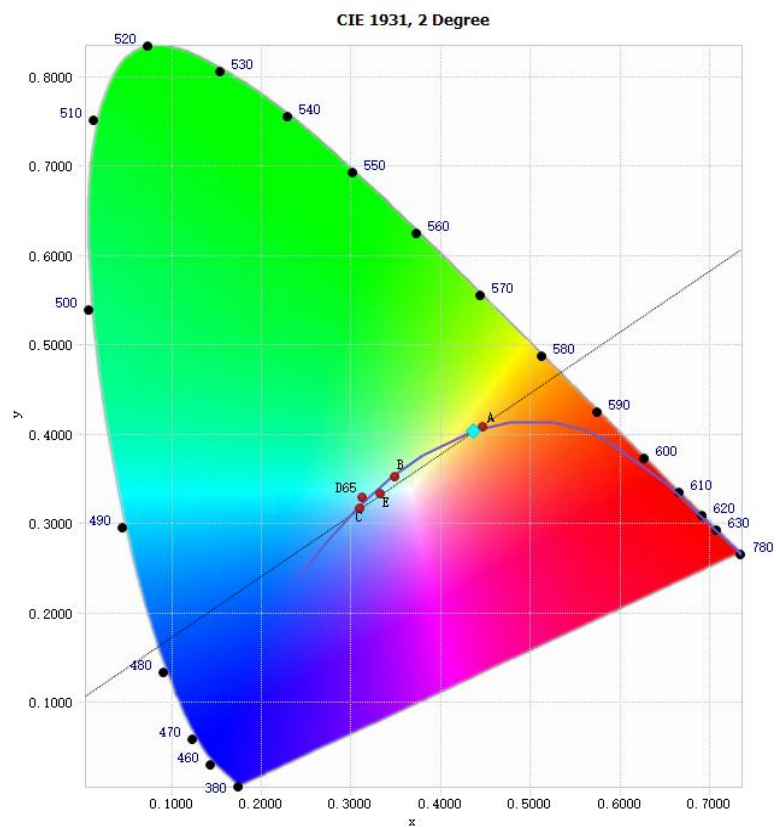
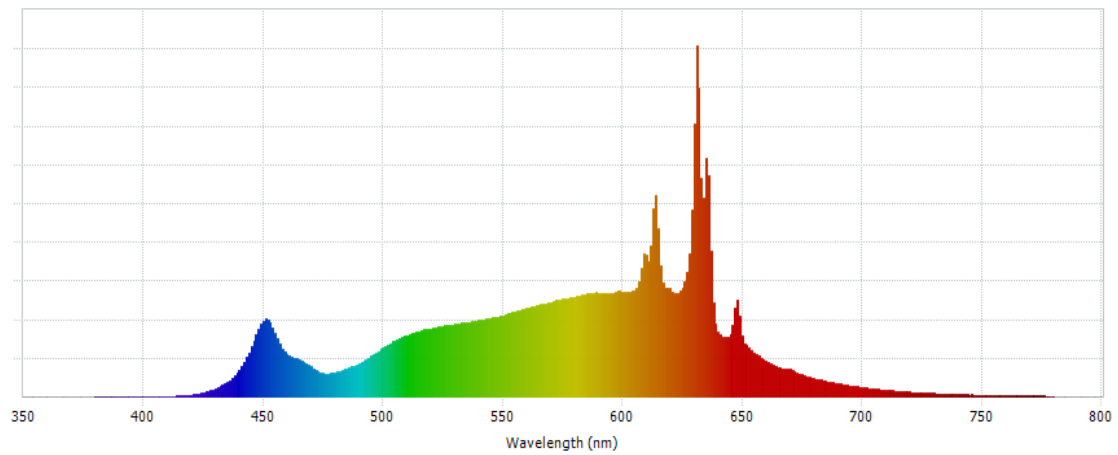
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.00	60	0.252	30.1	0.995
277.00	60	0.120	30.1	0.909

#### Test Result

CCT (K)	CRI	R9	Duv
2998	94	60	-0.0002

Rf	Rg	IES Rcs,h1
91	100	-5%

## 4.1 Integrating Sphere Test



## 4.1 Integrating Sphere Test

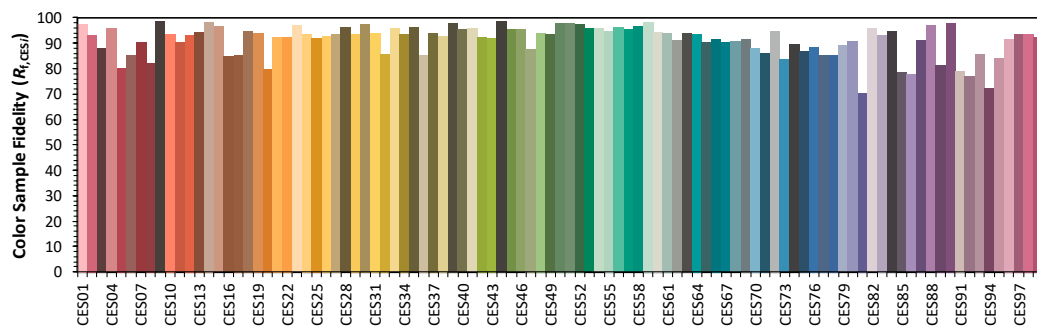
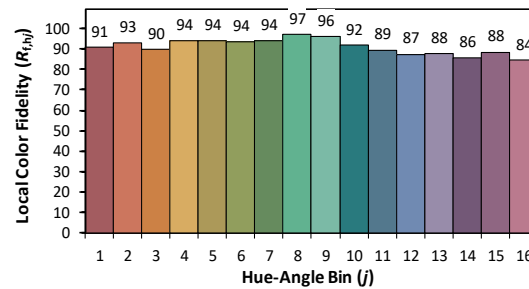
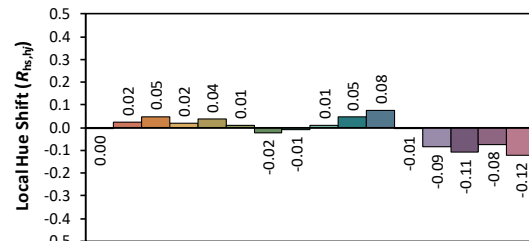
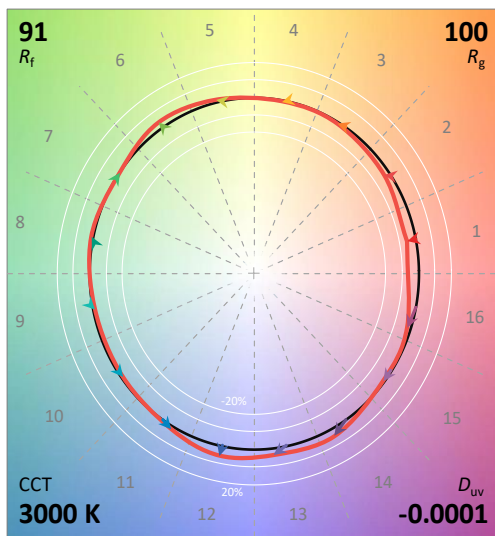
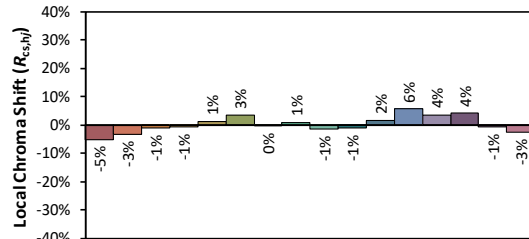
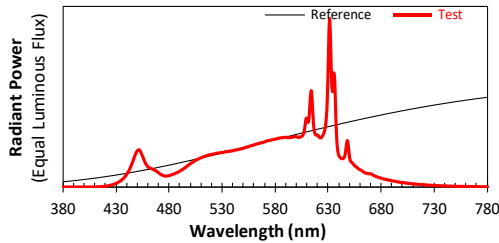
### IES TM-30-18 Color Rendition Report

Source: DLF2509110-40a

Manufacturer: RAB Lighting Inc.

Date: 2025/10/9

Model: BOAE3PU @ 30W/3000K/60%/40%



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

$x$  0.4368

$y$  0.4038

$u'$  0.2506

$v'$  0.5212

CIE 13.3-1995  
(CRI)

$R_a$  94

$R_g$  62



#### 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	7.83E-05	485	1.79E-02	590	6.64E-02	695	7.09E-03
385	4.20E-05	490	2.13E-02	595	6.65E-02	700	5.99E-03
390	8.27E-05	495	2.59E-02	600	6.71E-02	705	5.09E-03
395	5.97E-05	500	3.13E-02	605	6.80E-02	710	4.30E-03
400	6.96E-05	505	3.57E-02	610	9.05E-02	715	3.63E-03
405	1.43E-04	510	3.92E-02	615	1.07E-01	720	3.09E-03
410	2.64E-04	515	4.18E-02	620	6.94E-02	725	2.60E-03
415	5.84E-04	520	4.35E-02	625	6.98E-02	730	2.20E-03
420	1.20E-03	525	4.53E-02	630	1.75E-01	735	1.86E-03
425	2.62E-03	530	4.64E-02	635	1.53E-01	740	1.52E-03
430	5.05E-03	535	4.75E-02	640	4.18E-02	745	1.27E-03
435	9.34E-03	540	4.87E-02	645	4.00E-02	750	1.09E-03
440	1.72E-02	545	5.02E-02	650	3.92E-02	755	9.06E-04
445	3.18E-02	550	5.19E-02	655	2.82E-02	760	7.60E-04
450	4.86E-02	555	5.41E-02	660	2.31E-02	765	6.65E-04
455	4.08E-02	560	5.65E-02	665	1.89E-02	770	5.44E-04
460	2.69E-02	565	5.86E-02	670	1.77E-02	775	4.58E-04
465	2.35E-02	570	6.05E-02	675	1.41E-02	780	3.93E-04
470	1.92E-02	575	6.25E-02	680	1.18E-02		
475	1.51E-02	580	6.39E-02	685	9.97E-03		
480	1.54E-02	585	6.57E-02	690	8.37E-03		

## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

Model No.	BOAE3PU @ 30W/3000K/60%/40%	Sample ID.	DLF2509110-AN1
Opreate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.1	Humidity (%RH)	55.0

#### Test Method

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

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

The ambient temperature shall be maintained at 25° C ± 1.2° 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	120.03	60	0.253	30.2	0.995
NON-WORST CASE	277.00	60	0.120	30.2	0.909

#### Test Result

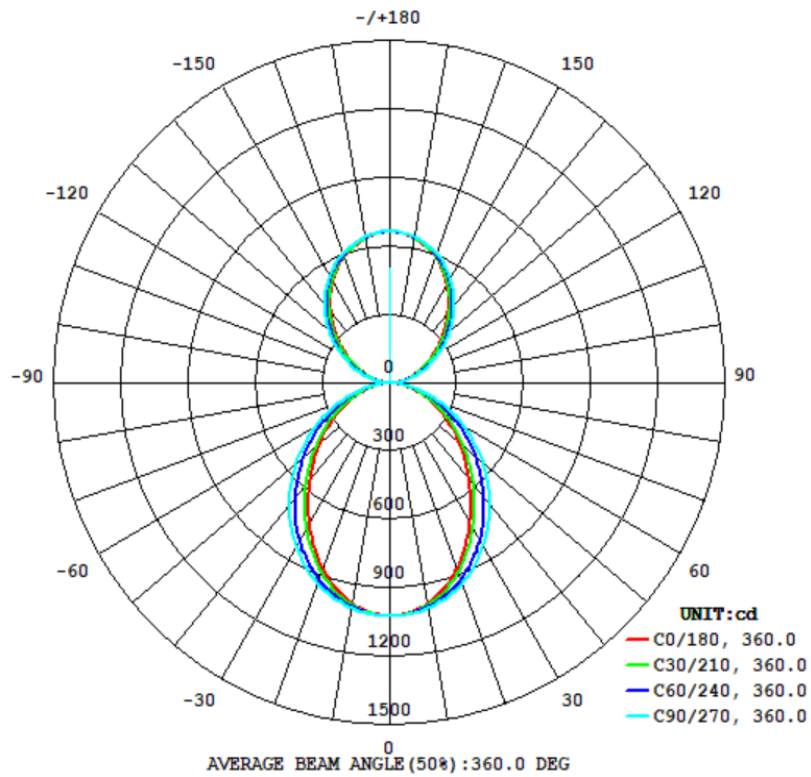
Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
4025	360.0	360.0	360.0	360.0	133.3

Zonal Lumen Requirement (90°-150°)	UGR (X=4H, Y=8H, 70/50/20%)	Length(ft)	Lumen/ft
28.18%	26.0	3	1342

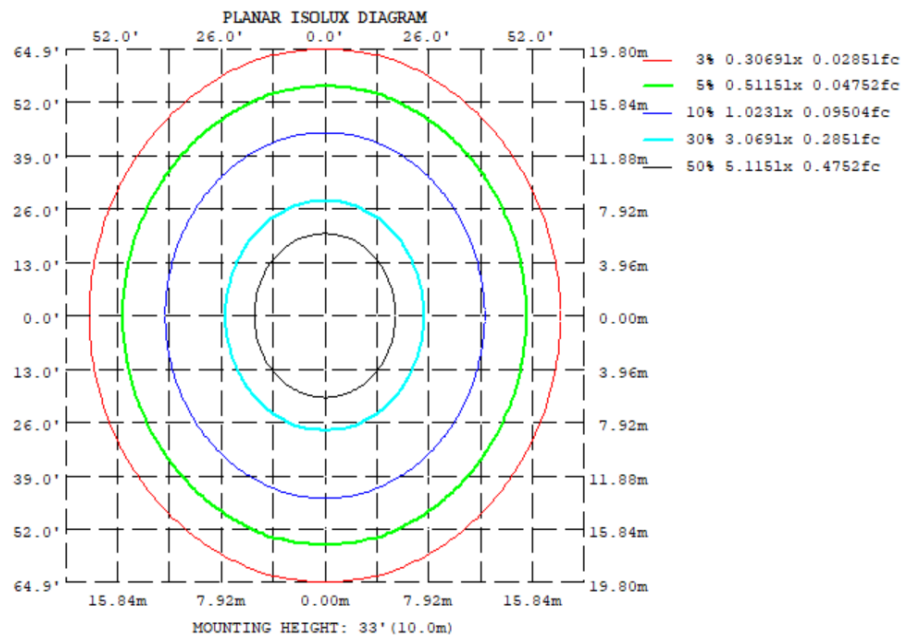


## 4.2 Goniophotometer Test

### Light Distrubtion Curve



### Isolux Plot



## 4.2 Goniophotometer Test

### Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	984.4	993.5	1002	993.5	984.4	993.5	1002	993.5
20	874.2	907.0	938.7	907.0	874.2	907.0	938.7	907.0
30	718.6	774.9	836.0	774.9	718.6	774.9	836.0	774.9
40	557.3	620.0	701.5	620.0	557.3	620.0	701.5	620.0
50	409.0	465.2	547.1	465.2	409.0	465.2	547.1	465.2
60	277.2	319.3	385.3	319.3	277.2	319.3	385.3	319.3
70	159.7	185.3	226.3	185.3	159.7	185.3	226.3	185.3
80	57.43	66.74	80.94	66.74	57.43	66.74	80.94	66.74
90	0	0	0	0	0	0	0	0
100	41.85	48.67	54.85	48.67	41.85	48.67	54.85	48.67
110	115.0	130.3	147.1	130.3	115.0	130.3	147.1	130.3
120	204.7	225.9	248.5	225.9	204.7	225.9	248.5	225.9
130	305.4	328.7	352.5	328.7	305.4	328.7	352.5	328.7
140	412.4	432.7	452.9	432.7	412.4	432.7	452.9	432.7
150	514.2	527.8	541.3	527.8	514.2	527.8	541.3	527.8
160	595.9	602.7	609.5	602.7	595.9	602.7	609.5	602.7
170	648.5	650.4	652.3	650.4	648.5	650.4	652.3	650.4
180	666.6	666.6	666.6	666.6	666.6	666.6	666.6	666.6
DEG	LUMINOUS INTENSITY:cd							

### 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		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	22.5	23.4	23.4	24.3	25.5	20.7	21.6	21.6	22.5	23.7
	3H	24.2	25.0	25.0	25.9	27.1	22.2	23.0	23.1	23.9	25.1
	4H	24.7	25.5	25.6	26.4	27.6	22.7	23.5	23.6	24.4	25.6
	6H	25.0	25.8	26.0	26.7	27.9	23.0	23.7	23.9	24.7	25.8
	8H	25.1	25.8	26.0	26.8	27.9	23.1	23.8	24.0	24.7	25.9
	12H	25.1	25.8	26.1	26.7	27.9	23.1	23.7	24.0	24.7	25.9
4H	2H	22.8	23.6	23.7	24.5	25.7	21.4	22.2	22.3	23.1	24.2
	3H	24.7	25.3	25.6	26.3	27.5	23.0	23.7	24.0	24.6	25.8
	4H	25.4	26.0	26.3	26.9	28.1	23.7	24.2	24.6	25.2	26.4
	6H	25.8	26.3	26.8	27.3	28.5	24.0	24.6	25.0	25.5	26.7
	8H	26.0	26.4	26.9	27.4	28.6	24.2	24.6	25.1	25.6	26.8
	12H	26.0	26.4	27.0	27.4	28.6	24.2	24.6	25.1	25.6	26.8
8H	4H	25.5	26.0	26.4	26.9	28.1	23.9	24.4	24.9	25.4	26.6
	6H	26.0	26.4	27.0	27.4	28.7	24.4	24.8	25.4	25.8	27.1
	8H	26.2	26.6	27.2	27.5	28.8	24.6	24.9	25.6	25.9	27.2
	12H	26.3	26.6	27.3	27.6	28.9	24.6	25.0	25.6	25.9	27.2
12H	4H	25.4	25.9	26.4	26.9	28.1	23.9	24.4	24.9	25.3	26.6
	6H	26.0	26.4	27.0	27.4	28.6	24.5	24.8	25.5	25.8	27.1
	8H	26.2	26.5	27.2	27.5	28.8	24.6	24.9	25.6	25.9	27.2
Maximum UGR = 28.9											

## 4.2 Goniophotometer Test

### ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0-10	96.28	0 - 10	96.28	2.39%
10-20	269.27	0 - 20	365.55	9.08%
20-30	388.94	0 - 30	754.49	18.74%
30-40	438.82	0 - 40	1193.31	29.65%
40-50	422.92	0 - 50	1616.23	40.15%
50-60	355.85	0 - 60	1972.08	49.00%
60-70	254.02	0 - 70	2226.10	55.31%
70-80	133.83	0 - 80	2359.93	58.63%
80-90	29.02	0 - 90	2388.95	59.35%
90-100	22.87	0 - 100	2411.82	59.92%
100-110	92.74	0 - 110	2504.56	62.22%
110-120	175.77	0 - 120	2680.33	66.59%
120-130	247.62	0 - 130	2927.95	72.74%
130-140	293.94	0 - 140	3221.89	80.05%
140-150	301.24	0 - 150	3523.13	87.53%
150-160	261.48	0 - 160	3784.61	94.03%
160-170	177.58	0 - 170	3962.19	98.44%
170-180	62.86	0 - 180	4025.05	100.00%

## 4.2 Goniophotometer Test

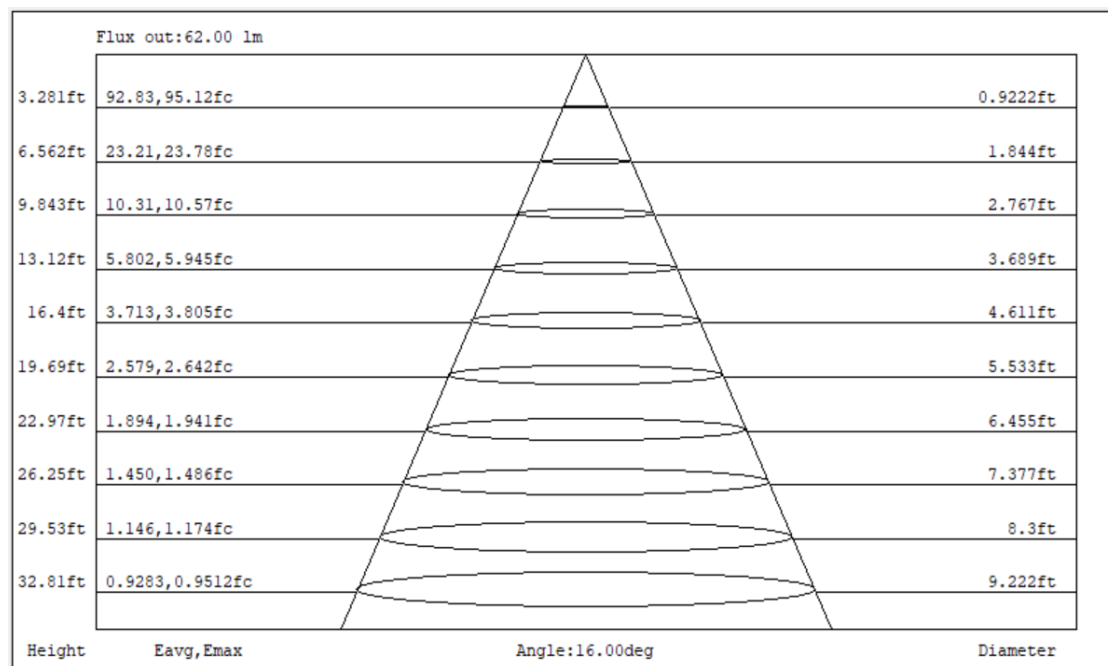
### COEFFICIENTS OF UTILIZATION - ZONAL CAVITY METHOD

#### 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	109	109	109	109	102	102	102	102	89	89	89	76	76	76	65	65	65	59
1	100	96	92	89	93	90	86	83	78	76	73	68	66	64	58	56	55	51
2	91	84	78	73	85	79	73	69	69	65	61	60	57	54	51	49	47	43
3	84	74	67	61	78	70	63	58	61	56	52	53	49	46	45	43	40	37
4	77	66	58	52	71	62	55	49	54	49	44	47	43	40	41	38	35	32
5	70	59	51	45	66	55	48	43	49	43	38	43	38	34	37	33	31	28
6	65	53	45	39	61	50	43	37	44	38	34	39	34	30	34	30	27	24
7	60	48	40	34	56	45	38	33	40	34	30	35	31	27	31	27	24	22
8	56	44	36	30	52	41	34	29	37	31	27	32	28	24	28	25	22	19
9	52	40	32	27	49	38	31	26	34	28	24	30	25	22	26	22	20	18
10	49	37	29	25	46	35	28	24	31	26	22	28	23	20	24	21	18	16

### CONE OF LIGHT DIAGRAM



## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

Model No.	BOAE3PU @ 30W/3000K/60%/40%	Sample ID.	DLF2509110-AN1
Temperature (°C)	25.2	Humidity (%RH)	55.2

#### Test Method

The samples were tested according to the ANSI C82.77-10:2014.

The ambient temperature shall be maintained at 25° C ± 1.0° 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
120.00	60	0.252	30.1	0.995	3.35%
277.00	60	0.120	30.1	0.909	9.42%

## 5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2024/12/23	2025/12/22
DLF108	Auxiliary Lamp	2024/12/23	2025/12/22
DLF122	Measurement Standard Lamp Standard Lamp Type: Tungsten, Omni-directional	2024/12/23	2025/12/22
DLF116	AC Power Source	2024/12/13	2025/12/12
DLF516	Power Meter	2024/12/13	2025/12/12
DLF112	Temperature Recorder	2024/12/19	2025/12/18
DLF114	Temperature & Humidity Datalogger	2024/12/19	2025/12/18
DLF521	Measurement Standard Lamp Standard Lamp Type: Tungsten, Omni-directional	2024/12/23	2025/12/22
DLF101	Goniophotometer	2024/12/23	2025/12/22
DLF511	AC Power Source	2024/12/13	2025/12/12
DLF512	AC Power Source	2024/12/13	2025/12/12
DLF513	AC Power Source	2024/12/13	2025/12/12
DLF507	DC Power Source	2024/12/13	2025/12/12
DLF111	Temperature & Humidity Datalogger	2024/12/19	2025/12/18
DLF119	Power Meter	2024/12/13	2025/12/12
DLF530	Hot-wire anemometer	2025/1/23	2026/1/22
DLF129	Clock	2025/9/4	2026/9/3

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