

# Photometric Test Report

## Relevant Standards

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

## 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

**DLF2509110**

## Report Number

**DLF2509110-43a**

## Test Date

**2025/9/24**

## Issue Date

**2025/9/26**

### 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.

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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	2000		5505
Lumen/ft (Goniophotometer - Section 4.2)	IES LM-79-2019	≥500		1376
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2019	Standard 115	Premium 130	138.3
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2019	Wrosted Case		39.8
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77-10: 2014	20.00%	120V	4.72%
		20.00%	277V	7.61%
Power Factor (THD & PF - section 4.3)	ANSI C82.77-10: 2014	0.9	120V	0.996
		0.9	277V	0.939
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2019	7 step	3045±175	3021
		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		61
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		101
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%		68.54%
Corrected UGR (X=4H, Y=8H, 70/50/20%) (Goniophotometer - Section 4.2)	CIE 190-2010	<22		-
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		0.333
(Goniophotometer - Section 4.2)		Non-Worst Case		0.151
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2019	Worst Case		39.8
(Goniophotometer - Section 4.2)		Non-Worst Case		39.4

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2025/9/24	BOAE4PU @ 40W/3000K/0%/100%	N/A	DLF2509110-AQ1
2	Goniophotometer Test	2025/9/24	BOAE4PU @ 40W/3000K/0%/100%	N/A	DLF2509110-AQ1
3	THD and PF Test	2025/9/24	BOAE4PU @ 40W/3000K/0%/100%	N/A	DLF2509110-AQ1

### 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:** BOAE4PU @ 40W/3000K/0%/100%

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

**Received Date:** 2025/9/22

### Photos of Luminaire Characteristics



## 4.0 LM-79 Measurement and Test Results

### 4.1 Integrating Sphere Test

Model No.	BOAE4PU @ 40W/3000K/0%/100%	Sample ID.	DLF2509110-AQ1
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

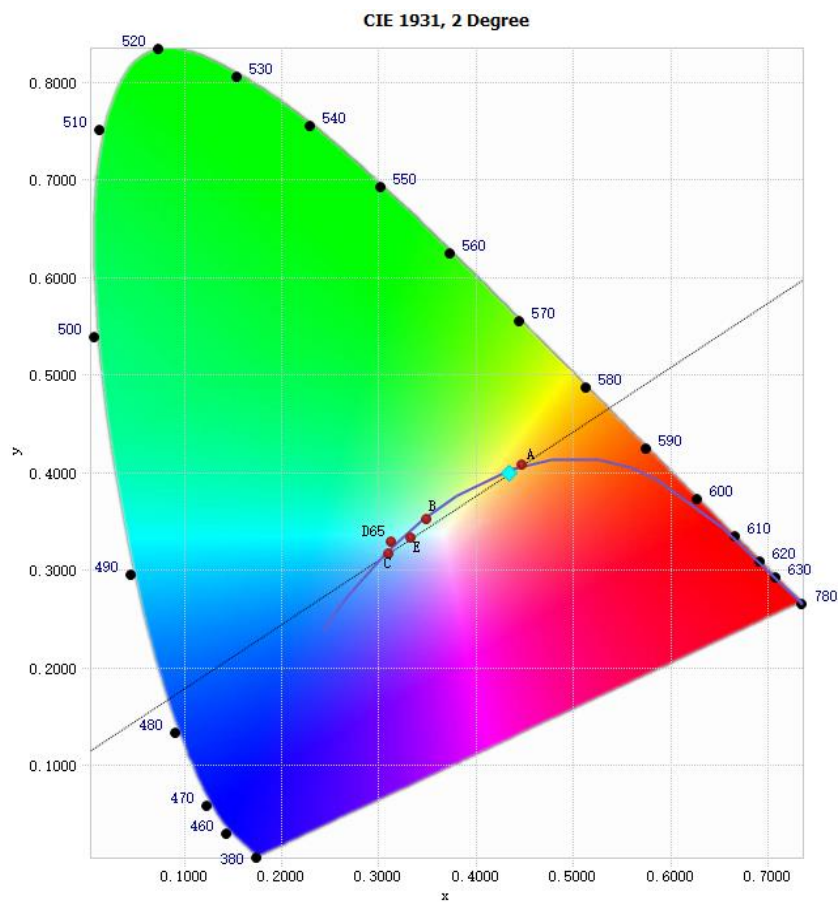
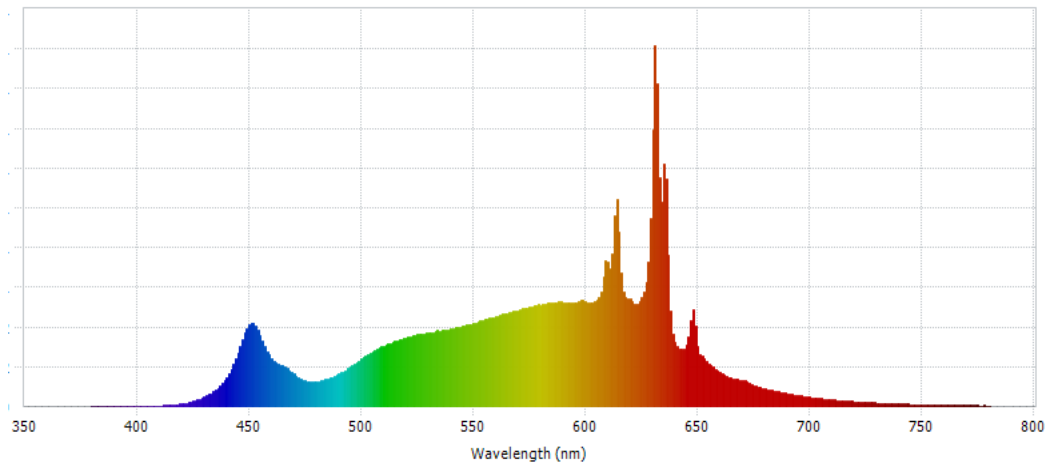
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.00	60	0.330	39.5	0.996
277.02	60	0.150	39.1	0.939

#### Test Result

CCT (K)	CRI	R9	Duv
3021	94	61	-0.0015

Rf	Rg	IES Rcs,h1
91	101	-5%

## 4.1 Integrating Sphere Test



## 4.1 Integrating Sphere Test

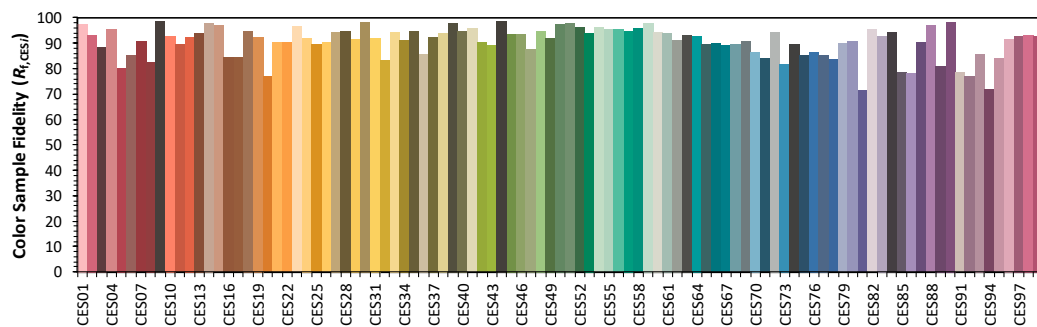
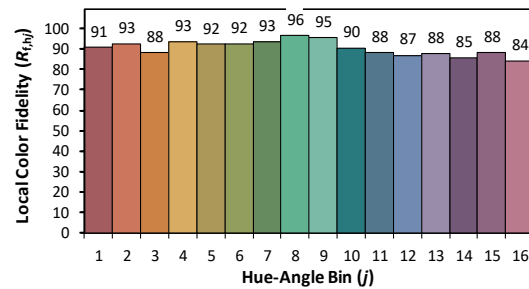
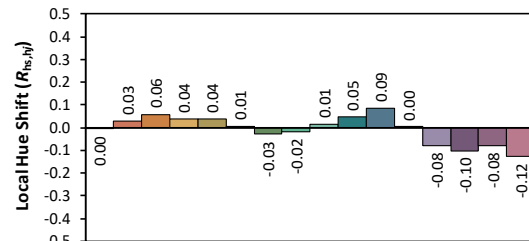
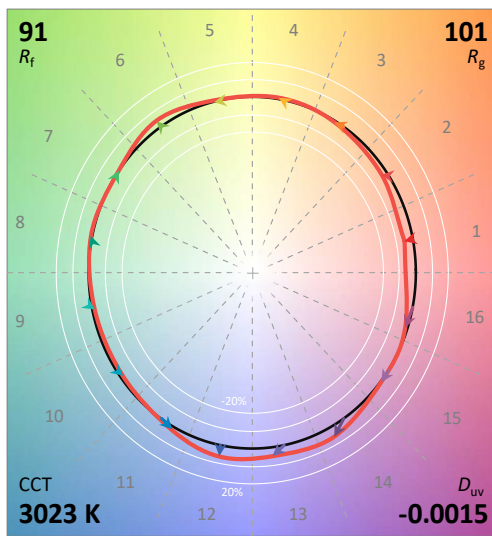
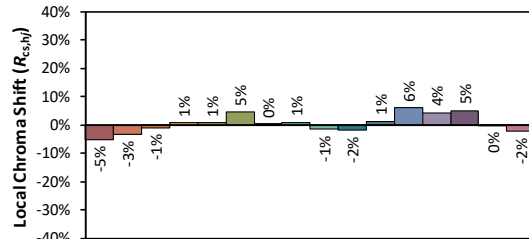
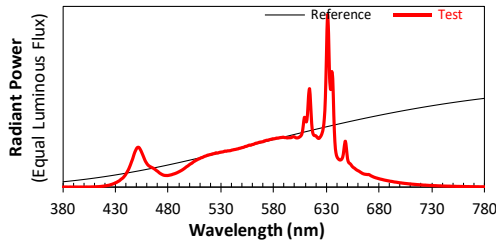
### IES TM-30-18 Color Rendition Report

Source: DLF2509110-43a

Manufacturer: RAB Lighting Inc.

Date: 2025/9/24

Model: BOAE4PU @ 40W/3000K/0%/100%



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

$x$  0.4332

$y$  0.3990

$u'$  0.2503

$v'$  0.5188

CIE 13.3-1995  
(CRI)

$R_a$  94

$R_g$  63



#### 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	1.69E-04	485	2.32E-02	590	8.74E-02	695	8.92E-03
385	5.18E-05	490	2.71E-02	595	8.71E-02	700	7.55E-03
390	7.01E-05	495	3.28E-02	600	8.82E-02	705	6.43E-03
395	9.53E-05	500	3.97E-02	605	8.92E-02	710	5.56E-03
400	9.74E-05	505	4.59E-02	610	1.21E-01	715	4.64E-03
405	2.17E-04	510	5.07E-02	615	1.46E-01	720	3.89E-03
410	4.31E-04	515	5.47E-02	620	9.05E-02	725	3.28E-03
415	1.03E-03	520	5.75E-02	625	9.11E-02	730	2.79E-03
420	2.11E-03	525	6.04E-02	630	2.32E-01	735	2.35E-03
425	4.25E-03	530	6.18E-02	635	2.04E-01	740	1.98E-03
430	7.83E-03	535	6.32E-02	640	5.36E-02	745	1.69E-03
435	1.39E-02	540	6.52E-02	645	5.09E-02	750	1.36E-03
440	2.42E-02	545	6.72E-02	650	5.05E-02	755	1.22E-03
445	4.49E-02	550	6.97E-02	655	3.55E-02	760	1.04E-03
450	6.89E-02	555	7.27E-02	660	2.89E-02	765	9.57E-04
455	5.94E-02	560	7.52E-02	665	2.35E-02	770	7.79E-04
460	4.02E-02	565	7.81E-02	670	2.23E-02	775	5.93E-04
465	3.38E-02	570	8.03E-02	675	1.76E-02	780	5.41E-04
470	2.75E-02	575	8.31E-02	680	1.48E-02		
475	2.13E-02	580	8.52E-02	685	1.25E-02		
480	2.07E-02	585	8.68E-02	690	1.06E-02		

## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

Model No.	BOAE4PU @ 40W/3000K/0%/100%	Sample ID.	DLF2509110-AQ1
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	0.333	39.8	0.996
NON-WORST CASE	277.01	60	0.151	39.4	0.939

#### Test Result

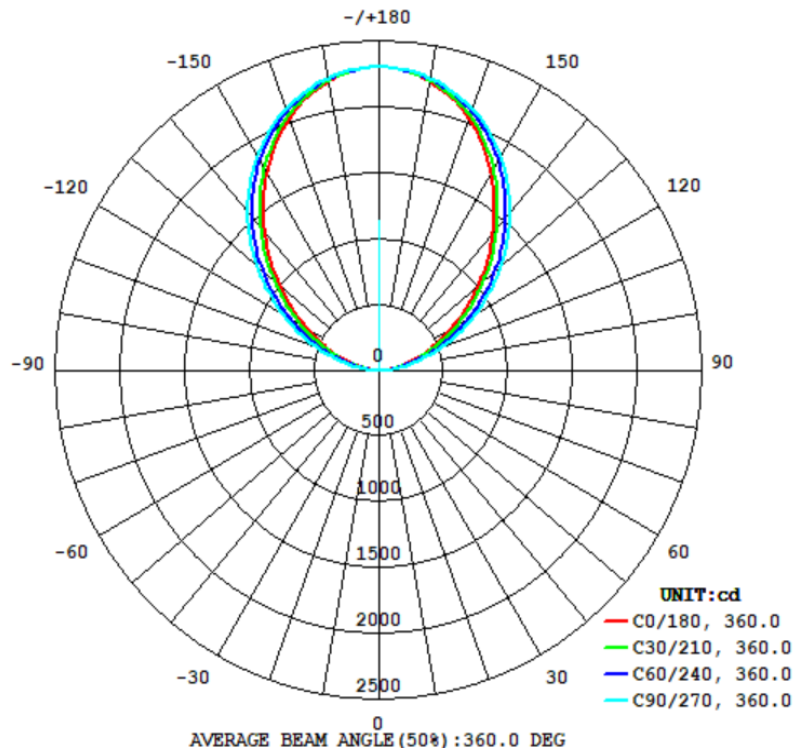
Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
5505	360.0	360.0	360.0	360.0	138.3

Zonal Lumen Requirement (90°-150°)	UGR (X=4H, Y=8H, 70/50/20%)	Length(ft)	Lumen/ft
68.54%	-	4	1376



## 4.2 Goniophotometer Test

Light Distrubtion Curve



Isolux Plot

No Isolux Plot for No Downlight

## 4.2 Goniophotometer Test

### Zonal Lumen Summary

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315
10	0	0	0	0	0	0	0	0
20	0	0	0	0	0	0	0	0
30	0	0	0	0	0	0	0	0
40	0	0	0	0	0	0	0	0
50	0	0	0	0	0	0	0	0
60	0	0	0	0	0	0	0	0
70	0	0	0	0	0	0	0	0
80	0	0	0	0	0	0	0	0
90	0	0	0	0	0	0	0	0
100	102.8	131.0	157.6	131.0	102.8	131.0	157.6	131.0
110	348.2	413.9	492.6	413.9	348.2	413.9	492.6	413.9
120	651.7	746.7	859.3	746.7	651.7	746.7	859.3	746.7
130	1001	1112	1234	1112	1001	1112	1234	1112
140	1378	1477	1582	1477	1378	1477	1582	1477
150	1741	1814	1886	1814	1741	1814	1886	1814
160	2042	2081	2116	2081	2042	2081	2116	2081
170	2238	2249	2258	2249	2238	2249	2258	2249
180	2306	2306	2306	2306	2306	2306	2306	2306
DEG	LUMINOUS INTENSITY:cd							

### UGR Table - Corrected

<b>UGR Table</b>
Unable to calculate UGR - No downlight

## 4.2 Goniophotometer Test

### ZONAL LUMEN SUMMARY

	Zonal (lm)		Total (lm)	Percent
0-10	0.00	0 - 10	0.00	0.00%
10-20	0.00	0 - 20	0.00	0.00%
20-30	0.00	0 - 30	0.00	0.00%
30-40	0.00	0 - 40	0.00	0.00%
40-50	0.00	0 - 50	0.00	0.00%
50-60	0.00	0 - 60	0.00	0.00%
60-70	0.00	0 - 70	0.00	0.00%
70-80	0.00	0 - 80	0.00	0.00%
80-90	0.00	0 - 90	0.00	0.00%
90-100	50.12	0 - 100	50.12	0.91%
100-110	282.31	0 - 110	332.43	6.04%
110-120	575.11	0 - 120	907.54	16.49%
120-130	831.82	0 - 130	1739.36	31.60%
130-140	1001.52	0 - 140	2740.88	49.79%
140-150	1032.34	0 - 150	3773.22	68.54%
150-160	900.68	0 - 160	4673.90	84.91%
160-170	613.48	0 - 170	5287.38	96.05%
170-180	217.40	0 - 180	5504.78	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	95	95	95	95	81	81	81	81	56	56	56	32	32	32	10	10	10	0
1	87	83	79	76	74	71	68	65	48	47	45	28	27	26	9	9	8	0
2	79	72	66	62	67	62	57	53	42	40	37	24	23	22	8	7	7	0
3	72	63	56	51	61	54	49	44	37	34	31	21	20	18	7	6	6	0
4	65	56	48	43	56	48	42	37	33	29	26	19	17	16	6	6	5	0
5	60	49	42	36	51	42	36	32	29	25	22	17	15	13	5	5	4	0
6	55	44	36	31	47	38	32	27	26	22	19	15	13	11	5	4	4	0
7	50	39	32	27	43	34	28	23	23	19	17	14	11	10	4	4	3	0
8	47	35	28	23	40	30	24	20	21	17	14	12	10	9	4	3	3	0
9	43	32	25	20	37	28	22	18	19	15	13	11	9	8	4	3	3	0
10	40	29	22	18	34	25	19	16	17	14	11	10	8	7	3	3	2	0

### CONE OF LIGHT DIAGRAM

No Cone of Light for No Downlight

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

Model No.	BOAE4PU @ 40W/3000K/0%/100%	Sample ID.	DLF2509110-AQ1
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	0.330	39.5	0.996	4.72%
277.02	60	0.150	39.1	0.939	7.61%

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