

## Photometric Test Report

### Relevant Standards

- ☒ ANSI/IES LM-79-2019
- ☒ ANSI C82.77-2017

Prepared For

**RAB Lighting Inc.**

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Prepared By

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Date: 2024-11-01

Review by:

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Issue Date: 2024-11-01

Revised Date: N/A

## 1.0 Test Summary

DLC Technical Requirements V5.1

Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires				
Requirement Category	Test Method	Requirements		Test Value
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-180° zones)	ANSI/IES LM-79:2019	N/A		1840
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	ANSI/IES LM-79:2019	N/A		144.9
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	300		1797
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	Standard	Premium	141.5
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		12.7
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	120V	26.98
			277V	48.50
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	120V	0.891
			277V	0.577
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	3985±275	4112
		4 steps	3985±154	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		83.6
Minimum R9 (Integrating Sphere – Section 4.1)	ANSI/IES LM-79-2019 CIE13.3-1995	N/A		18
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		84
Minimum Rg (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥89		97
IES Rcs,h1 (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-11%
Zonal Lumen Requirement (80°-90°) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	≤10%		4.9%
Input Voltage (V)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Cast		277.0
(Goniophotometer – Section 4.2)		Non-Worst Case		120.0
Input Current (A)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		0.080
(Goniophotometer – Section 4.2)		Non-Worst Case		0.109
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		12.7
(Goniophotometer – Section 4.2)		Non-Worst Case		11.7

## 2.0 Test List

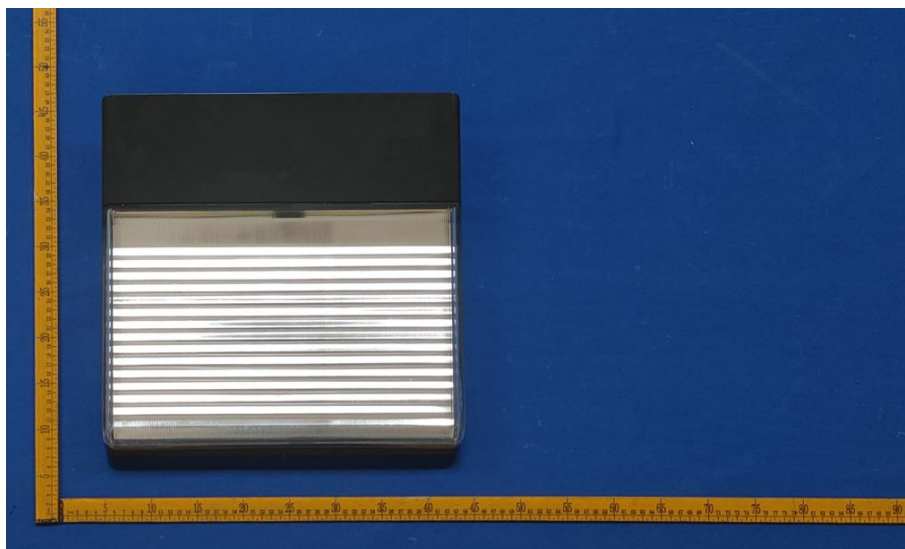
Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024-10-31	PWLED @13W4000K	-	241031001-S1
2	Goniophotometer Test	2024-10-31	PWLED @13W4000K	-	241031001-S1
3	THD and PF Test	2024-10-31	PWLED @13W4000K	-	241031001-S1
<b>Remark (If any):</b>					
<ol style="list-style-type: none"> <li>The results contained in this report pertain only to the tested samples.</li> <li>This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.</li> <li>This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. Government.</li> </ol>					

### 3.0 Product Description

Luminaire Description: Model No. PWLED @13W4000K, color tunable from 3000K, 4000K and 5000K.

Electrical Specification: 120-277Vac, 50/60Hz

Photos of Luminaire Characteristics



## 4.0 LM-79 Measurement and Test Results

### 4.1 Integrating Sphere Test

<b>Model No.</b>	PWLED @13W4000K	<b>Sample ID</b>	241031001-S1
<b>Operate time (Min.)</b>	10	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	25.4	<b>Humidity (%RH)</b>	41.0

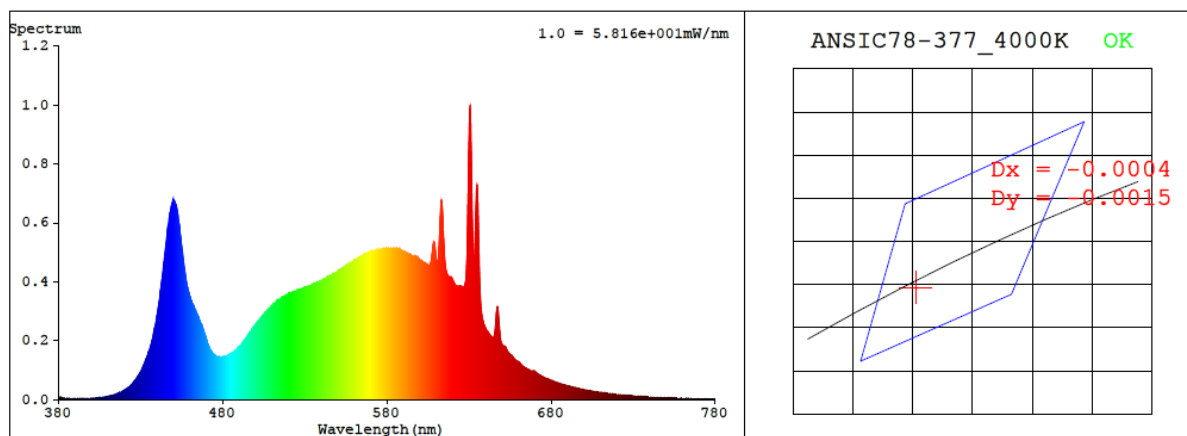
Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere.</p> <p>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.</p> <p>The sample was measured using 4<math>\pi</math> 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 780nm.</p>

#### Test Result

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	0.109	11.7	0.891
277.0	60	0.080	12.7	0.577

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4112	83.6	18	-0.0006	84	97	-11%

## 4.1 Integrating Sphere Test



### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.3753$   $y = 0.3722$  /  $u' = 0.2235$   $v' = 0.4988$  ( $duv = -6.17e-04$ )

CCT= 4112K Prcp WL:  $L_d = 579.0\text{nm}$  Purity=24.3%

Peak WL:  $L_p = 631\text{nm}$  FWHM:  $=4.5\text{nm}$  Ratio: R=18.2% G=78.2% B=3.6%

Render Index:  $R_a = 83.6$  AvgR = 77.3 TM30:  $R_f = 84$   $R_g = 97$

EEL: 0.09737 A++ Highest

R1 =82 R2 =89 R3 =93 R4 =83 R5 =82 R6 =84 R7 =87

R8 =69 R9 =18 R10=72 R11=81 R12=61 R13=83 R14=96 R15=78

## 4.1 Integrating Sphere Test

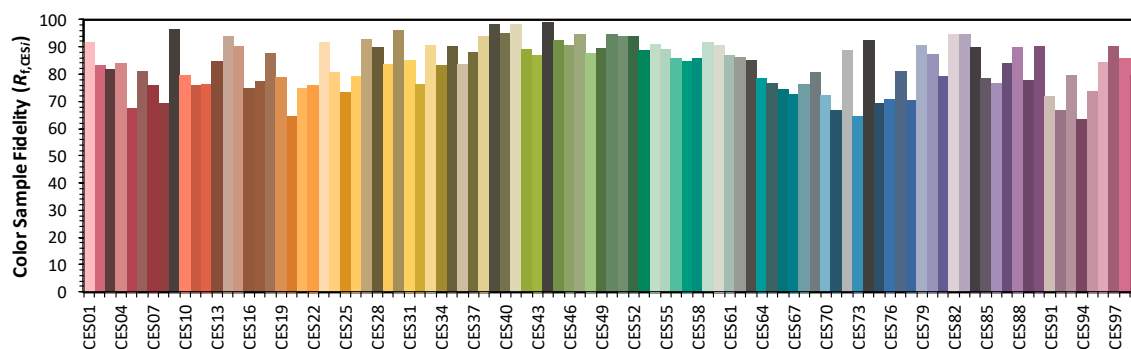
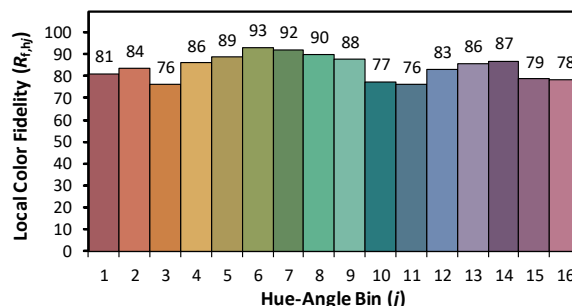
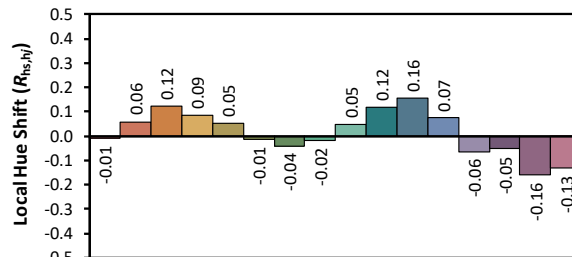
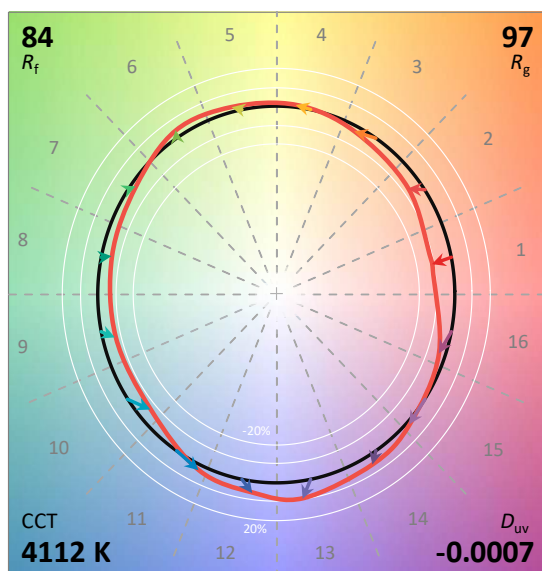
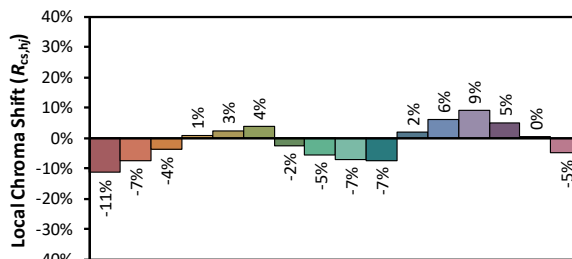
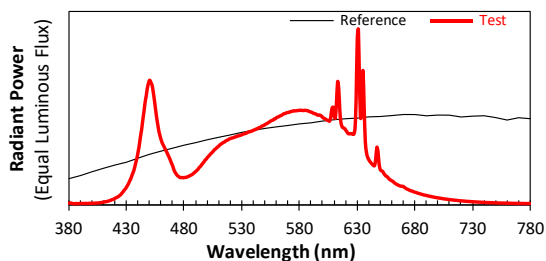
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/11/1

Model: PWLED @13W4000K



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

$x$  0.3752  
 $y$  0.3720  
 $u'$  0.2236  
 $v'$  0.4987

CIE 13.3-1995  
(CRI)

$R_a$  84  
 $R_g$  18



## 4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength											
WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)
380	4.60E-06	447	5.93E-04	514	3.38E-04	581	5.13E-04	648	2.87E-04	715	2.09E-05
381	5.90E-06	448	6.36E-04	515	3.40E-04	582	5.13E-04	649	2.17E-04	716	2.05E-05
382	5.50E-06	449	6.62E-04	516	3.46E-04	583	5.12E-04	650	1.89E-04	717	1.99E-05
383	2.90E-06	450	6.78E-04	517	3.49E-04	584	5.13E-04	651	1.82E-04	718	1.89E-05
384	2.20E-06	451	6.66E-04	518	3.52E-04	585	5.13E-04	652	1.79E-04	719	1.81E-05
385	1.70E-06	452	6.52E-04	519	3.56E-04	586	5.12E-04	653	1.69E-04	720	1.76E-05
386	3.10E-06	453	6.16E-04	520	3.59E-04	587	5.11E-04	654	1.60E-04	721	1.75E-05
387	2.70E-06	454	5.72E-04	521	3.61E-04	588	5.08E-04	655	1.53E-04	722	1.68E-05
388	2.50E-06	455	5.23E-04	522	3.62E-04	589	5.06E-04	656	1.50E-04	723	1.62E-05
389	3.20E-06	456	4.75E-04	523	3.65E-04	590	5.03E-04	657	1.43E-04	724	1.56E-05
390	3.80E-06	457	4.35E-04	524	3.68E-04	591	5.01E-04	658	1.35E-04	725	1.52E-05
391	3.40E-06	458	3.98E-04	525	3.69E-04	592	4.97E-04	659	1.31E-04	726	1.47E-05
392	3.50E-06	459	3.72E-04	526	3.73E-04	593	4.95E-04	660	1.27E-04	727	1.44E-05
393	3.20E-06	460	3.50E-04	527	3.73E-04	594	4.93E-04	661	1.24E-04	728	1.38E-05
394	4.70E-06	461	3.32E-04	528	3.76E-04	595	4.89E-04	662	1.17E-04	729	1.33E-05
395	3.70E-06	462	3.20E-04	529	3.77E-04	596	4.86E-04	663	1.13E-04	730	1.29E-05
396	3.30E-06	463	3.07E-04	530	3.80E-04	597	4.88E-04	664	1.09E-04	731	1.24E-05
397	3.80E-06	464	2.93E-04	531	3.82E-04	598	4.85E-04	665	1.06E-04	732	1.21E-05
398	4.30E-06	465	2.82E-04	532	3.85E-04	599	4.82E-04	666	1.02E-04	733	1.17E-05
399	3.80E-06	466	2.67E-04	533	3.87E-04	600	4.74E-04	667	9.99E-05	734	1.13E-05
400	4.80E-06	467	2.54E-04	534	3.89E-04	601	4.70E-04	668	9.76E-05	735	1.10E-05
401	4.50E-06	468	2.39E-04	535	3.93E-04	602	4.67E-04	669	9.78E-05	736	1.07E-05
402	4.80E-06	469	2.22E-04	536	3.94E-04	603	4.63E-04	670	9.61E-05	737	1.04E-05
403	5.30E-06	470	2.08E-04	537	3.97E-04	604	4.59E-04	671	9.10E-05	738	1.00E-05
404	6.00E-06	471	1.88E-04	538	3.98E-04	605	4.57E-04	672	8.70E-05	739	9.50E-06
405	5.60E-06	472	1.75E-04	539	4.01E-04	606	4.54E-04	673	8.29E-05	740	9.30E-06
406	7.00E-06	473	1.65E-04	540	4.04E-04	607	4.74E-04	674	8.04E-05	741	8.90E-06
407	7.10E-06	474	1.56E-04	541	4.06E-04	608	5.21E-04	675	7.70E-05	742	8.70E-06
408	8.70E-06	475	1.52E-04	542	4.10E-04	609	5.30E-04	676	7.40E-05	743	8.30E-06
409	9.20E-06	476	1.47E-04	543	4.12E-04	610	4.81E-04	677	7.20E-05	744	8.20E-06
410	1.04E-05	477	1.45E-04	544	4.16E-04	611	4.71E-04	678	7.00E-05	745	7.90E-06
411	1.26E-05	478	1.45E-04	545	4.18E-04	612	5.57E-04	679	6.73E-05	746	7.60E-06
412	1.33E-05	479	1.44E-04	546	4.20E-04	613	6.70E-04	680	6.50E-05	747	7.50E-06
413	1.45E-05	480	1.46E-04	547	4.26E-04	614	6.25E-04	681	6.34E-05	748	7.20E-06
414	1.61E-05	481	1.46E-04	548	4.28E-04	615	5.01E-04	682	6.10E-05	749	7.10E-06
415	1.86E-05	482	1.47E-04	549	4.31E-04	616	4.41E-04	683	5.88E-05	750	6.70E-06
416	2.02E-05	483	1.50E-04	550	4.35E-04	617	4.22E-04	684	5.71E-05	751	6.60E-06
417	2.36E-05	484	1.52E-04	551	4.39E-04	618	4.17E-04	685	5.54E-05	752	6.40E-06
418	2.50E-05	485	1.56E-04	552	4.42E-04	619	4.14E-04	686	5.33E-05	753	6.00E-06
419	2.81E-05	486	1.59E-04	553	4.46E-04	620	4.05E-04	687	5.14E-05	754	5.90E-06
420	3.21E-05	487	1.63E-04	554	4.50E-04	621	3.96E-04	688	4.96E-05	755	5.90E-06
421	3.52E-05	488	1.68E-04	555	4.55E-04	622	3.87E-04	689	4.87E-05	756	5.70E-06
422	3.84E-05	489	1.74E-04	556	4.58E-04	623	3.84E-04	690	4.69E-05	757	5.50E-06
423	4.20E-05	490	1.79E-04	557	4.60E-04	624	3.85E-04	691	4.60E-05	758	5.50E-06
424	4.75E-05	491	1.85E-04	558	4.66E-04	625	3.85E-04	692	4.38E-05	759	5.10E-06
425	5.26E-05	492	1.92E-04	559	4.67E-04	626	3.82E-04	693	4.28E-05	760	4.80E-06
426	6.08E-05	493	2.01E-04	560	4.73E-04	627	3.83E-04	694	4.14E-05	761	4.90E-06
427	6.77E-05	494	2.06E-04	561	4.76E-04	628	4.07E-04	695	3.99E-05	762	4.80E-06
428	7.70E-05	495	2.15E-04	562	4.79E-04	629	5.67E-04	696	3.88E-05	763	4.70E-06
429	8.41E-05	496	2.23E-04	563	4.82E-04	630	9.02E-04	697	3.74E-05	764	4.30E-06
430	9.40E-05	497	2.30E-04	564	4.85E-04	631	9.55E-04	698	3.61E-05	765	4.30E-06
431	1.05E-04	498	2.41E-04	565	4.88E-04	632	6.43E-04	699	3.52E-05	766	4.00E-06
432	1.17E-04	499	2.46E-04	566	4.94E-04	633	4.68E-04	700	3.40E-05	767	4.00E-06
433	1.32E-04	500	2.55E-04	567	4.95E-04	634	6.13E-04	701	3.29E-05	768	3.90E-06
434	1.45E-04	501	2.62E-04	568	4.97E-04	635	7.29E-04	702	3.20E-05	769	3.70E-06
435	1.64E-04	502	2.68E-04	569	5.01E-04	636	5.25E-04	703	3.10E-05	770	3.60E-06
436	1.79E-04	503	2.76E-04	570	5.01E-04	637	3.42E-04	704	2.98E-05	771	3.50E-06
437	2.02E-04	504	2.81E-04	571	5.02E-04	638	2.82E-04	705	2.89E-05	772	3.50E-06
438	2.29E-04	505	2.89E-04	572	5.06E-04	639	2.58E-04	706	2.78E-05	773	3.60E-06
439	2.54E-04	506	2.96E-04	573	5.07E-04	640	2.43E-04	707	2.71E-05	774	3.30E-06
440	2.88E-04	507	3.01E-04	574	5.09E-04	641	2.33E-04	708	2.67E-05	775	3.00E-06
441	3.24E-04	508	3.07E-04	575	5.10E-04	642	2.25E-04	709	2.52E-05	776	3.00E-06
442	3.70E-04	509	3.13E-04	576	5.10E-04	643	2.18E-04	710	2.46E-05	777	3.00E-06
443	4.08E-04	510	3.18E-04	577	5.11E-04	644	2.12E-04	711	2.38E-05	778	3.00E-06
444	4.60E-04	511	3.25E-04	578	5.11E-04	645	2.10E-04	712	2.33E-05	779	3.00E-06
445	5.05E-04	512	3.29E-04	579	5.12E-04	646	2.45E-04	713	2.25E-05	780	3.00E-06
446	5.56E-04	513	3.34E-04	580	5.13E-04	647	3.11E-04	714	2.16E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	PWLED @13W4000K	<b>Sample ID</b>	241031001-S1
<b>Operate time (Min.)</b>	30	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	24.9	<b>Humidity (%RH)</b>	41.5

<b>Test Method</b>
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using a type C goniophotometer and software.</p> <p>The ambient temperature shall be maintained at <math>25 \pm 1^\circ\text{C}</math>, measured at a point not more than 1 m from the sample and at the same height as the sample.</p> <p>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 <math>\pm 0.2</math> percent under load.</p> <p>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 <math>1.0^\circ</math> vertical intervals and <math>15^\circ</math> horizontal intervals.</p>

### Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
<b>WORST CASE</b>	277.0	60	0.080	12.7	0.577
<b>NON-WORST CASE</b>	120.0	60	0.109	11.7	0.891

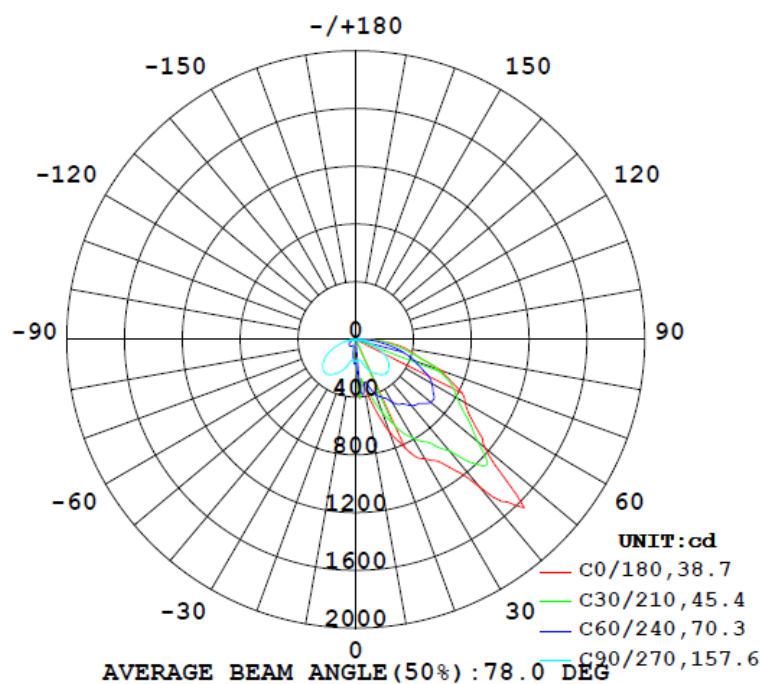
### Test Result

Result Type	Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement (80°-90°)	BUG
		C0-180	C90-270	C0-180	C90-270			
<b>0°-180° zones</b>	1840	90.7	147.3	42.4	80.6	144.9	4.8%	B0-U2-G1
<b>0°-90° zones</b>	1797	90.7	147.3	42.4	80.6	141.5	4.9%	B0-U2-G1

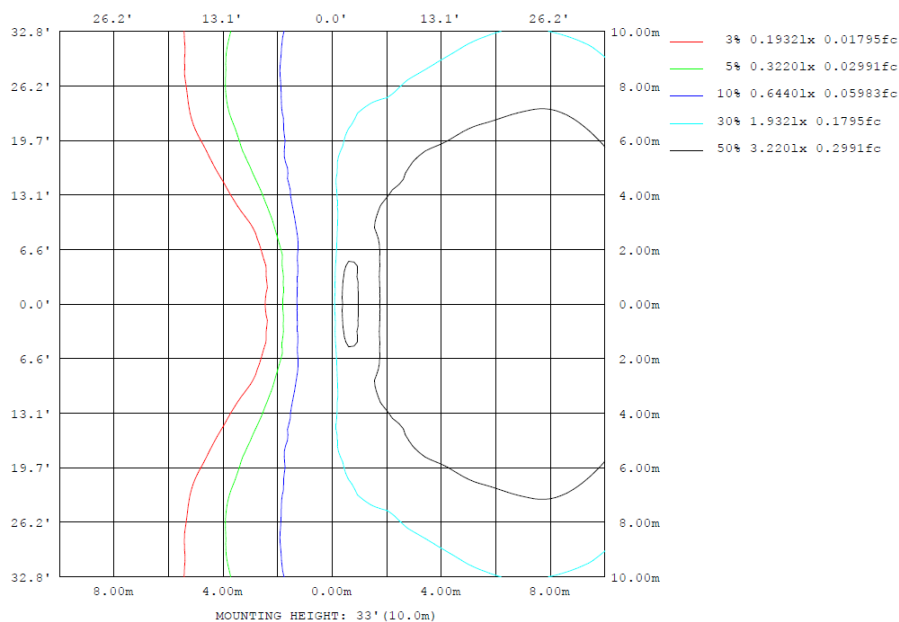
## 4.2 Goniophotometer Test

### Lighting Distribution Curve

#### LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



### Isolux Plot



## 4.2 Goniophotometer Test

### Zonal Lumen Summary

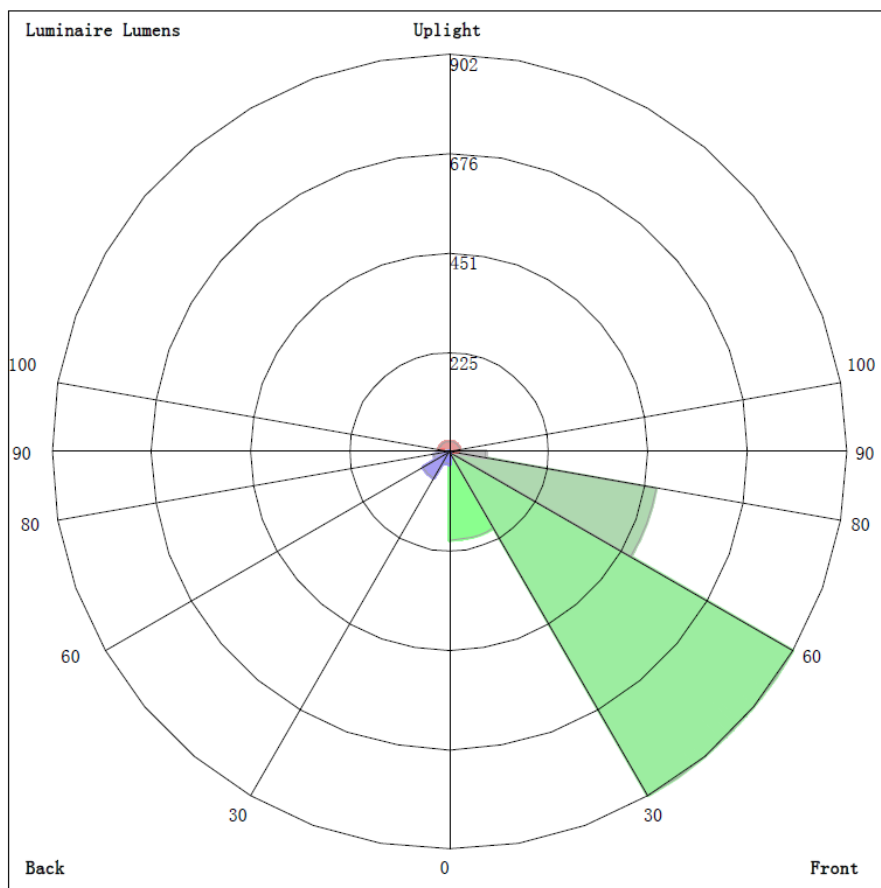
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	340.6	289.8	143.8	66.39	35.39	66.39	143.8	289.8	0- 10	20.14	20.14	1.09,1.09
20	681.6	448.5	209.6	25.61	12.36	25.61	209.6	448.5	10- 20	63.45	83.59	4.54,4.54
30	954.4	646.7	268.1	24.78	8.365	24.78	268.1	646.7	20- 30	143.5	227.1	12.3,12.3
40	1336	798.8	312.9	24.07	3.579	24.07	312.9	798.8	30- 40	242.4	469.4	25.5,25.5
50	1167	965.8	298.7	20.23	0.5750	20.23	298.7	965.8	40- 50	368.1	837.5	45.5,45.5
60	874.3	734.9	243.4	16.41	0.0458	16.41	243.4	734.9	50- 60	360.5	1198	65.1,65.1
70	622.0	557.1	150.9	11.93	0.1130	11.93	150.9	557.1	60- 70	308.3	1506	81.9,81.9
80	342.8	292.3	64.30	7.290	0.2432	7.290	64.30	292.3	70- 80	203.2	1710	92.9,92.9
90	79.02	72.66	8.442	2.813	0.4225	2.813	8.442	72.66	80- 90	87.96	1797	97.7,97.7
100	35.69	24.68	2.578	1.414	0.6223	1.414	2.578	24.68	90-100	19.21	1817	98.7,98.7
110	20.26	13.30	1.702	1.079	0.7583	1.079	1.702	13.30	100-110	9.461	1826	99.2,99.2
120	12.35	8.903	1.410	1.023	0.8327	1.023	1.410	8.903	110-120	5.454	1832	99.5,99.5
130	8.756	6.616	1.167	1.022	0.9280	1.022	1.167	6.616	120-130	3.555	1835	99.7,99.7
140	7.151	5.059	0.8932	0.8995	0.9114	0.8995	0.8932	5.059	130-140	2.387	1838	99.9,99.9
150	5.545	3.661	0.7089	0.6984	0.8294	0.6984	0.7089	3.661	140-150	1.503	1839	99.9,99.9
160	3.632	2.297	0.6042	0.5580	0.6057	0.5580	0.6042	2.297	150-160	0.8049	1840	100,100
170	1.324	0.9125	0.5173	0.4829	0.4237	0.4829	0.5173	0.9125	160-170	0.3024	1840	100,100
180	0.3578	0.3991	0.4533	0.4610	0.3529	0.4610	0.4533	0.3991	170-180	0.0525	1840	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	20.14	0-10	20.14	1.09%
10-20	63.45	0-20	83.59	4.54%
20-30	143.48	0-30	227.07	12.34%
30-40	242.36	0-40	469.43	25.51%
40-50	368.10	0-50	837.53	45.51%
50-60	360.48	0-60	1198.01	65.10%
60-70	308.32	0-70	1506.33	81.86%
70-80	203.19	0-80	1709.52	92.90%
80-90	87.96	0-90	1797.48	97.68%
90-100	19.21	0-100	1816.69	98.73%
100-110	9.46	0-110	1826.15	99.24%
110-120	5.45	0-120	1831.60	99.54%
120-130	3.55	0-130	1835.15	99.73%
130-140	2.39	0-140	1837.54	99.86%
140-150	1.50	0-150	1839.04	99.94%
150-160	0.80	0-160	1839.84	99.98%
160-170	0.30	0-170	1840.14	100.00%
170-180	0.05	0-180	1840.19	100.00%

## 4.2 Goniophotometer Test

LCS/BUG

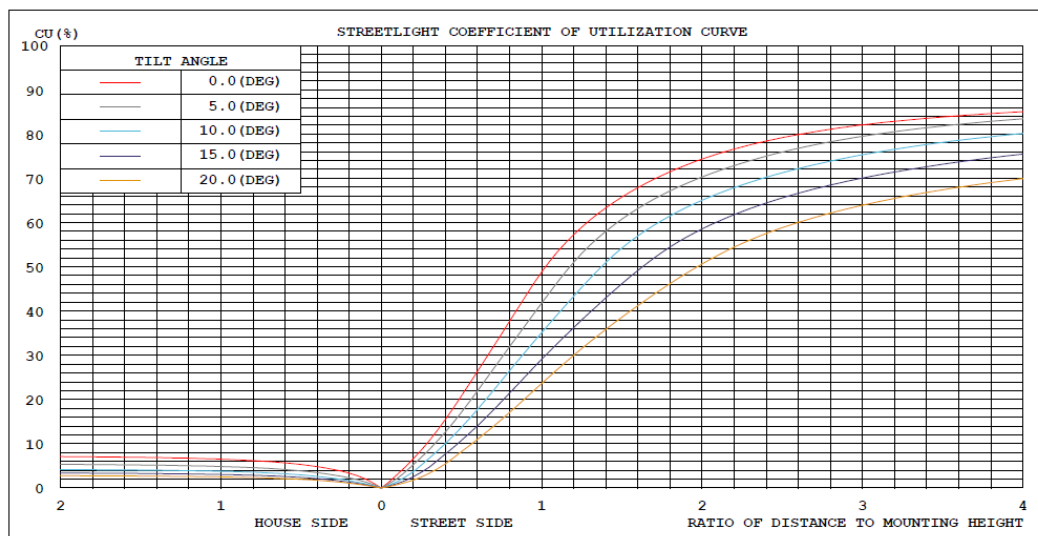


### LUMINAIRE CLASSIFICATION SYSTEM (LCS)

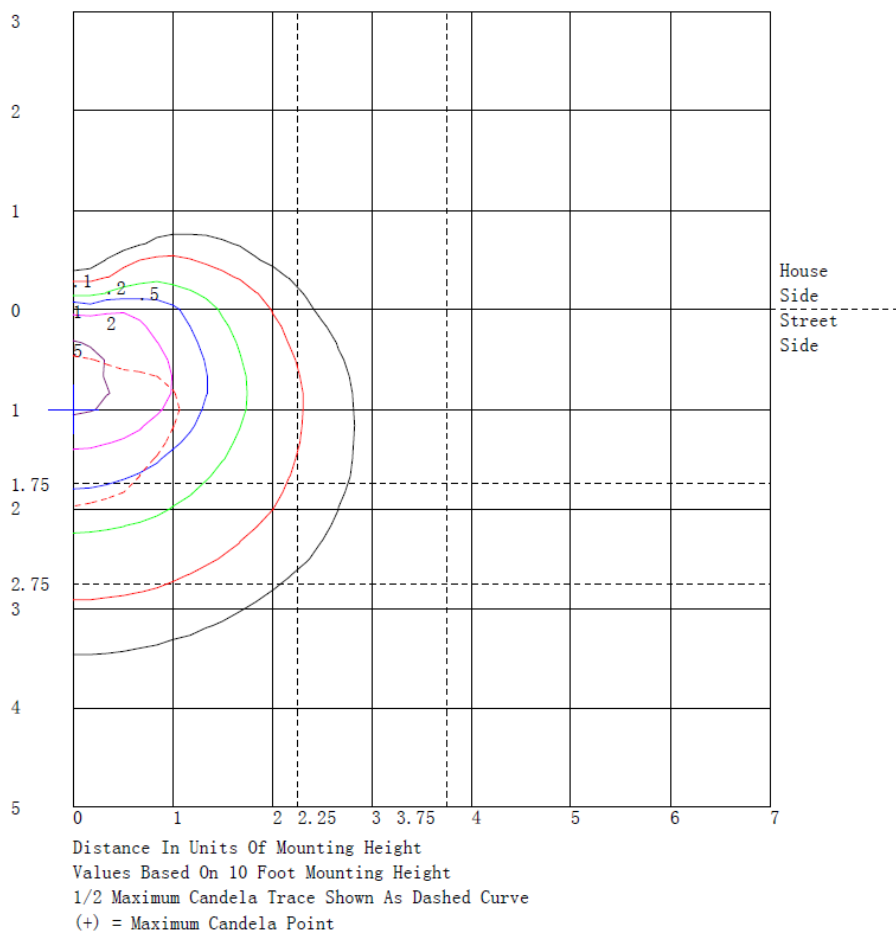
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	200.0	N.A.	10.9
FM - Front-Medium (30-60)	901.8	N.A.	49.0
FH - Front-High (60-80)	475.8	N.A.	25.9
FVH - Front-Very High (80-90)	82.7	N.A.	4.5
BL - Back-Low (0-30)	27.0	N.A.	1.5
BM - Back-Medium (30-60)	69.2	N.A.	3.8
BH - Back-High (60-80)	35.7	N.A.	1.9
BVH - Back-Very High (80-90)	5.2	N.A.	0.3
UL - Uplight-Low (90-100)	19.2	N.A.	1.0
UH - Uplight-High (100-180)	23.5	N.A.	1.3
Total	1840.1	N.A.	100.0
BUG Rating	B0-U2-G1		

## 4.2 Goniophotometer Test

### Coefficients of Utilization



### Isolines



## 4.2 Goniophotometer Test

### Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) y (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	154	154	154	154	154	154	154	154	154	153	154	153	154	153	154	153	154	154	154
5	359	370	400	398	352	247	148	160	162	144	127	114	115	114	127	144	162	160	148
10	341	335	314	290	330	332	144	147	107	66.4	44.7	36.1	35.4	36.1	44.7	66.4	107	147	144
15	481	459	411	370	329	354	165	124	62.9	33.1	22.7	18.6	18.1	18.6	22.7	33.1	62.9	124	165
20	682	634	540	449	403	334	210	110	48.3	25.6	16.8	12.6	12.4	12.6	16.8	25.6	48.3	110	210
25	845	794	673	553	447	366	245	105	47.3	25.2	14.6	10.1	9.85	10.1	14.6	25.2	47.3	105	245
30	954	904	784	647	501	384	268	110	51.3	24.8	13.7	9.04	8.36	9.04	13.7	24.8	51.3	110	268
35	1046	992	867	704	546	409	300	114	56.4	24.3	13.1	7.26	5.81	7.26	13.1	24.3	56.4	114	300
40	1336	1208	1007	799	598	397	313	117	62.3	24.1	12.1	5.36	3.58	5.36	12.1	24.1	62.3	117	313
45	1649	1482	1237	911	626	394	316	124	61.9	22.6	11.3	4.08	1.85	4.08	11.3	22.6	61.9	124	316
50	1167	1138	1102	966	680	431	299	122	60.5	20.2	10.8	3.30	0.57	3.30	10.8	20.2	60.5	122	299
55	990	968	937	859	658	414	276	117	58.2	18.0	10.5	3.29	0.04	3.29	10.5	18.0	58.2	117	276
60	874	858	809	735	608	397	243	108	52.3	16.4	10.5	3.73	0.05	3.73	10.5	16.4	52.3	108	243
65	763	759	728	653	520	338	199	96.3	42.5	14.6	10.9	3.78	0.07	3.78	10.9	14.6	42.5	96.3	199
70	622	619	599	557	432	298	151	78.2	35.0	11.9	9.66	3.57	0.11	3.57	9.66	11.9	35.0	78.2	151
75	442	437	428	423	337	217	106	57.6	23.8	9.81	8.20	2.92	0.17	2.92	8.20	9.81	23.8	57.6	106
80	343	333	309	292	232	139	64.3	37.5	16.8	7.29	6.44	2.15	0.24	2.15	6.44	7.29	16.8	37.5	64.3
85	218	207	191	179	139	72.4	29.4	20.2	10.4	4.92	3.90	1.40	0.33	1.40	3.90	4.92	10.4	20.2	29.4
90	79.0	78.1	74.2	72.7	52.3	22.7	8.44	9.23	5.16	2.81	2.15	0.90	0.42	0.90	2.15	2.81	5.16	9.23	8.44
95	46.2	43.1	39.6	36.4	28.3	11.5	3.65	4.78	3.08	1.79	1.32	0.66	0.52	0.66	1.32	1.79	3.08	4.78	3.65
100	35.7	32.6	28.6	24.7	18.9	7.99	2.58	3.29	2.22	1.41	1.06	0.62	0.62	0.62	1.06	1.41	2.22	3.29	2.58
105	25.9	24.0	20.9	17.7	13.5	6.17	2.00	2.50	1.73	1.20	0.94	0.62	0.71	0.62	0.94	1.20	1.73	2.50	2.00
110	20.3	18.6	15.9	13.3	10.2	4.97	1.70	2.03	1.45	1.08	0.90	0.67	0.76	0.67	0.90	1.08	1.45	2.03	1.70
115	15.4	14.2	12.2	10.6	8.14	4.15	1.54	1.72	1.29	1.05	0.91	0.73	0.80	0.73	0.91	1.05	1.29	1.72	1.54
120	12.4	11.6	10.2	8.90	6.74	3.56	1.41	1.51	1.20	1.02	0.94	0.80	0.83	0.80	0.94	1.02	1.20	1.51	1.41
125	10.4	9.81	8.68	7.58	5.71	3.07	1.28	1.35	1.15	1.03	0.97	0.86	0.89	0.86	0.97	1.03	1.15	1.35	1.28
130	8.76	8.40	7.55	6.62	4.88	2.62	1.17	1.21	1.10	1.02	0.98	0.88	0.93	0.88	0.98	1.02	1.10	1.21	1.17
135	7.86	7.54	6.79	5.82	4.16	2.19	1.03	1.09	1.03	0.98	0.94	0.86	0.94	0.86	0.94	0.98	1.03	1.09	1.03
140	7.15	6.77	6.08	5.06	3.54	1.83	0.89	0.96	0.93	0.90	0.87	0.79	0.91	0.79	0.87	0.90	0.93	0.96	0.89
145	6.38	6.01	5.33	4.35	2.98	1.51	0.79	0.84	0.82	0.79	0.77	0.71	0.88	0.71	0.77	0.79	0.82	0.84	0.79
150	5.54	5.22	4.59	3.66	2.48	1.25	0.71	0.74	0.72	0.70	0.67	0.63	0.83	0.63	0.67	0.70	0.72	0.74	0.71
155	4.65	4.38	3.84	2.98	1.98	1.04	0.66	0.68	0.65	0.62	0.58	0.55	0.73	0.55	0.58	0.62	0.65	0.68	0.66
160	3.63	3.43	2.99	2.30	1.50	0.85	0.60	0.62	0.59	0.56	0.52	0.48	0.61	0.48	0.52	0.56	0.59	0.62	0.60
165	2.48	2.35	2.04	1.57	1.06	0.65	0.56	0.57	0.55	0.52	0.48	0.46	0.50	0.46	0.48	0.52	0.55	0.57	0.56
170	1.32	1.27	1.12	0.91	0.69	0.50	0.52	0.52	0.50	0.48	0.45	0.44	0.42	0.44	0.45	0.48	0.50	0.52	0.52
175	0.52	0.51	0.49	0.46	0.46	0.49	0.51	0.51	0.51	0.51	0.49	0.48	0.40	0.48	0.49	0.51	0.51	0.51	0.51
180	0.36	0.35	0.37	0.40	0.42	0.44	0.45	0.46	0.46	0.46	0.45	0.45	0.35	0.45	0.45	0.46	0.46	0.46	0.45

Table--2

UNIT: cd

C (DEG) y (DEG)	285	300	315	330	345														
0	154	154	154	154	154														
5	247	352	398	400	370														
10	332	330	290	314	335														
15	354	329	370	411	459														
20	334	403	449	540	634														
25	366	447	553	673	794														
30	384	501	647	784	904														
35	409	546	704	867	992														
40	397	598	799	1007	1208														
45	394	626	911	1237	1482														
50	431	680	966	1102	1138														
55	414	658	859	937	968														
60	397	608	735	809	858														
65	338	520	653	728	759														
70	298	432	557	599	619														
75	217	337	423	428	437														
80	139	232	292	309	333														
85	72.4	139	179	191	207														
90	22.7	52.3	72.7	74.2	78.1														
95	11.5	28.3	36.4	39.6	43.1														
100	7.99	18.9	24.7	28.6	32.6														
105	6.17	13.5	17.7	20.9	24.0														
110	4.97	10.2	13.3	15.9	18.6														
115	4.15	8.14	10.6	12.2	14.2														
120	3.56	6.74	8.90	10.2	11.6														
125	3.07	5.71	7.58	8.68	9.81														
130	2.62	4.88	6.62	7.55	8.40														
135	2.19	4.16	5.82	6.79	7.54														
140	1.83	3.54	5.06	6.08	6.77														
145	1.51	2.98	4.35	5.33	6.01														
150	1.25	2.48	3.66	4.59	5.22														
155	1.04	1.98	2.98	3.84	4.38														
160	0.85	1.50	2.30	2.99	3.43														
165	0.65	1.06	1.57	2.04	2.35														
170	0.50	0.69	0.91	1.12	1.27														
175	0.49	0.46	0.46	0.49	0.51														
180	0.44	0.42	0.40	0.37	0.35														

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

<b>Model No.</b>	PWLED @13W4000K	<b>Sample ID</b>	241031001-S1
<b>Temperature (°C)</b>	25.4	<b>Humidity (%RH)</b>	41.0

<b>Test Method</b>
<p>The samples were tested according to the and Ansi C82.77: 2002 and ANSI C82.77-10:2020</p> <p>The total harmonic distortion shall be measured to the 40th order.</p> <p>The ambient temperature shall be maintained at <math>25 \pm 1^\circ\text{C}</math>. 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 was calculated.</p>

### Test Results

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	iTHD(%)
120.0	60	0.109	11.7	0.891	26.98
277.0	60	0.080	12.7	0.577	48.50



## 5.0 Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2023-11-08	2024-11-07
NTC-F01-006	2.0 meter Integrating Sphere	2023-11-08	2024-11-07
NTC-F01-012	Standard Lamp	2023-11-02	2024-11-01
NTC-F01-013	Standard Lamp	2023-11-02	2024-11-01
NTC-F01-031	Digital Power Meter	2024-08-06	2025-08-05
NTC-F01-019	Temperature & Humidity Meter	2023-11-06	2024-11-05

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