

## 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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Revised Date: N/A

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## 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		1769
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	ANSI/IES LM-79:2019	N/A		136.1
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	300		1728
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	Standard	Premium	132.9
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		13.0
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	120V	26.45
			277V	47.88
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	120V	0.895
			277V	0.582
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	3045±175	3027
		4 steps	3045±100	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		81.7
Minimum R9 (Integrating Sphere – Section 4.1)	ANSI/IES LM-79-2019 CIE13.3-1995	N/A		12
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		98
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		0.081
(Goniophotometer – Section 4.2)		Non-Worst Case		0.112
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		13.0
(Goniophotometer – Section 4.2)		Non-Worst Case		12.0

## 2.0 Test List

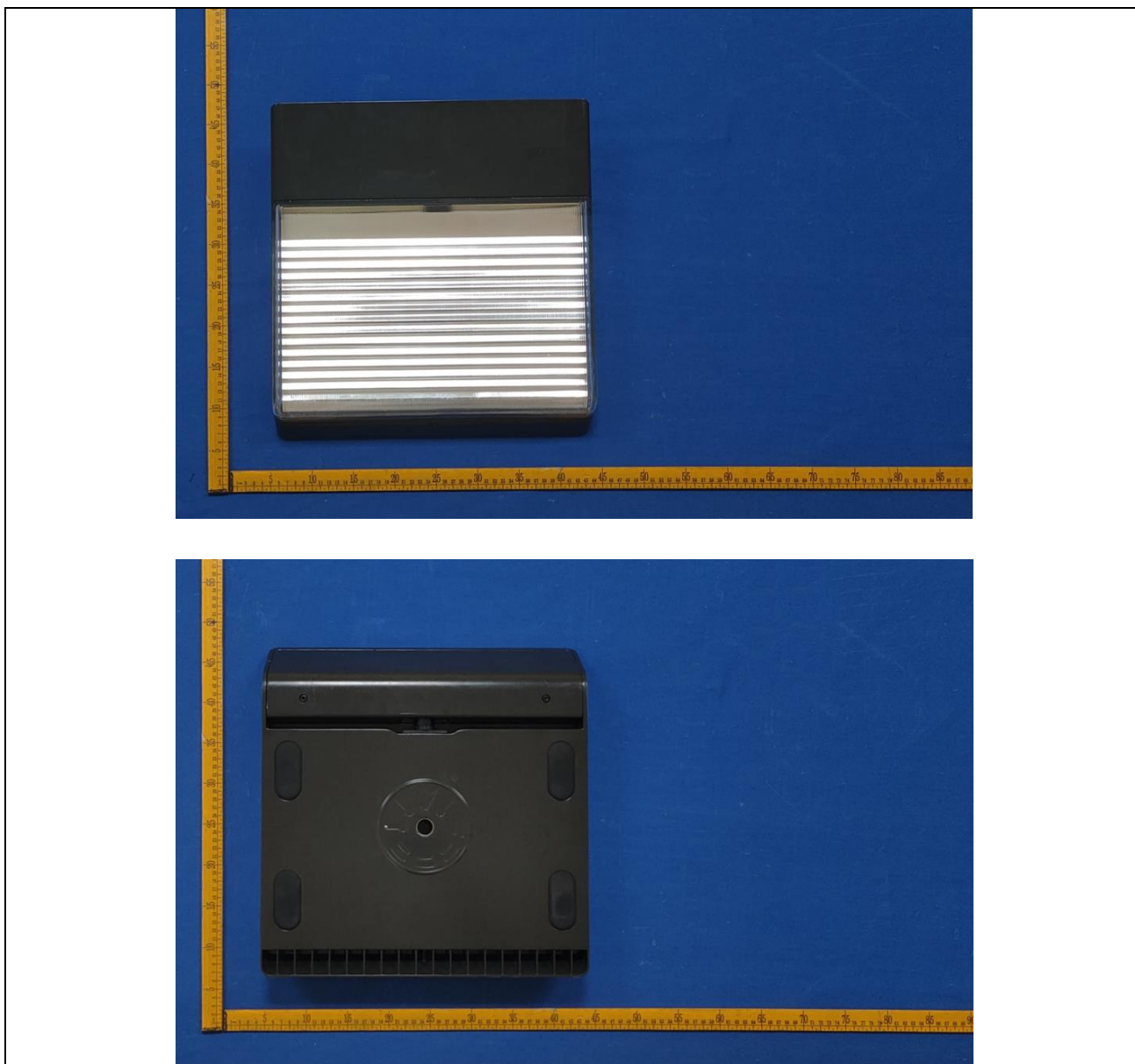
Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024-10-31	PWLED @13W3000K	-	241031001-S1
2	Goniophotometer Test	2024-10-31	PWLED @13W3000K	-	241031001-S1
3	THD and PF Test	2024-10-31	PWLED @13W3000K	-	241031001-S1
<b>Remark (If any):</b>					
<ol style="list-style-type: 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 @13W3000K, 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 @13W3000K	<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

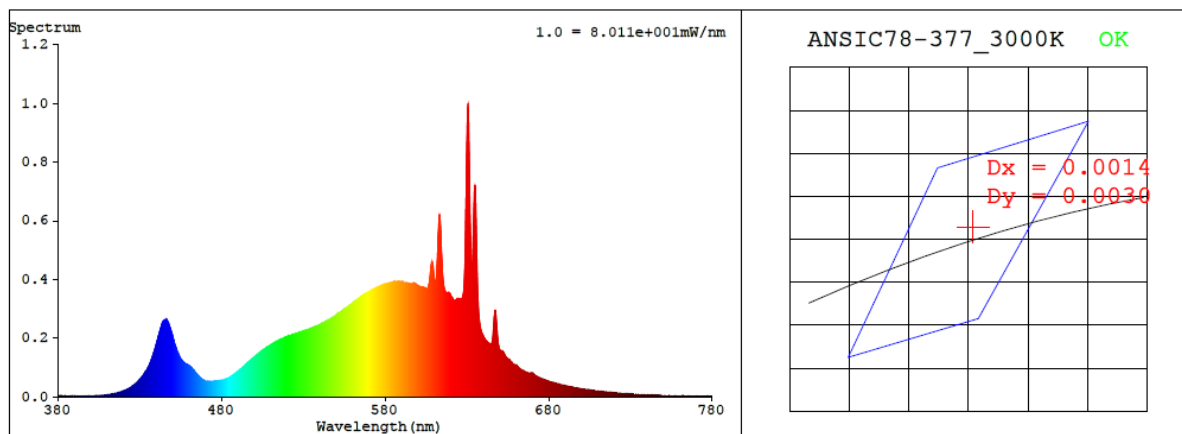
<b>Test Method</b>
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were 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 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 780nm.</p>

### Test Result

<b>Voltage (Vac)</b>	<b>Frequency (Hz)</b>	<b>Current (A)</b>	<b>Power (W)</b>	<b>Power Factor</b>
120.0	60	0.112	12.0	0.895
277.0	60	0.081	13.0	0.582

<b>CCT (K)</b>	<b>CRI</b>	<b>R9</b>	<b>Duv</b>	<b>Rf</b>	<b>Rg</b>	<b>IES Rcs,h1</b>
3027	81.7	12	0.0010	83	98	-11%

## 4.1 Integrating Sphere Test



### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.4364$   $y = 0.4064$  /  $u' = 0.2493$   $v' = 0.5222$  ( $duv=9.80e-04$ )

CCT= 3027K Prcp WL:  $L_d=582.4nm$  Purity=53.0%

Peak WL:  $L_p=631nm$  FWHM:  $=4.1nm$  Ratio:R=22.6% G=75.3% B=2.1%

Render Index:  $R_a = 81.7$  AvgR = 75.6 TM30:Rf=82 Rg=97

EEL: 0.10364 A++ Highest

R1 =80 R2 =87 R3 =95 R4 =81 R5 =79 R6 =84 R7 =85

R8 =63 R9 =12 R10=71 R11=80 R12=66 R13=81 R14=97 R15=74

## 4.1 Integrating Sphere Test

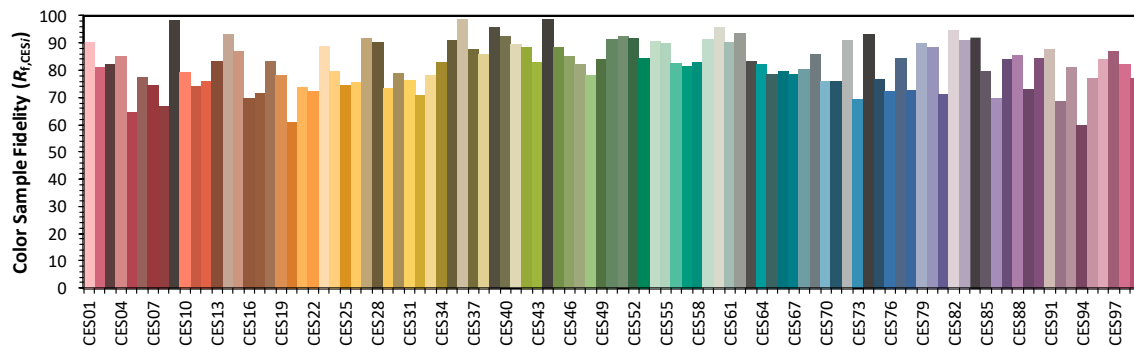
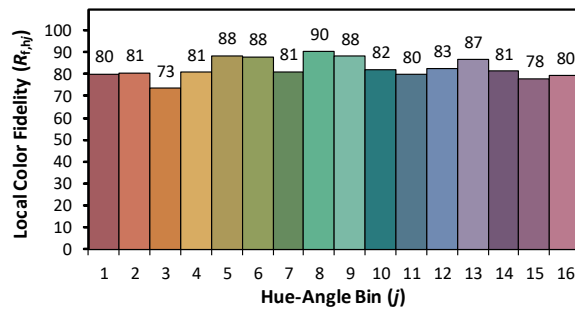
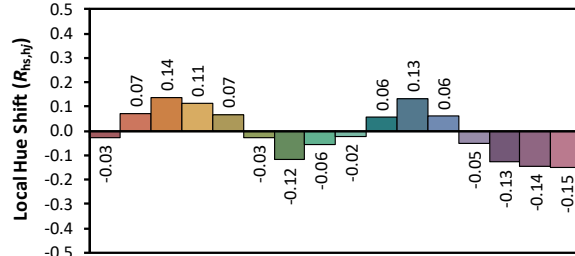
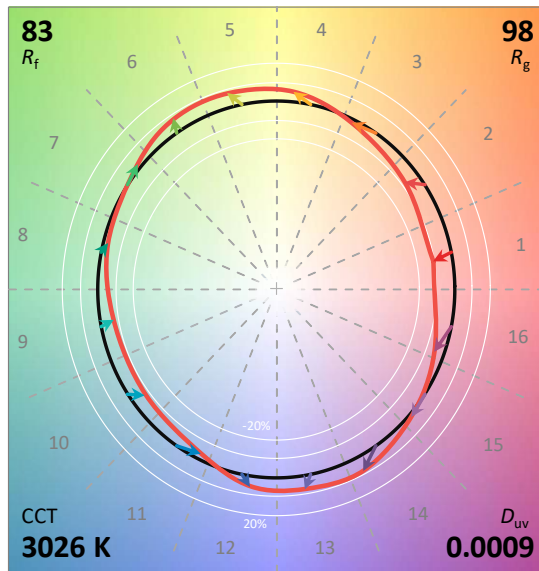
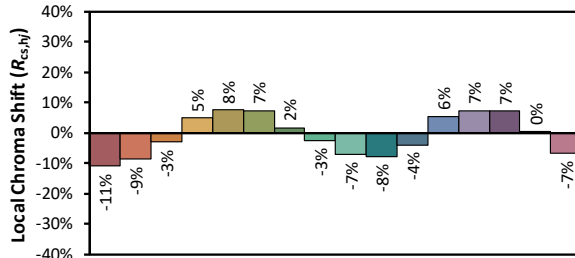
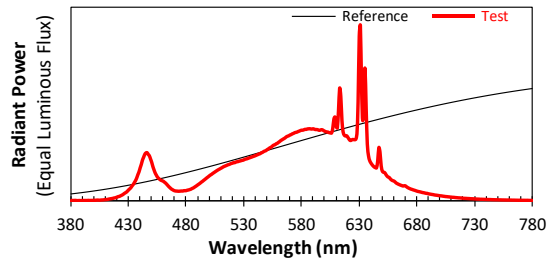
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/11/1

Model: PWLED @13W3000K



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

$x$  0.4364  
 $y$  0.4062  
 $u'$  0.2493  
 $v'$  0.5222

CIE 13.3-1995  
(CRI)

$R_a$  82  
 $R_g$  12



## 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	0.00E+00	447	2.53E-04	514	1.90E-04	581	3.84E-04	648	2.64E-04	715	1.68E-05
381	1.90E-06	448	2.45E-04	515	1.93E-04	582	3.87E-04	649	1.91E-04	716	1.60E-05
382	1.80E-06	449	2.27E-04	516	1.96E-04	583	3.89E-04	650	1.62E-04	717	1.57E-05
383	2.00E-06	450	2.10E-04	517	1.98E-04	584	3.89E-04	651	1.55E-04	718	1.53E-05
384	2.10E-06	451	1.87E-04	518	2.00E-04	585	3.91E-04	652	1.54E-04	719	1.47E-05
385	1.20E-06	452	1.69E-04	519	2.03E-04	586	3.92E-04	653	1.45E-04	720	1.41E-05
386	1.00E-06	453	1.52E-04	520	2.05E-04	587	3.92E-04	654	1.35E-04	721	1.35E-05
387	1.50E-06	454	1.40E-04	521	2.08E-04	588	3.91E-04	655	1.30E-04	722	1.32E-05
388	1.20E-06	455	1.29E-04	522	2.07E-04	589	3.91E-04	656	1.27E-04	723	1.29E-05
389	7.00E-07	456	1.22E-04	523	2.11E-04	590	3.92E-04	657	1.19E-04	724	1.24E-05
390	2.20E-06	457	1.17E-04	524	2.13E-04	591	3.90E-04	658	1.13E-04	725	1.21E-05
391	1.50E-06	458	1.12E-04	525	2.14E-04	592	3.88E-04	659	1.10E-04	726	1.17E-05
392	1.80E-06	459	1.09E-04	526	2.16E-04	593	3.88E-04	660	1.08E-04	727	1.12E-05
393	1.70E-06	460	1.07E-04	527	2.17E-04	594	3.87E-04	661	1.03E-04	728	1.10E-05
394	1.60E-06	461	1.02E-04	528	2.20E-04	595	3.84E-04	662	9.71E-05	729	1.06E-05
395	2.30E-06	462	9.66E-05	529	2.21E-04	596	3.84E-04	663	9.34E-05	730	1.01E-05
396	1.70E-06	463	9.01E-05	530	2.23E-04	597	3.87E-04	664	9.02E-05	731	9.70E-06
397	1.90E-06	464	8.30E-05	531	2.26E-04	598	3.86E-04	665	8.74E-05	732	9.40E-06
398	2.00E-06	465	7.61E-05	532	2.28E-04	599	3.83E-04	666	8.48E-05	733	9.20E-06
399	2.10E-06	466	7.04E-05	533	2.30E-04	600	3.79E-04	667	8.26E-05	734	8.90E-06
400	2.50E-06	467	6.45E-05	534	2.32E-04	601	3.76E-04	668	8.06E-05	735	8.30E-06
401	2.70E-06	468	6.08E-05	535	2.34E-04	602	3.75E-04	669	8.17E-05	736	8.40E-06
402	3.40E-06	469	5.69E-05	536	2.37E-04	603	3.74E-04	670	8.12E-05	737	8.00E-06
403	3.90E-06	470	5.44E-05	537	2.39E-04	604	3.71E-04	671	7.63E-05	738	7.90E-06
404	3.50E-06	471	5.32E-05	538	2.41E-04	605	3.70E-04	672	7.21E-05	739	7.50E-06
405	3.10E-06	472	5.28E-05	539	2.43E-04	606	3.69E-04	673	6.88E-05	740	7.30E-06
406	4.20E-06	473	5.21E-05	540	2.46E-04	607	3.92E-04	674	6.59E-05	741	7.00E-06
407	4.40E-06	474	5.22E-05	541	2.49E-04	608	4.44E-04	675	6.33E-05	742	6.80E-06
408	4.80E-06	475	5.28E-05	542	2.52E-04	609	4.56E-04	676	6.14E-05	743	6.70E-06
409	5.80E-06	476	5.33E-05	543	2.54E-04	610	4.05E-04	677	5.90E-05	744	6.60E-06
410	6.40E-06	477	5.32E-05	544	2.57E-04	611	3.97E-04	678	5.72E-05	745	6.20E-06
411	6.90E-06	478	5.50E-05	545	2.61E-04	612	4.90E-04	679	5.49E-05	746	6.00E-06
412	8.00E-06	479	5.49E-05	546	2.63E-04	613	6.13E-04	680	5.27E-05	747	5.80E-06
413	9.60E-06	480	5.57E-05	547	2.68E-04	614	5.68E-04	681	5.09E-05	748	5.60E-06
414	1.07E-05	481	5.79E-05	548	2.71E-04	615	4.38E-04	682	4.96E-05	749	5.40E-06
415	1.18E-05	482	5.90E-05	549	2.73E-04	616	3.75E-04	683	4.82E-05	750	5.50E-06
416	1.27E-05	483	6.12E-05	550	2.78E-04	617	3.58E-04	684	4.64E-05	751	5.00E-06
417	1.47E-05	484	6.32E-05	551	2.82E-04	618	3.53E-04	685	4.48E-05	752	4.90E-06
418	1.57E-05	485	6.70E-05	552	2.86E-04	619	3.55E-04	686	4.38E-05	753	4.80E-06
419	1.77E-05	486	6.96E-05	553	2.90E-04	620	3.46E-04	687	4.22E-05	754	4.50E-06
420	2.02E-05	487	7.38E-05	554	2.94E-04	621	3.37E-04	688	4.07E-05	755	4.50E-06
421	2.28E-05	488	7.79E-05	555	3.00E-04	622	3.29E-04	689	4.02E-05	756	4.30E-06
422	2.41E-05	489	8.22E-05	556	3.04E-04	623	3.29E-04	690	3.80E-05	757	4.30E-06
423	2.73E-05	490	8.70E-05	557	3.06E-04	624	3.33E-04	691	3.69E-05	758	3.90E-06
424	3.04E-05	491	9.13E-05	558	3.11E-04	625	3.33E-04	692	3.57E-05	759	4.10E-06
425	3.38E-05	492	9.59E-05	559	3.13E-04	626	3.33E-04	693	3.46E-05	760	4.00E-06
426	3.87E-05	493	1.01E-04	560	3.18E-04	627	3.35E-04	694	3.37E-05	761	3.80E-06
427	4.29E-05	494	1.06E-04	561	3.23E-04	628	3.64E-04	695	3.22E-05	762	3.80E-06
428	4.68E-05	495	1.11E-04	562	3.28E-04	629	5.37E-04	696	3.10E-05	763	3.40E-06
429	5.28E-05	496	1.16E-04	563	3.32E-04	630	8.96E-04	697	3.04E-05	764	3.50E-06
430	5.95E-05	497	1.21E-04	564	3.36E-04	631	9.54E-04	698	2.94E-05	765	3.30E-06
431	6.54E-05	498	1.26E-04	565	3.40E-04	632	6.23E-04	699	2.84E-05	766	3.10E-06
432	7.19E-05	499	1.31E-04	566	3.44E-04	633	4.36E-04	700	2.73E-05	767	3.10E-06
433	8.12E-05	500	1.36E-04	567	3.49E-04	634	5.94E-04	701	2.68E-05	768	2.80E-06
434	8.88E-05	501	1.41E-04	568	3.52E-04	635	7.21E-04	702	2.59E-05	769	3.00E-06
435	9.95E-05	502	1.44E-04	569	3.54E-04	636	5.02E-04	703	2.48E-05	770	2.70E-06
436	1.10E-04	503	1.49E-04	570	3.58E-04	637	3.09E-04	704	2.40E-05	771	2.60E-06
437	1.24E-04	504	1.53E-04	571	3.61E-04	638	2.46E-04	705	2.30E-05	772	2.60E-06
438	1.42E-04	505	1.58E-04	572	3.65E-04	639	2.20E-04	706	2.26E-05	773	2.60E-06
439	1.58E-04	506	1.62E-04	573	3.67E-04	640	2.07E-04	707	2.17E-05	774	2.50E-06
440	1.79E-04	507	1.66E-04	574	3.71E-04	641	1.98E-04	708	2.12E-05	775	2.40E-06
441	1.98E-04	508	1.70E-04	575	3.72E-04	642	1.90E-04	709	2.02E-05	776	2.60E-06
442	2.22E-04	509	1.73E-04	576	3.74E-04	643	1.84E-04	710	1.98E-05	777	2.10E-06
443	2.37E-04	510	1.77E-04	577	3.77E-04	644	1.81E-04	711	1.89E-05	778	2.00E-06
444	2.53E-04	511	1.80E-04	578	3.79E-04	645	1.80E-04	712	1.88E-05	779	2.00E-06
445	2.60E-04	512	1.85E-04	579	3.82E-04	646	2.17E-04	713	1.79E-05	780	2.00E-06
446	2.62E-04	513	1.87E-04	580	3.84E-04	647	2.89E-04	714	1.73E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	PWLED @13W3000K	<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\pm1^{\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	0.081	13.0	0.582
<b>NON-WORST CASE</b>	120.0	60	0.112	12.0	0.895

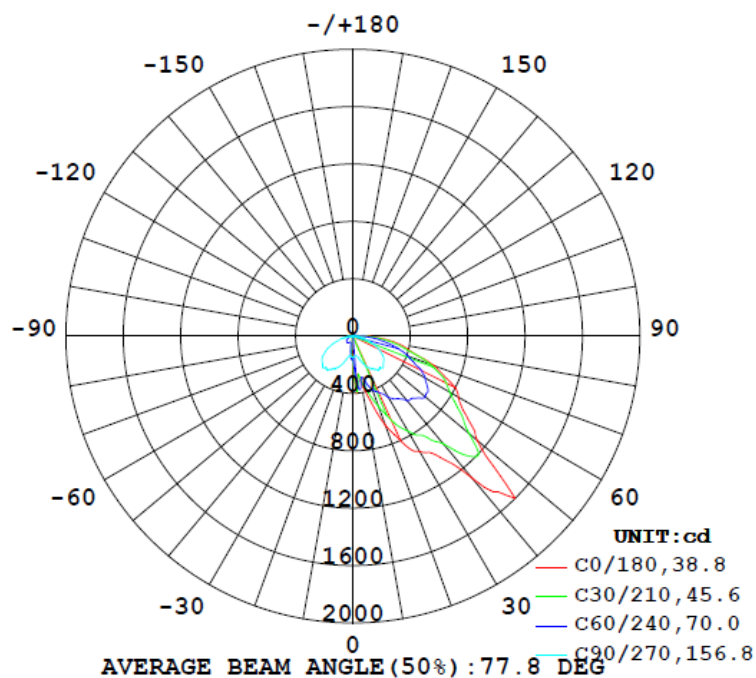
### Test Result

Result Type	Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement	BUG
		C0-180	C90-270	C0-180	C90-270		(80°-90°)	
<b>0°-180° zones</b>	1769	90.8	146.5	42.5	80.5	136.1	4.7%	B0-U2-G1
<b>0°-90° zones</b>	1728	90.8	146.5	42.5	80.5	132.9	4.9%	B0-U2-G1

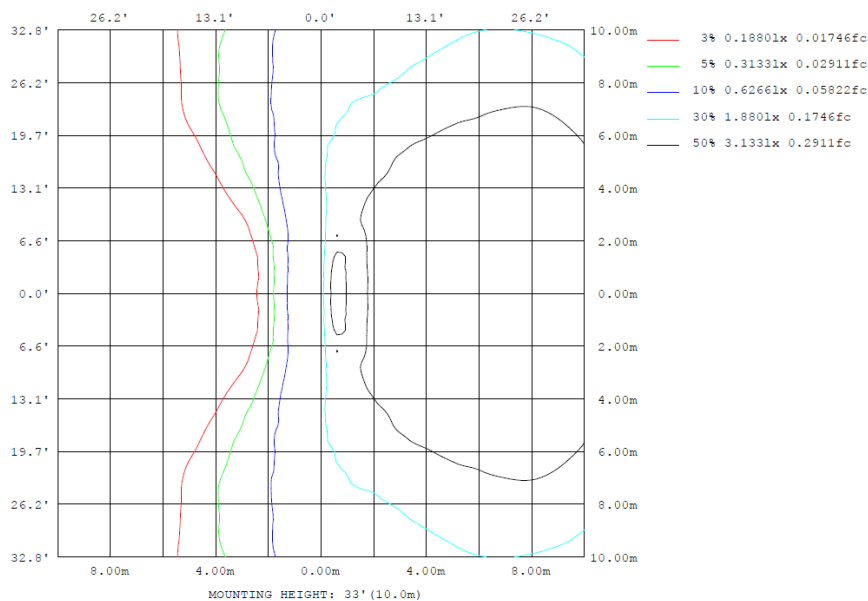
## 4.2 Goniophotometer Test

### Lighting Distribution Curve

#### LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



### Isolux Plot



## 4.2 Goniophotometer Test

### Zonal Lumen Summary

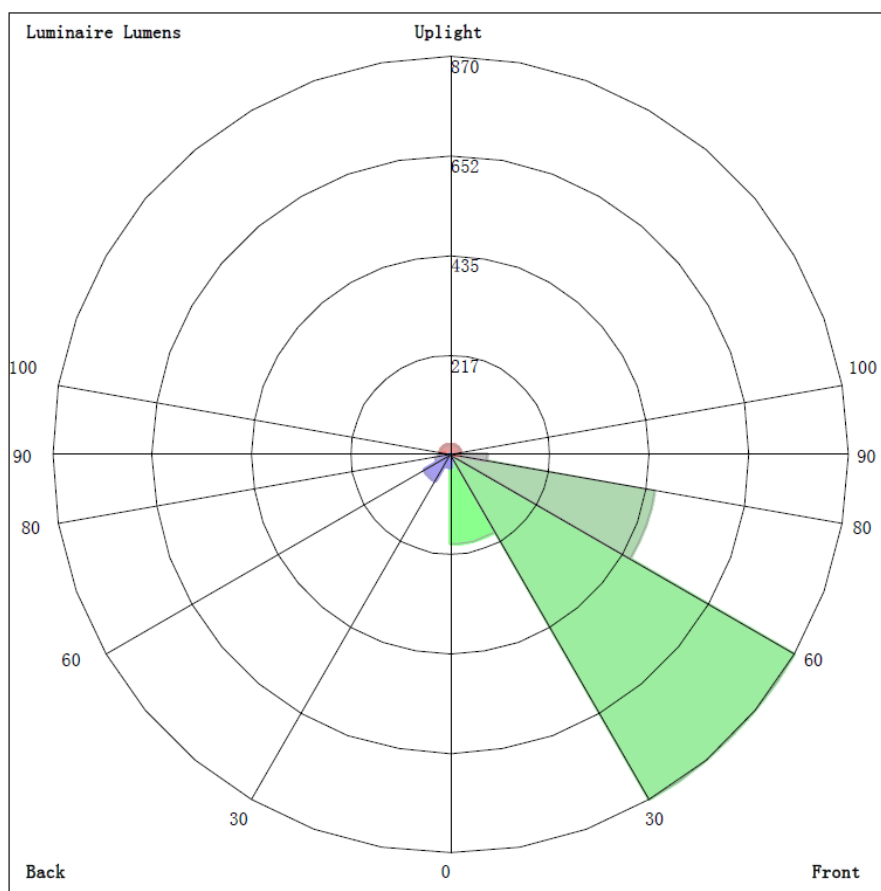
ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	%lum, lamp
10	329.1	281.8	140.0	64.11	34.14	64.11	140.0	281.8	0- 10	19.56	19.56	1.11, 1.11
20	660.6	441.7	202.4	24.61	11.86	24.61	202.4	441.7	10- 20	61.72	81.28	4.59, 4.59
30	929.8	631.4	264.0	23.95	8.013	23.95	264.0	631.4	20- 30	140.0	221.2	12.5, 12.5
40	1291	767.8	295.9	23.13	3.408	23.13	295.9	767.8	30- 40	235.5	456.7	25.8, 25.8
50	1132	934.8	279.9	19.14	0.5477	19.14	279.9	934.8	40- 50	354.6	811.3	45.9, 45.9
60	847.7	706.4	226.6	16.02	0.0440	16.02	226.6	706.4	50- 60	345.6	1157	65.4, 65.4
70	601.6	532.9	141.5	11.08	0.1070	11.08	141.5	532.9	60- 70	294.1	1451	82, 82
80	330.3	278.8	60.02	6.790	0.2339	6.790	60.02	278.8	70- 80	193.4	1644	92.9, 92.9
90	80.46	68.95	7.999	2.644	0.4059	2.644	7.999	68.95	80- 90	84.00	1728	97.7, 97.7
100	34.23	23.58	2.440	1.329	0.5982	1.329	2.440	23.58	90-100	18.40	1747	98.7, 98.7
110	19.38	12.77	1.621	1.022	0.7300	1.022	1.621	12.77	100-110	9.078	1756	99.2, 99.2
120	11.87	8.545	1.354	0.9817	0.8007	0.9817	1.354	8.545	110-120	5.234	1761	99.5, 99.5
130	8.416	6.351	1.122	0.9785	0.8953	0.9785	1.122	6.351	120-130	3.413	1764	99.7, 99.7
140	6.863	4.866	0.8582	0.8655	0.8794	0.8655	0.8582	4.866	130-140	2.293	1767	99.9, 99.9
150	5.314	3.517	0.6798	0.6737	0.8048	0.6737	0.6798	3.517	140-150	1.444	1768	99.9, 99.9
160	3.476	2.200	0.5815	0.5387	0.5876	0.5387	0.5815	2.200	150-160	0.7728	1769	100, 100
170	1.272	0.8745	0.4975	0.4653	0.4117	0.4653	0.4975	0.8745	160-170	0.2906	1769	100, 100
180	0.3492	0.3894	0.4351	0.4451	0.3418	0.4451	0.4351	0.3894	170-180	0.0507	1769	100, 100
DEG	LUMINOUS INTENSITY:cd								UNIT:lm			

Zonal (lm)		Total (lm)		Percent
0-10	19.56	0-10	19.56	1.11%
10-20	61.72	0-20	81.28	4.59%
20-30	139.96	0-30	221.24	12.50%
30-40	235.47	0-40	456.71	25.81%
40-50	354.58	0-50	811.29	45.86%
50-60	345.56	0-60	1156.85	65.39%
60-70	294.07	0-70	1450.92	82.01%
70-80	193.41	0-80	1644.33	92.94%
80-90	84.00	0-90	1728.33	97.69%
90-100	18.40	0-100	1746.73	98.73%
100-110	9.08	0-110	1755.81	99.24%
110-120	5.23	0-120	1761.04	99.54%
120-130	3.41	0-130	1764.45	99.73%
130-140	2.29	0-140	1766.74	99.86%
140-150	1.44	0-150	1768.18	99.94%
150-160	0.77	0-160	1768.95	99.98%
160-170	0.29	0-170	1769.24	100.00%
170-180	0.05	0-180	1769.29	100.00%

## 4.2 Goniophotometer Test

LCS/BUG

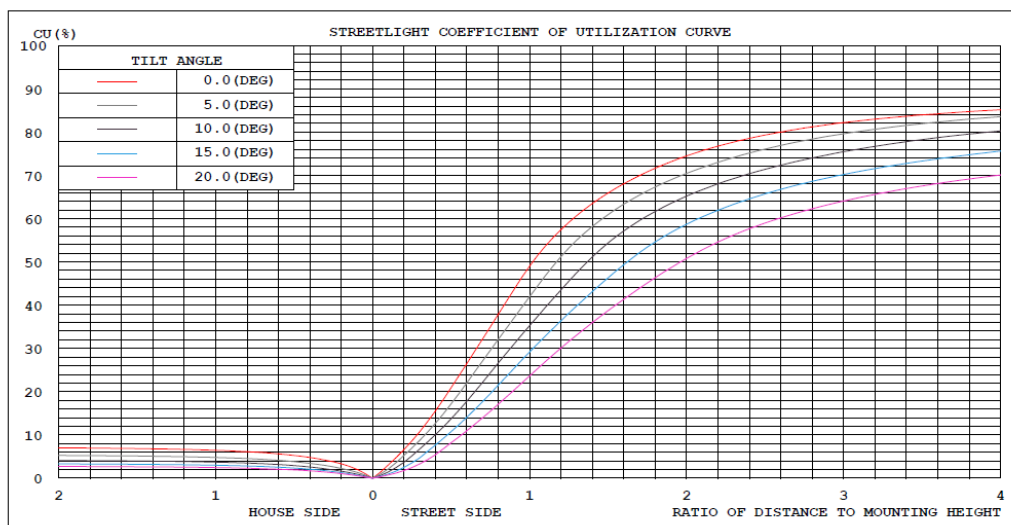


### LUMINAIRE CLASSIFICATION SYSTEM (LCS)

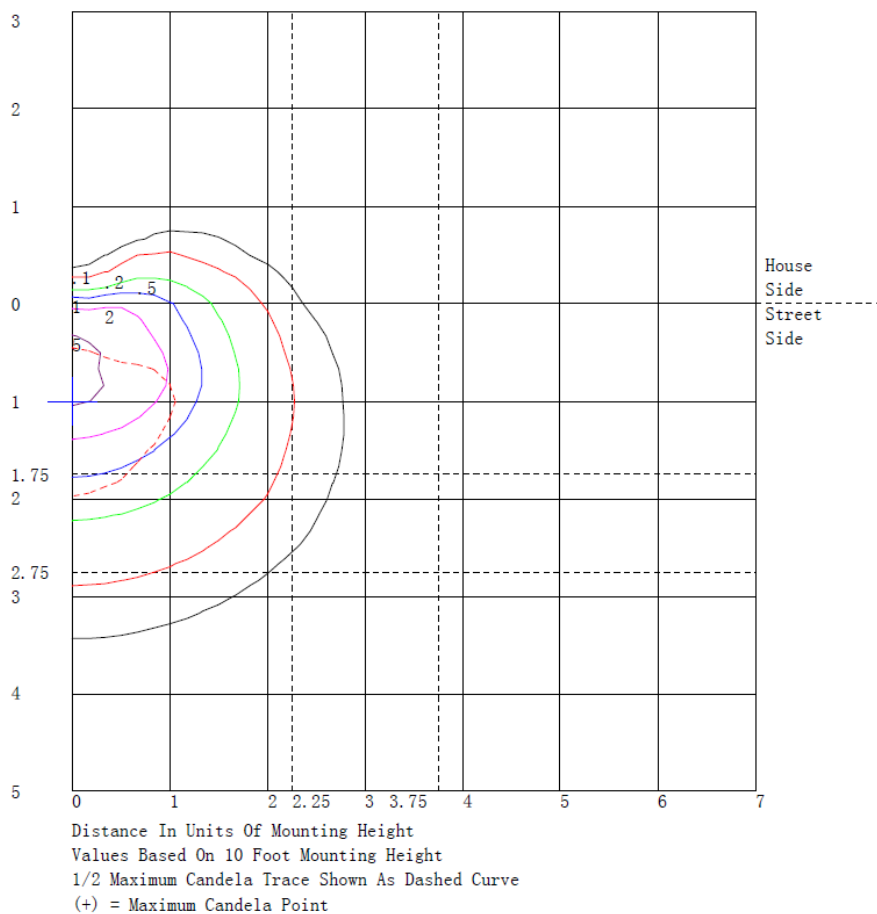
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	194.9	N.A.	11.0
FM - Front-Medium (30-60)	869.8	N.A.	49.2
FH - Front-High (60-80)	454.2	N.A.	25.7
FVH - Front-Very High (80-90)	79.1	N.A.	4.5
BL - Back-Low (0-30)	26.3	N.A.	1.5
BM - Back-Medium (30-60)	65.8	N.A.	3.7
BH - Back-High (60-80)	33.3	N.A.	1.9
BVH - Back-Very High (80-90)	4.9	N.A.	0.3
UL - Uplight-Low (90-100)	18.4	N.A.	1.0
UH - Uplight-High (100-180)	22.6	N.A.	1.3
Total	1769.3	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	149	150	150	150	150	149	149	149	149	149	148	149	149	149	148	149	149	149	149
5	351	360	389	386	344	241	143	156	157	140	122	111	112	111	122	140	157	156	143
10	329	322	303	282	320	323	140	143	104	64.1	43.1	34.8	34.1	34.8	43.1	64.1	104	143	140
15	465	442	402	361	322	344	160	120	61.5	31.8	21.9	17.8	17.4	17.8	21.9	31.8	61.5	120	160
20	661	612	523	442	396	322	202	110	47.4	24.6	16.1	12.0	11.9	12.0	16.1	24.6	47.4	110	202
25	819	774	657	537	437	356	237	105	46.3	24.4	14.0	9.70	9.43	9.70	14.0	24.4	46.3	105	237
30	930	881	763	631	493	376	264	108	49.9	24.0	13.0	8.66	8.01	8.66	13.0	24.0	49.9	108	264
35	1012	960	844	688	532	386	283	113	55.4	23.2	12.4	6.88	5.55	6.88	12.4	23.2	55.4	113	283
40	1291	1167	978	768	590	376	296	112	62.4	23.1	11.4	5.08	3.41	5.08	11.4	23.1	62.4	112	296
45	1598	1430	1191	880	613	374	297	122	58.9	21.7	10.6	3.85	1.76	3.85	10.6	21.7	58.9	122	297
50	1132	1090	1057	935	657	406	280	110	59.7	19.1	10.1	3.09	0.55	3.09	10.1	19.1	59.7	110	280
55	965	930	905	829	636	386	263	109	54.7	17.1	9.81	3.07	0.04	3.07	9.81	17.1	54.7	109	263
60	848	825	779	706	581	373	227	100.0	50.1	16.0	9.77	3.46	0.04	3.46	9.77	16.0	50.1	100.0	227
65	739	730	698	625	492	316	185	89.7	40.0	13.9	10.1	3.52	0.07	3.52	10.1	13.9	40.0	89.7	185
70	602	593	574	533	408	278	142	74.3	32.4	11.1	8.97	3.35	0.11	3.35	8.97	11.1	32.4	74.3	142
75	425	419	408	401	317	203	97.6	54.0	22.1	9.18	7.70	2.69	0.16	2.69	7.70	9.18	22.1	54.0	97.6
80	330	323	297	279	221	129	60.0	34.2	15.6	6.79	5.96	1.99	0.23	1.99	5.96	6.79	15.6	34.2	60.0
85	210	200	182	168	131	68.5	27.7	18.9	9.69	4.58	3.61	1.31	0.31	1.31	3.61	4.58	9.69	18.9	27.7
90	80.5	74.7	71.2	69.0	50.3	21.9	8.00	8.84	4.84	2.64	2.01	0.84	0.41	0.84	2.01	2.64	4.84	8.84	8.00
95	44.3	41.4	38.1	34.9	27.4	11.0	3.45	4.50	2.89	1.68	1.24	0.63	0.50	0.63	1.24	1.68	2.89	4.50	3.45
100	34.2	31.5	27.5	23.6	18.2	7.62	2.44	3.11	2.09	1.33	1.00	0.59	0.60	0.59	1.00	1.33	2.09	3.11	2.44
105	24.8	23.1	20.1	17.0	12.9	5.90	1.89	2.37	1.64	1.13	0.89	0.60	0.68	0.60	0.89	1.13	1.64	2.37	1.89
110	19.4	17.9	15.3	12.8	9.71	4.74	1.62	1.93	1.37	1.02	0.86	0.64	0.73	0.64	0.86	1.02	1.37	1.93	1.62
115	14.8	13.7	11.7	10.2	7.77	3.98	1.47	1.64	1.22	1.00	0.87	0.70	0.77	0.70	0.87	1.00	1.22	1.64	1.47
120	11.9	11.2	9.80	8.54	6.46	3.41	1.35	1.44	1.15	0.98	0.90	0.77	0.80	0.77	0.90	0.98	1.15	1.44	1.35
125	9.98	9.42	8.34	7.26	5.49	2.94	1.23	1.29	1.11	0.99	0.94	0.83	0.85	0.83	0.94	0.99	1.11	1.29	1.23
130	8.42	8.06	7.27	6.35	4.68	2.51	1.12	1.16	1.06	0.98	0.94	0.85	0.90	0.85	0.94	0.98	1.06	1.16	1.12
135	7.56	7.26	6.52	5.58	4.00	2.10	0.99	1.04	0.99	0.94	0.91	0.83	0.90	0.83	0.91	0.94	0.99	1.04	0.99
140	6.86	6.52	5.84	4.87	3.39	1.75	0.86	0.92	0.89	0.87	0.83	0.76	0.88	0.76	0.83	0.87	0.89	0.92	0.86
145	6.13	5.77	5.13	4.17	2.87	1.45	0.76	0.80	0.78	0.76	0.74	0.68	0.85	0.68	0.74	0.76	0.78	0.80	0.76
150	5.31	5.00	4.41	3.52	2.38	1.19	0.68	0.71	0.69	0.67	0.65	0.61	0.80	0.61	0.65	0.67	0.69	0.71	0.68
155	4.46	4.21	3.69	2.87	1.90	0.99	0.63	0.65	0.63	0.60	0.56	0.53	0.71	0.53	0.56	0.60	0.63	0.65	0.63
160	3.48	3.29	2.86	2.20	1.44	0.82	0.58	0.60	0.57	0.54	0.50	0.47	0.59	0.47	0.50	0.54	0.57	0.60	0.58
165	2.38	2.26	1.95	1.51	1.01	0.63	0.54	0.55	0.53	0.50	0.47	0.45	0.48	0.45	0.47	0.50	0.53	0.55	0.54
170	1.27	1.21	1.07	0.87	0.66	0.49	0.50	0.50	0.49	0.47	0.44	0.43	0.41	0.43	0.44	0.47	0.49	0.50	0.50
175	0.50	0.49	0.48	0.45	0.44	0.47	0.49	0.50	0.50	0.49	0.48	0.46	0.39	0.46	0.48	0.49	0.50	0.50	0.49
180	0.35	0.34	0.36	0.39	0.41	0.43	0.44	0.44	0.44	0.45	0.43	0.44	0.34	0.44	0.43	0.45	0.44	0.44	0.44

Table--2

UNIT: cd

C (DEG) y (DEG)	285	300	315	330	345														
0	149	150	150	150	150														
5	241	344	386	389	360														
10	323	320	282	303	322														
15	344	322	361	402	442														
20	322	396	442	523	612														
25	356	437	537	657	774														
30	376	493	631	763	881														
35	386	532	688	844	960														
40	376	590	768	978	1167														
45	374	613	880	1191	1430														
50	406	657	935	1057	1090														
55	386	636	829	905	930														
60	373	581	706	779	825														
65	316	492	625	698	730														
70	278	408	533	574	593														
75	203	317	401	408	419														
80	129	221	279	297	323														
85	68.5	131	168	182	200														
90	21.9	50.3	69.0	71.2	74.7														
95	11.0	27.4	34.9	38.1	41.4														
100	7.62	18.2	23.6	27.5	31.5														
105	5.90	12.9	17.0	20.1	23.1														
110	4.74	9.71	12.8	15.3	17.9														
115	3.98	7.77	10.2	11.7	13.7														
120	3.41	6.46	8.54	9.80	11.2														
125	2.94	5.49	7.26	8.34	9.42														
130	2.51	4.68	6.35	7.27	8.06														
135	2.10	4.00	5.58	6.52	7.26														
140	1.75	3.39	4.87	5.84	6.52														
145	1.45	2.87	4.17	5.13	5.77														
150	1.19	2.38	3.52	4.41	5.00														
155	0.99	1.90	2.87	3.69	4.21														
160	0.82	1.44	2.20	2.86	3.29														
165	0.63	1.01	1.51	1.95	2.26														
170	0.49	0.66	0.87	1.07	1.21														
175	0.47	0.44	0.45	0.48	0.49														
180	0.43	0.41	0.39	0.36	0.34														

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

<b>Model No.</b>	PWLED @13W3000K	<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	0.112	12.0	0.895	26.45
277.0	60	0.081	13.0	0.582	47.88



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