

## 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: 2024-10-10

Review by:

*Vincent Yuan*

Technical Lead: Vincent Yuan

Issue Date: 2024-10-10

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		5499
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	ANSI/IES LM-79:2019	N/A		139.9
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	300		5361
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	Standard	Premium	136.4
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		39.3
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	120V	3.02
			277V	14.63
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	120V	0.996
			277V	0.921
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	3045±175	3018
		4 steps	3045±100	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		81.3
Minimum R9 (Integrating Sphere – Section 4.1)	ANSI/IES LM-79-2019 CIE13.3-1995	N/A		11
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		82
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%		5.1%
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		0.154
(Goniophotometer – Section 4.2)		Non-Worst Case		0.327
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		39.3
(Goniophotometer – Section 4.2)		Non-Worst Case		39.1

## 2.0 Test List

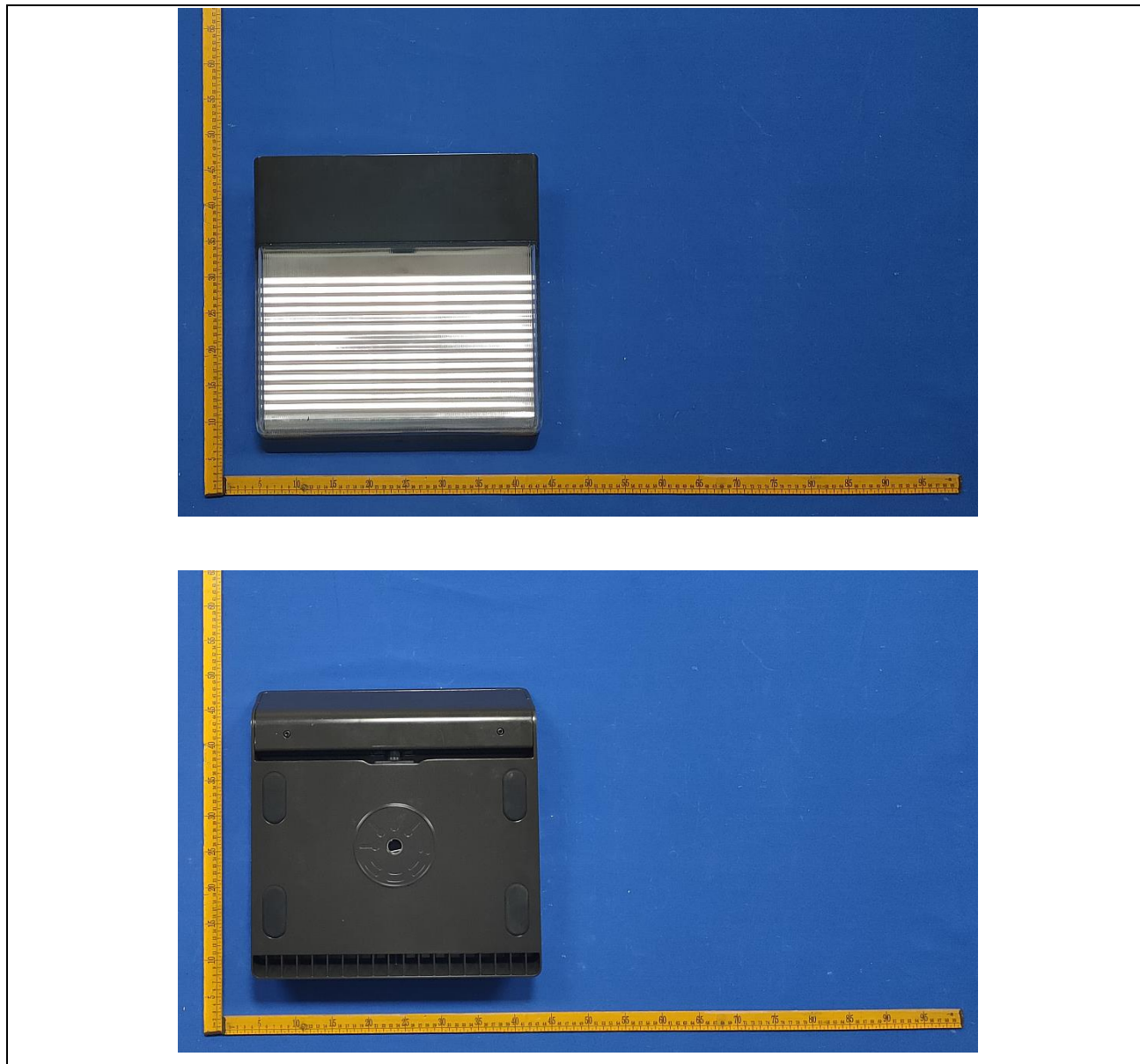
Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024-10-09	PWLED @41W3000K	-	241009001-S1
2	Goniophotometer Test	2024-10-09	PWLED @41W3000K	-	241009001-S1
3	THD and PF Test	2024-10-09	PWLED @41W3000K	-	241009001-S1
<b>Remark (If any):</b>					
<ol style="list-style-type: 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 @41W3000K, 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 @41W3000K	<b>Sample ID</b>	241009001-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

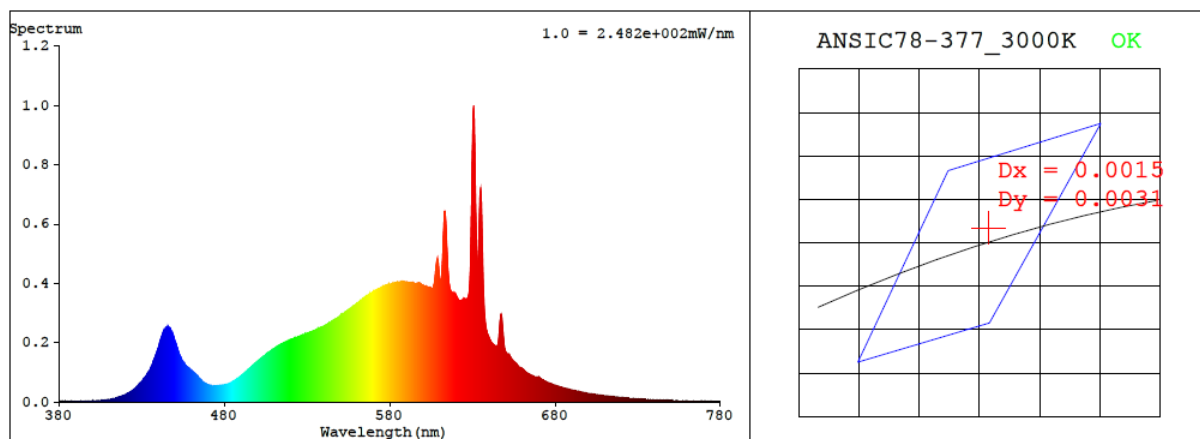
<b>Test Method</b>
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were 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	0.327	39.1	0.996
277.0	60	0.154	39.3	0.921

<b>CCT (K)</b>	<b>CRI</b>	<b>R9</b>	<b>Duv</b>	<b>Rf</b>	<b>Rg</b>	<b>IES Rcs,h1</b>
3018	81.3	11	0.0010	82	98	-11%

#### 4.1 Integrating Sphere Test



#### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.4372$   $y = 0.4068$  /  $u' = 0.2496$   $v' = 0.5225$  ( $duv=1.03e-03$ )

CCT= 3018K Prcp WL:  $L_d=582.4nm$  Purity=53.3%

Peak WL:  $L_p=631nm$  FWHM:  $=4.2nm$  Ratio:R=22.6% G=75.3% B=2.1%

Render Index:  $R_a = 81.3$  AvgR = 75.0 TM30:Rf=82 Rg=97

EEL: 0.09768 A++ Highest

R1 =79 R2 =87 R3 =94 R4 =81 R5 =79 R6 =84 R7 =85

R8 =62 R9 =11 R10=70 R11=79 R12=66 R13=80 R14=96 R15=73

## 4.1 Integrating Sphere Test

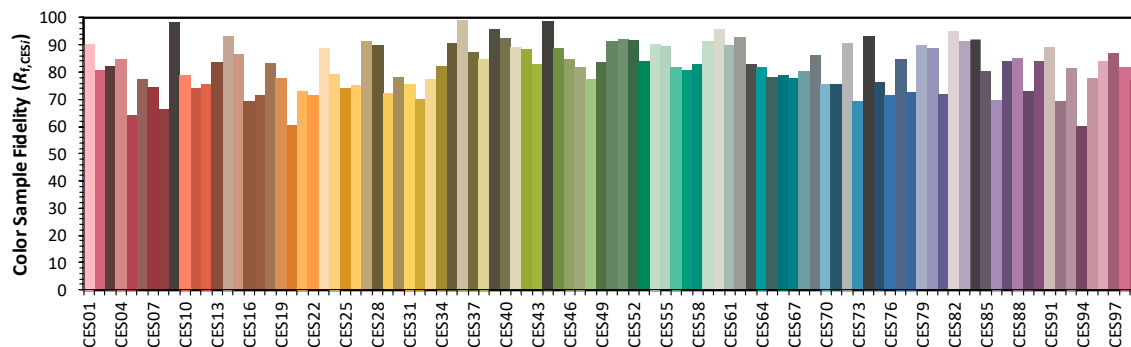
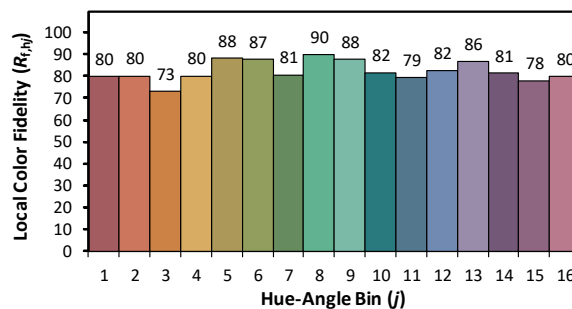
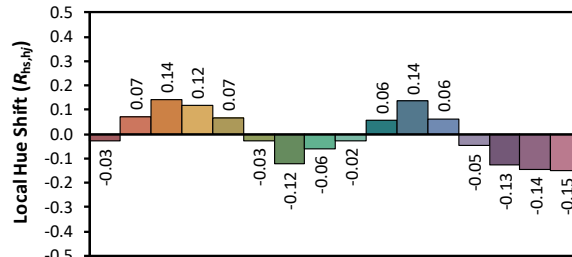
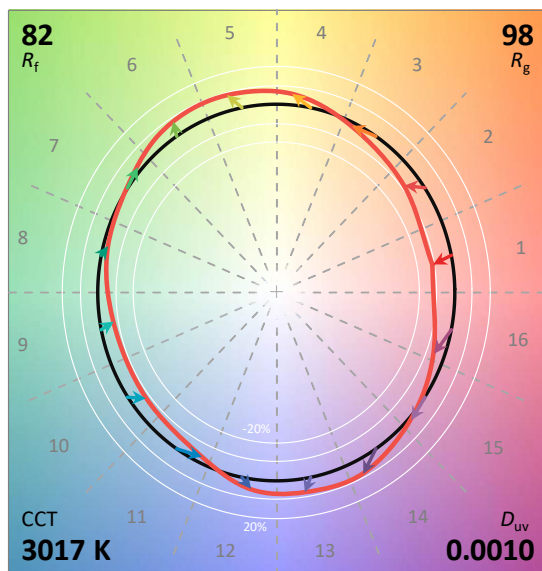
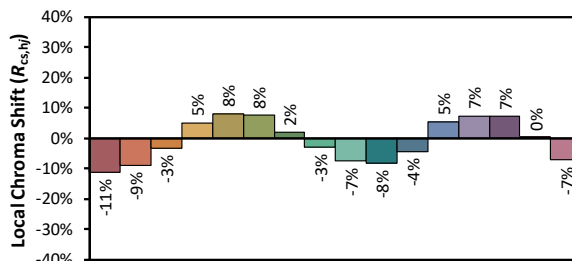
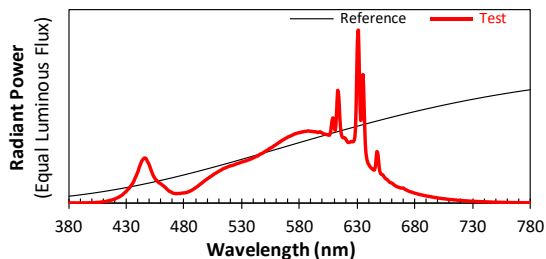
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/10/10

Model: PWLED @41W3000K



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

$x$  0.4372  
 $y$  0.4066  
 $u'$  0.2496  
 $v'$  0.5224

CIE 13.3-1995  
(CRI)

$R_a$  81  
 $R_g$  11



## 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	7.00E-07	447	2.49E-04	514	1.95E-04	581	3.98E-04	648	2.73E-04	715	1.83E-05
381	1.60E-06	448	2.35E-04	515	1.97E-04	582	4.01E-04	649	2.03E-04	716	1.76E-05
382	2.20E-06	449	2.25E-04	516	2.00E-04	583	4.01E-04	650	1.70E-04	717	1.66E-05
383	1.10E-06	450	2.08E-04	517	2.02E-04	584	4.03E-04	651	1.62E-04	718	1.63E-05
384	2.40E-06	451	1.90E-04	518	2.05E-04	585	4.04E-04	652	1.60E-04	719	1.58E-05
385	1.90E-06	452	1.72E-04	519	2.07E-04	586	4.04E-04	653	1.52E-04	720	1.54E-05
386	8.00E-07	453	1.57E-04	520	2.10E-04	587	4.06E-04	654	1.42E-04	721	1.47E-05
387	1.50E-06	454	1.45E-04	521	2.12E-04	588	4.06E-04	655	1.37E-04	722	1.42E-05
388	2.10E-06	455	1.35E-04	522	2.13E-04	589	4.05E-04	656	1.32E-04	723	1.39E-05
389	1.50E-06	456	1.29E-04	523	2.15E-04	590	4.05E-04	657	1.26E-04	724	1.37E-05
390	1.70E-06	457	1.21E-04	524	2.18E-04	591	4.03E-04	658	1.19E-04	725	1.28E-05
391	1.30E-06	458	1.16E-04	525	2.21E-04	592	4.02E-04	659	1.15E-04	726	1.27E-05
392	1.40E-06	459	1.12E-04	526	2.23E-04	593	4.02E-04	660	1.13E-04	727	1.22E-05
393	2.90E-06	460	1.07E-04	527	2.25E-04	594	4.02E-04	661	1.09E-04	728	1.18E-05
394	1.60E-06	461	1.02E-04	528	2.26E-04	595	3.99E-04	662	1.03E-04	729	1.13E-05
395	1.80E-06	462	9.66E-05	529	2.30E-04	596	3.97E-04	663	9.82E-05	730	1.12E-05
396	2.30E-06	463	9.15E-05	530	2.32E-04	597	4.01E-04	664	9.45E-05	731	1.06E-05
397	2.60E-06	464	8.60E-05	531	2.33E-04	598	4.01E-04	665	9.19E-05	732	1.04E-05
398	2.70E-06	465	7.89E-05	532	2.36E-04	599	3.97E-04	666	8.94E-05	733	1.00E-05
399	2.30E-06	466	7.35E-05	533	2.38E-04	600	3.93E-04	667	8.69E-05	734	9.70E-06
400	2.40E-06	467	6.73E-05	534	2.40E-04	601	3.90E-04	668	8.51E-05	735	9.20E-06
401	3.50E-06	468	6.49E-05	535	2.42E-04	602	3.89E-04	669	8.55E-05	736	9.20E-06
402	3.20E-06	469	6.13E-05	536	2.44E-04	603	3.87E-04	670	8.51E-05	737	8.80E-06
403	3.60E-06	470	5.75E-05	537	2.47E-04	604	3.85E-04	671	8.00E-05	738	8.30E-06
404	4.60E-06	471	5.56E-05	538	2.49E-04	605	3.83E-04	672	7.59E-05	739	8.10E-06
405	4.80E-06	472	5.47E-05	539	2.53E-04	606	3.84E-04	673	7.31E-05	740	7.80E-06
406	5.00E-06	473	5.36E-05	540	2.55E-04	607	4.05E-04	674	6.97E-05	741	7.60E-06
407	5.60E-06	474	5.43E-05	541	2.59E-04	608	4.59E-04	675	6.69E-05	742	7.50E-06
408	6.50E-06	475	5.48E-05	542	2.61E-04	609	4.79E-04	676	6.44E-05	743	7.30E-06
409	7.60E-06	476	5.44E-05	543	2.65E-04	610	4.29E-04	677	6.25E-05	744	6.90E-06
410	8.60E-06	477	5.56E-05	544	2.67E-04	611	4.12E-04	678	6.08E-05	745	6.90E-06
411	9.10E-06	478	5.69E-05	545	2.72E-04	612	5.00E-04	679	5.80E-05	746	6.40E-06
412	1.01E-05	479	5.72E-05	546	2.76E-04	613	6.32E-04	680	5.63E-05	747	6.20E-06
413	1.17E-05	480	5.82E-05	547	2.79E-04	614	5.98E-04	681	5.45E-05	748	5.90E-06
414	1.29E-05	481	5.90E-05	548	2.82E-04	615	4.70E-04	682	5.26E-05	749	5.90E-06
415	1.49E-05	482	6.07E-05	549	2.86E-04	616	3.96E-04	683	5.06E-05	750	5.70E-06
416	1.66E-05	483	6.29E-05	550	2.90E-04	617	3.73E-04	684	4.91E-05	751	5.60E-06
417	1.79E-05	484	6.50E-05	551	2.95E-04	618	3.68E-04	685	4.74E-05	752	5.40E-06
418	2.01E-05	485	6.85E-05	552	2.97E-04	619	3.68E-04	686	4.63E-05	753	5.10E-06
419	2.20E-05	486	7.11E-05	553	3.03E-04	620	3.61E-04	687	4.49E-05	754	5.20E-06
420	2.44E-05	487	7.50E-05	554	3.07E-04	621	3.50E-04	688	4.34E-05	755	4.90E-06
421	2.79E-05	488	7.92E-05	555	3.11E-04	622	3.42E-04	689	4.22E-05	756	4.70E-06
422	3.03E-05	489	8.35E-05	556	3.14E-04	623	3.42E-04	690	4.08E-05	757	4.80E-06
423	3.37E-05	490	8.77E-05	557	3.18E-04	624	3.44E-04	691	3.94E-05	758	4.50E-06
424	3.70E-05	491	9.23E-05	558	3.24E-04	625	3.47E-04	692	3.86E-05	759	4.10E-06
425	4.16E-05	492	9.70E-05	559	3.27E-04	626	3.45E-04	693	3.71E-05	760	4.20E-06
426	4.54E-05	493	1.03E-04	560	3.32E-04	627	3.49E-04	694	3.63E-05	761	4.10E-06
427	5.07E-05	494	1.08E-04	561	3.35E-04	628	3.75E-04	695	3.45E-05	762	3.90E-06
428	5.76E-05	495	1.12E-04	562	3.41E-04	629	5.30E-04	696	3.35E-05	763	3.90E-06
429	6.24E-05	496	1.18E-04	563	3.44E-04	630	8.76E-04	697	3.23E-05	764	3.60E-06
430	6.91E-05	497	1.22E-04	564	3.50E-04	631	9.70E-04	698	3.15E-05	765	3.50E-06
431	7.69E-05	498	1.28E-04	565	3.53E-04	632	6.71E-04	699	3.06E-05	766	3.50E-06
432	8.32E-05	499	1.32E-04	566	3.58E-04	633	4.66E-04	700	2.91E-05	767	3.30E-06
433	9.14E-05	500	1.37E-04	567	3.61E-04	634	5.90E-04	701	2.85E-05	768	3.20E-06
434	1.00E-04	501	1.41E-04	568	3.65E-04	635	7.24E-04	702	2.78E-05	769	3.10E-06
435	1.10E-04	502	1.47E-04	569	3.68E-04	636	5.34E-04	703	2.66E-05	770	3.10E-06
436	1.20E-04	503	1.51E-04	570	3.73E-04	637	3.34E-04	704	2.58E-05	771	3.00E-06
437	1.36E-04	504	1.55E-04	571	3.75E-04	638	2.61E-04	705	2.54E-05	772	2.80E-06
438	1.50E-04	505	1.59E-04	572	3.77E-04	639	2.32E-04	706	2.43E-05	773	2.70E-06
439	1.65E-04	506	1.65E-04	573	3.81E-04	640	2.17E-04	707	2.36E-05	774	2.80E-06
440	1.82E-04	507	1.68E-04	574	3.83E-04	641	2.06E-04	708	2.28E-05	775	2.60E-06
441	2.03E-04	508	1.72E-04	575	3.87E-04	642	1.99E-04	709	2.18E-05	776	2.50E-06
442	2.19E-04	509	1.75E-04	576	3.90E-04	643	1.93E-04	710	2.11E-05	777	2.60E-06
443	2.35E-04	510	1.80E-04	577	3.92E-04	644	1.88E-04	711	2.03E-05	778	2.50E-06
444	2.44E-04	511	1.84E-04	578	3.94E-04	645	1.88E-04	712	2.01E-05	779	2.50E-06
445	2.52E-04	512	1.87E-04	579	3.96E-04	646	2.21E-04	713	1.94E-05	780	2.50E-06
446	2.54E-04	513	1.91E-04	580	3.97E-04	647	2.89E-04	714	1.85E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	PWLED @41W3000K	<b>Sample ID</b>	241009001-S1
<b>Operate time (Min.)</b>	30	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	25.0	<b>Humidity (%RH)</b>	42.2

<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	0.154	39.3	0.921
<b>NON-WORST CASE</b>	120.0	60	0.327	39.1	0.996

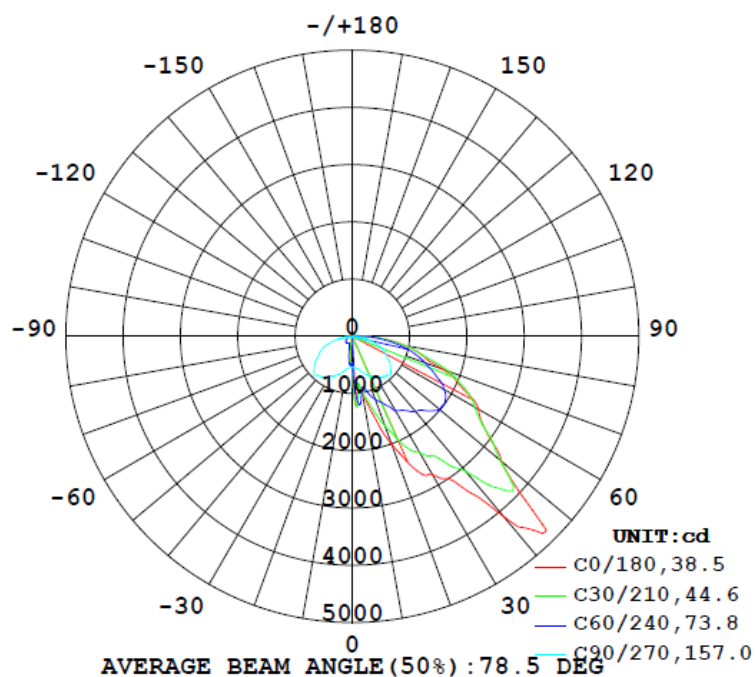
### Test Result

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>	5499	90.5	150.0	39.8	81.8	139.9	5.0%	B0-U3-G3
<b>0°-90° zones</b>	5361	90.5	150.0	39.8	81.8	136.4	5.1%	B0-U3-G3

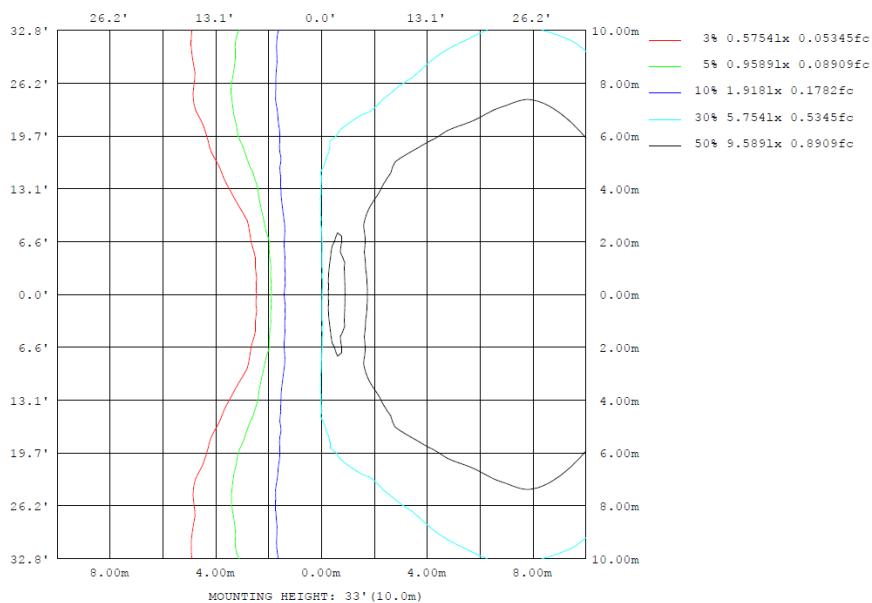
## 4.2 Goniophotometer Test

### Lighting Distribution Curve

#### LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



### Isolux Plot



## 4.2 Goniophotometer Test

### Zonal Lumen Summary

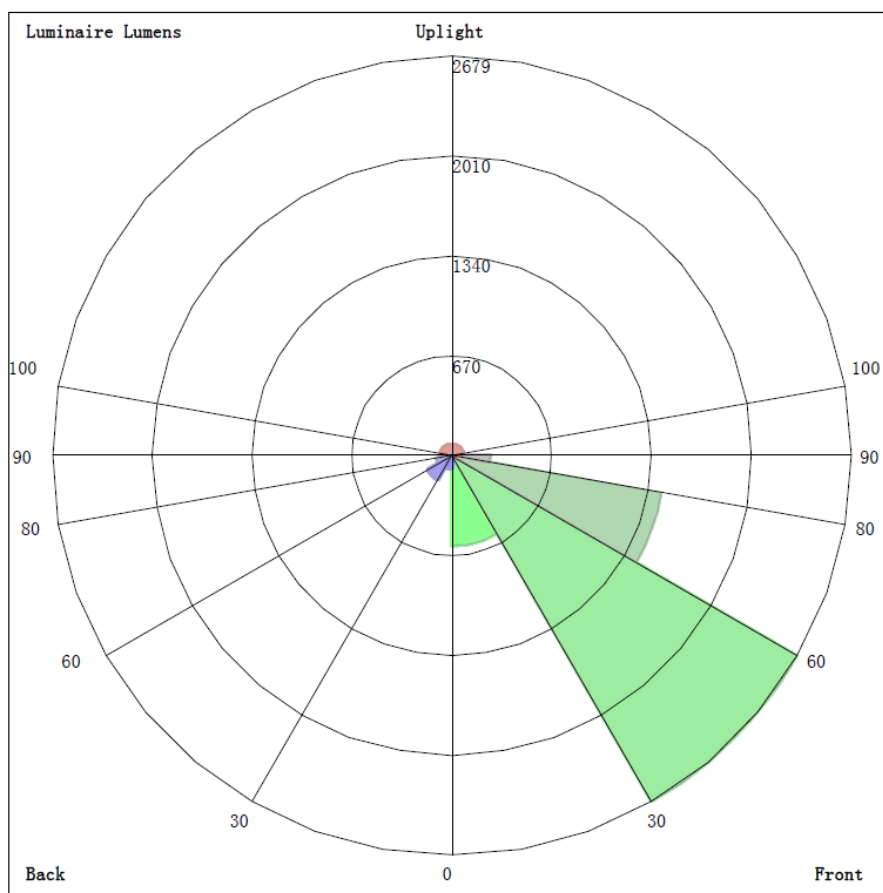
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	1014	886.0	576.9	239.8	115.6	239.8	576.9	886.0	0- 10	64.07	64.07	1.17,1.17
20	2003	1360	714.1	75.44	36.12	75.44	714.1	1360	10- 20	196.0	260.1	4.73,4.73
30	2783	1919	839.0	64.95	24.31	64.95	839.0	1919	20- 30	429.3	689.4	12.5,12.5
40	4107	2352	923.7	58.49	10.45	58.49	923.7	2352	30- 40	712.0	1401	25.5,25.5
50	3394	3018	872.4	50.23	1.895	50.23	872.4	3018	40- 50	1092	2494	45.3,45.3
60	2539	2254	680.2	42.73	0.1284	42.73	680.2	2254	50- 60	1062	3555	64.7,64.7
70	1689	1718	505.7	32.32	0.2997	32.32	505.7	1718	60- 70	913.2	4468	81.3,81.3
80	940.8	928.1	237.6	21.53	0.6602	21.53	237.6	928.1	70- 80	617.4	5086	92.5,92.5
90	190.5	225.3	34.46	9.236	1.174	9.236	34.46	225.3	80- 90	275.2	5361	97.5,97.5
100	99.49	80.09	7.950	4.064	1.752	4.064	7.950	80.09	90-100	61.70	5423	98.6,98.6
110	59.68	42.75	5.158	3.091	2.165	3.091	5.158	42.75	100-110	29.52	5452	99.1,99.1
120	36.15	29.25	4.470	3.006	2.397	3.006	4.470	29.25	110-120	17.00	5469	99.5,99.5
130	31.15	22.14	3.774	3.076	2.724	3.076	3.774	22.14	120-130	11.78	5481	99.7,99.7
140	22.62	17.47	2.922	2.878	2.658	2.878	2.922	17.47	130-140	8.026	5489	99.8,99.8
150	18.16	13.45	2.395	2.378	2.432	2.378	2.395	13.45	140-150	5.281	5494	99.9,99.9
160	13.18	10.08	2.208	2.014	1.827	2.014	2.208	10.08	150-160	3.088	5497	100,100
170	7.447	7.257	2.067	1.866	1.245	1.866	2.067	7.257	160-170	1.399	5499	100,100
180	1.052	1.163	1.328	1.346	1.041	1.346	1.328	1.163	170-180	0.2786	5499	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	64.07	0-10	64.07	1.17%
10-20	195.98	0-20	260.05	4.73%
20-30	429.33	0-30	689.38	12.54%
30-40	712.00	0-40	1401.38	25.49%
40-50	1092.28	0-50	2493.66	45.35%
50-60	1061.55	0-60	3555.21	64.65%
60-70	913.19	0-70	4468.40	81.26%
70-80	617.38	0-80	5085.78	92.49%
80-90	275.19	0-90	5360.97	97.49%
90-100	61.70	0-100	5422.67	98.62%
100-110	29.52	0-110	5452.19	99.15%
110-120	17.00	0-120	5469.19	99.46%
120-130	11.78	0-130	5480.97	99.68%
130-140	8.03	0-140	5489.00	99.82%
140-150	5.28	0-150	5494.28	99.92%
150-160	3.09	0-160	5497.37	99.97%
160-170	1.40	0-170	5498.77	100.00%
170-180	0.28	0-180	5499.05	100.01%

## 4.2 Goniophotometer Test

LCS/BUG

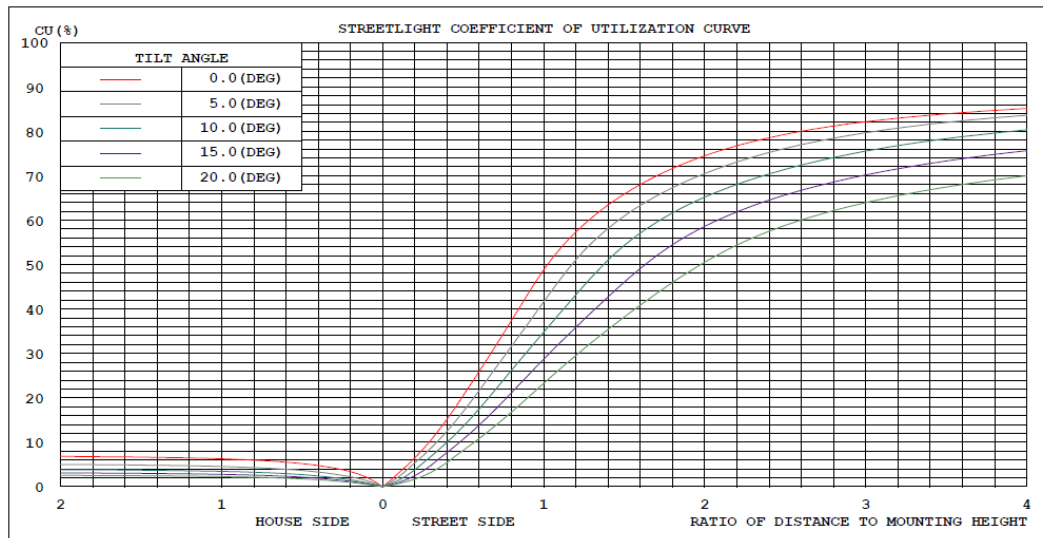


### LUMINAIRE CLASSIFICATION SYSTEM (LCS)

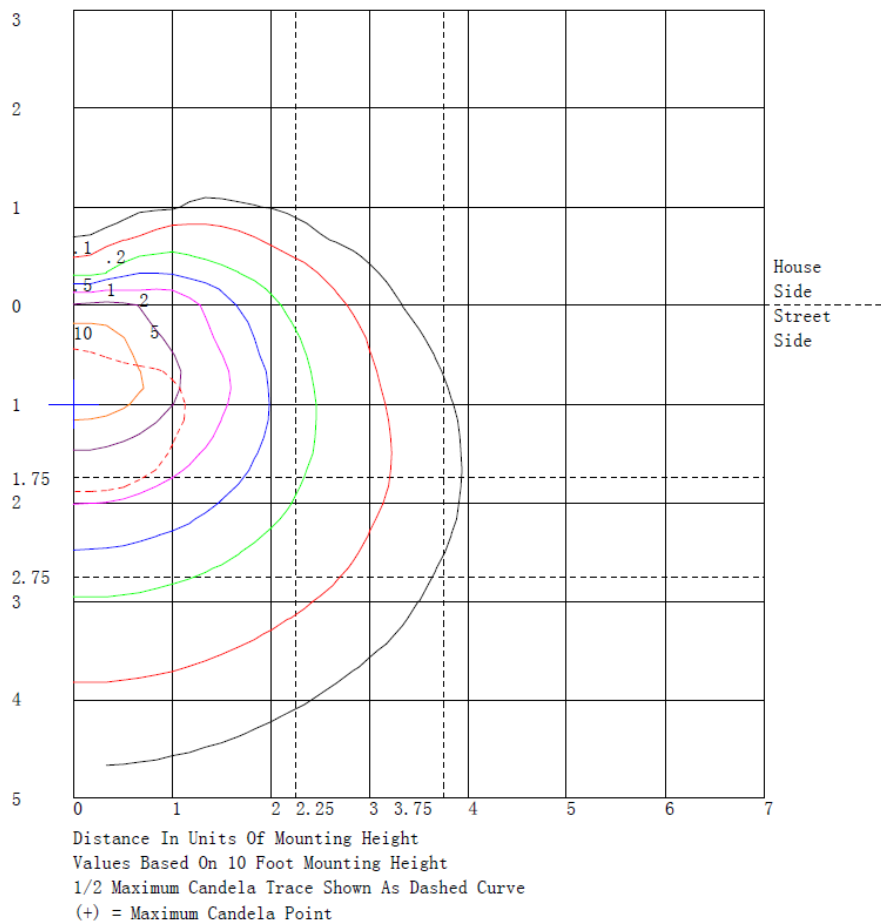
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	603.5	N.A.	11.0
FM - Front-Medium (30-60)	2679.5	N.A.	48.7
FH - Front-High (60-80)	1426.6	N.A.	25.9
FVH - Front-Very High (80-90)	256.6	N.A.	4.7
BL - Back-Low (0-30)	85.9	N.A.	1.6
BM - Back-Medium (30-60)	186.4	N.A.	3.4
BH - Back-High (60-80)	104.0	N.A.	1.9
BVH - Back-Very High (80-90)	18.6	N.A.	0.3
UL - Uplight-Low (90-100)	61.7	N.A.	1.1
UH - Uplight-High (100-180)	76.4	N.A.	1.4
Total	5499.2	N.A.	100.0
BUG Rating	B0-U3-G3		

## 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	531	537	543	546	549	547	542	538	531	524	517	510	531	510	517	524	531	538	542
5	953	986	1093	1225	1166	950	552	465	508	478	428	393	388	393	428	478	508	465	552
10	1014	1004	963	886	933	1099	577	463	370	240	158	122	116	122	158	240	370	463	577
15	1434	1381	1263	1117	1004	1003	649	400	222	112	71.9	57.4	54.6	57.4	71.9	112	222	400	649
20	2003	1905	1663	1360	1171	958	714	348	154	75.4	49.2	37.9	36.1	37.9	49.2	75.4	154	348	714
25	2542	2428	2082	1674	1299	1027	797	305	133	68.0	40.8	29.5	28.4	29.5	40.8	68.0	133	305	797
30	2783	2685	2348	1919	1507	1097	839	308	135	64.9	36.4	25.8	24.3	25.8	36.4	64.9	135	308	839
35	3089	2968	2578	2101	1582	1077	874	298	146	60.6	33.7	20.7	17.0	20.7	33.7	60.6	146	298	874
40	4107	3729	3077	2352	1711	1049	924	298	158	58.5	30.5	14.7	10.5	14.7	30.5	58.5	158	298	924
45	4794	4502	3819	2753	1838	1098	942	317	152	55.7	27.8	10.8	5.55	10.8	27.8	55.7	152	317	942
50	3394	3373	3371	3018	1994	1137	872	296	156	50.2	25.9	8.11	1.90	8.11	25.9	50.2	156	296	872
55	2831	2824	2828	2619	1981	1140	812	301	140	45.0	25.4	7.61	0.13	7.61	25.4	45.0	140	301	812
60	2539	2541	2463	2254	1842	1124	680	289	132	42.7	25.5	8.71	0.13	8.71	25.5	42.7	132	289	680
65	2104	2154	2176	2015	1597	1002	614	261	112	38.7	26.3	9.43	0.19	9.43	26.3	38.7	112	261	614
70	1689	1741	1792	1718	1353	869	506	217	96.4	32.3	25.9	9.39	0.30	9.39	25.9	32.3	96.4	217	506
75	1253	1271	1289	1315	1096	724	367	166	69.2	27.2	21.5	8.21	0.46	8.21	21.5	27.2	69.2	166	367
80	941	951	926	928	792	487	238	121	51.7	21.5	17.8	6.55	0.66	6.55	17.8	21.5	51.7	121	238
85	581	583	571	570	489	283	130	67.6	34.1	14.7	12.4	4.68	0.90	4.68	12.4	14.7	34.1	67.6	130
90	190	196	206	225	207	106	34.5	34.2	18.6	9.24	7.32	3.08	1.17	3.08	7.32	9.24	18.6	34.2	34.5
95	129	128	125	121	102	40.6	11.9	15.7	10.1	5.46	4.17	2.18	1.46	2.18	4.17	5.46	10.1	15.7	11.9
100	99.5	97.3	90.1	80.1	64.8	26.9	7.95	10.2	6.81	4.06	3.14	1.91	1.75	1.91	3.14	4.06	6.81	10.2	7.95
105	73.4	72.2	66.2	57.7	44.7	20.4	6.03	7.44	5.17	3.40	2.74	1.88	2.01	1.88	2.74	3.40	5.17	7.44	6.03
110	59.7	57.6	50.5	42.7	33.0	16.3	5.16	5.99	4.24	3.09	2.62	2.00	2.16	2.00	2.62	3.09	4.24	5.99	5.16
115	44.4	42.8	38.0	33.5	26.4	13.9	4.75	5.09	3.76	3.01	2.65	2.20	2.29	2.20	2.65	3.01	3.76	5.09	4.75
120	36.2	35.3	32.5	29.2	22.5	12.4	4.47	4.51	3.53	3.01	2.78	2.43	2.40	2.43	2.78	3.01	3.53	4.51	4.47
125	32.4	32.5	30.4	26.1	19.4	11.1	4.14	4.08	3.43	3.06	2.92	2.64	2.59	2.64	2.92	3.06	3.43	4.08	4.14
130	31.2	30.2	26.5	22.1	16.6	9.99	3.77	3.69	3.32	3.08	2.97	2.75	2.72	2.75	2.97	3.08	3.32	3.69	3.77
135	24.8	24.3	22.4	19.6	14.5	8.91	3.34	3.35	3.19	3.04	2.93	2.74	2.70	2.74	2.93	3.04	3.19	3.35	3.34
140	22.6	22.1	20.4	17.5	12.9	8.12	2.92	3.01	2.94	2.88	2.78	2.60	2.66	2.60	2.78	2.88	2.94	3.01	2.92
145	21.1	20.6	18.6	15.4	11.5	7.55	2.61	2.70	2.68	2.63	2.55	2.39	2.57	2.39	2.55	2.63	2.68	2.70	2.61
150	18.2	17.8	16.1	13.5	10.2	7.20	2.39	2.46	2.44	2.38	2.30	2.18	2.43	2.18	2.30	2.38	2.44	2.46	2.39
155	15.8	15.5	14.1	11.8	9.07	7.02	2.30	2.35	2.29	2.20	2.07	1.87	2.18	1.87	2.07	2.20	2.29	2.35	2.30
160	13.2	13.0	11.9	10.1	8.15	6.90	2.21	2.23	2.14	2.01	1.84	1.47	1.83	1.47	1.84	2.01	2.14	2.23	2.21
165	10.2	10.1	9.58	8.46	7.41	5.81	2.12	2.13	2.04	1.93	1.80	1.34	1.48	1.34	1.80	1.93	2.04	2.13	2.12
170	7.45	7.40	7.35	7.26	6.92	2.05	2.07	2.03	1.96	1.87	1.41	1.26	1.24	1.26	1.41	1.87	1.96	2.03	2.07
175	5.86	5.83	5.56	2.35	1.37	1.50	1.60	1.59	1.54	1.49	1.43	1.37	1.19	1.37	1.43	1.49	1.54	1.59	1.60
180	1.05	1.03	1.08	1.16	1.24	1.30	1.33	1.34	1.35	1.35	1.33	1.31	1.04	1.31	1.33	1.35	1.35	1.34	1.33

Table--2

UNIT: cd

C (DEG) y (DEG)	285	300	315	330	345														
0	547	549	546	543	537														
5	950	1166	1225	1093	986														
10	1099	933	886	963	1004														
15	1003	1004	1117	1263	1381														
20	958	1171	1360	1663	1905														
25	1027	1299	1674	2082	2428														
30	1097	1507	1919	2348	2685														
35	1077	1582	2101	2578	2968														
40	1049	1711	2352	3077	3729														
45	1098	1838	2753	3819	4502														
50	1137	1994	3018	3371	3373														
55	1140	1981	2619	2828	2824														
60	1124	1842	2254	2463	2541														
65	1002	1597	2015	2176	2154														
70	869	1353	1718	1792	1741														
75	724	1096	1315	1289	1271														
80	487	792	928	926	951														
85	283	489	570	571	583														
90	106	207	225	206	196														
95	40.6	102	121	125	128														
100	26.9	64.8	80.1	90.1	97.3														
105	20.4	44.7	57.7	66.2	72.2														
110	16.3	33.0	42.7	50.5	57.6														
115	13.9	26.4	33.5	38.0	42.8														
120	12.4	22.5	29.2	32.5	35.3														
125	11.1	19.4	26.1	30.4	32.5														
130	9.99	16.6	22.1	26.5	30.2														
135	8.91	14.5	19.6	22.4	24.3														
140	8.12	12.9	17.5	20.4	22.1														
145	7.55	11.5	15.4	18.6	20.6														
150	7.20	10.2	13.5	16.1	17.8														
155	7.02	9.07	11.8	14.1	15.5														
160	6.90	8.15	10.1	11.9	13.0														
165	5.81	7.41	8.46	9.58	10.1														
170	2.05	6.92	7.26	7.35	7.40														
175	1.50	1.37	2.35	5.56	5.83														
180	1.30	1.24	1.16	1.08	1.03														

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

<b>Model No.</b>	PWLED @41W3000K	<b>Sample ID</b>	241009001-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	0.327	39.1	0.996	3.02
277.0	60	0.154	39.3	0.921	14.63



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