

## 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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## 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		1786
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	ANSI/IES LM-79:2019	N/A		133.3
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	300		1747
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	Standard	Premium	130.4
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		13.4
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	480V	37.39
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	480V	0.551
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	5029±283	5159
		4 steps	5029±220	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		82.7
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		83
Minimum Rg (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥89		96
IES Rcs,h1 (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-13%
Zonal Lumen Requirement (80°-90°) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	≤10%		5.2%
Input Voltage (V)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Cast		480.0
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Input Current (A)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		0.051
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		13.4
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A

## 2.0 Test List

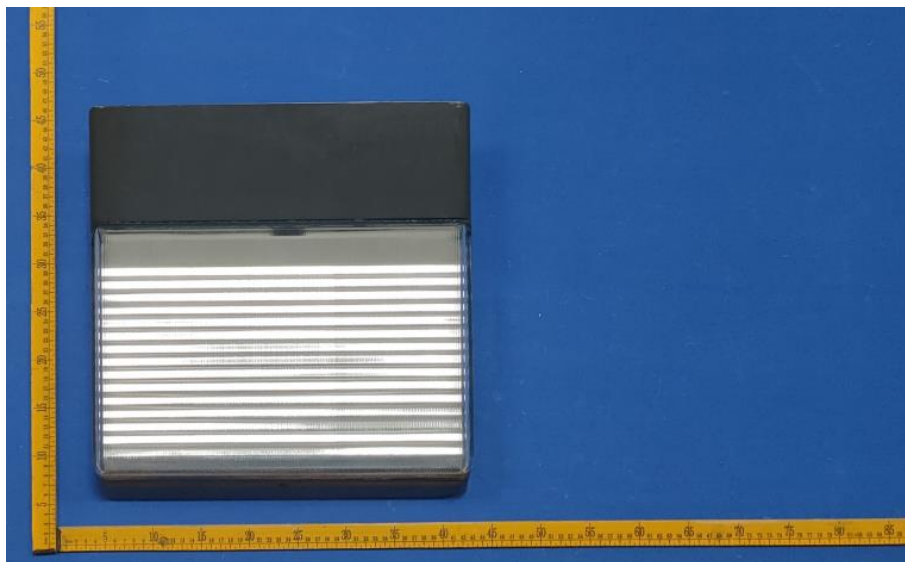
Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024-10-09	PWLED/480 @13W5000K	-	241009002-S1
2	Goniophotometer Test	2024-10-09	PWLED/480 @13W5000K	-	241009002-S1
3	THD and PF Test	2024-10-09	PWLED/480 @13W5000K	-	241009002-S1
<b>Remark (If any):</b>					
<ol style="list-style-type: 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/480 @13W5000K, color tunable from 3000K, 4000K and 5000K.

Electrical Specification: 480Vac, 50/60Hz

Photos of Luminaire Characteristics



## 4.0 LM-79 Measurement and Test Results

### 4.1 Integrating Sphere Test

<b>Model No.</b>	PWLED/480 @13W5000K	<b>Sample ID</b>	241009002-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

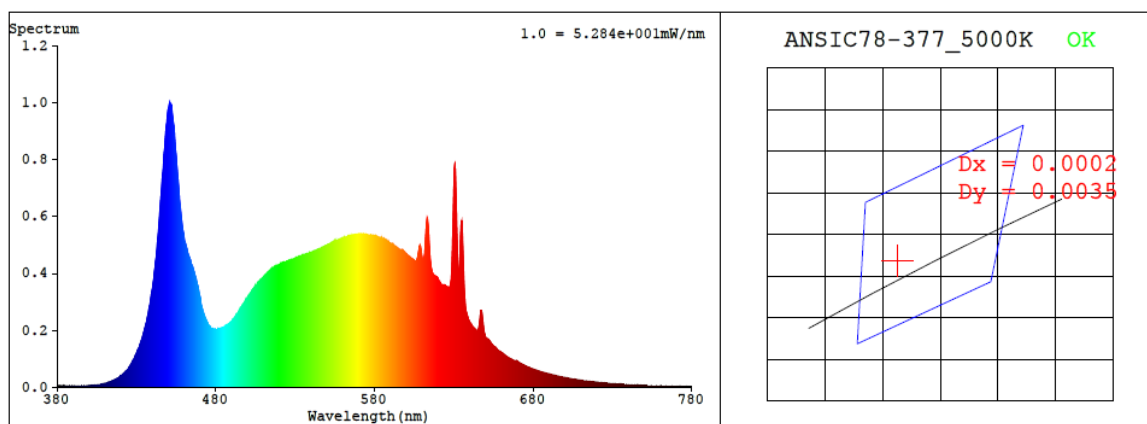
<b>Test Method</b>
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were 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>
480.0	60	0.051	13.4	0.551

<b>CCT (K)</b>	<b>CRI</b>	<b>R9</b>	<b>Duv</b>	<b>Rf</b>	<b>Rg</b>	<b>IES Rcs,h1</b>
5159	82.7	11	0.0017	83	96	-13%

## 4.1 Integrating Sphere Test



### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.3410$   $y = 0.3517$  /  $u' = 0.2086$   $v' = 0.4841$  ( $duv=1.69e-03$ )

CCT= 5159K Prcp WL:  $L_d=568.2nm$  Purity=7.8%

Peak WL:  $L_p=451nm$  FWHM:  $=18.1nm$  Ratio:  $R=15.4\%$   $G=80.0\%$   $B=4.6\%$

Render Index:  $R_a = 82.7$   $AvgR = 75.8$   $TM30:R_f=83$   $R_g=96$

EEL: 0.10647 A++ Highest

R1 =81	R2 =87	R3 =91	R4 =82	R5 =82	R6 =82	R7 =87
R8 =69	R9 =11	R10=70	R11=81	R12=60	R13=82	R14=95 R15=77

## 4.1 Integrating Sphere Test

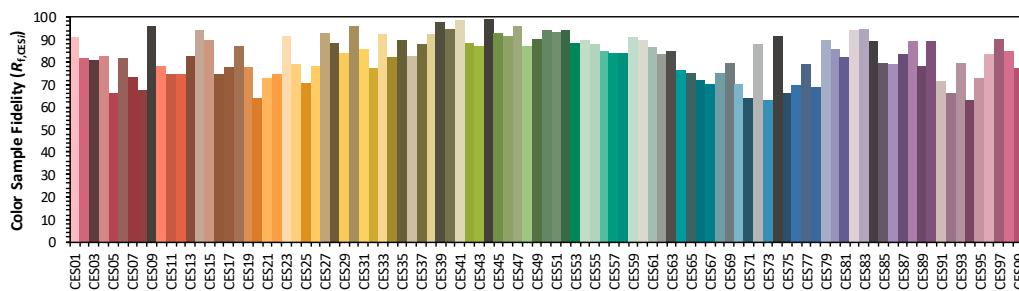
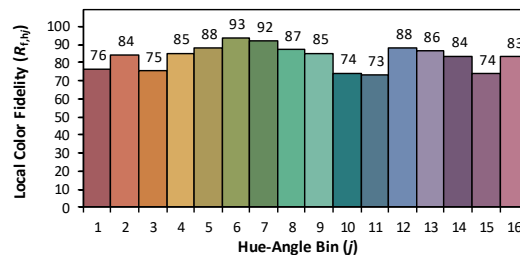
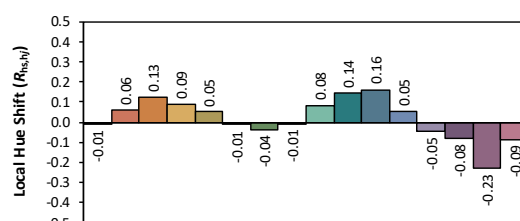
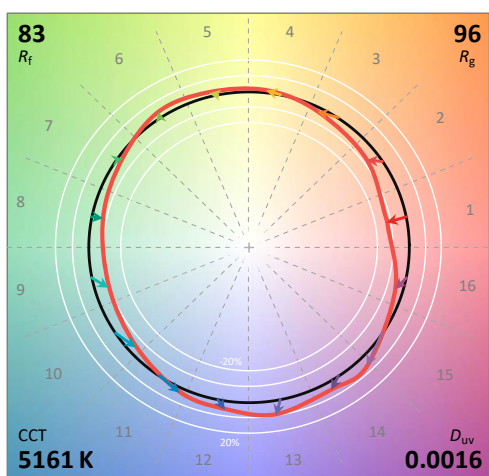
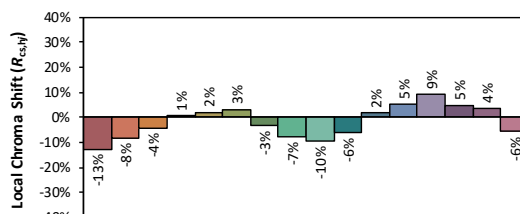
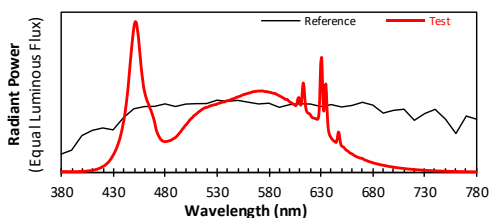
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/10/10

Model: PWLED/480 @13W5000K



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

$x$  0.3410  
 $y$  0.3515  
 $u'$  0.2087  
 $v'$  0.4840

CIE 13.3-1995  
(CRI)  
 $R_a$  83  
 $R_g$  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	4.10E-06	447	7.97E-04	514	4.09E-04	581	5.29E-04	648	2.50E-04	715	2.12E-05
381	4.90E-06	448	8.65E-04	515	4.15E-04	582	5.29E-04	649	1.99E-04	716	2.07E-05
382	4.10E-06	449	9.29E-04	516	4.19E-04	583	5.26E-04	650	1.77E-04	717	2.00E-05
383	4.60E-06	450	9.78E-04	517	4.24E-04	584	5.24E-04	651	1.71E-04	718	1.95E-05
384	4.80E-06	451	9.99E-04	518	4.26E-04	585	5.22E-04	652	1.67E-04	719	1.87E-05
385	4.40E-06	452	9.89E-04	519	4.30E-04	586	5.22E-04	653	1.60E-04	720	1.83E-05
386	3.70E-06	453	9.43E-04	520	4.30E-04	587	5.18E-04	654	1.51E-04	721	1.75E-05
387	4.50E-06	454	8.92E-04	521	4.32E-04	588	5.14E-04	655	1.45E-04	722	1.69E-05
388	4.30E-06	455	8.16E-04	522	4.35E-04	589	5.11E-04	656	1.41E-04	723	1.67E-05
389	4.20E-06	456	7.42E-04	523	4.40E-04	590	5.06E-04	657	1.36E-04	724	1.61E-05
390	3.80E-06	457	6.71E-04	524	4.40E-04	591	5.04E-04	658	1.29E-04	725	1.55E-05
391	4.10E-06	458	6.15E-04	525	4.43E-04	592	5.00E-04	659	1.26E-04	726	1.52E-05
392	3.60E-06	459	5.64E-04	526	4.45E-04	593	4.96E-04	660	1.23E-04	727	1.46E-05
393	4.10E-06	460	5.30E-04	527	4.46E-04	594	4.92E-04	661	1.19E-04	728	1.41E-05
394	4.20E-06	461	5.02E-04	528	4.49E-04	595	4.87E-04	662	1.14E-04	729	1.36E-05
395	4.10E-06	462	4.80E-04	529	4.49E-04	596	4.83E-04	663	1.09E-04	730	1.35E-05
396	4.20E-06	463	4.62E-04	530	4.53E-04	597	4.83E-04	664	1.05E-04	731	1.28E-05
397	5.40E-06	464	4.47E-04	531	4.56E-04	598	4.81E-04	665	1.02E-04	732	1.23E-05
398	5.20E-06	465	4.26E-04	532	4.59E-04	599	4.73E-04	666	9.93E-05	733	1.22E-05
399	5.70E-06	466	4.11E-04	533	4.59E-04	600	4.68E-04	667	9.67E-05	734	1.16E-05
400	5.10E-06	467	3.91E-04	534	4.63E-04	601	4.62E-04	668	9.39E-05	735	1.14E-05
401	6.50E-06	468	3.70E-04	535	4.64E-04	602	4.58E-04	669	9.29E-05	736	1.08E-05
402	6.30E-06	469	3.47E-04	536	4.66E-04	603	4.54E-04	670	9.21E-05	737	1.05E-05
403	7.00E-06	470	3.19E-04	537	4.66E-04	604	4.50E-04	671	8.81E-05	738	1.02E-05
404	7.80E-06	471	2.85E-04	538	4.68E-04	605	4.46E-04	672	8.38E-05	739	9.90E-06
405	8.30E-06	472	2.65E-04	539	4.73E-04	606	4.41E-04	673	8.08E-05	740	9.70E-06
406	9.20E-06	473	2.48E-04	540	4.74E-04	607	4.54E-04	674	7.80E-05	741	9.10E-06
407	9.80E-06	474	2.35E-04	541	4.76E-04	608	4.88E-04	675	7.53E-05	742	9.00E-06
408	1.08E-05	475	2.23E-04	542	4.77E-04	609	4.94E-04	676	7.26E-05	743	8.70E-06
409	1.23E-05	476	2.15E-04	543	4.81E-04	610	4.57E-04	677	7.02E-05	744	8.60E-06
410	1.34E-05	477	2.08E-04	544	4.84E-04	611	4.46E-04	678	6.83E-05	745	8.30E-06
411	1.47E-05	478	2.06E-04	545	4.86E-04	612	5.07E-04	679	6.59E-05	746	8.00E-06
412	1.66E-05	479	2.03E-04	546	4.88E-04	613	5.90E-04	680	6.36E-05	747	7.70E-06
413	1.84E-05	480	2.03E-04	547	4.91E-04	614	5.56E-04	681	6.18E-05	748	7.40E-06
414	1.99E-05	481	2.04E-04	548	4.94E-04	615	4.62E-04	682	5.97E-05	749	7.20E-06
415	2.30E-05	482	2.05E-04	549	4.97E-04	616	4.14E-04	683	5.77E-05	750	7.20E-06
416	2.54E-05	483	2.07E-04	550	4.99E-04	617	3.97E-04	684	5.62E-05	751	6.60E-06
417	2.86E-05	484	2.09E-04	551	5.02E-04	618	3.92E-04	685	5.47E-05	752	6.50E-06
418	3.16E-05	485	2.11E-04	552	5.03E-04	619	3.88E-04	686	5.27E-05	753	6.50E-06
419	3.49E-05	486	2.15E-04	553	5.07E-04	620	3.81E-04	687	5.11E-05	754	6.40E-06
420	4.01E-05	487	2.20E-04	554	5.10E-04	621	3.69E-04	688	4.95E-05	755	6.00E-06
421	4.22E-05	488	2.23E-04	555	5.14E-04	622	3.62E-04	689	4.82E-05	756	5.80E-06
422	4.87E-05	489	2.28E-04	556	5.16E-04	623	3.59E-04	690	4.65E-05	757	5.60E-06
423	5.44E-05	490	2.32E-04	557	5.17E-04	624	3.58E-04	691	4.54E-05	758	5.50E-06
424	6.01E-05	491	2.39E-04	558	5.20E-04	625	3.56E-04	692	4.40E-05	759	5.40E-06
425	6.69E-05	492	2.46E-04	559	5.21E-04	626	3.53E-04	693	4.26E-05	760	5.10E-06
426	7.58E-05	493	2.55E-04	560	5.23E-04	627	3.51E-04	694	4.12E-05	761	5.00E-06
427	8.47E-05	494	2.63E-04	561	5.26E-04	628	3.67E-04	695	3.98E-05	762	4.90E-06
428	9.55E-05	495	2.71E-04	562	5.27E-04	629	4.78E-04	696	3.88E-05	763	4.80E-06
429	1.07E-04	496	2.82E-04	563	5.29E-04	630	7.15E-04	697	3.72E-05	764	4.60E-06
430	1.19E-04	497	2.90E-04	564	5.33E-04	631	7.58E-04	698	3.65E-05	765	4.40E-06
431	1.32E-04	498	2.99E-04	565	5.34E-04	632	5.39E-04	699	3.54E-05	766	4.20E-06
432	1.47E-04	499	3.09E-04	566	5.35E-04	633	4.05E-04	700	3.41E-05	767	4.20E-06
433	1.63E-04	500	3.15E-04	567	5.36E-04	634	5.02E-04	701	3.30E-05	768	4.00E-06
434	1.81E-04	501	3.24E-04	568	5.37E-04	635	5.85E-04	702	3.19E-05	769	3.90E-06
435	2.02E-04	502	3.32E-04	569	5.38E-04	636	4.43E-04	703	3.10E-05	770	3.80E-06
436	2.23E-04	503	3.42E-04	570	5.38E-04	637	3.10E-04	704	3.00E-05	771	3.60E-06
437	2.52E-04	504	3.49E-04	571	5.38E-04	638	2.62E-04	705	2.89E-05	772	3.50E-06
438	2.79E-04	505	3.57E-04	572	5.38E-04	639	2.42E-04	706	2.84E-05	773	3.50E-06
439	3.15E-04	506	3.61E-04	573	5.39E-04	640	2.29E-04	707	2.77E-05	774	3.30E-06
440	3.48E-04	507	3.71E-04	574	5.38E-04	641	2.19E-04	708	2.64E-05	775	3.30E-06
441	3.93E-04	508	3.77E-04	575	5.37E-04	642	2.12E-04	709	2.59E-05	776	3.30E-06
442	4.44E-04	509	3.81E-04	576	5.35E-04	643	2.06E-04	710	2.54E-05	777	3.20E-06
443	5.01E-04	510	3.87E-04	577	5.34E-04	644	2.01E-04	711	2.42E-05	778	3.00E-06
444	5.65E-04	511	3.93E-04	578	5.34E-04	645	1.98E-04	712	2.32E-05	779	3.10E-06
445	6.44E-04	512	3.99E-04	579	5.33E-04	646	2.21E-04	713	2.28E-05	780	3.10E-06
446	7.21E-04	513	4.04E-04	580	5.31E-04	647	2.66E-04	714	2.18E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	PWLED/480 @13W5000K	<b>Sample ID</b>	241009002-S1
<b>Operate time (Min.)</b>	30	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	25.0	<b>Humidity (%RH)</b>	43.1

<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>	480.0	60	0.051	13.4	0.551
<b>NON-WORST CASE</b>	N/A	N/A	N/A	N/A	N/A

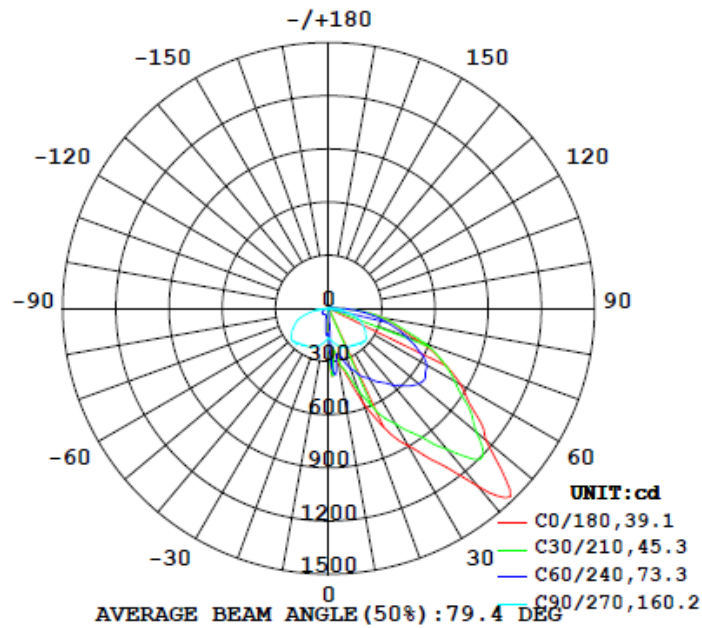
### Test Result

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>	1786	89.5	151.3	40.0	86.2	133.3	5.0%	B0-U2-G1
<b>0°-90° zones</b>	1747	89.5	151.3	40.0	86.2	130.4	5.2%	B0-U2-G1

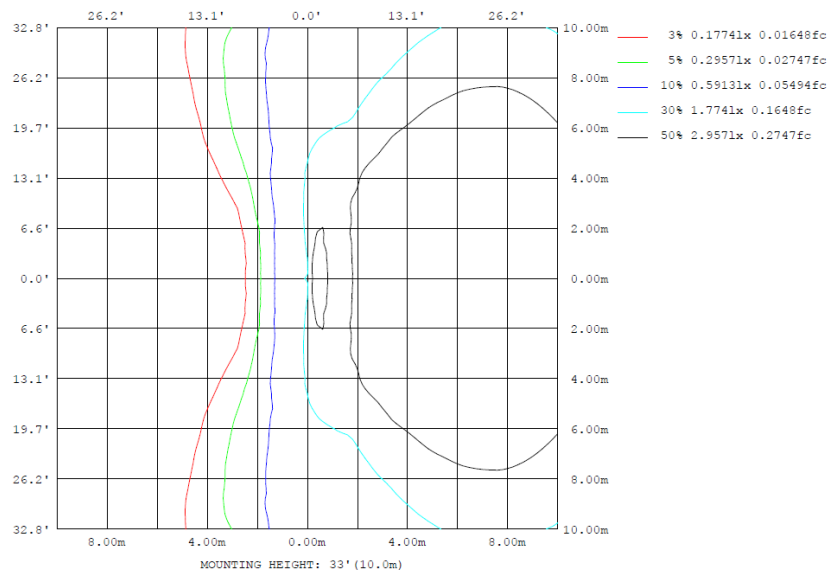
## 4.2 Goniophotometer Test

### Lighting Distribution Curve

#### LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



### Isolux Plot



## 4.2 Goniophotometer Test

### Zonal Lumen Summary

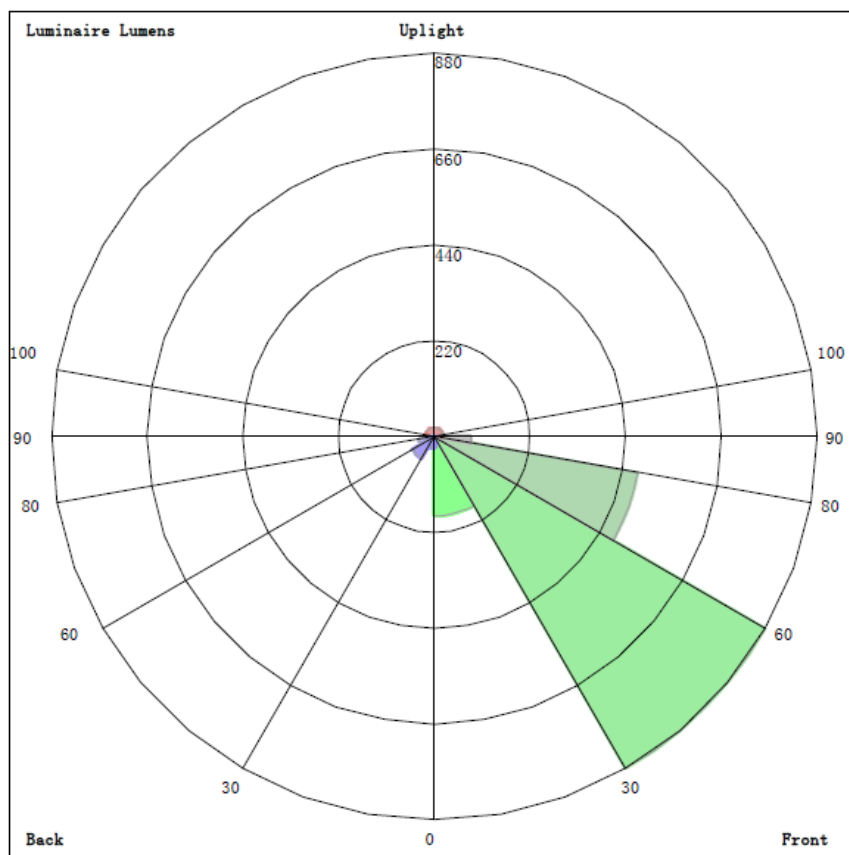
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	± zone	± total	±lum, lamp
10	305.8	252.5	202.4	65.00	34.09	65.00	202.4	252.5	0- 10	19.24	19.24	1.08,1.08
20	561.3	419.9	231.5	23.09	10.87	23.09	231.5	419.9	10- 20	57.64	76.88	4.3,4.3
30	893.7	621.8	247.1	19.53	7.768	19.53	247.1	621.8	20- 30	131.5	208.4	11.7,11.7
40	1312	814.2	262.7	18.37	3.466	18.37	262.7	814.2	30- 40	230.8	439.1	24.6,24.6
50	1159	971.4	273.8	16.80	0.8167	16.80	273.8	971.4	40- 50	349.7	788.9	44.2,44.2
60	860.4	773.2	231.0	14.31	0.0365	14.31	231.0	773.2	50- 60	357.5	1146	64.2,64.2
70	542.2	566.2	180.7	12.06	0.0895	12.06	180.7	566.2	60- 70	306.0	1452	81.3,81.3
80	312.2	311.4	84.52	7.971	0.2091	7.971	84.52	311.4	70- 80	204.9	1657	92.8,92.8
90	55.56	75.96	10.61	3.167	0.3835	3.167	10.61	75.96	80- 90	90.03	1747	97.8,97.8
100	28.07	23.50	2.261	1.240	0.5823	1.240	2.261	23.50	90-100	19.18	1766	98.9,98.9
110	15.85	10.93	1.430	0.9404	0.7191	0.9404	1.430	10.93	100-110	8.293	1775	99.3,99.3
120	8.117	6.899	1.197	0.9333	0.7874	0.9333	1.197	6.899	110-120	4.296	1779	99.6,99.6
130	6.331	5.280	1.028	0.9532	0.8845	0.9532	1.028	5.280	120-130	2.811	1782	99.7,99.7
140	5.264	4.180	0.8147	0.8822	0.8513	0.8822	0.8147	4.180	130-140	1.994	1784	99.9,99.9
150	4.136	3.312	0.6827	0.7185	0.7682	0.7185	0.6827	3.312	140-150	1.331	1785	99.9,99.9
160	2.943	2.597	0.6491	0.6101	0.5785	0.6101	0.6491	2.597	150-160	0.7996	1786	100,100
170	2.103	2.245	0.6023	0.5549	0.3876	0.5549	0.6023	2.245	160-170	0.3824	1786	100,100
180	0.3225	0.3626	0.4117	0.4098	0.3188	0.4098	0.4117	0.3626	170-180	0.0837	1786	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	19.24	0-10	19.24	1.08%
10-20	57.64	0-20	76.88	4.30%
20-30	131.49	0-30	208.37	11.66%
30-40	230.76	0-40	439.13	24.58%
40-50	349.75	0-50	788.88	44.16%
50-60	357.52	0-60	1146.40	64.18%
60-70	305.95	0-70	1452.35	81.30%
70-80	204.86	0-80	1657.21	92.77%
80-90	90.03	0-90	1747.24	97.81%
90-100	19.18	0-100	1766.42	98.89%
100-110	8.29	0-110	1774.71	99.35%
110-120	4.30	0-120	1779.01	99.59%
120-130	2.81	0-130	1781.82	99.75%
130-140	1.99	0-140	1783.81	99.86%
140-150	1.33	0-150	1785.14	99.93%
150-160	0.80	0-160	1785.94	99.98%
160-170	0.38	0-170	1786.32	100.00%
170-180	0.08	0-180	1786.40	100.00%

## 4.2 Goniophotometer Test

LCS/BUG

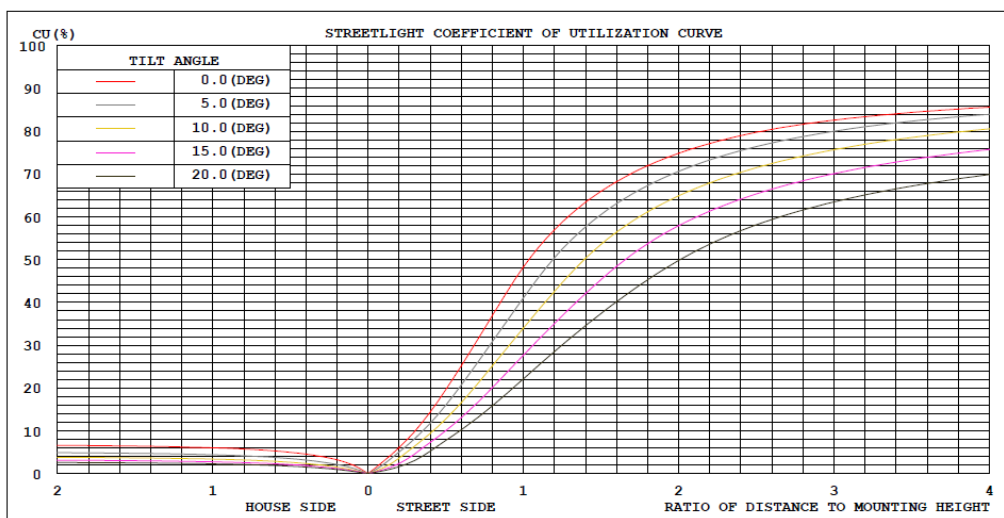


### LUMINAIRE CLASSIFICATION SYSTEM (LCS)

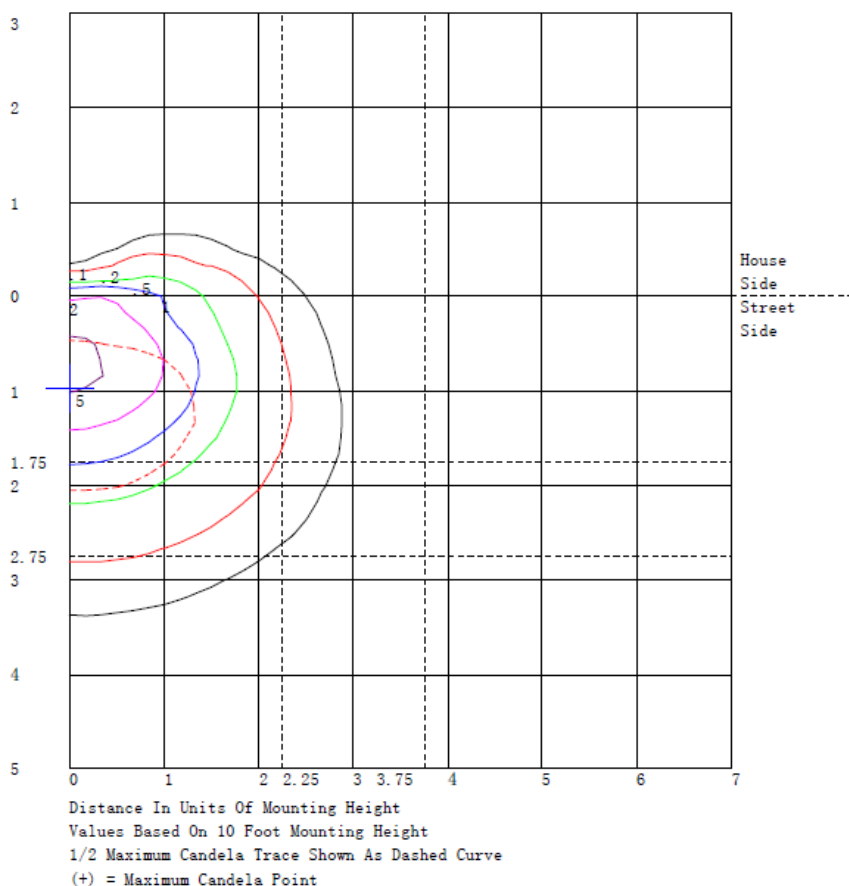
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	182.5	N.A.	10.2
FM - Front-Medium (30-60)	880.4	N.A.	49.3
FH - Front-High (60-80)	475.5	N.A.	26.6
FVH - Front-Very High (80-90)	83.8	N.A.	4.7
BL - Back-Low (0-30)	25.8	N.A.	1.4
BM - Back-Medium (30-60)	57.7	N.A.	3.2
BH - Back-High (60-80)	35.3	N.A.	2.0
BVH - Back-Very High (80-90)	6.2	N.A.	0.3
UL - Uplight-Low (90-100)	19.2	N.A.	1.1
UH - Uplight-High (100-180)	20.0	N.A.	1.1
Total	1786.4	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) γ (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	213	212	208	202	169	168	167	165	163	160	157	155	213	155	157	160	163	165	167
5	270	279	309	368	371	315	182	139	153	138	119	106	105	106	119	138	153	139	182
10	306	301	279	253	263	345	202	137	103	65.0	44.5	35.8	34.1	35.8	44.5	65.0	103	137	202
15	389	386	363	348	288	280	222	117	61.7	32.6	22.0	17.6	16.5	17.6	22.0	32.6	61.7	117	222
20	561	555	494	420	363	269	231	102	43.9	23.1	14.9	11.5	10.9	11.5	14.9	23.1	43.9	102	231
25	745	730	641	524	418	302	237	89.7	40.7	20.5	12.5	9.11	8.80	9.11	12.5	20.5	40.7	89.7	237
30	894	856	754	622	457	309	247	86.7	40.0	19.5	11.8	8.21	7.77	8.21	11.8	19.5	40.0	86.7	247
35	1058	1002	874	707	509	302	251	85.8	42.4	18.9	11.4	6.94	5.56	6.94	11.4	18.9	42.4	85.8	251
40	1312	1218	1038	814	567	312	263	91.4	43.8	18.4	11.0	5.15	3.47	5.15	11.0	18.4	43.8	91.4	263
45	1446	1374	1208	918	620	313	267	98.4	46.8	17.9	10.6	4.10	1.96	4.10	10.6	17.9	46.8	98.4	267
50	1159	1134	1091	971	663	356	274	96.4	45.3	16.8	10.5	3.55	0.82	3.55	10.5	16.8	45.3	96.4	274
55	993	984	959	884	664	389	254	93.7	44.7	15.4	11.0	3.43	0.13	3.43	11.0	15.4	44.7	93.7	254
60	860	861	821	773	638	372	231	90.9	40.9	14.3	11.4	3.90	0.04	3.90	11.4	14.3	40.9	90.9	231
65	705	719	711	675	559	341	208	81.4	36.2	13.3	12.1	4.27	0.06	4.27	12.1	13.3	36.2	81.4	208
70	542	565	577	566	468	295	181	68.3	30.4	12.1	11.2	4.05	0.09	4.05	11.2	12.1	30.4	68.3	181
75	406	414	417	432	367	248	135	51.0	22.5	10.6	10.1	3.43	0.14	3.43	10.1	10.6	22.5	51.0	135
80	312	315	311	311	266	163	84.5	36.3	16.7	7.97	7.65	2.72	0.21	2.72	7.65	7.97	16.7	36.3	84.5
85	173	174	179	190	170	96.5	42.1	21.7	11.2	5.29	5.11	1.86	0.29	1.86	5.11	5.29	11.2	21.7	42.1
90	55.6	56.7	61.1	76.0	74.1	37.0	10.6	11.1	5.99	3.17	3.02	1.19	0.38	1.19	3.02	3.17	5.99	11.1	10.6
95	37.9	37.5	37.3	38.0	33.8	14.9	3.55	4.70	3.17	1.73	1.55	0.74	0.48	0.74	1.55	1.73	3.17	4.70	3.55
100	28.1	27.4	25.5	23.5	19.6	9.05	2.26	2.83	2.05	1.24	1.11	0.62	0.58	0.62	1.11	1.24	2.05	2.83	2.26
105	20.6	20.0	18.2	15.7	12.8	6.18	1.71	2.01	1.51	1.02	0.92	0.59	0.67	0.59	0.92	1.02	1.51	2.01	1.71
110	15.8	15.2	13.1	10.9	8.65	4.64	1.43	1.56	1.22	0.94	0.86	0.62	0.72	0.62	0.86	0.94	1.22	1.56	1.43
115	10.5	10.4	9.33	8.26	6.65	3.83	1.29	1.29	1.09	0.92	0.86	0.68	0.76	0.68	0.86	0.92	1.09	1.29	1.29
120	8.12	8.15	7.62	6.90	5.49	3.33	1.20	1.17	1.03	0.93	0.90	0.76	0.79	0.76	0.90	0.93	1.03	1.17	1.20
125	7.07	7.13	6.64	5.98	4.71	2.98	1.13	1.10	1.00	0.95	0.94	0.83	0.84	0.83	0.94	0.95	1.00	1.10	1.13
130	6.33	6.39	5.86	5.28	4.08	2.73	1.03	1.00	0.97	0.95	0.95	0.87	0.88	0.87	0.95	0.95	0.97	1.00	1.03
135	5.69	5.75	5.28	4.67	3.65	2.53	0.92	0.92	0.94	0.94	0.93	0.86	0.87	0.86	0.93	0.94	0.94	0.92	0.92
140	5.26	5.20	4.79	4.18	3.29	2.37	0.81	0.85	0.88	0.88	0.87	0.82	0.85	0.82	0.87	0.88	0.88	0.85	0.81
145	4.65	4.65	4.31	3.73	2.99	2.27	0.73	0.77	0.79	0.80	0.79	0.74	0.82	0.74	0.79	0.80	0.79	0.77	0.73
150	4.14	4.13	3.81	3.31	2.71	2.26	0.68	0.72	0.72	0.72	0.70	0.67	0.77	0.67	0.70	0.72	0.72	0.68	0.67
155	3.48	3.49	3.29	2.92	2.50	2.26	0.67	0.69	0.69	0.67	0.64	0.60	0.69	0.60	0.64	0.67	0.69	0.69	0.67
160	2.94	2.97	2.84	2.60	2.34	2.31	0.65	0.66	0.64	0.61	0.57	0.51	0.58	0.51	0.57	0.61	0.64	0.66	0.65
165	2.46	2.45	2.46	2.34	2.29	1.54	0.63	0.63	0.61	0.58	0.54	0.42	0.47	0.42	0.54	0.58	0.61	0.63	0.63
170	2.10	2.11	2.19	2.24	2.00	0.60	0.60	0.59	0.58	0.55	0.49	0.39	0.39	0.39	0.49	0.55	0.58	0.59	0.60
175	1.57	1.54	1.36	0.56	0.43	0.48	0.52	0.52	0.49	0.47	0.44	0.42	0.37	0.42	0.44	0.47	0.49	0.52	0.52
180	0.32	0.32	0.33	0.36	0.38	0.40	0.41	0.42	0.41	0.41	0.40	0.39	0.32	0.39	0.40	0.41	0.41	0.42	0.41

Table--2

UNIT: cd

C (DEG) γ (DEG)	285	300	315	330	345														
0	168	169	202	208	212														
5	315	371	368	309	279														
10	345	263	253	279	301														
15	280	288	348	363	386														
20	269	363	420	494	555														
25	302	418	524	641	730														
30	309	457	622	754	856														
35	302	509	707	874	1002														
40	312	567	814	1038	1218														
45	313	620	918	1208	1374														
50	356	663	971	1091	1134														
55	389	664	884	959	984														
60	372	638	773	821	861														
65	341	559	675	711	719														
70	295	468	566	577	565														
75	248	367	432	417	414														
80	163	266	311	311	315														
85	96.5	170	190	179	174														
90	37.0	74.1	76.0	61.1	56.7														
95	14.9	33.8	38.0	37.3	37.5														
100	9.05	19.6	23.5	25.5	27.4														
105	6.18	12.8	15.7	18.2	20.0														
110	4.64	8.65	10.9	13.1	15.2														
115	3.83	6.65	8.26	9.33	10.4														
120	3.33	5.49	6.90	7.62	8.15														
125	2.98	4.71	5.98	6.64	7.13														
130	2.73	4.08	5.28	5.86	6.39														
135	2.53	3.65	4.67	5.28	5.75														
140	2.37	3.29	4.18	4.79	5.20														
145	2.27	2.99	3.73	4.31	4.65														
150	2.26	2.71	3.31	3.81	4.13														
155	2.26	2.50	2.92	3.29	3.49														
160	2.31	2.34	2.60	2.84	2.97														
165	1.54	2.29	2.34	2.46	2.45														
170	0.60	2.00	2.24	2.19	2.11														
175	0.48	0.43	0.56	1.36	1.54														
180	0.40	0.38	0.36	0.33	0.32														

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

<b>Model No.</b>	PWLED/480 @13W5000K	<b>Sample ID</b>	241009002-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(%)
480.0	60	0.051	13.4	0.551	37.39



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