

## 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:

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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		9642
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	ANSI/IES LM-79:2019	N/A		135.4
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	300		9429
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	Standard	Premium	132.4
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		71.2
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	480V	7.46
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	480V	0.922
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	5029±283	5191
		4 steps	5029±220	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		82.5
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%		5.1%
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		0.161
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		71.2
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A

## 2.0 Test List

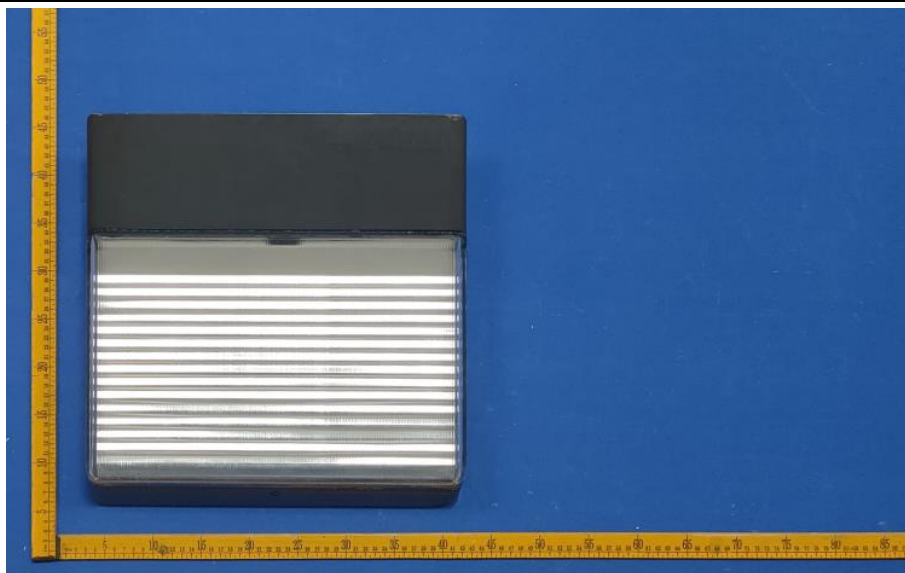
Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024-10-09	PWLED/480 @72W5000K	-	241009002-S1
2	Goniophotometer Test	2024-10-09	PWLED/480 @72W5000K	-	241009002-S1
3	THD and PF Test	2024-10-09	PWLED/480 @72W5000K	-	241009002-S1
<b>Remark (If any):</b>					
<ol style="list-style-type: 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 @72W5000K, 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 @72W5000K	<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

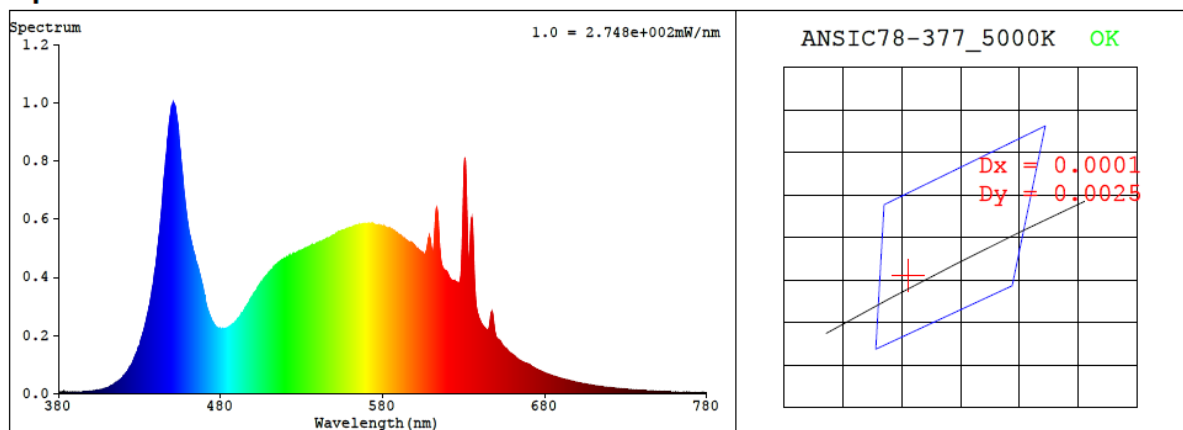
<b>Test Method</b>
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were 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	0.161	71.2	0.922

<b>CCT (K)</b>	<b>CRI</b>	<b>R9</b>	<b>Duv</b>	<b>Rf</b>	<b>Rg</b>	<b>IES Rcs,h1</b>
5191	82.5	11	0.0012	83	96	-13%

#### 4.1 Integrating Sphere Test



#### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.3401$   $y = 0.3499$  /  $u' = 0.2087$   $v' = 0.4831$  ( $duv=1.21e-03$ )

CCT= 5191K Prcp WL:  $L_d=567.9nm$  Purity=7.0%

Peak WL:  $L_p=451nm$  FWHM:  $=21.7nm$  Ratio: R=15.4% G=80.1% B=4.5%

Render Index:  $R_a = 82.5$  AvgR = 75.6 TM30:  $R_f=82$   $R_g=96$

EEL: 0.10057 A++ Highest

R1 =81 R2 =87 R3 =91 R4 =82 R5 =82 R6 =82 R7 =87

R8 =69 R9 =11 R10=68 R11=81 R12=61 R13=82 R14=95 R15=77

## 4.1 Integrating Sphere Test

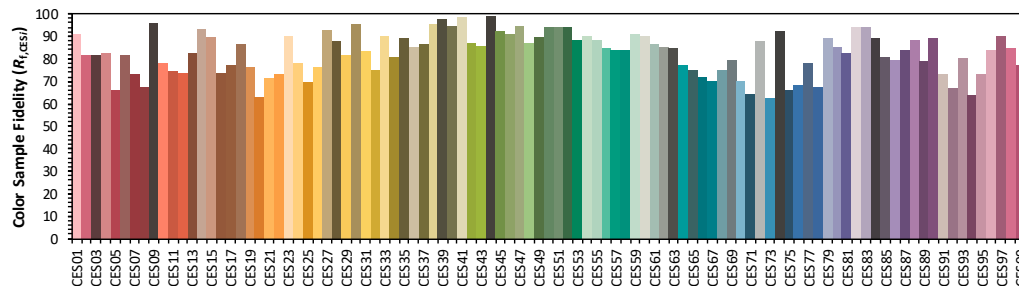
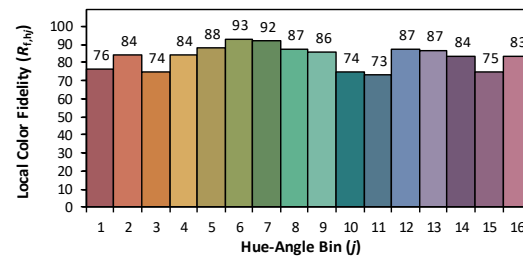
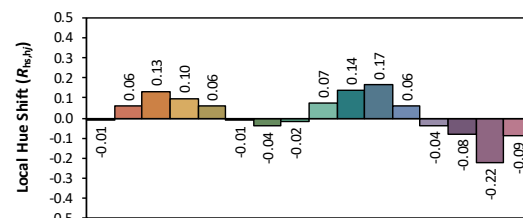
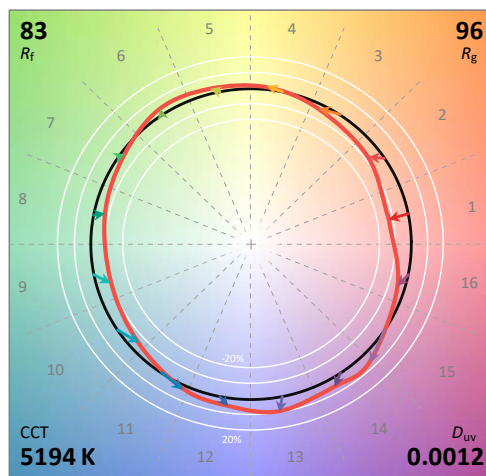
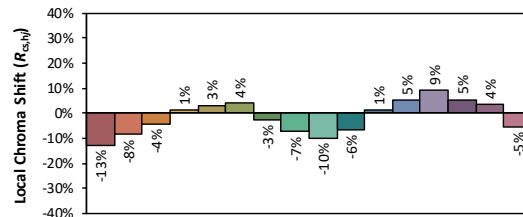
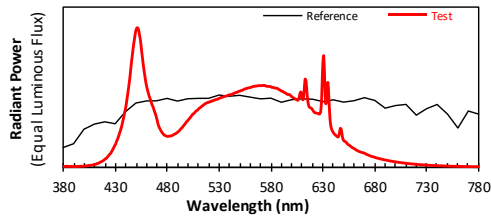
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/10/10

Model: PWLED/480 @72W5000K



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

$x$  0.3400  
 $y$  0.3497  
 $u'$  0.2087  
 $v'$  0.4830

CIE 13.3-1995  
(CRI)

$R_a$  82  
 $R_g$  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	6.30E-06	447	8.57E-04	514	4.40E-04	581	5.71E-04	648	2.68E-04	715	2.43E-05
381	5.00E-06	448	9.07E-04	515	4.45E-04	582	5.71E-04	649	2.20E-04	716	2.37E-05
382	5.70E-06	449	9.58E-04	516	4.51E-04	583	5.68E-04	650	1.95E-04	717	2.28E-05
383	7.50E-06	450	9.88E-04	517	4.56E-04	584	5.67E-04	651	1.87E-04	718	2.23E-05
384	5.40E-06	451	9.98E-04	518	4.59E-04	585	5.65E-04	652	1.82E-04	719	2.14E-05
385	4.80E-06	452	9.86E-04	519	4.64E-04	586	5.64E-04	653	1.76E-04	720	2.11E-05
386	5.40E-06	453	9.48E-04	520	4.64E-04	587	5.60E-04	654	1.66E-04	721	2.04E-05
387	5.90E-06	454	9.05E-04	521	4.69E-04	588	5.54E-04	655	1.60E-04	722	1.96E-05
388	4.70E-06	455	8.38E-04	522	4.69E-04	589	5.51E-04	656	1.55E-04	723	1.90E-05
389	5.30E-06	456	7.76E-04	523	4.74E-04	590	5.45E-04	657	1.49E-04	724	1.84E-05
390	4.20E-06	457	7.16E-04	524	4.75E-04	591	5.44E-04	658	1.43E-04	725	1.77E-05
391	5.30E-06	458	6.64E-04	525	4.79E-04	592	5.38E-04	659	1.38E-04	726	1.72E-05
392	4.80E-06	459	6.15E-04	526	4.82E-04	593	5.35E-04	660	1.35E-04	727	1.68E-05
393	5.50E-06	460	5.77E-04	527	4.84E-04	594	5.30E-04	661	1.31E-04	728	1.60E-05
394	5.50E-06	461	5.45E-04	528	4.86E-04	595	5.26E-04	662	1.25E-04	729	1.56E-05
395	6.40E-06	462	5.19E-04	529	4.88E-04	596	5.21E-04	663	1.20E-04	730	1.53E-05
396	6.70E-06	463	4.95E-04	530	4.93E-04	597	5.20E-04	664	1.16E-04	731	1.47E-05
397	6.70E-06	464	4.76E-04	531	4.95E-04	598	5.19E-04	665	1.13E-04	732	1.42E-05
398	7.10E-06	465	4.50E-04	532	4.99E-04	599	5.11E-04	666	1.10E-04	733	1.38E-05
399	7.80E-06	466	4.34E-04	533	5.00E-04	600	5.06E-04	667	1.07E-04	734	1.33E-05
400	8.30E-06	467	4.11E-04	534	5.04E-04	601	4.99E-04	668	1.05E-04	735	1.30E-05
401	9.10E-06	468	3.89E-04	535	5.06E-04	602	4.95E-04	669	1.03E-04	736	1.26E-05
402	9.20E-06	469	3.67E-04	536	5.08E-04	603	4.90E-04	670	1.01E-04	737	1.18E-05
403	1.06E-05	470	3.39E-04	537	5.09E-04	604	4.87E-04	671	9.75E-05	738	1.18E-05
404	1.19E-05	471	3.07E-04	538	5.12E-04	605	4.82E-04	672	9.29E-05	739	1.15E-05
405	1.20E-05	472	2.86E-04	539	5.16E-04	606	4.78E-04	673	8.97E-05	740	1.10E-05
406	1.33E-05	473	2.72E-04	540	5.18E-04	607	4.90E-04	674	8.67E-05	741	1.08E-05
407	1.44E-05	474	2.58E-04	541	5.19E-04	608	5.25E-04	675	8.37E-05	742	1.05E-05
408	1.58E-05	475	2.46E-04	542	5.21E-04	609	5.38E-04	676	8.07E-05	743	1.01E-05
409	1.84E-05	476	2.38E-04	543	5.24E-04	610	5.02E-04	677	7.80E-05	744	9.80E-06
410	2.00E-05	477	2.29E-04	544	5.27E-04	611	4.83E-04	678	7.61E-05	745	9.80E-06
411	2.17E-05	478	2.26E-04	545	5.31E-04	612	5.38E-04	679	7.36E-05	746	9.50E-06
412	2.55E-05	479	2.22E-04	546	5.34E-04	613	6.29E-04	680	7.14E-05	747	9.10E-06
413	2.72E-05	480	2.20E-04	547	5.35E-04	614	6.12E-04	681	6.88E-05	748	8.50E-06
414	3.09E-05	481	2.21E-04	548	5.39E-04	615	5.16E-04	682	6.64E-05	749	8.30E-06
415	3.53E-05	482	2.22E-04	549	5.43E-04	616	4.56E-04	683	6.46E-05	750	8.30E-06
416	3.83E-05	483	2.23E-04	550	5.44E-04	617	4.31E-04	684	6.29E-05	751	8.00E-06
417	4.24E-05	484	2.25E-04	551	5.48E-04	618	4.25E-04	685	6.09E-05	752	7.60E-06
418	4.72E-05	485	2.28E-04	552	5.50E-04	619	4.22E-04	686	5.91E-05	753	7.30E-06
419	5.22E-05	486	2.32E-04	553	5.53E-04	620	4.14E-04	687	5.74E-05	754	7.40E-06
420	6.00E-05	487	2.37E-04	554	5.57E-04	621	4.01E-04	688	5.54E-05	755	6.90E-06
421	6.32E-05	488	2.41E-04	555	5.60E-04	622	3.92E-04	689	5.36E-05	756	6.80E-06
422	7.24E-05	489	2.45E-04	556	5.62E-04	623	3.88E-04	690	5.20E-05	757	6.50E-06
423	8.10E-05	490	2.51E-04	557	5.64E-04	624	3.87E-04	691	5.09E-05	758	6.50E-06
424	9.04E-05	491	2.58E-04	558	5.67E-04	625	3.85E-04	692	4.92E-05	759	6.40E-06
425	9.78E-05	492	2.65E-04	559	5.68E-04	626	3.82E-04	693	4.78E-05	760	6.00E-06
426	1.10E-04	493	2.75E-04	560	5.70E-04	627	3.81E-04	694	4.65E-05	761	6.10E-06
427	1.23E-04	494	2.81E-04	561	5.71E-04	628	3.95E-04	695	4.48E-05	762	5.70E-06
428	1.37E-04	495	2.91E-04	562	5.75E-04	629	4.94E-04	696	4.37E-05	763	5.50E-06
429	1.54E-04	496	3.00E-04	563	5.77E-04	630	7.19E-04	697	4.26E-05	764	5.20E-06
430	1.65E-04	497	3.09E-04	564	5.79E-04	631	7.96E-04	698	4.08E-05	765	5.20E-06
431	1.87E-04	498	3.20E-04	565	5.80E-04	632	6.07E-04	699	3.94E-05	766	5.20E-06
432	2.03E-04	499	3.29E-04	566	5.81E-04	633	4.56E-04	700	3.83E-05	767	4.90E-06
433	2.26E-04	500	3.36E-04	567	5.82E-04	634	5.19E-04	701	3.74E-05	768	4.60E-06
434	2.48E-04	501	3.46E-04	568	5.83E-04	635	6.07E-04	702	3.63E-05	769	4.70E-06
435	2.72E-04	502	3.54E-04	569	5.84E-04	636	4.91E-04	703	3.52E-05	770	4.30E-06
436	2.99E-04	503	3.65E-04	570	5.83E-04	637	3.51E-04	704	3.40E-05	771	4.50E-06
437	3.31E-04	504	3.74E-04	571	5.84E-04	638	2.91E-04	705	3.30E-05	772	4.20E-06
438	3.65E-04	505	3.82E-04	572	5.84E-04	639	2.66E-04	706	3.21E-05	773	4.00E-06
439	4.02E-04	506	3.87E-04	573	5.85E-04	640	2.52E-04	707	3.10E-05	774	3.90E-06
440	4.39E-04	507	3.97E-04	574	5.85E-04	641	2.39E-04	708	3.03E-05	775	4.00E-06
441	4.89E-04	508	4.03E-04	575	5.81E-04	642	2.32E-04	709	2.91E-05	776	3.80E-06
442	5.41E-04	509	4.08E-04	576	5.79E-04	643	2.25E-04	710	2.82E-05	777	3.60E-06
443	5.96E-04	510	4.15E-04	577	5.78E-04	644	2.20E-04	711	2.72E-05	778	3.70E-06
444	6.57E-04	511	4.23E-04	578	5.78E-04	645	2.17E-04	712	2.65E-05	779	3.80E-06
445	7.33E-04	512	4.28E-04	579	5.77E-04	646	2.37E-04	713	2.58E-05	780	3.80E-06
446	7.93E-04	513	4.34E-04	580	5.75E-04	647	2.77E-04	714	2.51E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	PWLED/480 @72W5000K	<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	0.161	71.2	0.922
<b>NON-WORST CASE</b>	N/A	N/A	N/A	N/A	N/A

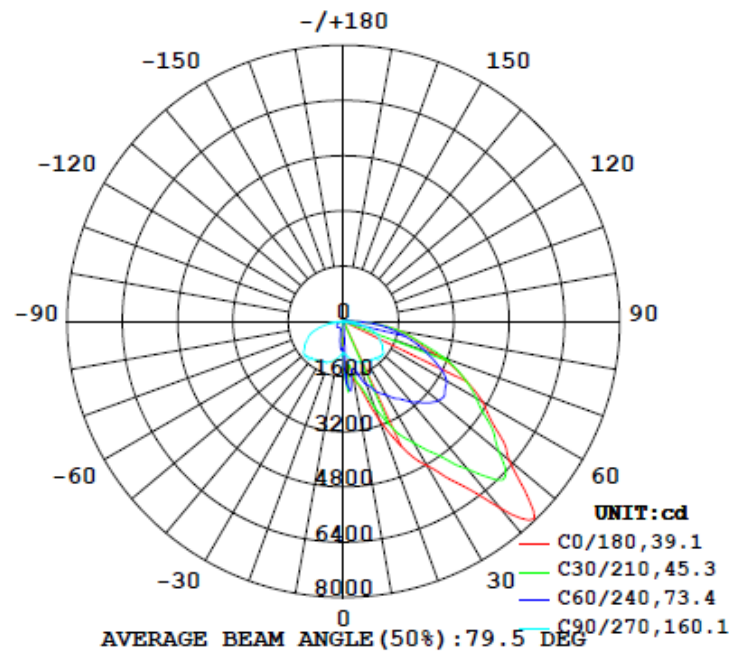
### Test Result

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>	9642	89.6	151.4	40.1	86.4	135.4	5.0%	B1-U3-G3
<b>0°-90° zones</b>	9429	89.6	151.4	40.1	86.4	132.4	5.1%	B1-U3-G3

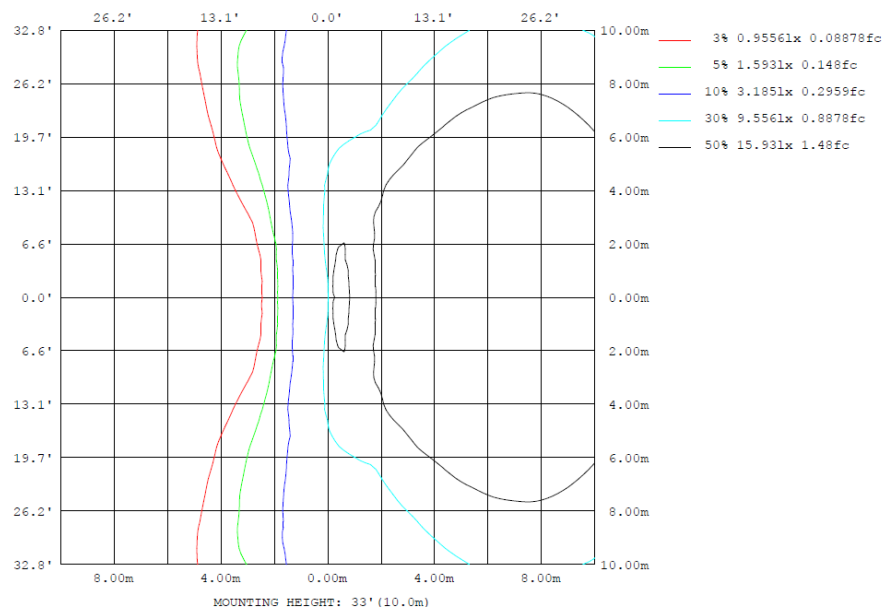
## 4.2 Goniophotometer Test

### Lighting Distribution Curve

#### LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



### Isolux Plot



## 4.2 Goniophotometer Test

### Zonal Lumen Summary

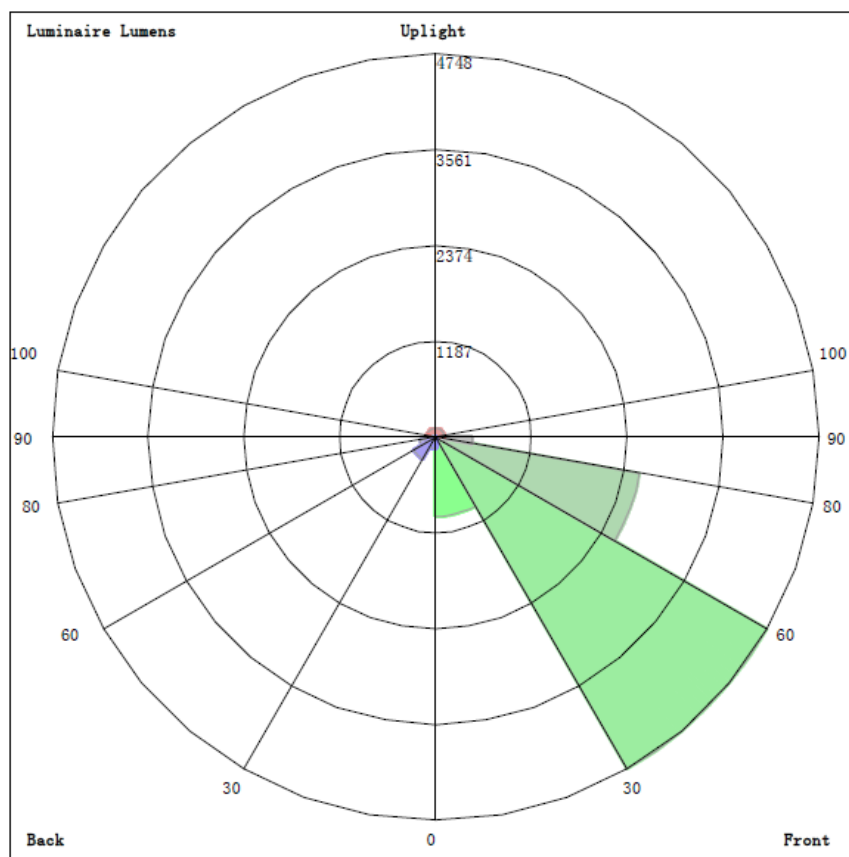
ZONAL FLUX DIAGRAM:

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315	$\gamma$	$\Phi$ zone	$\Phi$ total	$\Phi$ lum, lamp
10	1649	1362	1097	352.1	185.5	352.1	1097	1362	0- 10	103.4	103.4	1.07,1.07
20	3030	2264	1256	125.5	59.26	125.5	1256	2264	10- 20	311.1	414.5	4.3,4.3
30	4817	3351	1338	105.8	42.33	105.8	1338	3351	20- 30	709.4	1124	11.7,11.7
40	7067	4383	1418	99.76	19.03	99.76	1418	4383	30- 40	1245	2368	24.6,24.6
50	6251	5237	1484	91.03	4.455	91.03	1484	5237	40- 50	1887	4256	44.1,44.1
60	4637	4173	1255	77.72	0.2038	77.72	1255	4173	50- 60	1930	6185	64.2,64.2
70	2925	3060	980.7	65.36	0.4888	65.36	980.7	3060	60- 70	1652	7838	81.3,81.3
80	1683	1682	456.5	43.41	1.135	43.41	456.5	1682	70- 80	1107	8945	92.8,92.8
90	300.3	376.7	69.51	17.22	2.073	17.22	69.51	376.7	80- 90	484.3	9429	97.8,97.8
100	152.3	127.7	12.38	6.803	3.151	6.803	12.38	127.7	90-100	103.9	9533	98.9,98.9
110	85.73	59.25	7.794	5.126	3.905	5.126	7.794	59.25	100-110	45.11	9578	99.3,99.3
120	44.12	37.54	6.516	5.069	4.267	5.069	6.516	37.54	110-120	23.30	9602	99.6,99.6
130	34.40	28.71	5.586	5.170	4.796	5.170	5.586	28.71	120-130	15.28	9617	99.7,99.7
140	28.58	22.72	4.420	4.785	4.617	4.785	4.420	22.72	130-140	10.84	9628	99.9,99.9
150	22.47	18.02	3.708	3.895	4.170	3.895	3.708	18.02	140-150	7.230	9635	99.9,99.9
160	16.00	14.12	3.519	3.312	3.138	3.312	3.519	14.12	150-160	4.346	9639	100,100
170	11.44	12.23	3.263	3.009	2.095	3.009	3.263	12.23	160-170	2.076	9641	100,100
180	1.749	1.959	2.247	2.227	1.731	2.227	2.247	1.959	170-180	0.4509	9642	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	103.42	0-10	103.42	1.07%
10-20	311.11	0-20	414.53	4.30%
20-30	709.37	0-30	1123.90	11.66%
30-40	1244.52	0-40	2368.42	24.57%
40-50	1887.17	0-50	4255.59	44.14%
50-60	1929.67	0-60	6185.26	64.15%
60-70	1652.38	0-70	7837.64	81.29%
70-80	1107.32	0-80	8944.96	92.78%
80-90	484.32	0-90	9429.28	97.80%
90-100	103.93	0-100	9533.21	98.88%
100-110	45.11	0-110	9578.32	99.35%
110-120	23.30	0-120	9601.62	99.59%
120-130	15.28	0-130	9616.90	99.75%
130-140	10.84	0-140	9627.74	99.86%
140-150	7.23	0-150	9634.97	99.93%
150-160	4.35	0-160	9639.32	99.98%
160-170	2.08	0-170	9641.40	100.00%
170-180	0.45	0-180	9641.85	100.00%

## 4.2 Goniophotometer Test

LCS/BUG

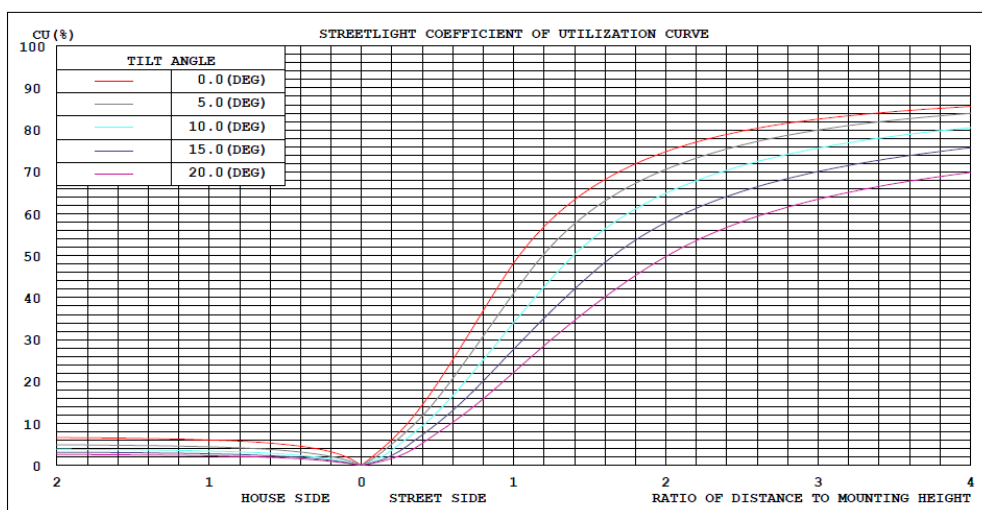


### LUMINAIRE CLASSIFICATION SYSTEM (LCS)

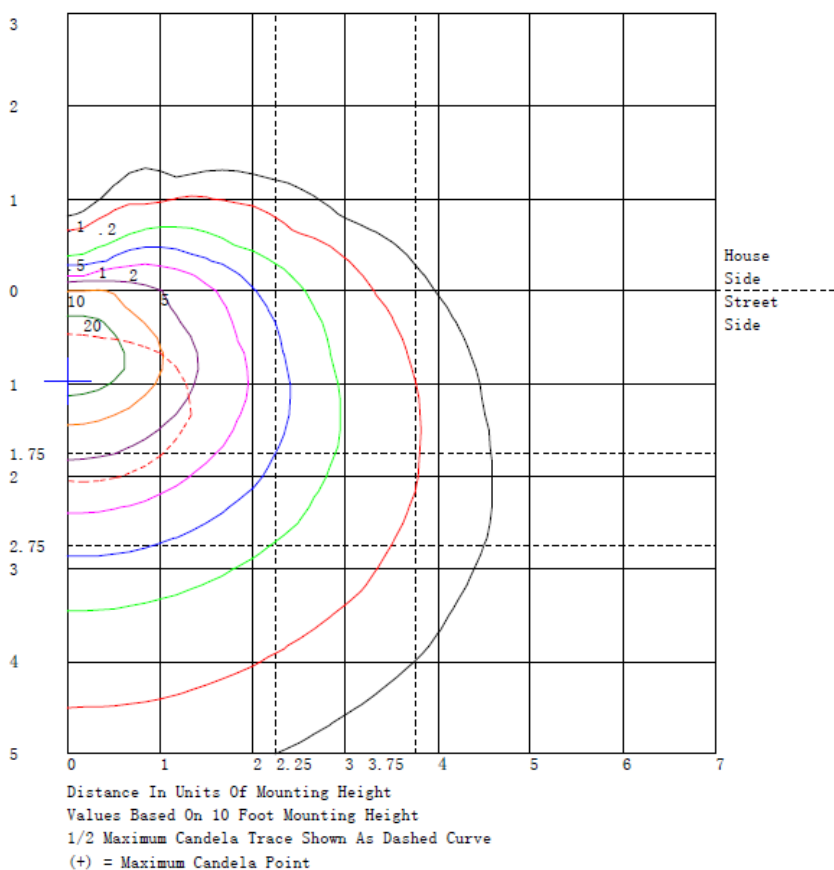
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	983.8	N.A.	10.2
FM - Front-Medium (30-60)	4748.5	N.A.	49.2
FH - Front-High (60-80)	2568.1	N.A.	26.6
FVH - Front-Very High (80-90)	450.6	N.A.	4.7
BL - Back-Low (0-30)	140.1	N.A.	1.5
BM - Back-Medium (30-60)	312.9	N.A.	3.2
BH - Back-High (60-80)	191.6	N.A.	2.0
BVH - Back-Very High (80-90)	33.8	N.A.	0.4
UL - Uplight-Low (90-100)	103.9	N.A.	1.1
UH - Uplight-High (100-180)	108.6	N.A.	1.1
Total	9641.9	N.A.	100.0
BUG Rating	B1-U3-G3		

## 4.2 Goniophotometer Test

### Coefficients of Utilization



## Isolines



## 4.2 Goniophotometer Test

### Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) γ	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	898	902	920	929	922	917	908	897	1049	1149	1214	1238	898	1238	1214	1149	1049	897	908
5	1460	1509	1673	1987	1959	1715	996	754	831	746	644	574	576	574	644	746	831	754	996
10	1649	1621	1503	1362	1417	1867	1097	741	558	352	240	194	186	194	240	352	558	741	1097
15	2094	2081	1955	1877	1554	1516	1206	634	334	177	119	96.8	90.2	96.8	119	177	334	634	1206
20	3030	2990	2660	2264	1951	1459	1256	551	239	125	80.6	62.3	59.3	62.3	80.6	125	239	551	1256
25	4017	3933	3452	2827	2251	1636	1285	486	221	111	67.8	49.4	47.9	49.4	67.8	111	221	486	1285
30	4817	4610	4064	3351	2458	1669	1338	469	217	106	63.5	44.5	42.3	44.5	63.5	106	217	469	1338
35	5708	5398	4707	3812	2738	1637	1364	466	229	102	61.7	37.5	30.3	37.5	61.7	102	229	466	1364
40	7067	6554	5591	4383	3057	1681	1418	496	237	99.8	59.2	27.9	19.0	27.9	59.2	99.8	237	496	1418
45	7791	7401	6508	4946	3347	1700	1456	533	254	96.8	57.5	22.2	10.7	22.2	57.5	96.8	254	533	1456
50	6251	6123	5883	5237	3579	1931	1484	524	246	91.0	56.9	19.2	4.46	19.2	56.9	91.0	246	524	1484
55	5350	5298	5167	4767	3584	2096	1380	511	243	83.7	59.7	18.5	0.69	18.5	59.7	83.7	243	511	1380
60	4637	4650	4430	4173	3444	2014	1255	493	222	77.7	62.0	21.1	0.20	21.1	62.0	77.7	222	493	1255
65	3809	3883	3832	3643	3018	1845	1131	443	197	72.3	65.7	23.1	0.30	23.1	65.7	72.3	197	443	1131
70	2925	3043	3114	3060	2526	1595	981	372	165	65.4	60.9	21.9	0.49	21.9	60.9	65.4	165	372	981
75	2192	2240	2254	2328	1987	1342	736	277	122	57.6	54.4	18.6	0.77	18.6	54.4	57.6	122	277	736
80	1683	1703	1680	1682	1437	883	457	196	90.7	43.4	41.5	14.7	1.13	14.7	41.5	43.4	90.7	196	457
85	938	944	971	1024	915	525	228	118	60.7	28.8	27.8	10.2	1.57	10.2	27.8	28.8	60.7	118	228
90	300	307	329	377	369	201	69.5	60.3	32.4	17.2	16.4	6.46	2.07	6.46	16.4	17.2	32.4	60.3	69.5
95	206	204	203	206	183	83.6	19.3	25.7	17.3	9.65	8.49	4.07	2.59	4.07	8.49	9.65	17.3	25.7	19.3
100	152	149	139	128	107	49.1	12.4	15.5	11.2	6.80	6.05	3.37	3.15	3.37	6.05	6.80	11.2	15.5	12.4
105	112	109	98.9	86.1	69.8	33.8	9.30	11.0	8.27	5.59	5.03	3.22	3.65	3.22	5.03	5.59	8.27	11.0	9.30
110	85.7	82.5	71.2	59.3	47.0	25.3	7.79	8.49	6.65	5.13	4.67	3.37	3.91	3.37	4.67	5.13	6.65	8.49	7.79
115	57.0	56.2	50.7	44.9	36.2	20.9	7.03	7.05	5.93	5.01	4.67	3.69	4.12	3.69	4.67	5.01	5.93	7.05	7.03
120	44.1	44.3	41.4	37.5	29.9	18.1	6.52	6.34	5.60	5.07	4.87	4.10	4.27	4.10	4.87	5.07	5.60	6.34	6.52
125	38.4	38.8	36.1	32.5	25.6	16.3	6.13	5.99	5.43	5.16	5.08	4.49	4.58	4.49	5.08	5.16	5.43	5.99	6.13
130	34.4	34.7	31.9	28.7	22.2	14.9	5.59	5.44	5.29	5.17	5.14	4.69	4.80	4.69	5.14	5.17	5.29	5.44	5.59
135	30.9	31.3	28.7	25.4	19.8	13.8	5.00	5.02	5.11	5.09	5.05	4.68	4.73	4.68	5.05	5.09	5.11	5.02	5.00
140	28.6	28.3	26.0	22.7	17.9	12.9	4.42	4.59	4.77	4.79	4.73	4.43	4.62	4.43	4.73	4.79	4.77	4.59	4.42
145	25.3	25.3	23.4	20.3	16.2	12.4	3.98	4.20	4.28	4.34	4.28	4.02	4.43	4.02	4.28	4.34	4.28	4.20	3.98
150	22.5	22.4	20.7	18.0	14.7	12.3	3.71	3.90	3.90	3.82	3.61	4.17	3.61	3.82	3.90	3.90	3.90	3.71	22.5
155	18.9	19.0	17.9	15.9	13.6	12.3	3.62	3.77	3.72	3.62	3.46	3.25	3.72	3.25	3.46	3.62	3.72	3.77	3.62
160	16.0	16.2	15.4	14.1	12.7	12.5	3.52	3.59	3.49	3.31	3.09	2.77	3.14	2.77	3.09	3.31	3.49	3.59	3.52
165	13.4	13.3	13.4	12.7	12.5	8.30	3.39	3.41	3.32	3.15	2.93	2.25	2.52	2.25	2.93	3.15	3.32	3.41	3.39
170	11.4	11.5	11.9	12.2	10.8	3.22	3.26	3.22	3.15	3.01	2.64	2.13	2.10	2.13	2.64	3.01	3.15	3.22	3.26
175	8.33	8.11	5.65	2.87	2.34	2.59	2.80	2.76	2.63	2.54	2.41	2.27	2.00	2.27	2.41	2.54	2.63	2.76	2.80
180	1.75	1.73	1.81	1.96	2.10	2.20	2.25	2.26	2.26	2.23	2.17	2.14	1.73	2.14	2.17	2.23	2.26	2.26	2.25

Table--2

UNIT: cd

C (DEG) γ	285	300	315	330	345														
0	917	922	929	920	902														
5	1715	1959	1987	1673	1509														
10	1867	1417	1362	1503	1621														
15	1516	1554	1877	1955	2081														
20	1459	1951	2264	2660	2990														
25	1636	2251	2827	3452	3933														
30	1669	2458	3351	4064	4610														
35	1637	2738	3812	4707	5398														
40	1681	3057	4383	5591	6554														
45	1700	3347	4946	6508	7401														
50	1931	3579	5237	5883	6123														
55	2096	3584	4767	5167	5298														
60	2014	3444	4173	4430	4650														
65	1845	3018	3643	3832	3883														
70	1595	2526	3060	3114	3043														
75	1342	1987	2328	2254	2240														
80	883	1437	1682	1680	1703														
85	525	915	1024	971	944														
90	201	369	377	329	307														
95	83.6	183	206	203	204														
100	49.1	107	128	139	149														
105	33.8	69.8	86.1	98.9	109														
110	25.3	47.0	59.3	71.2	82.5														
115	20.9	36.2	44.9	50.7	56.2														
120	18.1	29.9	37.5	41.4	44.3														
125	16.3	25.6	32.5	36.1	38.8														
130	14.9	22.2	28.7	31.9	34.7														
135	13.8	19.8	25.4	28.7	31.3														
140	12.9	17.9	22.7	26.0	28.3														
145	12.4	16.2	20.3	23.4	25.3														
150	12.3	14.7	18.0	20.7	22.4														
155	12.3	13.6	15.9	17.9	19.0														
160	12.5	12.7	14.1	15.4	16.2														
165	8.30	12.5	12.7	13.4	13.3														
170	3.22	10.8	12.2	11.9	11.5														
175	2.59	2.34	2.87	5.65	8.11														
180	2.20	2.10	1.96	1.81	1.73														

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

<b>Model No.</b>	PWLED/480 @72W5000K	<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	0.161	71.2	0.922	7.46



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