

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

Address: 408 W 14th St New York, NY 10014

Prepared By

Dongguan New Testing Centre Co., Ltd.

Address: 3F No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China

Prepare by:

Alan Wang

Engineer: Alan Wang

Date: 2024-10-10

Review by:

Vincent Yuan

Technical Lead: Vincent Yuan

Issue Date: 2024-10-10

Revised Date: N/A

Laboratory: Dongguan New Testing Centre Co., Ltd

Address: 3F, No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan,
Guangdong, China

Tel: 86-769-22212079

Website: <http://www.ntc-cert.com>

Page 1 of 16

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		1721
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	ANSI/IES LM-79:2019	N/A		130.4
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	300		1684
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	ANSI/IES LM-79:2019	Standard	Premium	127.6
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		13.2
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	480V	37.51
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	480V	0.549
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	3985±275	4173
		4 steps	3985±154	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		83.9
Minimum R9 (Integrating Sphere – Section 4.1)	ANSI/IES LM-79-2019 CIE13.3-1995	N/A		20
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		84
Minimum Rg (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥89		97
IES Rcs,h1 (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-11%
Zonal Lumen Requirement (80°-90°) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	≤10%		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		0.050
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		13.2
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A

2.0 Test List

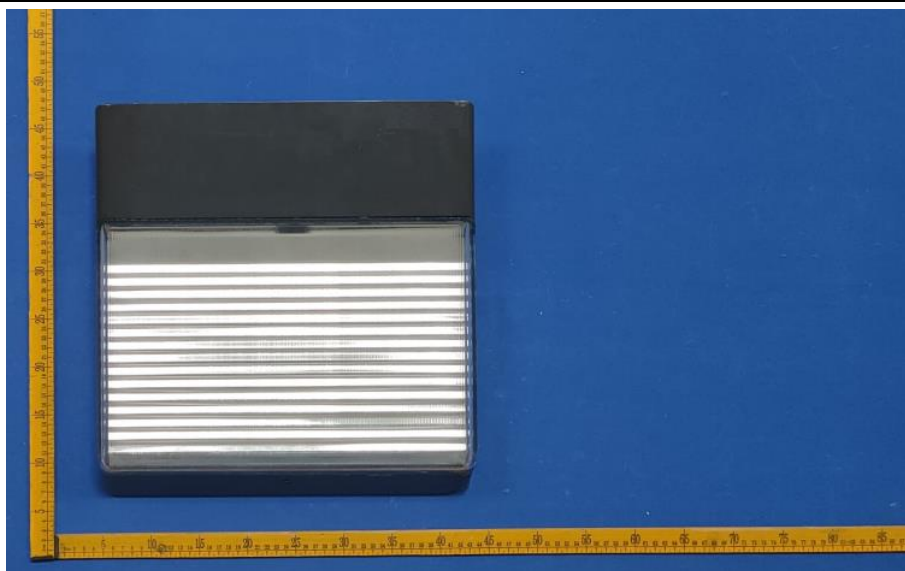
Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024-10-09	PWLED/480 @13W4000K	-	241009002-S1
2	Goniophotometer Test	2024-10-09	PWLED/480 @13W4000K	-	241009002-S1
3	THD and PF Test	2024-10-09	PWLED/480 @13W4000K	-	241009002-S1
Remark (If any):					
<ol style="list-style-type: none"> The results contained in this report pertain only to the tested samples. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd. 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. 					

3.0 Product Description

Luminaire Description: Model No. PWLED/480 @13W4000K, 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

Model No.	PWLED/480 @13W4000K	Sample ID	241009002-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

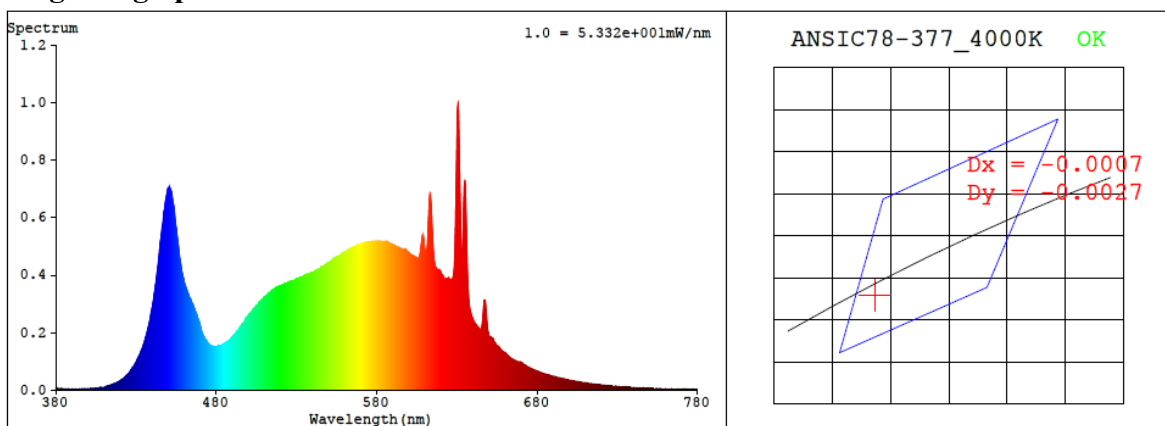
Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere.</p> <p>The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ±0.2 percent under load.</p> <p>The sample was measured using 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

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
480.0	60	0.050	13.2	0.549

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4173	83.9	20	-0.0011	84	97	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3724$ $y = 0.3694$ / $u' = 0.2227$ $v' = 0.4971$ ($duv = -1.05e-03$)

CCT= 4173K Prcp WL: $L_d = 579.1\text{nm}$ Purity=22.6%

Peak WL: $L_p = 631\text{nm}$ FWHM: $\approx 4.5\text{nm}$ Ratio: R=18.1% G=78.2% B=3.7%

Render Index: $R_a = 83.9$ AvgR = 77.6 TM30: Rf=83 Rg=97

EEL: 0.10894 A++ Highest

R1 =83 R2 =89 R3 =93 R4 =83 R5 =82 R6 =84 R7 =87
R8 =70 R9 =20 R10=73 R11=81 R12=61 R13=84 R14=96 R15=78

4.1 Integrating Sphere Test

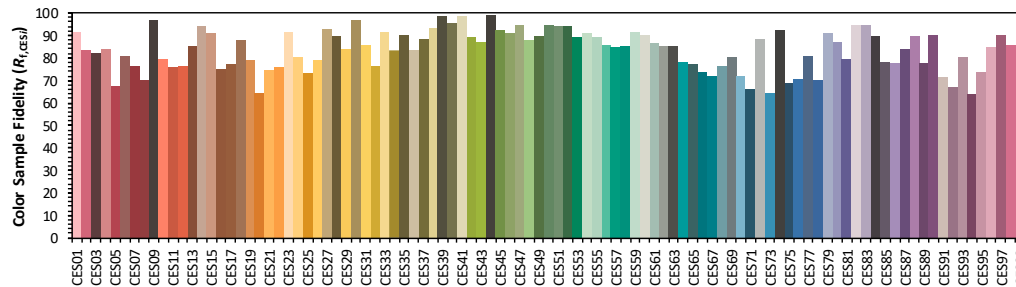
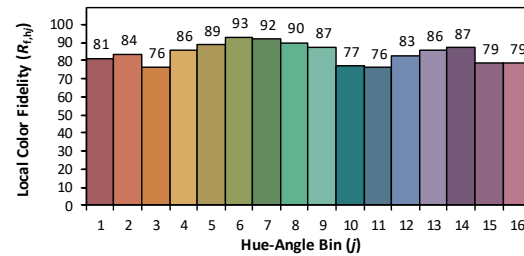
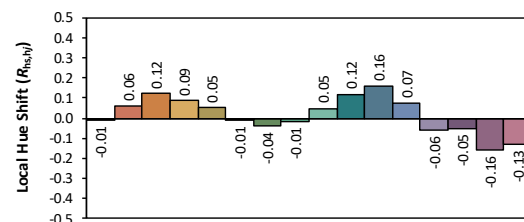
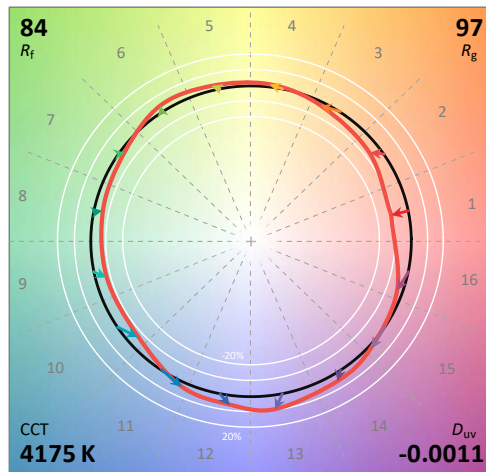
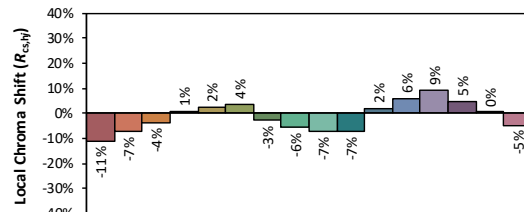
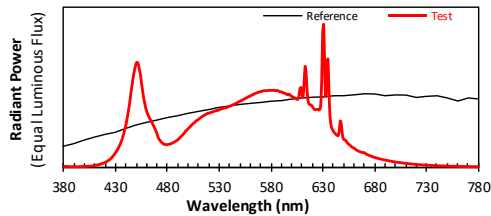
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/10/10

Model: PWLED/480 @13W4000K



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

x 0.3724
 y 0.3693
 u' 0.2228
 v' 0.4970

CIE 13.3-1995
(CRI)
 R_a 84
 R_g 20

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	4.20E-06	447	6.08E-04	514	3.42E-04	581	5.16E-04	648	2.88E-04	715	2.18E-05
381	4.70E-06	448	6.43E-04	515	3.46E-04	582	5.17E-04	649	2.19E-04	716	2.13E-05
382	3.30E-06	449	6.79E-04	516	3.50E-04	583	5.16E-04	650	1.90E-04	717	2.04E-05
383	5.60E-06	450	7.00E-04	517	3.54E-04	584	5.16E-04	651	1.85E-04	718	1.96E-05
384	3.50E-06	451	7.05E-04	518	3.58E-04	585	5.15E-04	652	1.80E-04	719	1.91E-05
385	3.70E-06	452	6.90E-04	519	3.62E-04	586	5.16E-04	653	1.71E-04	720	1.85E-05
386	3.30E-06	453	6.54E-04	520	3.62E-04	587	5.14E-04	654	1.62E-04	721	1.78E-05
387	2.60E-06	454	6.18E-04	521	3.66E-04	588	5.09E-04	655	1.54E-04	722	1.74E-05
388	3.10E-06	455	5.64E-04	522	3.67E-04	589	5.08E-04	656	1.50E-04	723	1.67E-05
389	3.50E-06	456	5.16E-04	523	3.71E-04	590	5.06E-04	657	1.44E-04	724	1.63E-05
390	3.40E-06	457	4.69E-04	524	3.72E-04	591	5.03E-04	658	1.37E-04	725	1.57E-05
391	3.30E-06	458	4.34E-04	525	3.76E-04	592	5.00E-04	659	1.32E-04	726	1.52E-05
392	2.20E-06	459	4.00E-04	526	3.78E-04	593	4.98E-04	660	1.29E-04	727	1.47E-05
393	2.60E-06	460	3.77E-04	527	3.79E-04	594	4.95E-04	661	1.24E-04	728	1.41E-05
394	2.70E-06	461	3.56E-04	528	3.81E-04	595	4.91E-04	662	1.18E-04	729	1.39E-05
395	4.00E-06	462	3.41E-04	529	3.82E-04	596	4.87E-04	663	1.13E-04	730	1.34E-05
396	3.80E-06	463	3.26E-04	530	3.86E-04	597	4.89E-04	664	1.10E-04	731	1.29E-05
397	3.10E-06	464	3.15E-04	531	3.88E-04	598	4.90E-04	665	1.06E-04	732	1.24E-05
398	4.00E-06	465	3.01E-04	532	3.92E-04	599	4.81E-04	666	1.04E-04	733	1.22E-05
399	4.10E-06	466	2.88E-04	533	3.93E-04	600	4.77E-04	667	1.00E-04	734	1.17E-05
400	5.10E-06	467	2.72E-04	534	3.95E-04	601	4.72E-04	668	9.87E-05	735	1.14E-05
401	4.90E-06	468	2.58E-04	535	3.99E-04	602	4.69E-04	669	9.84E-05	736	1.09E-05
402	4.90E-06	469	2.42E-04	536	4.00E-04	603	4.66E-04	670	9.72E-05	737	1.04E-05
403	5.80E-06	470	2.23E-04	537	4.01E-04	604	4.62E-04	671	9.26E-05	738	1.05E-05
404	6.50E-06	471	2.01E-04	538	4.03E-04	605	4.59E-04	672	8.76E-05	739	1.01E-05
405	6.20E-06	472	1.88E-04	539	4.08E-04	606	4.56E-04	673	8.45E-05	740	9.60E-06
406	7.40E-06	473	1.78E-04	540	4.09E-04	607	4.75E-04	674	8.11E-05	741	9.30E-06
407	7.90E-06	474	1.70E-04	541	4.12E-04	608	5.25E-04	675	7.84E-05	742	9.00E-06
408	8.50E-06	475	1.62E-04	542	4.15E-04	609	5.35E-04	676	7.57E-05	743	8.60E-06
409	1.02E-05	476	1.57E-04	543	4.19E-04	610	4.86E-04	677	7.31E-05	744	8.30E-06
410	1.03E-05	477	1.53E-04	544	4.20E-04	611	4.73E-04	678	7.07E-05	745	8.10E-06
411	1.22E-05	478	1.53E-04	545	4.25E-04	612	5.60E-04	679	6.82E-05	746	8.10E-06
412	1.43E-05	479	1.51E-04	546	4.29E-04	613	6.76E-04	680	6.52E-05	747	7.70E-06
413	1.49E-05	480	1.52E-04	547	4.31E-04	614	6.32E-04	681	6.37E-05	748	7.50E-06
414	1.71E-05	481	1.53E-04	548	4.35E-04	615	5.07E-04	682	6.14E-05	749	7.20E-06
415	1.93E-05	482	1.54E-04	549	4.41E-04	616	4.44E-04	683	5.95E-05	750	7.10E-06
416	2.20E-05	483	1.56E-04	550	4.42E-04	617	4.24E-04	684	5.74E-05	751	6.80E-06
417	2.34E-05	484	1.60E-04	551	4.48E-04	618	4.19E-04	685	5.61E-05	752	6.70E-06
418	2.63E-05	485	1.62E-04	552	4.49E-04	619	4.18E-04	686	5.43E-05	753	6.50E-06
419	2.89E-05	486	1.67E-04	553	4.53E-04	620	4.09E-04	687	5.23E-05	754	6.20E-06
420	3.33E-05	487	1.70E-04	554	4.58E-04	621	3.97E-04	688	5.10E-05	755	6.20E-06
421	3.52E-05	488	1.74E-04	555	4.61E-04	622	3.89E-04	689	4.93E-05	756	5.90E-06
422	4.04E-05	489	1.79E-04	556	4.65E-04	623	3.87E-04	690	4.78E-05	757	5.70E-06
423	4.45E-05	490	1.84E-04	557	4.68E-04	624	3.88E-04	691	4.67E-05	758	5.30E-06
424	5.02E-05	491	1.91E-04	558	4.73E-04	625	3.88E-04	692	4.50E-05	759	5.50E-06
425	5.54E-05	492	1.97E-04	559	4.76E-04	626	3.86E-04	693	4.38E-05	760	5.10E-06
426	6.24E-05	493	2.05E-04	560	4.79E-04	627	3.86E-04	694	4.23E-05	761	4.90E-06
427	7.05E-05	494	2.11E-04	561	4.82E-04	628	4.10E-04	695	4.10E-05	762	4.80E-06
428	7.86E-05	495	2.19E-04	562	4.87E-04	629	5.66E-04	696	3.99E-05	763	4.70E-06
429	8.78E-05	496	2.28E-04	563	4.89E-04	630	8.99E-04	697	3.85E-05	764	4.50E-06
430	9.73E-05	497	2.35E-04	564	4.93E-04	631	9.58E-04	698	3.72E-05	765	4.40E-06
431	1.09E-04	498	2.46E-04	565	4.97E-04	632	6.54E-04	699	3.62E-05	766	4.20E-06
432	1.20E-04	499	2.51E-04	566	4.98E-04	633	4.75E-04	700	3.47E-05	767	4.20E-06
433	1.34E-04	500	2.58E-04	567	5.02E-04	634	6.11E-04	701	3.40E-05	768	4.10E-06
434	1.49E-04	501	2.66E-04	568	5.04E-04	635	7.28E-04	702	3.26E-05	769	3.80E-06
435	1.65E-04	502	2.72E-04	569	5.07E-04	636	5.33E-04	703	3.19E-05	770	3.70E-06
436	1.83E-04	503	2.80E-04	570	5.08E-04	637	3.48E-04	704	3.07E-05	771	3.70E-06
437	2.05E-04	504	2.87E-04	571	5.10E-04	638	2.85E-04	705	2.98E-05	772	3.50E-06
438	2.30E-04	505	2.94E-04	572	5.12E-04	639	2.60E-04	706	2.89E-05	773	3.40E-06
439	2.59E-04	506	2.98E-04	573	5.14E-04	640	2.45E-04	707	2.82E-05	774	3.20E-06
440	2.87E-04	507	3.06E-04	574	5.15E-04	641	2.34E-04	708	2.71E-05	775	3.20E-06
441	3.25E-04	508	3.12E-04	575	5.15E-04	642	2.26E-04	709	2.64E-05	776	3.20E-06
442	3.64E-04	509	3.16E-04	576	5.14E-04	643	2.19E-04	710	2.53E-05	777	3.00E-06
443	4.07E-04	510	3.22E-04	577	5.15E-04	644	2.14E-04	711	2.47E-05	778	2.90E-06
444	4.55E-04	511	3.27E-04	578	5.16E-04	645	2.12E-04	712	2.37E-05	779	2.90E-06
445	5.12E-04	512	3.32E-04	579	5.17E-04	646	2.46E-04	713	2.30E-05	780	2.90E-06
446	5.58E-04	513	3.38E-04	580	5.17E-04	647	3.10E-04	714	2.24E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	PWLED/480 @13W4000K	Sample ID	241009002-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	25.0	Humidity (%RH)	43.1

Test Method
<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 $25 \pm 1^{\circ}\text{C}$, 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 ± 0.2 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 1.0° vertical intervals and 15° horizontal intervals.</p>

Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	480.0	60	0.050	13.2	0.549
NON-WORST CASE	N/A	N/A	N/A	N/A	N/A

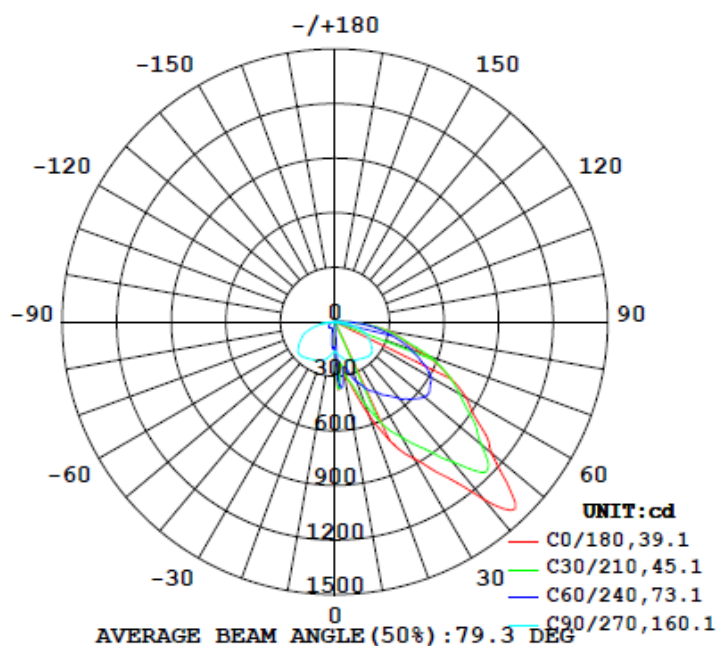
Test Result

Result Type	Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement (80°-90°)	BUG
		C0-180	C90-270	C0-180	C90-270			
0°-180° zones	1721	89.4	150.9	40.0	85.4	130.4	5.0%	B0-U2-G1
0°-90° zones	1684	89.4	150.9	40.0	85.4	127.6	5.1%	B0-U2-G1

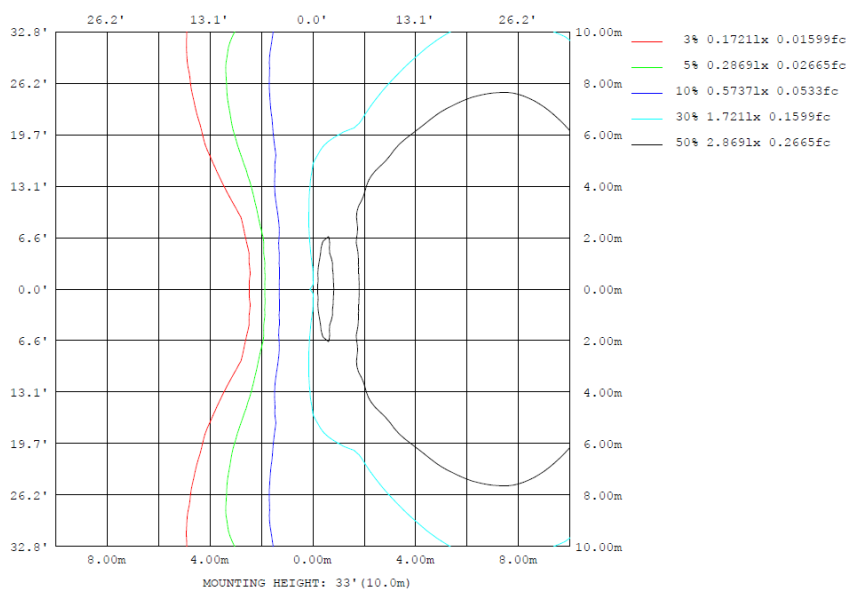
4.2 Goniophotometer Test

Lighting Distribution Curve

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

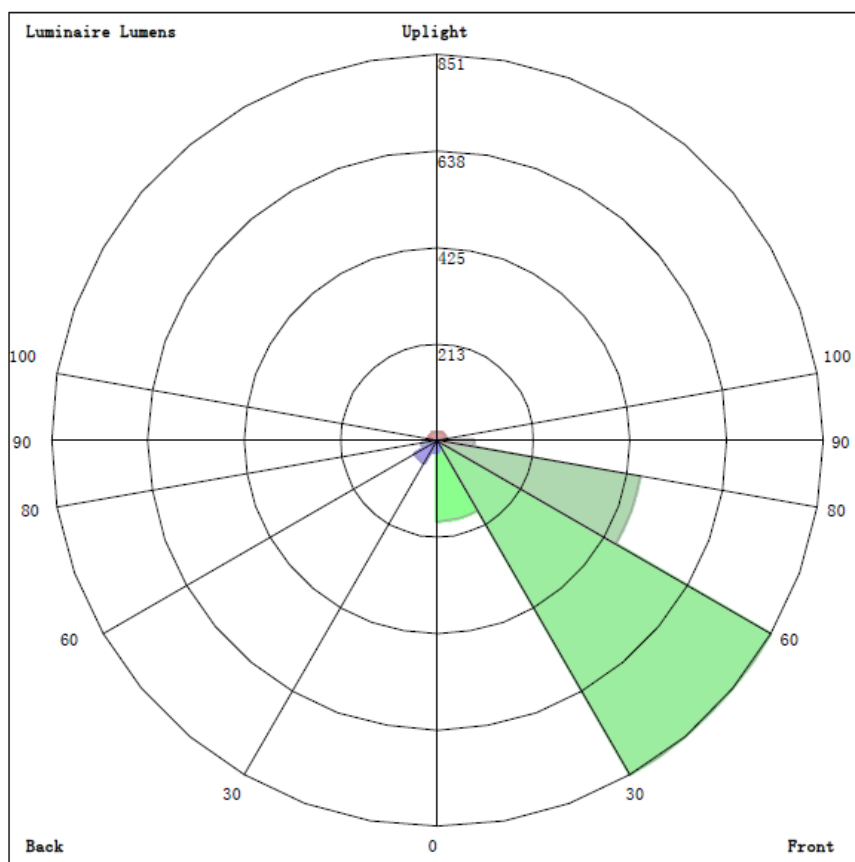
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	φ zone	φ total	%lum, lamp
10	297.3	245.7	196.1	62.82	32.97	62.82	196.1	245.7	0- 10	18.65	18.65	1.08,1.08
20	546.3	408.3	226.0	22.34	10.48	22.34	226.0	408.3	10- 20	56.01	74.65	4.34,4.34
30	867.6	605.9	241.7	19.05	7.473	19.05	241.7	605.9	20- 30	128.1	202.7	11.8,11.8
40	1274	787.4	256.7	18.01	3.325	18.01	256.7	787.4	30- 40	224.2	427.0	24.8,24.8
50	1122	936.9	264.7	16.53	0.7862	16.53	264.7	936.9	40- 50	338.5	765.5	44.5,44.5
60	831.9	742.0	224.4	14.20	0.0363	14.20	224.4	742.0	50- 60	344.1	1110	64.5,64.5
70	523.9	540.8	174.3	11.60	0.0861	11.60	174.3	540.8	60- 70	293.1	1403	81.5,81.5
80	301.6	294.4	81.06	7.650	0.2009	7.650	81.06	294.4	70- 80	195.5	1598	92.9,92.9
90	53.28	71.64	9.935	3.014	0.3676	3.014	9.935	71.64	80- 90	85.57	1684	97.8,97.8
100	27.02	22.28	2.151	1.185	0.5605	1.185	2.151	22.28	90-100	18.18	1702	98.9,98.9
110	15.28	10.49	1.368	0.9022	0.6941	0.9022	1.368	10.49	100-110	7.908	1710	99.3,99.3
120	7.835	6.611	1.149	0.8987	0.7587	0.8987	1.149	6.611	110-120	4.112	1714	99.6,99.6
130	6.129	5.085	0.9891	0.9207	0.8547	0.9207	0.9891	5.085	120-130	2.705	1717	99.7,99.7
140	5.096	4.039	0.7882	0.8535	0.8238	0.8535	0.7882	4.039	130-140	1.927	1719	99.9,99.9
150	4.008	3.215	0.6638	0.6962	0.7456	0.6962	0.6638	3.215	140-150	1.290	1720	99.9,99.9
160	2.858	2.533	0.6315	0.5937	0.5615	0.5937	0.6315	2.533	150-160	0.7775	1721	100,100
170	2.058	2.205	0.5860	0.5401	0.3751	0.5401	0.5860	2.205	160-170	0.3731	1721	100,100
180	0.3128	0.3497	0.3992	0.3970	0.3098	0.3970	0.3992	0.3497	170-180	0.0817	1721	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	18.65	0-10	18.65	1.08%
10-20	56.01	0-20	74.66	4.34%
20-30	128.08	0-30	202.74	11.78%
30-40	224.24	0-40	426.98	24.81%
40-50	338.50	0-50	765.48	44.48%
50-60	344.08	0-60	1109.56	64.47%
60-70	293.12	0-70	1402.68	81.50%
70-80	195.51	0-80	1598.19	92.86%
80-90	85.57	0-90	1683.76	97.83%
90-100	18.18	0-100	1701.94	98.89%
100-110	7.91	0-110	1709.85	99.35%
110-120	4.11	0-120	1713.96	99.59%
120-130	2.71	0-130	1716.67	99.75%
130-140	1.93	0-140	1718.60	99.86%
140-150	1.29	0-150	1719.89	99.93%
150-160	0.78	0-160	1720.67	99.98%
160-170	0.37	0-170	1721.04	100.00%
170-180	0.08	0-180	1721.12	100.00%

4.2 Goniophotometer Test

LCS/BUG

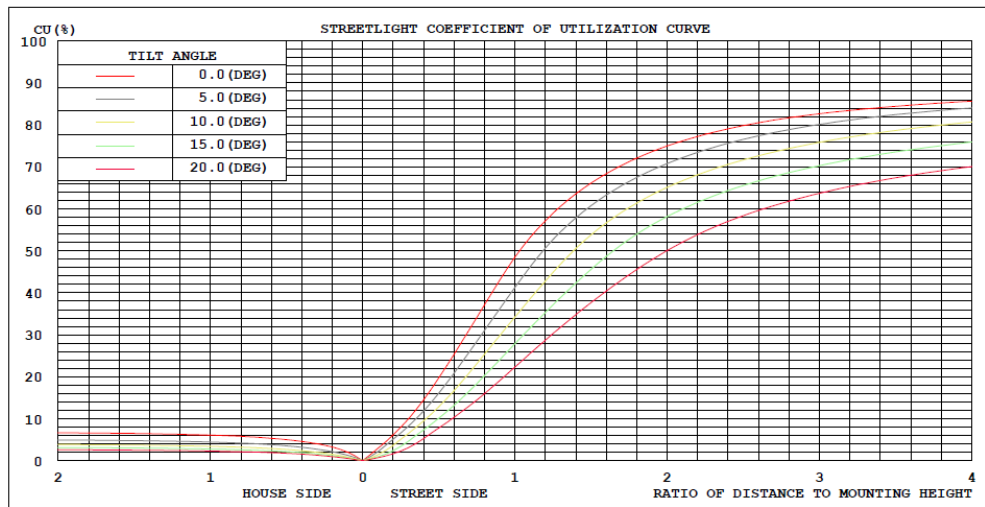


LUMINAIRE CLASSIFICATION SYSTEM (LCS)

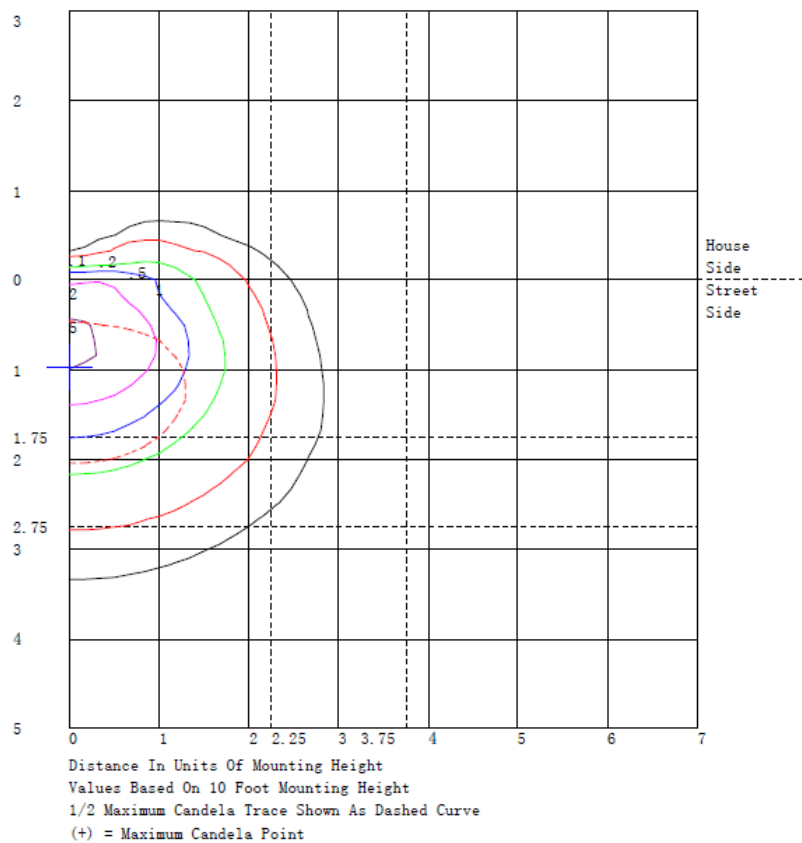
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	177.6	N.A.	10.3
FM - Front-Medium (30-60)	850.6	N.A.	49.4
FH - Front-High (60-80)	454.6	N.A.	26.4
FVH - Front-Very High (80-90)	79.6	N.A.	4.6
BL - Back-Low (0-30)	25.1	N.A.	1.5
BM - Back-Medium (30-60)	56.2	N.A.	3.3
BH - Back-High (60-80)	34.0	N.A.	2.0
BVH - Back-Very High (80-90)	5.9	N.A.	0.3
UL - Uplight-Low (90-100)	18.2	N.A.	1.1
UH - Uplight-High (100-180)	19.2	N.A.	1.1
Total	1721.0	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	207	206	203	194	164	162	161	160	157	154	151	149	207	149	151	154	157	160	161
5	263	271	300	358	361	307	177	135	149	134	115	103	102	103	115	134	149	135	177
10	297	292	271	246	256	335	196	133	99.9	62.8	42.8	34.5	33.0	34.5	42.8	62.8	99.9	133	196
15	377	374	353	339	281	273	214	114	59.6	31.4	21.2	16.9	16.0	16.9	21.2	31.4	59.6	114	214
20	546	539	480	408	352	262	226	100	43.0	22.3	14.4	11.1	10.5	11.1	14.4	22.3	43.0	100	226
25	725	710	621	513	406	297	233	88.1	39.8	19.9	12.1	8.75	8.46	8.75	12.1	19.9	39.8	88.1	233
30	868	832	732	606	444	301	242	84.3	39.5	19.1	11.4	7.89	7.47	7.89	11.4	19.1	39.5	84.3	242
35	1029	973	850	688	495	293	246	86.6	41.8	18.5	11.0	6.67	5.35	6.67	11.0	18.5	41.8	86.6	246
40	1274	1177	1004	787	550	301	257	90.5	43.3	18.0	10.6	4.95	3.32	4.95	10.6	18.0	43.3	90.5	257
45	1400	1324	1170	890	600	304	264	94.6	46.0	17.5	10.3	3.96	1.89	3.96	10.3	17.5	46.0	94.6	264
50	1122	1091	1052	937	643	343	265	92.9	45.0	16.5	10.2	3.43	0.79	3.43	10.2	16.5	45.0	92.9	265
55	960	944	921	847	637	373	247	91.6	43.6	15.2	10.7	3.31	0.12	3.31	10.7	15.2	43.6	91.6	247
60	832	826	791	742	610	358	224	87.9	39.6	14.2	11.1	3.78	0.04	3.78	11.1	14.2	39.6	87.9	224
65	691	688	681	648	530	327	201	78.9	34.7	13.0	11.7	4.13	0.05	4.13	11.7	13.0	34.7	78.9	201
70	524	539	550	541	445	283	174	66.3	29.4	11.6	10.8	3.89	0.09	3.89	10.8	11.6	29.4	66.3	174
75	392	395	398	411	349	236	129	49.1	21.5	10.1	9.63	3.29	0.14	3.29	9.63	10.1	21.5	49.1	129
80	302	301	295	294	252	155	81.1	34.5	16.0	7.65	7.33	2.60	0.20	2.60	7.33	7.65	16.0	34.5	81.1
85	166	167	170	179	160	90.9	40.1	20.6	10.7	5.06	4.89	1.77	0.28	1.77	4.89	5.06	10.7	20.6	40.1
90	53.3	54.0	57.8	71.6	69.6	34.9	9.94	10.6	5.66	3.01	2.87	1.13	0.37	1.13	2.87	3.01	5.66	10.6	9.94
95	36.5	35.9	35.5	35.9	31.7	13.9	3.35	4.44	3.00	1.65	1.48	0.71	0.46	0.71	1.48	1.65	3.00	4.44	3.35
100	27.0	26.2	24.3	22.3	18.5	8.48	2.15	2.68	1.95	1.19	1.05	0.59	0.56	0.59	1.05	1.19	1.95	2.68	2.15
105	19.8	19.2	17.3	14.9	12.2	5.85	1.63	1.91	1.44	0.98	0.88	0.57	0.65	0.57	0.88	0.98	1.44	1.91	1.63
110	15.3	14.6	12.6	10.5	8.21	4.42	1.37	1.48	1.17	0.90	0.82	0.60	0.69	0.60	0.82	0.90	1.17	1.48	1.37
115	10.2	9.98	8.94	7.88	6.34	3.65	1.24	1.24	1.05	0.89	0.83	0.66	0.73	0.66	0.83	0.89	1.05	1.24	1.24
120	7.84	7.84	7.31	6.61	5.26	3.20	1.15	1.12	0.99	0.90	0.86	0.73	0.76	0.73	0.86	0.90	0.99	1.12	1.15
125	6.83	6.88	6.38	5.74	4.53	2.87	1.08	1.06	0.96	0.92	0.90	0.80	0.82	0.80	0.90	0.92	0.96	1.06	1.08
130	6.13	6.17	5.65	5.09	3.93	2.64	0.99	0.97	0.94	0.92	0.92	0.84	0.85	0.84	0.92	0.92	0.94	0.97	0.99
135	5.51	5.57	5.10	4.50	3.52	2.46	0.89	0.89	0.91	0.91	0.90	0.84	0.84	0.84	0.90	0.91	0.91	0.89	0.89
140	5.10	5.03	4.63	4.04	3.18	2.31	0.79	0.82	0.85	0.85	0.84	0.79	0.82	0.79	0.84	0.85	0.85	0.82	0.79
145	4.51	4.51	4.17	3.61	2.90	2.22	0.71	0.75	0.77	0.78	0.76	0.72	0.79	0.72	0.76	0.78	0.77	0.75	0.71
150	4.01	4.01	3.69	3.22	2.64	2.21	0.66	0.70	0.70	0.70	0.68	0.65	0.75	0.65	0.68	0.70	0.70	0.66	0.66
155	3.37	3.39	3.19	2.84	2.44	2.22	0.65	0.67	0.66	0.65	0.62	0.58	0.66	0.58	0.62	0.65	0.66	0.67	0.65
160	2.86	2.89	2.77	2.53	2.29	2.27	0.63	0.64	0.62	0.59	0.56	0.50	0.56	0.50	0.56	0.59	0.62	0.64	0.63
165	2.40	2.39	2.40	2.29	2.25	1.51	0.61	0.61	0.59	0.56	0.53	0.40	0.45	0.40	0.53	0.56	0.59	0.61	0.61
170	2.06	2.06	2.14	2.20	1.95	0.58	0.59	0.58	0.57	0.54	0.48	0.38	0.38	0.38	0.48	0.54	0.57	0.58	0.59
175	1.53	1.50	1.32	0.54	0.42	0.47	0.51	0.50	0.47	0.45	0.43	0.40	0.36	0.40	0.43	0.45	0.47	0.50	0.51
180	0.31	0.31	0.32	0.35	0.38	0.39	0.40	0.40	0.40	0.40	0.39	0.38	0.31	0.38	0.39	0.40	0.40	0.40	0.40

Table--2

UNIT: cd

C (DEG) y (DEG)	285	300	315	330	345														
0	162	164	194	203	206														
5	307	361	358	300	271														
10	335	256	246	271	292														
15	273	281	339	353	374														
20	262	352	408	480	539														
25	297	406	513	621	710														
30	301	444	606	732	832														
35	293	495	688	850	973														
40	301	550	787	1004	1177														
45	304	600	890	1170	1324														
50	343	643	937	1052	1091														
55	373	637	847	921	944														
60	358	610	742	791	826														
65	327	530	648	681	688														
70	283	445	541	550	539														
75	236	349	411	398	395														
80	155	252	294	295	301														
85	90.9	160	179	170	167														
90	34.9	69.6	71.6	57.8	54.0														
95	13.9	31.7	35.9	35.5	35.9														
100	8.48	18.5	22.3	24.3	26.2														
105	5.85	12.2	14.9	17.3	19.2														
110	4.42	8.21	10.5	12.6	14.6														
115	3.65	6.34	7.88	8.94	9.98														
120	3.20	5.26	6.61	7.31	7.84														
125	2.87	4.53	5.74	6.38	6.88														
130	2.64	3.93	5.09	5.65	6.17														
135	2.46	3.52	4.50	5.10	5.57														
140	2.31	3.18	4.04	4.63	5.03														
145	2.22	2.90	3.61	4.17	4.51														
150	2.21	2.64	3.22	3.69	4.01														
155	2.22	2.44	2.84	3.19	3.39														
160	2.27	2.29	2.53	2.77	2.89														
165	1.51	2.25	2.29	2.40	2.39														
170	0.58	1.95	2.20	2.14	2.06														
175	0.47	0.42	0.54	1.32	1.50														
180	0.39	0.38	0.35	0.32	0.31														

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	PWLED/480 @13W4000K	Sample ID	241009002-S1
Temperature (°C)	25.4	Humidity (%RH)	41.0

Test Method
<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 $25 \pm 1^\circ\text{C}$. 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	0.050	13.2	0.549	37.51

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*****