

## Photometric Test Report

### Relevant Standards

- ☒ IES LM-79-2008
- ☒ ANSI C82.77-2017

Prepared For

**RAB Lighting Inc.**

Prepared By

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Revised Date: N/A

## 1.0 Test Summary

DLC Technical Requirements V5.1

Integrated Retrofit Kits for 2x4 Luminaires				
Requirement Category	Test Method	Requirements		Test Value
Luminaire Output (lm) (Goniophotometer – Section 4.2)	IES LM-79-2008	3000		3543
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	139.5
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		25.4
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	6.97
			277V	8.48
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.996
			277V	0.957
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3465±245	3469
		4 steps	3465±124	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		83.6
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥0		11
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		85
Minimum Rg (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥89		95
IES Rcs,h1 (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	-12%≤IES Rcs,h1≤+23%		-12%
Zonal Lumen Requirement (0°-60°) (Goniophotometer – Section 4.2)	IES LM-79-2008	≥75%		77.8%
Discomfort Glare (UGR) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	18.7
		N/A	<22	
Spacing Criterion (Goniophotometer – Section 4.2)	IES LM-79-2008	0°-180°	1.0-2.0	1.28
		90°-270°	1.0-2.0	1.28
Input Voltage (V)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Cast		277.0
(Goniophotometer – Section 4.2)		Non-Worst Case		120.0
Input Current (A)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		0.096
(Goniophotometer – Section 4.2)		Non-Worst Case		0.211
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		25.4
(Goniophotometer – Section 4.2)		Non-Worst Case		25.2

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-02-23	RPLED2X4 @25W3500K	240130004-S1
2	Goniophotometer Test	2024-02-23	RPLED2X4 @25W3500K	240130004-S1
3	THD and PF Test	2024-02-23	RPLED2X4 @25W3500K	240130004-S1

### Remark (If any)

1. The results contained in this report pertain only to the tested samples.
2. Test Troffer is Lithonia 2GT8 lensed 2x4.
3. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.
4. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

## 3.0 Product Description

Luminaire Description: Model No. RPLED2X4 @25W3500K, color tunable from 3500K, 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>	RPLED2X4 @25W3500K	<b>Sample ID</b>	240130004-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

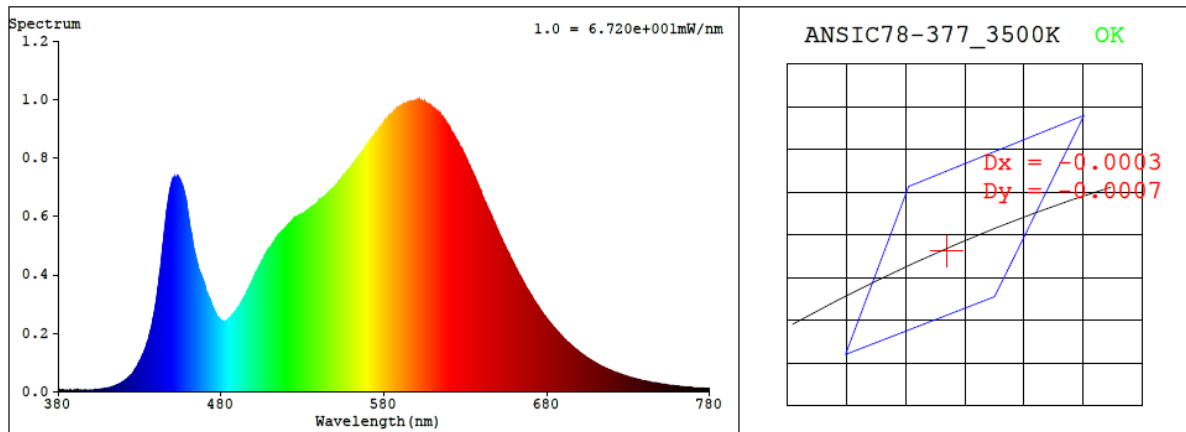
<b>Test Method</b>
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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 4<math>\pi</math> 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
120.0	60	0.211	25.2	0.996
277.0	60	0.096	25.4	0.957

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
3469	83.6	11	-0.0002	85	95	-12%

## 4.1 Integrating Sphere Test



### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.4068$   $y = 0.3909$  /  $u' = 0.2366$   $v' = 0.5116$  ( $duv = -2.48e-04$ )

CCT= 3469K Prcp WL: Ld=581.1nm Purity=39.4%

Peak WL: Lp=602nm FWHM: =144.1nm Ratio:R=20.5% G=76.4% B=3.1%

Render Index: Ra = 83.6 AvgR = 77.6 TM30:Rf=84 Rg=96

EEL: 0.09621 A++ Highest

R1 =82 R2 =91 R3 =96 R4 =82 R5 =82 R6 =88 R7 =85

R8 =63 R9 =11 R10=78 R11=81 R12=67 R13=84 R14=98 R15=76

## 4.1 Integrating Sphere Test

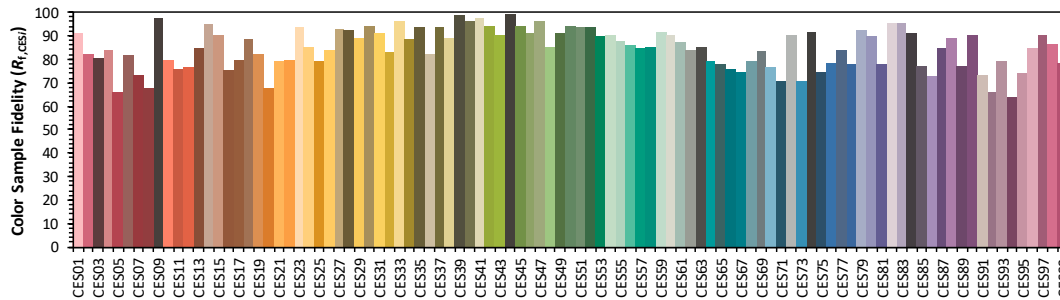
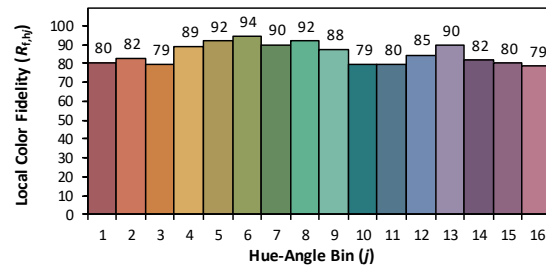
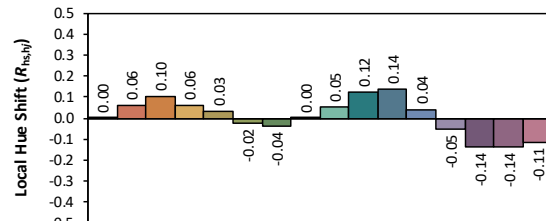
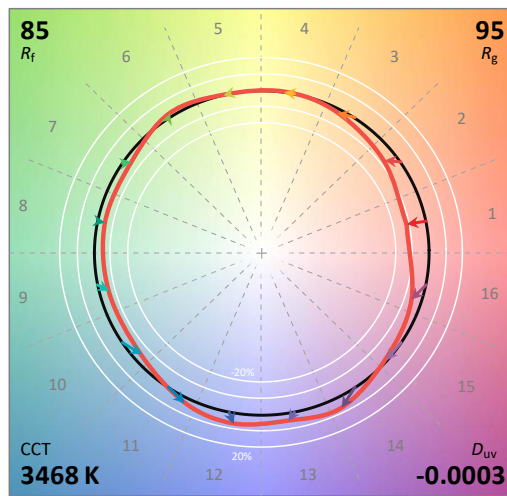
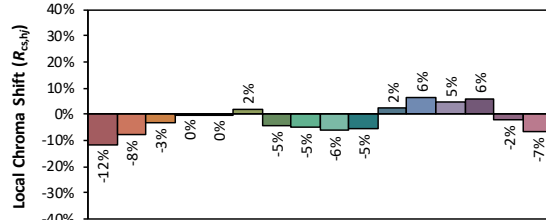
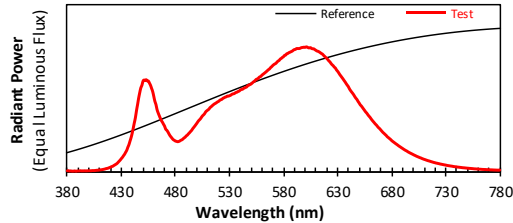
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/2/28

Model: RPLED2X4 @25W3500K



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

$x$  0.4068  
 $y$  0.3908  
 $u'$  0.2367  
 $v'$  0.5115

CIE 13.3-1995  
(CRI)

$R_a$  84  
 $R_g$  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	5.50E-06	447	6.32E-04	514	5.27E-04	581	9.31E-04	648	5.77E-04	715	8.39E-05
381	6.60E-06	448	6.70E-04	515	5.34E-04	582	9.33E-04	649	5.62E-04	716	8.09E-05
382	3.70E-06	449	6.90E-04	516	5.41E-04	583	9.44E-04	650	5.49E-04	717	7.83E-05
383	4.90E-06	450	7.23E-04	517	5.46E-04	584	9.46E-04	651	5.35E-04	718	7.56E-05
384	3.40E-06	451	7.34E-04	518	5.52E-04	585	9.53E-04	652	5.26E-04	719	7.29E-05
385	2.90E-06	452	7.29E-04	519	5.58E-04	586	9.56E-04	653	5.14E-04	720	7.09E-05
386	3.50E-06	453	7.36E-04	520	5.62E-04	587	9.61E-04	654	5.02E-04	721	6.82E-05
387	4.70E-06	454	7.26E-04	521	5.70E-04	588	9.64E-04	655	4.90E-04	722	6.66E-05
388	2.00E-06	455	7.25E-04	522	5.75E-04	589	9.71E-04	656	4.78E-04	723	6.44E-05
389	4.00E-06	456	7.08E-04	523	5.79E-04	590	9.77E-04	657	4.68E-04	724	6.26E-05
390	4.50E-06	457	6.91E-04	524	5.87E-04	591	9.79E-04	658	4.56E-04	725	6.02E-05
391	4.20E-06	458	6.66E-04	525	5.91E-04	592	9.85E-04	659	4.45E-04	726	5.85E-05
392	6.10E-06	459	6.41E-04	526	5.96E-04	593	9.86E-04	660	4.35E-04	727	5.67E-05
393	4.90E-06	460	6.03E-04	527	5.99E-04	594	9.85E-04	661	4.23E-04	728	5.49E-05
394	5.00E-06	461	5.63E-04	528	6.04E-04	595	9.86E-04	662	4.11E-04	729	5.32E-05
395	5.00E-06	462	5.37E-04	529	6.04E-04	596	9.91E-04	663	4.01E-04	730	5.16E-05
396	5.70E-06	463	4.97E-04	530	6.07E-04	597	9.94E-04	664	3.91E-04	731	4.97E-05
397	5.00E-06	464	4.71E-04	531	6.11E-04	598	9.95E-04	665	3.80E-04	732	4.78E-05
398	5.40E-06	465	4.49E-04	532	6.17E-04	599	9.96E-04	666	3.72E-04	733	4.65E-05
399	5.70E-06	466	4.28E-04	533	6.22E-04	600	9.95E-04	667	3.61E-04	734	4.51E-05
400	6.30E-06	467	4.09E-04	534	6.23E-04	601	9.99E-04	668	3.51E-04	735	4.36E-05
401	6.10E-06	468	3.95E-04	535	6.28E-04	602	9.97E-04	669	3.43E-04	736	4.25E-05
402	5.90E-06	469	3.79E-04	536	6.33E-04	603	9.92E-04	670	3.33E-04	737	4.06E-05
403	7.40E-06	470	3.64E-04	537	6.36E-04	604	9.91E-04	671	3.23E-04	738	3.93E-05
404	7.20E-06	471	3.40E-04	538	6.41E-04	605	9.93E-04	672	3.13E-04	739	3.82E-05
405	7.60E-06	472	3.31E-04	539	6.45E-04	606	9.86E-04	673	3.06E-04	740	3.76E-05
406	8.40E-06	473	3.18E-04	540	6.52E-04	607	9.84E-04	674	2.97E-04	741	3.56E-05
407	9.60E-06	474	3.03E-04	541	6.58E-04	608	9.83E-04	675	2.89E-04	742	3.48E-05
408	1.05E-05	475	2.88E-04	542	6.59E-04	609	9.77E-04	676	2.79E-04	743	3.36E-05
409	1.06E-05	476	2.77E-04	543	6.65E-04	610	9.71E-04	677	2.72E-04	744	3.27E-05
410	1.22E-05	477	2.66E-04	544	6.70E-04	611	9.66E-04	678	2.65E-04	745	3.15E-05
411	1.39E-05	478	2.56E-04	545	6.74E-04	612	9.63E-04	679	2.58E-04	746	3.03E-05
412	1.45E-05	479	2.50E-04	546	6.78E-04	613	9.59E-04	680	2.49E-04	747	2.98E-05
413	1.66E-05	480	2.44E-04	547	6.88E-04	614	9.53E-04	681	2.42E-04	748	2.88E-05
414	1.84E-05	481	2.42E-04	548	6.92E-04	615	9.46E-04	682	2.35E-04	749	2.78E-05
415	2.06E-05	482	2.39E-04	549	6.97E-04	616	9.41E-04	683	2.29E-04	750	2.69E-05
416	2.35E-05	483	2.41E-04	550	7.01E-04	617	9.32E-04	684	2.22E-04	751	2.62E-05
417	2.51E-05	484	2.44E-04	551	7.09E-04	618	9.23E-04	685	2.16E-04	752	2.51E-05
418	2.79E-05	485	2.50E-04	552	7.17E-04	619	9.15E-04	686	2.09E-04	753	2.47E-05
419	3.16E-05	486	2.54E-04	553	7.23E-04	620	9.06E-04	687	2.03E-04	754	2.37E-05
420	3.48E-05	487	2.61E-04	554	7.32E-04	621	8.98E-04	688	1.98E-04	755	2.31E-05
421	3.95E-05	488	2.69E-04	555	7.40E-04	622	8.87E-04	689	1.91E-04	756	2.20E-05
422	4.21E-05	489	2.75E-04	556	7.42E-04	623	8.78E-04	690	1.86E-04	757	2.12E-05
423	4.79E-05	490	2.85E-04	557	7.51E-04	624	8.66E-04	691	1.80E-04	758	2.08E-05
424	5.32E-05	491	2.91E-04	558	7.58E-04	625	8.56E-04	692	1.74E-04	759	2.00E-05
425	5.85E-05	492	3.02E-04	559	7.62E-04	626	8.48E-04	693	1.69E-04	760	1.96E-05
426	6.46E-05	493	3.10E-04	560	7.72E-04	627	8.37E-04	694	1.65E-04	761	1.87E-05
427	7.38E-05	494	3.21E-04	561	7.79E-04	628	8.29E-04	695	1.59E-04	762	1.84E-05
428	8.30E-05	495	3.30E-04	562	7.85E-04	629	8.15E-04	696	1.54E-04	763	1.77E-05
429	9.25E-05	496	3.43E-04	563	7.92E-04	630	8.04E-04	697	1.49E-04	764	1.69E-05
430	1.04E-04	497	3.54E-04	564	8.00E-04	631	7.92E-04	698	1.45E-04	765	1.66E-05
431	1.14E-04	498	3.65E-04	565	8.08E-04	632	7.78E-04	699	1.40E-04	766	1.62E-05
432	1.27E-04	499	3.77E-04	566	8.16E-04	633	7.67E-04	700	1.36E-04	767	1.59E-05
433	1.39E-04	500	3.89E-04	567	8.22E-04	634	7.55E-04	701	1.31E-04	768	1.51E-05
434	1.55E-04	501	4.02E-04	568	8.32E-04	635	7.43E-04	702	1.27E-04	769	1.49E-05
435	1.70E-04	502	4.12E-04	569	8.40E-04	636	7.30E-04	703	1.23E-04	770	1.44E-05
436	1.94E-04	503	4.21E-04	570	8.49E-04	637	7.18E-04	704	1.19E-04	771	1.38E-05
437	2.15E-04	504	4.33E-04	571	8.56E-04	638	7.05E-04	705	1.16E-04	772	1.34E-05
438	2.44E-04	505	4.45E-04	572	8.62E-04	639	6.92E-04	706	1.12E-04	773	1.31E-05
439	2.72E-04	506	4.54E-04	573	8.67E-04	640	6.80E-04	707	1.09E-04	774	1.27E-05
440	3.06E-04	507	4.63E-04	574	8.77E-04	641	6.63E-04	708	1.05E-04	775	1.21E-05
441	3.47E-04	508	4.78E-04	575	8.85E-04	642	6.49E-04	709	1.01E-04	776	1.19E-05
442	3.90E-04	509	4.86E-04	576	8.90E-04	643	6.38E-04	710	9.79E-05	777	1.14E-05
443	4.32E-04	510	4.93E-04	577	9.01E-04	644	6.27E-04	711	9.53E-05	778	1.11E-05
444	4.88E-04	511	5.00E-04	578	9.07E-04	645	6.14E-04	712	9.20E-05	779	1.12E-05
445	5.36E-04	512	5.12E-04	579	9.15E-04	646	6.00E-04	713	8.90E-05	780	1.12E-05
446	5.88E-04	513	5.19E-04	580	9.20E-04	647	5.87E-04	714	8.61E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	RPLED2X4 @25W3500K	<b>Sample ID</b>	240130004-S1
<b>Operate time (Min.)</b>	30	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	24.8	<b>Humidity (%RH)</b>	42.3

<b>Test Method</b>
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using a type C goniophotometer and software.</p> <p>The ambient temperature shall be maintained at <math>25\pm1^{\circ}\text{C}</math>, measured at a point not more than 1 m from the sample and at the same height as the sample.</p> <p>The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within <math>\pm 0.2</math> percent under load.</p> <p>The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at <math>1.0^{\circ}</math> vertical intervals and <math>15^{\circ}</math> horizontal intervals.</p>

#### Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
<b>WORST CASE</b>	277.0	60	0.096	25.4	0.957
<b>NON-WORST CASE</b>	120.0	60	0.211	25.2	0.996

#### Test Result

Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement
	C0-180	C90-270	C0-180	C90-270		( $0^{\circ}$ - $60^{\circ}$ )
3543	164.3	164.5	113.2	114.1	139.5	77.8%

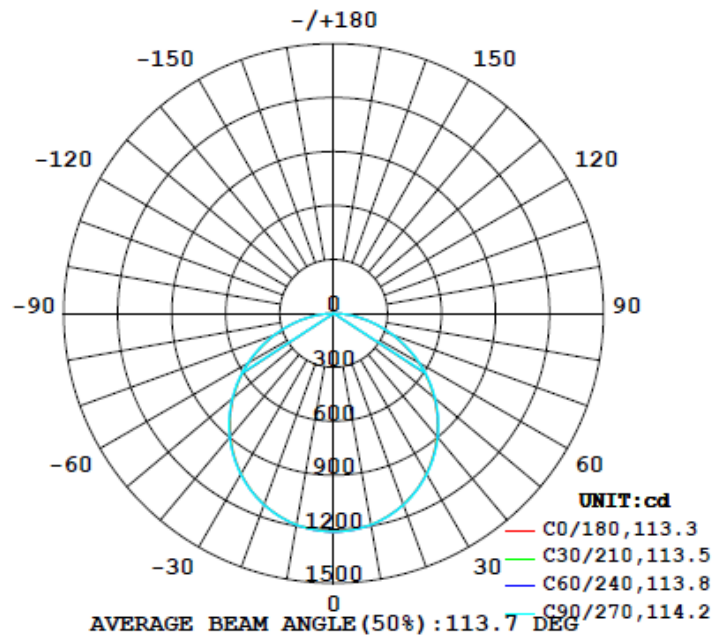
UGR		Spacing Criterion	
Crosswise	Endwise	( $0^{\circ}$ - $180^{\circ}$ )	( $90^{\circ}$ - $270^{\circ}$ )
18.6	18.7	1.28	1.28



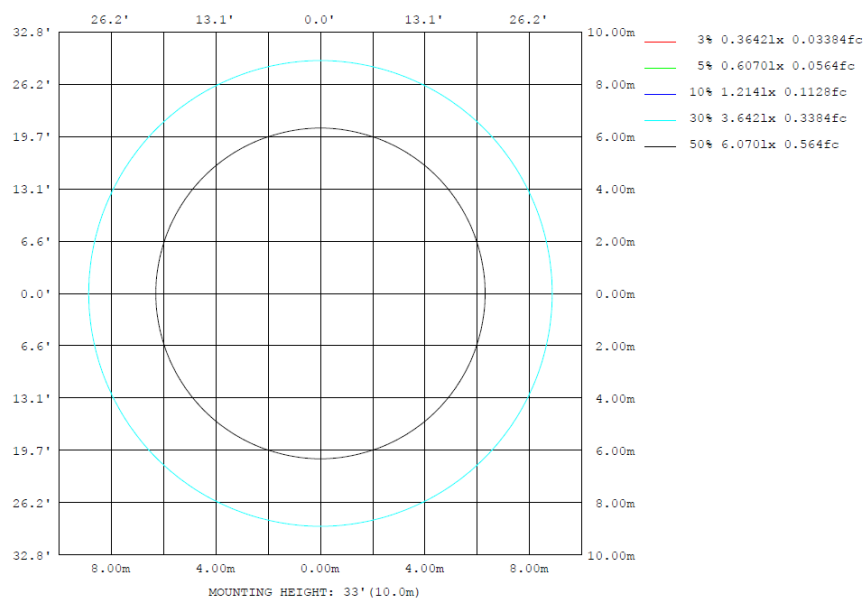
## 4.2 Goniophotometer Test

### 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	Φlum, lamp
10	1193	1193	1193	1193	1193	1193	1193	1193	0- 10	114.9	114.9	3.24,3.24
20	1131	1131	1134	1131	1131	1131	1134	1131	10- 20	329.5	444.3	12.5,12.5
30	1029	1032	1035	1032	1029	1032	1035	1032	20- 30	500.5	944.9	26.7,26.7
40	892.6	897.3	901.0	897.3	892.6	897.3	901.0	897.3	30- 40	605.4	1550	43.8,43.8
50	728.1	733.2	737.2	733.2	728.1	733.2	737.2	733.2	40- 50	630.7	2181	61.6,61.6
60	543.6	547.0	551.4	547.0	543.6	547.0	551.4	547.0	50- 60	573.5	2754	77.8,77.8
70	347.2	349.3	352.8	349.3	347.2	349.3	352.8	349.3	60- 70	443.7	3198	90.3,90.3
80	155.6	156.1	158.0	156.1	155.6	156.1	158.0	156.1	70- 80	265.0	3463	97.8,97.8
90	0	0	0	0	0	0	0	0	80- 90	79.34	3543	100,100
100	0	0	0	0	0	0	0	0	90-100	0	3543	100,100
110	0	0	0	0	0	0	0	0	100-110	0	3543	100,100
120	0	0	0	0	0	0	0	0	110-120	0	3543	100,100
130	0	0	0	0	0	0	0	0	120-130	0	3543	100,100
140	0	0	0	0	0	0	0	0	130-140	0	3543	100,100
150	0	0	0	0	0	0	0	0	140-150	0	3543	100,100
160	0	0	0	0	0	0	0	0	150-160	0	3543	100,100
170	0	0	0	0	0	0	0	0	160-170	0	3543	100,100
180	0	0	0	0	0	0	0	0	170-180	0	3543	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	114.88	0-10	114.88	3.24%
10-20	329.47	0-20	444.35	12.54%
20-30	500.54	0-30	944.89	26.67%
30-40	605.41	0-40	1550.30	43.76%
40-50	630.65	0-50	2180.95	61.57%
50-60	573.46	0-60	2754.41	77.75%
60-70	443.71	0-70	3198.12	90.28%
70-80	265.05	0-80	3463.17	97.76%
80-90	79.34	0-90	3542.51	100.00%
90-100	0.00	0-100	3542.51	100.00%
100-110	0.00	0-110	3542.51	100.00%
110-120	0.00	0-120	3542.51	100.00%
120-130	0.00	0-130	3542.51	100.00%
130-140	0.00	0-140	3542.51	100.00%
140-150	0.00	0-150	3542.51	100.00%
150-160	0.00	0-160	3542.51	100.00%
160-170	0.00	0-170	3542.51	100.00%
170-180	0.00	0-180	3542.51	100.00%

## 4.2 Goniophotometer Test

UGR – Uncorrected Table:

**UGR TABLE - UNCORRECTED**

Reflectances											
Ceiling Cavity	70	70	50	50	30		70	70	50	50	30
Walls	50	30	50	30	30		50	30	50	30	30
Floor Cavity	20	20	20	20	20		20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	9.7	11.3	10.0	11.6	11.9	9.7	11.4	10.1	11.7	12.0
	3H	11.5	13.0	11.9	13.4	13.7	11.6	13.1	12.0	13.4	13.8
	4H	12.3	13.7	12.7	14.0	14.4	12.3	13.7	12.7	14.1	14.5
	6H	12.8	14.1	13.2	14.5	14.9	12.9	14.2	13.3	14.6	15.0
	8H	13.0	14.3	13.4	14.6	15.0	13.1	14.3	13.5	14.7	15.1
	12H	13.1	14.3	13.6	14.7	15.2	13.2	14.4	13.6	14.8	15.2
4H	2H	10.3	11.7	10.7	12.1	12.5	10.4	11.8	10.8	12.1	12.5
	3H	12.4	13.6	12.8	14.0	14.4	12.5	13.7	12.9	14.1	14.5
	4H	13.3	14.4	13.7	14.8	15.2	13.3	14.4	13.8	14.8	15.3
	6H	14.0	14.9	14.4	15.4	15.8	14.0	15.0	14.5	15.4	15.9
	8H	14.2	15.1	14.7	15.5	16.0	14.3	15.2	14.7	15.6	16.1
	12H	14.4	15.2	14.9	15.7	16.2	14.5	15.3	15.0	15.8	16.2
8H	4H	13.6	14.5	14.1	15.0	15.4	13.7	14.6	14.1	15.0	15.5
	6H	14.5	15.2	14.9	15.7	16.2	14.5	15.3	15.0	15.7	16.2
	8H	14.8	15.4	15.3	16.0	16.4	14.8	15.5	15.4	16.0	16.5
	12H	15.1	15.6	15.6	16.1	16.7	15.1	15.7	15.6	16.2	16.8
12H	4H	13.7	14.5	14.2	14.9	15.4	13.7	14.5	14.2	15.0	15.5
	6H	14.5	15.2	15.1	15.7	16.2	14.6	15.3	15.1	15.7	16.3
	8H	14.9	15.5	15.4	16.0	16.6	15.0	15.6	15.5	16.1	16.6

Maximum UGR = 16.8

UGR – Corrected Table:

**UGR TABLE - CORRECTED**

Reflectances											
Ceiling Cavity	70	70	50	50	30		70	70	50	50	30
Walls	50	30	50	30	30		50	30	50	30	30
Floor Cavity	20	20	20	20	20		20	20	20	20	20
Room Size		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	14.1	15.7	14.4	16.0	16.3	14.1	15.8	14.5	16.1	16.4
	3H	15.9	17.4	16.3	17.8	18.1	16.0	17.5	16.4	17.8	18.2
	4H	16.7	18.1	17.1	18.4	18.8	16.7	18.1	17.1	18.5	18.9
	6H	17.2	18.5	17.6	18.9	19.3	17.3	18.6	17.7	19.0	19.4
	8H	17.4	18.7	17.8	19.0	19.4	17.5	18.7	17.9	19.1	19.5
	12H	17.5	18.7	18.0	19.1	19.6	17.6	18.8	18.0	19.2	19.6
4H	2H	14.7	16.1	15.1	16.5	16.9	14.8	16.2	15.2	16.5	16.9
	3H	16.8	18.0	17.2	18.4	18.8	16.9	18.1	17.3	18.5	18.9
	4H	17.7	18.8	18.1	19.2	19.6	17.7	18.8	18.2	19.2	19.7
	6H	18.4	19.3	18.8	19.8	20.2	18.4	19.4	18.9	19.8	20.3
	8H	18.6	19.5	19.1	19.9	20.4	18.7	19.6	19.1	20.0	20.5
	12H	18.8	19.6	19.3	20.1	20.6	18.9	19.7	19.4	20.2	20.6
8H	4H	18.0	18.9	18.5	19.4	19.8	18.1	19.0	18.5	19.4	19.9
	6H	18.9	19.6	19.3	20.1	20.6	18.9	19.7	19.4	20.1	20.6
	8H	19.2	19.8	19.7	20.4	20.8	19.2	19.9	19.8	20.4	20.9
	12H	19.5	20.0	20.0	20.5	21.1	19.5	20.1	20.0	20.6	21.2
12H	4H	18.1	18.9	18.6	19.3	19.8	18.1	18.9	18.6	19.4	19.9
	6H	18.9	19.6	19.5	20.1	20.6	19.0	19.7	19.5	20.1	20.7
	8H	19.3	19.9	19.8	20.4	21.0	19.4	20.0	19.9	20.5	21.0

Maximum UGR = 21.2

## 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	1214	1213	1214	1213	1214	1213	1214	1213	1214	1213	1214	1213	1214	1213	1214	1213	1214	1213	1214
5	1209	1208	1208	1208	1210	1209	1209	1209	1210	1208	1208	1208	1209	1208	1208	1208	1210	1209	1209
10	1193	1192	1193	1193	1194	1193	1193	1193	1194	1193	1193	1192	1193	1192	1193	1193	1194	1193	1193
15	1167	1167	1167	1168	1168	1167	1168	1167	1168	1168	1167	1167	1167	1167	1167	1168	1168	1167	1168
20	1131	1131	1131	1131	1132	1132	1134	1132	1132	1131	1131	1131	1131	1131	1131	1131	1132	1132	1134
25	1085	1085	1085	1086	1087	1087	1088	1087	1087	1086	1085	1085	1085	1085	1085	1086	1087	1087	1088
30	1029	1029	1030	1032	1033	1033	1035	1033	1033	1032	1030	1029	1029	1029	1030	1032	1033	1033	1035
35	965	965	966	968	969	969	971	969	969	968	966	965	965	965	966	968	969	969	971
40	893	894	895	897	899	899	901	899	899	897	895	894	893	894	895	897	899	899	901
45	814	814	816	819	820	820	822	820	820	819	816	814	814	814	816	819	820	820	822
50	728	729	730	733	734	735	737	735	734	733	730	729	728	729	730	733	734	735	737
55	638	638	639	643	644	644	647	644	644	643	639	638	638	638	639	643	644	644	647
60	544	543	545	547	549	549	551	549	549	547	545	543	544	543	545	547	549	549	551
65	446	446	447	448	450	451	453	451	450	448	447	446	446	446	447	448	450	451	453
70	347	347	348	349	350	351	353	351	350	349	348	347	347	347	348	349	350	351	353
75	250	249	250	250	251	251	253	251	250	250	249	250	249	250	250	251	251	251	253
80	156	156	156	156	156	157	158	157	156	156	156	156	156	156	156	156	156	157	158
85	69.8	69.7	69.8	69.7	70.0	70.6	71.7	70.6	70.0	69.7	69.8	69.7	69.8	69.7	69.8	69.7	70.0	70.6	71.7
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table--2

UNIT: cd

C (DEG) Y (DEG)	285	300	315	330	345														
0	1214	1214	1213	1214	1213														
5	1209	1210	1208	1208	1208														
10	1193	1194	1193	1193	1192														
15	1167	1168	1168	1167	1167														
20	1132	1132	1131	1131	1131														
25	1087	1087	1086	1085	1085														
30	1033	1033	1032	1030	1029														
35	969	969	968	966	965														
40	899	899	897	895	894														
45	820	820	819	816	814														
50	735	734	733	730	729														
55	644	644	643	639	638														
60	549	549	547	545	543														
65	451	450	448	447	446														
70	351	350	349	348	347														
75	251	251	250	250	249														
80	157	156	156	156	156														
85	70.6	70.0	69.7	69.8	69.7														
90	0.00	0.00	0.00	0.00	0.00														
95	0.00	0.00	0.00	0.00	0.00														
100	0.00	0.00	0.00	0.00	0.00														
105	0.00	0.00	0.00	0.00	0.00														
110	0.00	0.00	0.00	0.00	0.00														
115	0.00	0.00	0.00	0.00	0.00														
120	0.00	0.00	0.00	0.00	0.00														
125	0.00	0.00	0.00	0.00	0.00														
130	0.00	0.00	0.00	0.00	0.00														
135	0.00	0.00	0.00	0.00	0.00														
140	0.00	0.00	0.00	0.00	0.00														
145	0.00	0.00	0.00	0.00	0.00														
150	0.00	0.00	0.00	0.00	0.00														
155	0.00	0.00	0.00	0.00	0.00														
160	0.00	0.00	0.00	0.00	0.00														
165	0.00	0.00	0.00	0.00	0.00														
170	0.00	0.00	0.00	0.00	0.00														
175	0.00	0.00	0.00	0.00	0.00														
180	0.00	0.00	0.00	0.00	0.00														

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

<b>Model No.</b>	RPLED2X4 @25W3500K	<b>Sample ID</b>	240130004-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 ANSI C82.77:2014</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	0.211	25.2	0.996	6.97
277.0	60	0.096	25.4	0.957	8.48

## 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	2023-08-25	2024-08-24
NTC-F01-019	Temperature & Humidity Meter	2023-11-06	2024-11-05

\*\*\*\*\*End of Report\*\*\*\*\*