

## 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		4291
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	147.5
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		29.1
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	7.83
			277V	8.12
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.995
			277V	0.974
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3985±275	4203
		4 steps	3985±154	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		85.0
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥0		18
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		95
IES Rcs,h1 (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	-12%≤IES Rcs,h1≤+23%		-11%
Zonal Lumen Requirement (0°-60°) (Goniophotometer – Section 4.2)	IES LM-79-2008	≥75%		77.7%
Discomfort Glare (UGR) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	19.4
		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		120.0
(Goniophotometer – Section 4.2)		Non-Worst Case		277.0
Input Current (A)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		0.244
(Goniophotometer – Section 4.2)		Non-Worst Case		0.106
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		29.1
(Goniophotometer – Section 4.2)		Non-Worst Case		28.7

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-02-23	RPLED2X4 @30W4000K	240130004-S1
2	Goniophotometer Test	2024-02-23	RPLED2X4 @30W4000K	240130004-S1
3	THD and PF Test	2024-02-23	RPLED2X4 @30W4000K	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 @30W4000K, 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 @30W4000K	<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

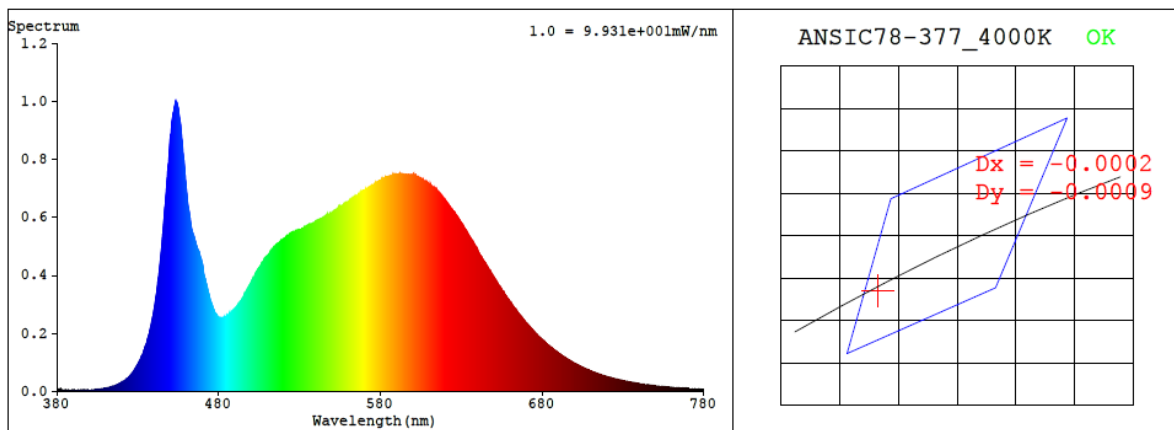
<b>Test Method</b>
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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	0.244	29.1	0.995
277.0	60	0.106	28.7	0.974

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4203	85.0	18	-0.0003	84	95	-11%

## 4.1 Integrating Sphere Test



### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.3717$   $y = 0.3704$  /  $u' = 0.2218$   $v' = 0.4975$  ( $duv = -3.35e-04$ )

CCT= 4203K Prcp WL: Ld=578.5nm Purity=22.7%

Peak WL: Lp=453nm FWHM: =22.0nm Ratio:R=18.1% G=77.9% B=4.1%

Render Index: Ra = 85.0 AvgR = 78.9 TM30:Rf=85 Rg=95

EEL: 0.09100 A++ Highest

R1 =84 R2 =92 R3 =96 R4 =83 R5 =84 R6 =87 R7 =87  
R8 =68 R9 =18 R10=79 R11=82 R12=61 R13=86 R14=98 R15=79

## 4.1 Integrating Sphere Test

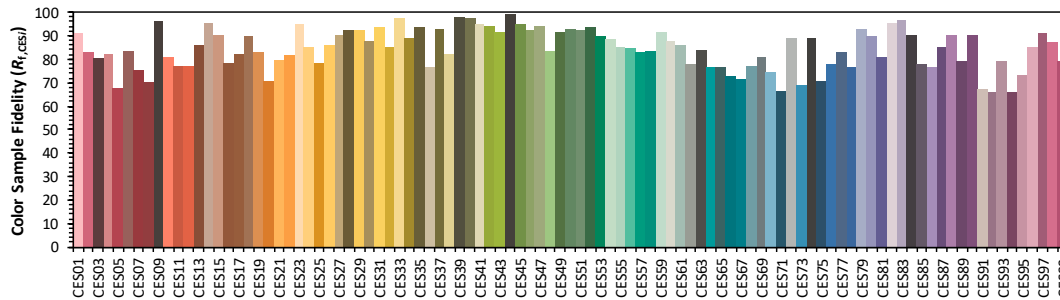
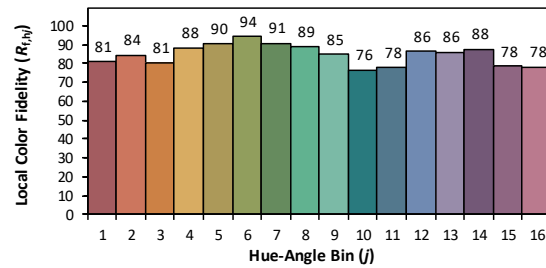
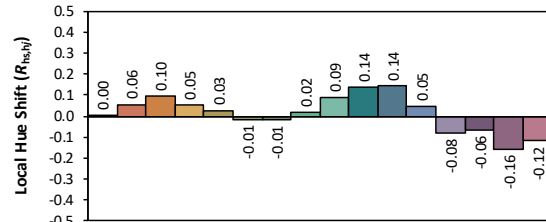
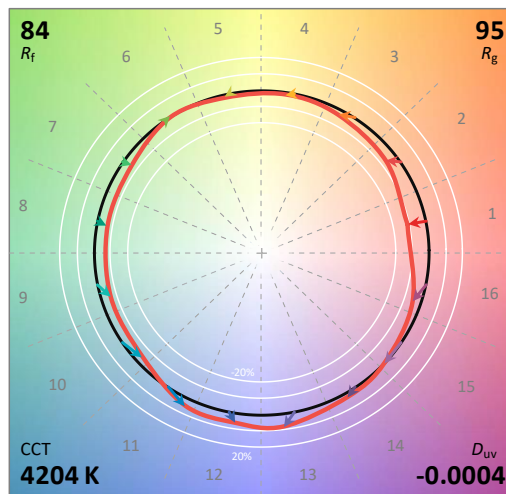
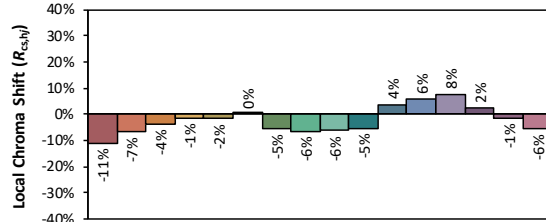
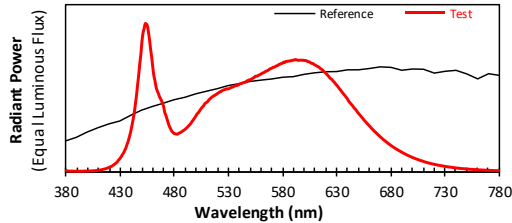
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/2/28

Model: RPLED2X4 @30W4000K



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

$x$  0.3717  
 $y$  0.3703  
 $u'$  0.2219  
 $v'$  0.4974

CIE 13.3-1995  
(CRI)

$R_a$  85  
 $R_g$  18

## 4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength											
WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)
380	7.40E-06	447	6.50E-04	514	4.96E-04	581	7.34E-04	648	4.15E-04	715	5.98E-05
381	6.70E-06	448	7.26E-04	515	5.01E-04	582	7.32E-04	649	4.04E-04	716	5.80E-05
382	5.40E-06	449	7.89E-04	516	5.07E-04	583	7.39E-04	650	3.95E-04	717	5.60E-05
383	5.00E-06	450	8.75E-04	517	5.11E-04	584	7.39E-04	651	3.85E-04	718	5.45E-05
384	4.90E-06	451	9.30E-04	518	5.15E-04	585	7.41E-04	652	3.77E-04	719	5.22E-05
385	5.50E-06	452	9.60E-04	519	5.20E-04	586	7.41E-04	653	3.68E-04	720	5.10E-05
386	4.50E-06	453	9.92E-04	520	5.25E-04	587	7.43E-04	654	3.60E-04	721	4.93E-05
387	4.90E-06	454	9.90E-04	521	5.30E-04	588	7.43E-04	655	3.51E-04	722	4.82E-05
388	4.00E-06	455	9.77E-04	522	5.36E-04	589	7.47E-04	656	3.42E-04	723	4.63E-05
389	4.30E-06	456	9.35E-04	523	5.37E-04	590	7.48E-04	657	3.34E-04	724	4.48E-05
390	4.40E-06	457	8.83E-04	524	5.43E-04	591	7.48E-04	658	3.26E-04	725	4.34E-05
391	4.30E-06	458	8.20E-04	525	5.47E-04	592	7.52E-04	659	3.19E-04	726	4.20E-05
392	4.00E-06	459	7.67E-04	526	5.50E-04	593	7.49E-04	660	3.11E-04	727	4.08E-05
393	4.80E-06	460	7.01E-04	527	5.51E-04	594	7.48E-04	661	3.04E-04	728	3.96E-05
394	3.90E-06	461	6.44E-04	528	5.56E-04	595	7.46E-04	662	2.94E-04	729	3.84E-05
395	4.10E-06	462	6.10E-04	529	5.55E-04	596	7.48E-04	663	2.87E-04	730	3.68E-05
396	5.20E-06	463	5.69E-04	530	5.56E-04	597	7.48E-04	664	2.80E-04	731	3.58E-05
397	5.50E-06	464	5.45E-04	531	5.59E-04	598	7.47E-04	665	2.72E-04	732	3.49E-05
398	5.10E-06	465	5.27E-04	532	5.62E-04	599	7.48E-04	666	2.65E-04	733	3.35E-05
399	5.50E-06	466	5.08E-04	533	5.67E-04	600	7.45E-04	667	2.59E-04	734	3.23E-05
400	5.70E-06	467	4.91E-04	534	5.68E-04	601	7.46E-04	668	2.51E-04	735	3.16E-05
401	5.80E-06	468	4.78E-04	535	5.72E-04	602	7.44E-04	669	2.45E-04	736	3.07E-05
402	6.00E-06	469	4.57E-04	536	5.75E-04	603	7.39E-04	670	2.38E-04	737	2.94E-05
403	6.30E-06	470	4.38E-04	537	5.77E-04	604	7.37E-04	671	2.31E-04	738	2.84E-05
404	7.00E-06	471	3.99E-04	538	5.79E-04	605	7.35E-04	672	2.25E-04	739	2.76E-05
405	6.80E-06	472	3.81E-04	539	5.81E-04	606	7.30E-04	673	2.19E-04	740	2.67E-05
406	7.70E-06	473	3.58E-04	540	5.87E-04	607	7.26E-04	674	2.12E-04	741	2.58E-05
407	8.20E-06	474	3.33E-04	541	5.90E-04	608	7.25E-04	675	2.06E-04	742	2.50E-05
408	9.10E-06	475	3.11E-04	542	5.91E-04	609	7.20E-04	676	2.01E-04	743	2.44E-05
409	1.04E-05	476	2.96E-04	543	5.95E-04	610	7.16E-04	677	1.95E-04	744	2.33E-05
410	1.13E-05	477	2.80E-04	544	5.98E-04	611	7.11E-04	678	1.89E-04	745	2.26E-05
411	1.17E-05	478	2.69E-04	545	5.99E-04	612	7.07E-04	679	1.84E-04	746	2.20E-05
412	1.33E-05	479	2.61E-04	546	6.01E-04	613	7.04E-04	680	1.78E-04	747	2.12E-05
413	1.49E-05	480	2.56E-04	547	6.09E-04	614	6.99E-04	681	1.73E-04	748	2.08E-05
414	1.66E-05	481	2.55E-04	548	6.09E-04	615	6.92E-04	682	1.68E-04	749	2.01E-05
415	1.83E-05	482	2.52E-04	549	6.15E-04	616	6.87E-04	683	1.63E-04	750	1.94E-05
416	2.03E-05	483	2.53E-04	550	6.15E-04	617	6.82E-04	684	1.59E-04	751	1.87E-05
417	2.26E-05	484	2.58E-04	551	6.20E-04	618	6.74E-04	685	1.54E-04	752	1.80E-05
418	2.52E-05	485	2.62E-04	552	6.25E-04	619	6.67E-04	686	1.50E-04	753	1.76E-05
419	2.80E-05	486	2.64E-04	553	6.28E-04	620	6.60E-04	687	1.46E-04	754	1.71E-05
420	3.14E-05	487	2.70E-04	554	6.34E-04	621	6.53E-04	688	1.41E-04	755	1.67E-05
421	3.50E-05	488	2.75E-04	555	6.40E-04	622	6.45E-04	689	1.37E-04	756	1.61E-05
422	3.73E-05	489	2.80E-04	556	6.40E-04	623	6.37E-04	690	1.33E-04	757	1.54E-05
423	4.32E-05	490	2.86E-04	557	6.43E-04	624	6.27E-04	691	1.29E-04	758	1.54E-05
424	4.73E-05	491	2.92E-04	558	6.47E-04	625	6.22E-04	692	1.25E-04	759	1.47E-05
425	5.31E-05	492	2.99E-04	559	6.50E-04	626	6.16E-04	693	1.21E-04	760	1.43E-05
426	5.87E-05	493	3.06E-04	560	6.54E-04	627	6.06E-04	694	1.17E-04	761	1.37E-05
427	6.59E-05	494	3.15E-04	561	6.59E-04	628	6.00E-04	695	1.14E-04	762	1.31E-05
428	7.58E-05	495	3.22E-04	562	6.62E-04	629	5.90E-04	696	1.10E-04	763	1.31E-05
429	8.36E-05	496	3.34E-04	563	6.66E-04	630	5.82E-04	697	1.07E-04	764	1.27E-05
430	9.36E-05	497	3.43E-04	564	6.70E-04	631	5.73E-04	698	1.04E-04	765	1.21E-05
431	1.04E-04	498	3.53E-04	565	6.75E-04	632	5.63E-04	699	1.01E-04	766	1.18E-05
432	1.16E-04	499	3.65E-04	566	6.77E-04	633	5.54E-04	700	9.68E-05	767	1.13E-05
433	1.27E-04	500	3.75E-04	567	6.81E-04	634	5.45E-04	701	9.43E-05	768	1.08E-05
434	1.43E-04	501	3.88E-04	568	6.87E-04	635	5.35E-04	702	9.12E-05	769	1.06E-05
435	1.58E-04	502	3.95E-04	569	6.91E-04	636	5.26E-04	703	8.84E-05	770	1.04E-05
436	1.80E-04	503	4.05E-04	570	6.94E-04	637	5.17E-04	704	8.55E-05	771	9.80E-06
437	1.99E-04	504	4.16E-04	571	6.99E-04	638	5.08E-04	705	8.33E-05	772	9.80E-06
438	2.25E-04	505	4.26E-04	572	7.00E-04	639	4.99E-04	706	8.02E-05	773	9.40E-06
439	2.52E-04	506	4.35E-04	573	7.03E-04	640	4.89E-04	707	7.76E-05	774	9.10E-06
440	2.83E-04	507	4.43E-04	574	7.08E-04	641	4.76E-04	708	7.52E-05	775	8.80E-06
441	3.20E-04	508	4.54E-04	575	7.11E-04	642	4.67E-04	709	7.33E-05	776	8.70E-06
442	3.59E-04	509	4.61E-04	576	7.14E-04	643	4.58E-04	710	7.10E-05	777	8.20E-06
443	4.03E-04	510	4.66E-04	577	7.20E-04	644	4.49E-04	711	6.84E-05	778	8.00E-06
444	4.58E-04	511	4.73E-04	578	7.22E-04	645	4.41E-04	712	6.55E-05	779	7.90E-06
445	5.16E-04	512	4.83E-04	579	7.26E-04	646	4.31E-04	713	6.38E-05	780	7.90E-06
446	5.85E-04	513	4.89E-04	580	7.27E-04	647	4.22E-04	714	6.17E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	RPLED2X4 @30W4000K	<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 \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>	120.0	60	0.244	29.1	0.995
<b>NON-WORST CASE</b>	277.0	60	0.106	28.7	0.974

#### 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		( $0^\circ$ - $60^\circ$ )
4291	164.3	164.6	113.3	114.2	147.5	77.7%

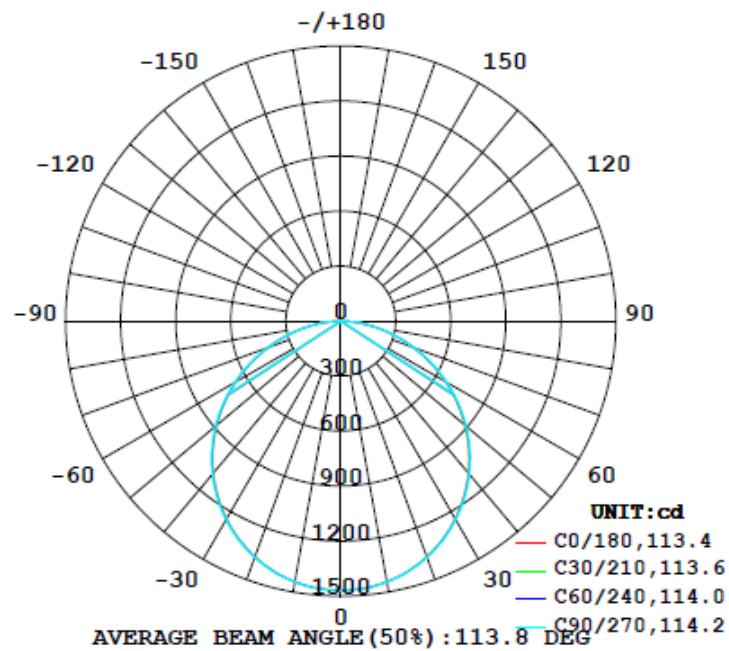
UGR		Spacing Criterion	
Crosswise	Endwise	( $0^\circ$ - $180^\circ$ )	( $90^\circ$ - $270^\circ$ )
19.3	19.4	1.28	1.28



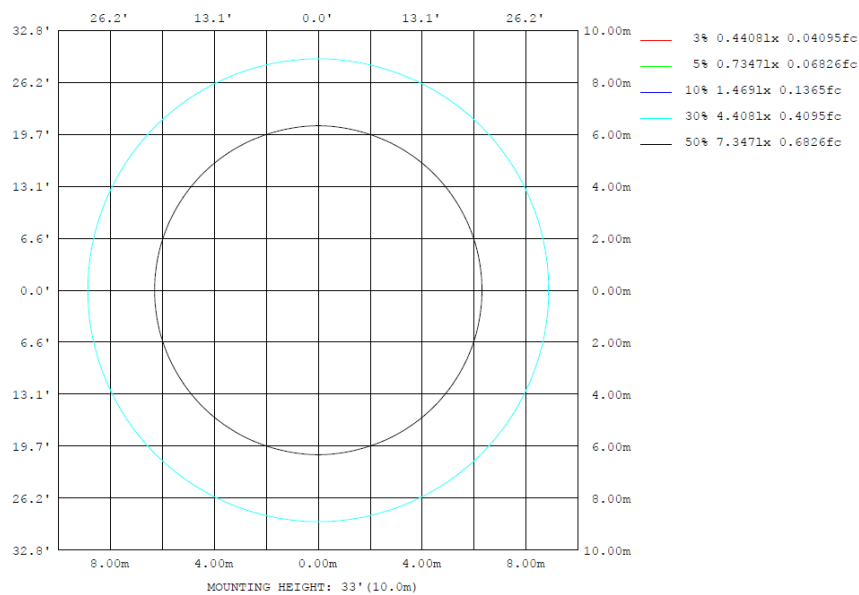
## 4.2 Goniophotometer Test

### 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	± zone	± total	%lum, lamp
10	1445	1444	1445	1444	1445	1444	1445	1444	0- 10	139.1	139.1	3.24,3.24
20	1369	1370	1372	1370	1369	1370	1372	1370	10- 20	398.9	538.0	12.5,12.5
30	1246	1249	1253	1249	1246	1249	1253	1249	20- 30	606.1	1144	26.7,26.7
40	1081	1087	1090	1087	1081	1087	1090	1087	30- 40	733.1	1877	43.7,43.7
50	882.7	888.8	893.4	888.8	882.7	888.8	893.4	888.8	40- 50	763.9	2641	61.5,61.5
60	659.2	663.0	667.9	663.0	659.2	663.0	667.9	663.0	50- 60	694.7	3336	77.7,77.7
70	420.8	423.1	427.0	423.1	420.8	423.1	427.0	423.1	60- 70	537.7	3873	90.3,90.3
80	188.8	189.6	191.8	189.6	188.8	189.6	191.8	189.6	70- 80	321.4	4195	97.8,97.8
90	0	0	0	0	0	0	0	0	80- 90	96.32	4291	100,100
100	0	0	0	0	0	0	0	0	90-100	0	4291	100,100
110	0	0	0	0	0	0	0	0	100-110	0	4291	100,100
120	0	0	0	0	0	0	0	0	110-120	0	4291	100,100
130	0	0	0	0	0	0	0	0	120-130	0	4291	100,100
140	0	0	0	0	0	0	0	0	130-140	0	4291	100,100
150	0	0	0	0	0	0	0	0	140-150	0	4291	100,100
160	0	0	0	0	0	0	0	0	150-160	0	4291	100,100
170	0	0	0	0	0	0	0	0	160-170	0	4291	100,100
180	0	0	0	0	0	0	0	0	170-180	0	4291	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	139.06	0-10	139.06	3.24%
10-20	398.92	0-20	537.98	12.54%
20-30	606.06	0-30	1144.04	26.66%
30-40	733.06	0-40	1877.10	43.74%
40-50	763.88	0-50	2640.98	61.54%
50-60	694.72	0-60	3335.70	77.73%
60-70	537.75	0-70	3873.45	90.27%
70-80	321.39	0-80	4194.84	97.76%
80-90	96.32	0-90	4291.16	100.00%
90-100	0.00	0-100	4291.16	100.00%
100-110	0.00	0-110	4291.16	100.00%
110-120	0.00	0-120	4291.16	100.00%
120-130	0.00	0-130	4291.16	100.00%
130-140	0.00	0-140	4291.16	100.00%
140-150	0.00	0-150	4291.16	100.00%
150-160	0.00	0-160	4291.16	100.00%
160-170	0.00	0-170	4291.16	100.00%
170-180	0.00	0-180	4291.16	100.00%

## 4.2 Goniophotometer Test

UGR – Uncorrected Table:

**UGR TABLE - UNCORRECTED**

Reflectances		70	70	50	50	30	70	70	50	50	30
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	13.8	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	14.7	15.1	13.1	14.3	13.5	14.7	15.1
	12H	13.1	14.4	13.6	14.7	15.2	13.2	14.4	13.7	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	13.4	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	15.6	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	15.0	15.7	16.2	14.5	15.3	15.0	15.7	16.2
	8H	14.8	15.5	15.3	16.0	16.4	14.8	15.5	15.4	16.0	16.5
	12H	15.1	15.7	15.6	16.1	16.7	15.1	15.7	15.6	16.2	16.8
12H	4H	13.7	14.5	14.2	15.0	15.4	13.7	14.5	14.2	15.0	15.5
	6H	14.6	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		70	70	50	50	30	70	70	50	50	30
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	14.8	16.4	15.1	16.7	17.0	14.8	16.5	15.2	16.8	17.1
	3H	16.6	18.1	17.0	18.5	18.8	16.7	18.2	17.1	18.5	18.9
	4H	17.4	18.8	17.8	19.1	19.5	17.4	18.9	17.8	19.2	19.6
	6H	17.9	19.2	18.3	19.6	20.0	18.0	19.3	18.4	19.7	20.1
	8H	18.1	19.4	18.5	19.8	20.2	18.2	19.4	18.6	19.8	20.2
	12H	18.2	19.5	18.7	19.8	20.3	18.3	19.5	18.8	19.9	20.3
4H	2H	15.4	16.8	15.8	17.2	17.6	15.5	16.9	15.9	17.2	17.6
	3H	17.5	18.7	17.9	19.1	19.5	17.6	18.8	18.0	19.2	19.6
	4H	18.4	19.5	18.8	19.9	20.3	18.5	19.5	18.9	19.9	20.4
	6H	19.1	20.0	19.5	20.5	20.9	19.1	20.1	19.6	20.5	21.0
	8H	19.3	20.2	19.8	20.7	21.1	19.4	20.3	19.8	20.7	21.2
	12H	19.5	20.3	20.0	20.8	21.3	19.6	20.4	20.1	20.9	21.3
8H	4H	18.7	19.6	19.2	20.1	20.5	18.8	19.7	19.2	20.1	20.6
	6H	19.6	20.3	20.1	20.8	21.3	19.6	20.4	20.1	20.8	21.3
	8H	19.9	20.6	20.4	21.1	21.5	19.9	20.6	20.5	21.1	21.6
	12H	20.2	20.8	20.7	21.2	21.8	20.2	20.8	20.7	21.3	21.9
12H	4H	18.8	19.6	19.3	20.1	20.5	18.8	19.6	19.3	20.1	20.6
	6H	19.7	20.3	20.2	20.8	21.3	19.7	20.4	20.2	20.8	21.4
	8H	20.0	20.6	20.5	21.1	21.7	20.1	20.7	20.6	21.2	21.7

Maximum UGR = 21.9

## 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	1469	1469	1469	1467	1469	1469	1470	1469	1469	1467	1469	1469	1469	1469	1469	1467	1469	1469	1470
5	1463	1463	1463	1463	1464	1464	1463	1464	1463	1463	1463	1463	1463	1463	1463	1463	1463	1464	1463
10	1445	1444	1442	1444	1444	1446	1445	1446	1444	1444	1442	1444	1445	1444	1442	1444	1444	1446	1445
15	1413	1413	1412	1413	1413	1413	1415	1413	1413	1413	1412	1413	1413	1413	1412	1413	1413	1413	1415
20	1369	1369	1369	1370	1370	1370	1372	1370	1370	1370	1369	1369	1369	1369	1369	1370	1370	1370	1372
25	1314	1314	1314	1316	1316	1315	1318	1315	1316	1316	1314	1314	1314	1314	1314	1316	1316	1315	1318
30	1246	1246	1248	1249	1250	1251	1253	1251	1250	1249	1248	1246	1246	1246	1248	1249	1250	1251	1253
35	1168	1170	1170	1173	1173	1173	1176	1173	1173	1173	1170	1170	1168	1170	1170	1173	1173	1173	1176
40	1081	1082	1084	1087	1088	1088	1090	1088	1088	1087	1084	1082	1081	1082	1084	1087	1088	1088	1090
45	986	986	989	992	993	992	996	992	993	992	989	986	986	986	989	992	993	992	996
50	883	883	885	889	890	891	893	891	890	889	885	883	883	883	885	889	890	891	893
55	773	773	775	778	779	781	783	781	779	778	775	773	773	773	775	778	779	781	783
60	659	659	660	663	664	665	668	665	664	663	660	659	659	659	660	663	664	665	668
65	541	540	541	544	545	546	549	546	545	544	541	540	541	540	541	544	545	546	549
70	421	421	421	423	424	425	427	425	424	423	421	421	421	421	421	423	424	425	427
75	303	303	303	304	304	305	307	305	304	304	303	303	303	303	303	304	304	305	307
80	189	189	189	190	189	190	192	190	189	190	189	189	189	189	189	190	189	190	192
85	84.9	84.8	84.9	84.9	85.3	85.8	87.1	85.8	85.3	84.9	84.9	84.8	84.9	84.8	84.9	84.9	85.3	85.8	87.1
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	1469	1469	1467	1469	1469														
5	1464	1463	1463	1463	1463														
10	1446	1444	1444	1442	1444														
15	1413	1413	1413	1412	1413														
20	1370	1370	1370	1369	1369														
25	1315	1316	1316	1314	1314														
30	1251	1250	1249	1248	1246														
35	1173	1173	1173	1170	1170														
40	1088	1088	1087	1084	1082														
45	992	993	992	989	986														
50	891	890	889	885	883														
55	781	779	778	775	773														
60	665	664	663	660	659														
65	546	545	544	541	540														
70	425	424	423	421	421														
75	305	304	304	303	303														
80	190	189	190	189	189														
85	85.8	85.3	84.9	84.9	84.8														
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 @30W4000K	<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	0.244	29.1	0.995	7.83
277.0	60	0.106	28.7	0.974	8.12

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