

## Photometric Test Report

### Relevant Standards

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

Prepared For

**RAB Lighting Inc.**

Prepared By

**Dongguan New Testing Centre Co., Ltd.**

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Issue Date: 2024-03-08

Revised Date: N/A

## 1.0 Test Summary

DLC Technical Requirements V5.1

Integrated Retrofit Kits for 2x2 Luminaires				
Requirement Category	Test Method	Requirements		Test Value
Luminaire Output (lm) (Goniophotometer – Section 4.2)	IES LM-79-2008	2000		3862
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	138.4
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		27.9
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	10.41
			277V	9.15
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.995
			277V	0.981
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3985±275	4243
		4 steps	3985±154	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		84.9
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%		76.6%
Discomfort Glare (UGR) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	21.9
		N/A	<22	
Spacing Criterion (Goniophotometer – Section 4.2)	IES LM-79-2008	0°-180°	1.0-2.0	1.30
		90°-270°	1.0-2.0	1.32
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		0.234
(Goniophotometer – Section 4.2)		Non-Worst Case		0.100
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		27.9
(Goniophotometer – Section 4.2)		Non-Worst Case		27.3

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-03-05	RPLED2X2 @30W4000K	240306002-S1
2	Goniophotometer Test	2024-03-05	RPLED2X2 @30W4000K	240306002-S1
3	THD and PF Test	2024-03-05	RPLED2X2 @30W4000K	240306002-S1

### Remark (If any)

1. The results contained in this report pertain only to the tested samples.
2. Test Troffer is Lithonia 2GT8 lensed 2x2.
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. RPLED2X2 @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>	RPLED2X2 @30W4000K	<b>Sample ID</b>	240306002-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

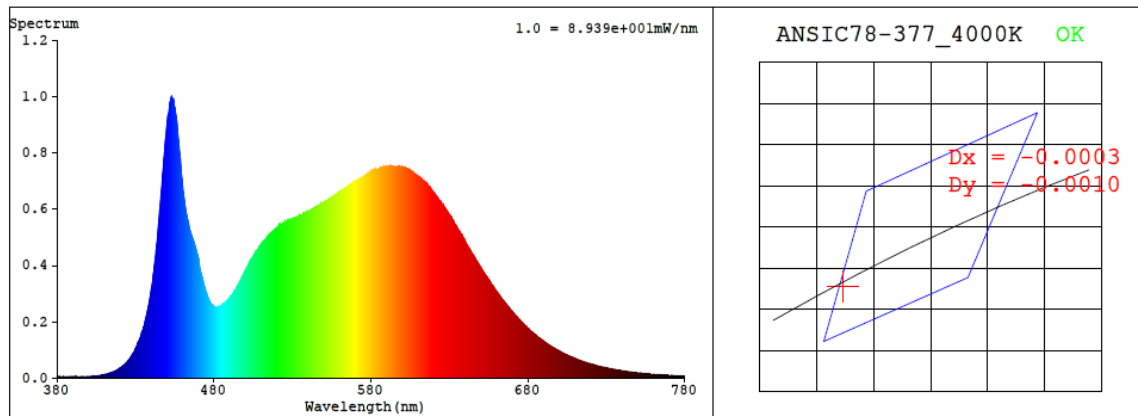
<b>Test Method</b>
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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	0.234	27.9	0.995
277.0	60	0.100	27.3	0.981

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4243	84.9	18	-0.0004	84	95	-11%

#### 4.1 Integrating Sphere Test



#### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.3701$   $y = 0.3692$  /  $u' = 0.2213$   $v' = 0.4967$  ( $duv = -4.10e-04$ )

CCT= 4243K Prcp WL:  $L_d = 578.4\text{nm}$  Purity=21.8%

Peak WL:  $L_p = 453\text{nm}$  FWHM:  $\approx 22.2\text{nm}$  Ratio: R=17.9% G=78.0% B=4.0%

Render Index:  $R_a = 84.9$  AvgR = 78.7 TM30:  $R_f = 84$   $R_g = 96$

EEL: 0.09706 A++ Highest

R1 =84 R2 =91 R3 =95 R4 =83 R5 =83 R6 =87 R7 =87

R8 =68 R9 =18 R10=78 R11=82 R12=61 R13=86 R14=98 R15=79

## 4.1 Integrating Sphere Test

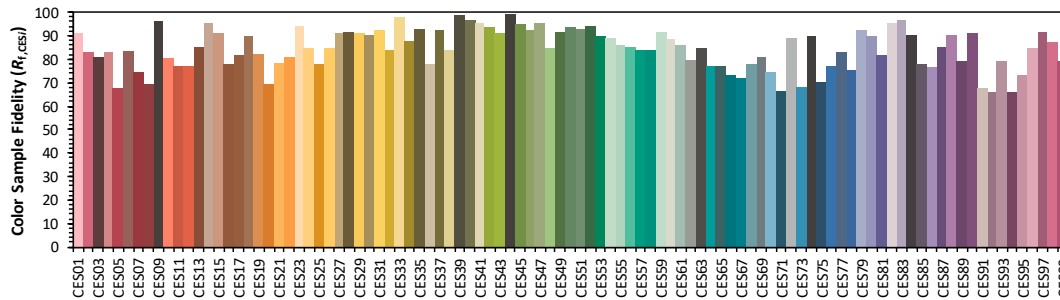
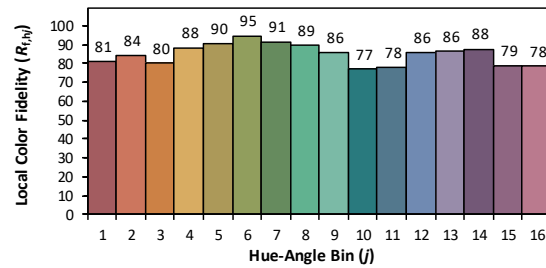
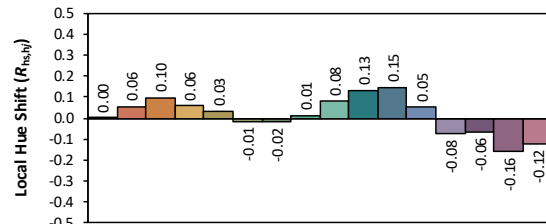
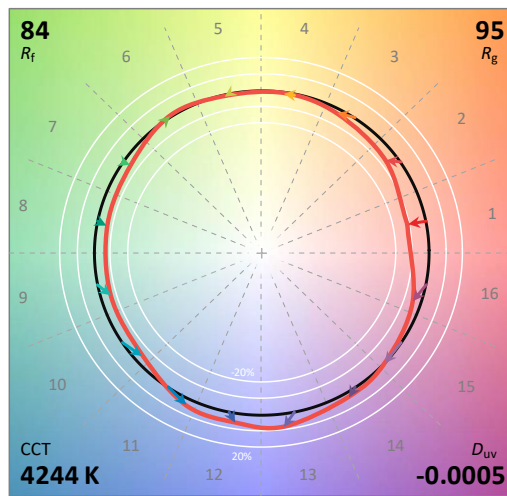
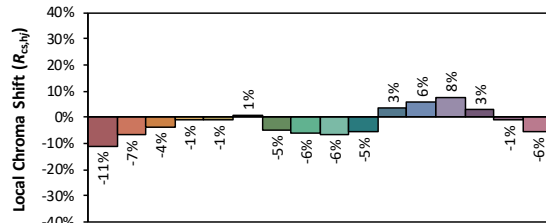
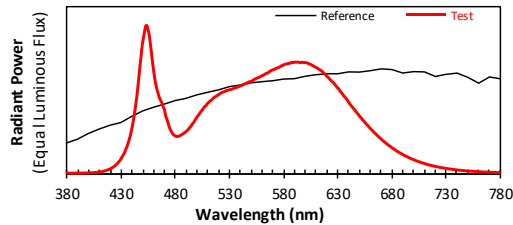
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/3/8

Model: RPLED2X2 @30W4000K



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

$x$  0.3700  
 $y$  0.3690  
 $u'$  0.2213  
 $v'$  0.4966

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	4.30E-06	447	7.11E-04	514	5.01E-04	581	7.36E-04	648	4.10E-04	715	5.87E-05
381	4.50E-06	448	7.74E-04	515	5.09E-04	582	7.38E-04	649	4.01E-04	716	5.66E-05
382	3.10E-06	449	8.47E-04	516	5.15E-04	583	7.40E-04	650	3.92E-04	717	5.52E-05
383	3.70E-06	450	8.99E-04	517	5.19E-04	584	7.41E-04	651	3.83E-04	718	5.34E-05
384	3.90E-06	451	9.38E-04	518	5.23E-04	585	7.43E-04	652	3.74E-04	719	5.19E-05
385	4.10E-06	452	9.80E-04	519	5.28E-04	586	7.46E-04	653	3.65E-04	720	5.00E-05
386	3.60E-06	453	9.99E-04	520	5.33E-04	587	7.46E-04	654	3.58E-04	721	4.87E-05
387	3.10E-06	454	9.90E-04	521	5.39E-04	588	7.50E-04	655	3.49E-04	722	4.73E-05
388	4.40E-06	455	9.60E-04	522	5.43E-04	589	7.49E-04	656	3.40E-04	723	4.56E-05
389	4.30E-06	456	9.26E-04	523	5.47E-04	590	7.51E-04	657	3.31E-04	724	4.41E-05
390	3.90E-06	457	8.63E-04	524	5.51E-04	591	7.52E-04	658	3.25E-04	725	4.23E-05
391	3.60E-06	458	8.06E-04	525	5.52E-04	592	7.52E-04	659	3.15E-04	726	4.14E-05
392	5.10E-06	459	7.42E-04	526	5.55E-04	593	7.52E-04	660	3.08E-04	727	3.98E-05
393	3.80E-06	460	6.87E-04	527	5.60E-04	594	7.51E-04	661	3.00E-04	728	3.90E-05
394	3.60E-06	461	6.37E-04	528	5.61E-04	595	7.49E-04	662	2.93E-04	729	3.75E-05
395	4.80E-06	462	5.96E-04	529	5.64E-04	596	7.48E-04	663	2.85E-04	730	3.65E-05
396	5.30E-06	463	5.67E-04	530	5.66E-04	597	7.51E-04	664	2.77E-04	731	3.53E-05
397	4.60E-06	464	5.42E-04	531	5.67E-04	598	7.50E-04	665	2.70E-04	732	3.38E-05
398	4.70E-06	465	5.15E-04	532	5.69E-04	599	7.48E-04	666	2.64E-04	733	3.27E-05
399	5.70E-06	466	4.99E-04	533	5.71E-04	600	7.49E-04	667	2.56E-04	734	3.18E-05
400	5.60E-06	467	4.85E-04	534	5.75E-04	601	7.48E-04	668	2.50E-04	735	3.09E-05
401	6.20E-06	468	4.67E-04	535	5.79E-04	602	7.46E-04	669	2.42E-04	736	2.96E-05
402	6.40E-06	469	4.45E-04	536	5.79E-04	603	7.43E-04	670	2.36E-04	737	2.90E-05
403	7.10E-06	470	4.29E-04	537	5.86E-04	604	7.39E-04	671	2.30E-04	738	2.81E-05
404	6.40E-06	471	3.90E-04	538	5.84E-04	605	7.37E-04	672	2.22E-04	739	2.70E-05
405	7.70E-06	472	3.69E-04	539	5.90E-04	606	7.32E-04	673	2.17E-04	740	2.59E-05
406	8.40E-06	473	3.46E-04	540	5.91E-04	607	7.29E-04	674	2.11E-04	741	2.53E-05
407	8.80E-06	474	3.23E-04	541	5.94E-04	608	7.24E-04	675	2.05E-04	742	2.43E-05
408	1.00E-05	475	3.02E-04	542	5.97E-04	609	7.21E-04	676	1.99E-04	743	2.36E-05
409	1.11E-05	476	2.88E-04	543	6.02E-04	610	7.16E-04	677	1.93E-04	744	2.32E-05
410	1.07E-05	477	2.75E-04	544	6.04E-04	611	7.13E-04	678	1.88E-04	745	2.22E-05
411	1.35E-05	478	2.65E-04	545	6.07E-04	612	7.08E-04	679	1.83E-04	746	2.16E-05
412	1.42E-05	479	2.58E-04	546	6.11E-04	613	7.03E-04	680	1.77E-04	747	2.09E-05
413	1.56E-05	480	2.54E-04	547	6.12E-04	614	6.98E-04	681	1.71E-04	748	2.02E-05
414	1.86E-05	481	2.51E-04	548	6.19E-04	615	6.94E-04	682	1.66E-04	749	1.94E-05
415	2.01E-05	482	2.51E-04	549	6.19E-04	616	6.88E-04	683	1.62E-04	750	1.88E-05
416	2.21E-05	483	2.53E-04	550	6.23E-04	617	6.80E-04	684	1.57E-04	751	1.84E-05
417	2.50E-05	484	2.56E-04	551	6.24E-04	618	6.74E-04	685	1.52E-04	752	1.81E-05
418	2.78E-05	485	2.60E-04	552	6.30E-04	619	6.66E-04	686	1.47E-04	753	1.71E-05
419	3.05E-05	486	2.64E-04	553	6.36E-04	620	6.57E-04	687	1.43E-04	754	1.69E-05
420	3.40E-05	487	2.68E-04	554	6.38E-04	621	6.52E-04	688	1.40E-04	755	1.61E-05
421	3.84E-05	488	2.74E-04	555	6.43E-04	622	6.44E-04	689	1.35E-04	756	1.57E-05
422	4.31E-05	489	2.79E-04	556	6.46E-04	623	6.35E-04	690	1.31E-04	757	1.51E-05
423	4.74E-05	490	2.86E-04	557	6.49E-04	624	6.28E-04	691	1.27E-04	758	1.47E-05
424	5.32E-05	491	2.92E-04	558	6.52E-04	625	6.19E-04	692	1.23E-04	759	1.41E-05
425	5.97E-05	492	2.99E-04	559	6.57E-04	626	6.15E-04	693	1.19E-04	760	1.39E-05
426	6.62E-05	493	3.09E-04	560	6.59E-04	627	6.05E-04	694	1.16E-04	761	1.33E-05
427	7.46E-05	494	3.16E-04	561	6.63E-04	628	5.97E-04	695	1.12E-04	762	1.31E-05
428	8.34E-05	495	3.27E-04	562	6.66E-04	629	5.88E-04	696	1.08E-04	763	1.27E-05
429	9.22E-05	496	3.39E-04	563	6.72E-04	630	5.78E-04	697	1.05E-04	764	1.23E-05
430	1.04E-04	497	3.46E-04	564	6.75E-04	631	5.73E-04	698	1.02E-04	765	1.17E-05
431	1.17E-04	498	3.60E-04	565	6.78E-04	632	5.62E-04	699	9.86E-05	766	1.14E-05
432	1.29E-04	499	3.70E-04	566	6.81E-04	633	5.51E-04	700	9.62E-05	767	1.12E-05
433	1.42E-04	500	3.83E-04	567	6.88E-04	634	5.43E-04	701	9.27E-05	768	1.08E-05
434	1.62E-04	501	3.92E-04	568	6.92E-04	635	5.32E-04	702	9.01E-05	769	1.05E-05
435	1.79E-04	502	4.01E-04	569	6.97E-04	636	5.23E-04	703	8.63E-05	770	1.00E-05
436	2.01E-04	503	4.13E-04	570	6.99E-04	637	5.16E-04	704	8.43E-05	771	9.70E-06
437	2.23E-04	504	4.22E-04	571	7.03E-04	638	5.07E-04	705	8.19E-05	772	9.60E-06
438	2.49E-04	505	4.32E-04	572	7.04E-04	639	4.95E-04	706	7.93E-05	773	9.30E-06
439	2.80E-04	506	4.41E-04	573	7.09E-04	640	4.86E-04	707	7.63E-05	774	8.90E-06
440	3.16E-04	507	4.52E-04	574	7.12E-04	641	4.74E-04	708	7.40E-05	775	8.50E-06
441	3.53E-04	508	4.56E-04	575	7.14E-04	642	4.64E-04	709	7.22E-05	776	8.40E-06
442	4.00E-04	509	4.67E-04	576	7.18E-04	643	4.56E-04	710	6.95E-05	777	7.90E-06
443	4.49E-04	510	4.76E-04	577	7.22E-04	644	4.46E-04	711	6.73E-05	778	7.80E-06
444	5.02E-04	511	4.81E-04	578	7.27E-04	645	4.38E-04	712	6.49E-05	779	7.70E-06
445	5.67E-04	512	4.89E-04	579	7.27E-04	646	4.29E-04	713	6.28E-05	780	7.70E-06
446	6.34E-04	513	4.94E-04	580	7.33E-04	647	4.19E-04	714	6.06E-05	N/A	N/A

## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	RPLED2X2 @30W4000K	<b>Sample ID</b>	240306002-S1
<b>Operate time (Min.)</b>	30	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	24.9	<b>Humidity (%RH)</b>	41.8

<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	0.234	27.9	0.995
<b>NON-WORST CASE</b>	277.0	60	0.100	27.3	0.981

#### 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		( $0^{\circ}$ - $60^{\circ}$ )
3862	166.3	166.3	117.8	117.8	138.4	76.6%

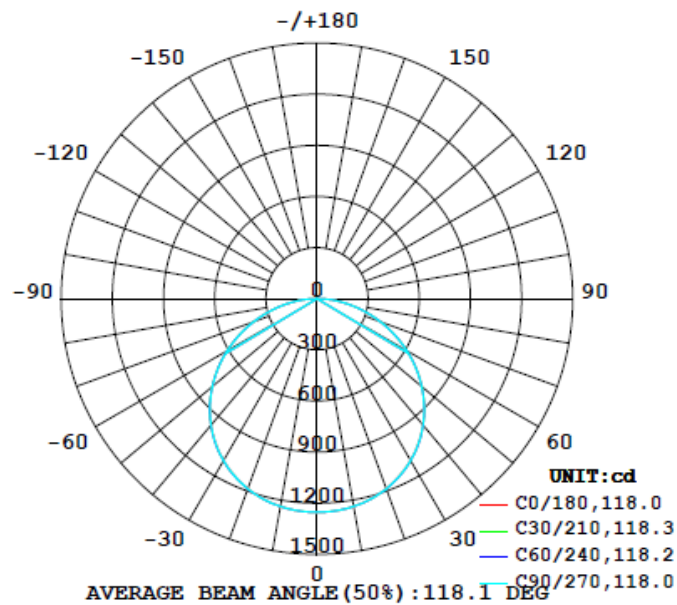
UGR		Spacing Criterion	
Crosswise	Endwise	( $0^{\circ}$ - $180^{\circ}$ )	( $90^{\circ}$ - $270^{\circ}$ )
21.9	21.9	1.30	1.32



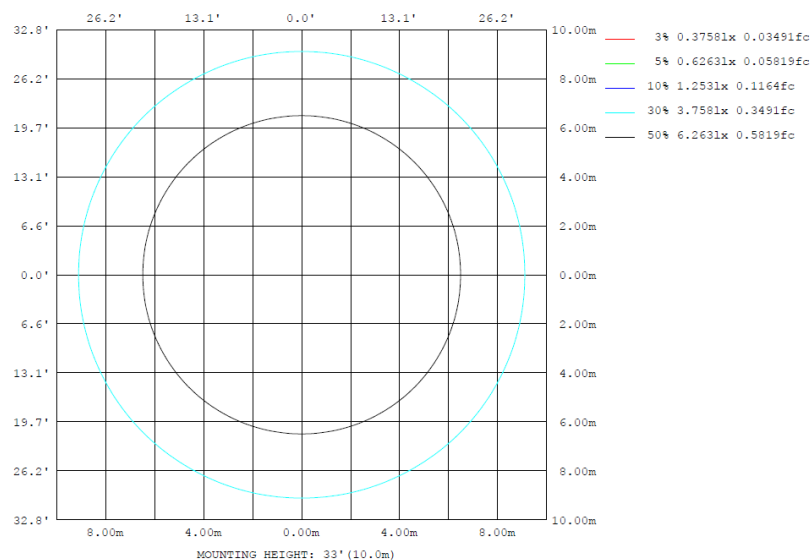
## 4.2 Goniophotometer Test

### 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	1237	1239	1237	1239	1237	1239	1237	1239	0- 10	118.9	118.9	3.08, 3.08
20	1185	1189	1187	1189	1185	1189	1187	1189	10- 20	343.7	462.6	12, 12
30	1095	1099	1097	1099	1095	1099	1097	1099	20- 30	528.8	991.5	25.7, 25.7
40	965.6	968.9	965.6	968.9	965.6	968.9	965.6	968.9	30- 40	649.1	1641	42.5, 42.5
50	800.1	802.9	800.1	802.9	800.1	802.9	800.1	802.9	40- 50	686.0	2327	60.2, 60.2
60	606.8	608.5	605.4	608.5	606.8	608.5	605.4	608.5	50- 60	632.6	2959	76.6, 76.6
70	395.6	397.4	394.3	397.4	395.6	397.4	394.3	397.4	60- 70	497.4	3457	89.5, 89.5
80	185.7	187.5	184.5	187.5	185.7	187.5	184.5	187.5	70- 80	306.2	3763	97.4, 97.4
90	0	0	0	0	0	0	0	0	80- 90	98.99	3862	100, 100
100	0	0	0	0	0	0	0	0	90-100	0	3862	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	3862	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	3862	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	3862	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	3862	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	3862	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	3862	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	3862	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	3862	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	118.88	0-10	118.88	3.08%
10-20	343.75	0-20	462.63	11.98%
20-30	528.84	0-30	991.47	25.67%
30-40	649.09	0-40	1640.56	42.48%
40-50	685.99	0-50	2326.55	60.25%
50-60	632.60	0-60	2959.15	76.63%
60-70	497.43	0-70	3456.58	89.51%
70-80	306.22	0-80	3762.80	97.44%
80-90	98.99	0-90	3861.79	100.00%
90-100	0.00	0-100	3861.79	100.00%
100-110	0.00	0-110	3861.79	100.00%
110-120	0.00	0-120	3861.79	100.00%
120-130	0.00	0-130	3861.79	100.00%
130-140	0.00	0-140	3861.79	100.00%
140-150	0.00	0-150	3861.79	100.00%
150-160	0.00	0-160	3861.79	100.00%
160-170	0.00	0-170	3861.79	100.00%
170-180	0.00	0-180	3861.79	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	12.4	14.1	12.8	14.4	14.7	12.4	14.1	12.8	14.4	14.7
	3H	14.3	15.9	14.7	16.2	16.6	14.3	15.9	14.7	16.2	16.6
	4H	15.1	16.6	15.5	16.9	17.3	15.1	16.5	15.5	16.9	17.3
	6H	15.7	17.1	16.2	17.4	17.8	15.7	17.0	16.1	17.4	17.8
	8H	15.9	17.2	16.4	17.6	18.0	15.9	17.2	16.3	17.6	18.0
	12H	16.1	17.3	16.5	17.7	18.1	16.1	17.3	16.5	17.7	18.1
4H	2H	13.1	14.5	13.5	14.9	15.2	13.1	14.5	13.5	14.9	15.2
	3H	15.3	16.5	15.7	16.9	17.3	15.3	16.5	15.7	16.9	17.3
	4H	16.2	17.3	16.6	17.7	18.1	16.2	17.3	16.6	17.7	18.1
	6H	16.9	17.9	17.4	18.3	18.8	16.9	17.9	17.4	18.3	18.8
	8H	17.2	18.1	17.7	18.6	19.0	17.2	18.1	17.7	18.5	19.0
	12H	17.4	18.2	17.9	18.7	19.2	17.4	18.2	17.9	18.7	19.2
8H	4H	16.6	17.4	17.0	17.9	18.4	16.5	17.4	17.0	17.9	18.3
	6H	17.5	18.2	17.9	18.7	19.2	17.4	18.2	17.9	18.7	19.1
	8H	17.8	18.5	18.3	19.0	19.5	17.8	18.5	18.3	19.0	19.5
	12H	18.1	18.7	18.6	19.2	19.8	18.1	18.7	18.6	19.2	19.8
12H	4H	16.6	17.4	17.1	17.9	18.3	16.6	17.4	17.1	17.9	18.3
	6H	17.5	18.2	18.1	18.7	19.2	17.5	18.2	18.0	18.7	19.2
	8H	18.0	18.6	18.5	19.1	19.6	17.9	18.5	18.4	19.0	19.6

Maximum UGR = 19.8

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	17.1	18.8	17.5	19.1	19.4	17.1	18.8	17.5	19.1	19.4
	3H	19.0	20.6	19.4	20.9	21.3	19.0	20.6	19.4	20.9	21.2
	4H	19.8	21.3	20.2	21.6	22.0	19.8	21.2	20.2	21.6	22.0
	6H	20.4	21.8	20.9	22.1	22.5	20.4	21.7	20.8	22.1	22.5
	8H	20.6	21.9	21.1	22.3	22.7	20.6	21.9	21.0	22.3	22.7
	12H	20.8	22.0	21.2	22.4	22.8	20.8	22.0	21.2	22.4	22.8
4H	2H	17.8	19.2	18.2	19.6	19.9	17.8	19.2	18.2	19.6	19.9
	3H	20.0	21.2	20.4	21.6	22.0	20.0	21.2	20.4	21.6	22.0
	4H	20.9	22.0	21.3	22.4	22.8	20.9	22.0	21.3	22.4	22.8
	6H	21.6	22.6	22.1	23.0	23.5	21.6	22.6	22.1	23.0	23.5
	8H	21.9	22.8	22.4	23.3	23.7	21.9	22.8	22.4	23.2	23.7
	12H	22.1	22.9	22.6	23.4	23.9	22.1	22.9	22.6	23.4	23.9
8H	4H	21.3	22.1	21.7	22.6	23.1	21.2	22.1	21.7	22.6	23.0
	6H	22.2	22.9	22.6	23.4	23.9	22.1	22.9	22.6	23.4	23.8
	8H	22.5	23.2	23.0	23.7	24.2	22.5	23.2	23.0	23.7	24.2
	12H	22.8	23.4	23.3	23.9	24.5	22.8	23.4	23.3	23.9	24.5
12H	4H	21.3	22.1	21.8	22.6	23.0	21.3	22.1	21.8	22.6	23.0
	6H	22.2	22.9	22.8	23.4	23.9	22.2	22.9	22.7	23.4	23.9
	8H	22.7	23.3	23.2	23.8	24.3	22.6	23.2	23.1	23.7	24.3

Maximum UGR = 24.5

## 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	1253	1253	1252	1252	1251	1251	1252	1251	1251	1252	1252	1253	1253	1253	1252	1252	1251	1251	1252
5	1248	1250	1249	1250	1249	1249	1249	1249	1249	1250	1249	1250	1248	1250	1249	1250	1249	1249	1249
10	1237	1238	1237	1239	1238	1237	1237	1237	1238	1239	1237	1238	1237	1238	1237	1239	1238	1237	1237
15	1216	1217	1217	1218	1217	1217	1217	1217	1218	1217	1217	1216	1217	1217	1217	1218	1217	1217	1217
20	1185	1187	1187	1189	1188	1187	1187	1187	1188	1189	1187	1187	1185	1187	1187	1189	1188	1187	1187
25	1145	1147	1147	1149	1147	1146	1146	1146	1147	1149	1147	1147	1145	1147	1147	1149	1147	1146	1146
30	1095	1097	1098	1099	1097	1098	1097	1098	1097	1099	1098	1097	1095	1097	1098	1099	1097	1098	1097
35	1035	1037	1038	1039	1038	1038	1036	1038	1038	1039	1038	1037	1035	1037	1038	1039	1038	1038	1036
40	966	968	969	969	969	968	966	968	969	969	968	966	968	968	969	969	969	968	966
45	887	891	890	891	890	889	888	889	890	891	890	891	887	891	890	891	890	889	888
50	800	803	803	803	802	802	800	802	802	803	803	803	800	803	803	803	802	802	800
55	706	708	709	709	708	708	706	708	708	709	709	708	706	708	709	709	708	708	706
60	607	608	609	608	607	607	605	607	607	608	609	608	607	608	609	608	607	607	605
65	502	503	504	504	502	502	501	502	502	504	504	503	502	503	504	504	502	502	501
70	396	397	397	397	396	395	394	395	396	397	397	397	396	397	397	397	396	395	394
75	289	291	291	290	289	289	288	289	289	290	291	291	289	291	291	290	289	289	288
80	186	187	187	188	186	185	184	185	186	188	187	187	186	187	187	188	186	185	184
85	88.4	89.6	89.9	90.0	89.8	89.3	88.7	89.3	89.8	90.0	89.9	89.6	88.4	89.6	89.9	90.0	89.8	89.3	88.7
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	1251	1251	1252	1252	1253														
5	1249	1249	1250	1249	1250														
10	1237	1238	1239	1237	1238														
15	1217	1217	1218	1217	1217														
20	1187	1188	1189	1187	1187														
25	1146	1147	1149	1147	1147														
30	1098	1097	1099	1098	1097														
35	1038	1038	1039	1038	1037														
40	968	969	969	969	968														
45	889	890	891	890	891														
50	802	802	803	803	803														
55	708	708	709	709	708														
60	607	607	608	609	608														
65	502	502	504	504	503														
70	395	396	397	397	397														
75	289	289	290	291	291														
80	185	186	188	187	187														
85	89.3	89.8	90.0	89.9	89.6														
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>	RPLED2X2 @30W4000K	<b>Sample ID</b>	240306002-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 25±1°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(%)
120.0	60	0.234	27.9	0.995	10.41
277.0	60	0.100	27.3	0.981	9.15

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