

## 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		3798
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	131.0
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		29.0
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	10.10
			277V	9.40
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.995
			277V	0.983
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	5029±283	5103
		4 steps	5029±220	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		84.1
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥0		13
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%		-12%
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	21.8
		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		0.243
(Goniophotometer – Section 4.2)		Non-Worst Case		0.104
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		29.0
(Goniophotometer – Section 4.2)		Non-Worst Case		28.2

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-03-05	RPLED2X2 @30W5000K	240306002-S1
2	Goniophotometer Test	2024-03-05	RPLED2X2 @30W5000K	240306002-S1
3	THD and PF Test	2024-03-05	RPLED2X2 @30W5000K	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 @30W5000K, 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 @30W5000K	<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

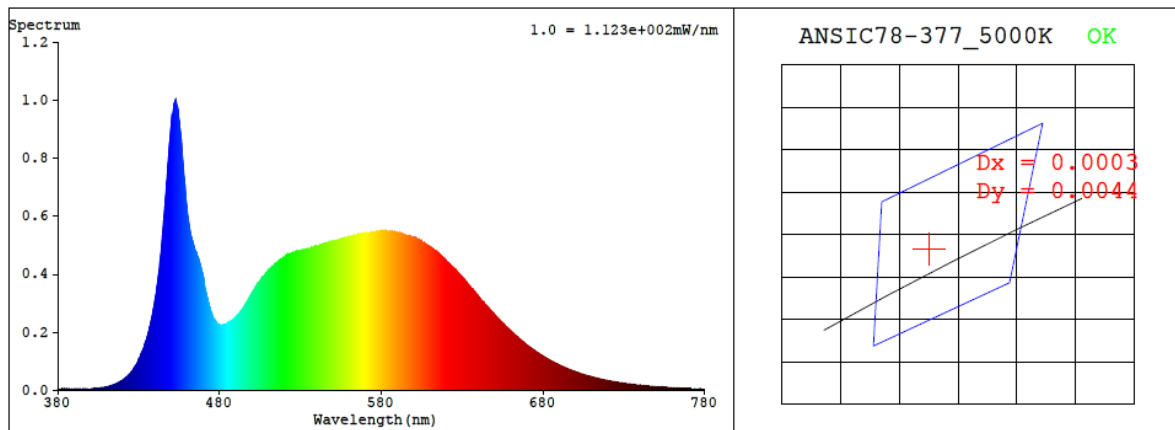
<b>Test Method</b>
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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.</p> <p>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	0.243	29.0	0.995
277.0	60	0.104	28.2	0.983

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
5103	84.1	13	0.0021	84	95	-12%

#### 4.1 Integrating Sphere Test



#### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.3426$   $y = 0.3538$  /  $u' = 0.2089$   $v' = 0.4854$  ( $duv=2.10e-03$ )

CCT= 5103K Prop WL:  $L_d=569.0nm$  Purity=8.9%

Peak WL:  $L_p=453nm$  FWHM:  $=19.9nm$  Ratio:  $R=15.7\%$   $G=79.6\%$   $B=4.7\%$

Render Index:  $R_a = 84.1$   $AvgR = 77.5$   $TM30:R_f=84$   $R_g=95$

EEL: 0.10206 A++ Highest

$R_1 = 83$   $R_2 = 89$   $R_3 = 93$   $R_4 = 84$   $R_5 = 83$   $R_6 = 85$   $R_7 = 87$

$R_8 = 69$   $R_9 = 13$   $R_{10} = 74$   $R_{11} = 83$   $R_{12} = 61$   $R_{13} = 85$   $R_{14} = 97$   $R_{15} = 78$

## 4.1 Integrating Sphere Test

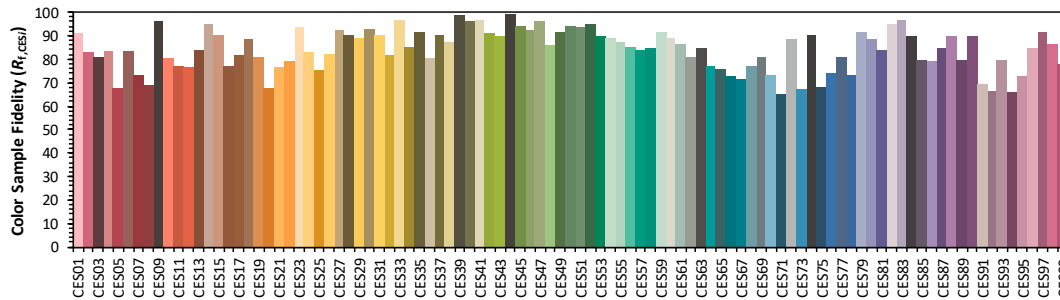
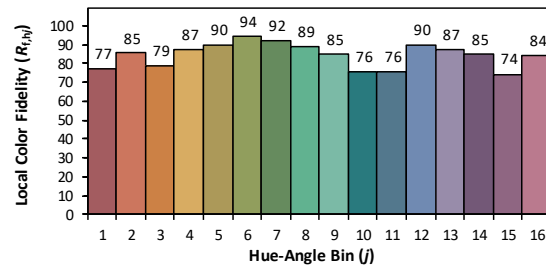
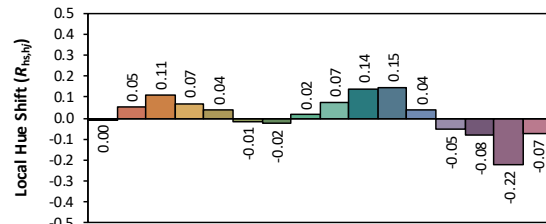
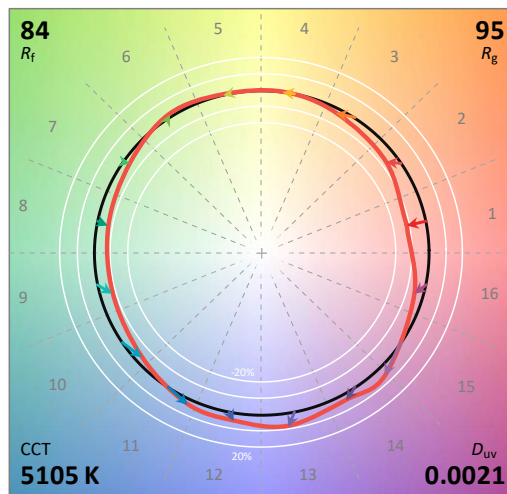
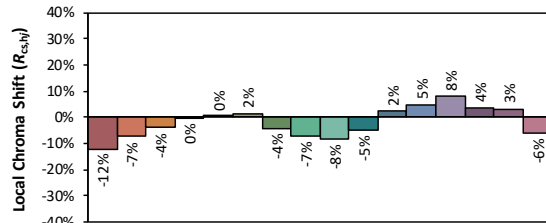
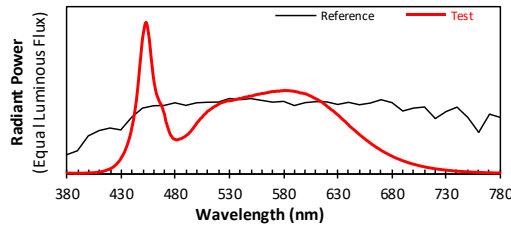
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/3/8

Model: RPLED2X2 @30W5000K



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

$x$  0.3425  
 $y$  0.3536  
 $u'$  0.2089  
 $v'$  0.4853

CIE 13.3-1995  
(CRI)

$R_a$  84  
 $R_g$  13

## 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	5.60E-06	447	7.05E-04	514	4.33E-04	581	5.49E-04	648	2.73E-04	715	3.93E-05
381	4.30E-06	448	7.75E-04	515	4.38E-04	582	5.48E-04	649	2.67E-04	716	3.80E-05
382	4.50E-06	449	8.53E-04	516	4.43E-04	583	5.49E-04	650	2.61E-04	717	3.71E-05
383	4.60E-06	450	9.12E-04	517	4.47E-04	584	5.48E-04	651	2.54E-04	718	3.59E-05
384	4.10E-06	451	9.50E-04	518	4.49E-04	585	5.48E-04	652	2.49E-04	719	3.43E-05
385	4.30E-06	452	9.89E-04	519	4.55E-04	586	5.47E-04	653	2.43E-04	720	3.36E-05
386	3.60E-06	453	9.98E-04	520	4.58E-04	587	5.45E-04	654	2.37E-04	721	3.26E-05
387	3.60E-06	454	9.75E-04	521	4.64E-04	588	5.47E-04	655	2.32E-04	722	3.14E-05
388	3.50E-06	455	9.30E-04	522	4.67E-04	589	5.44E-04	656	2.26E-04	723	3.07E-05
389	3.50E-06	456	8.79E-04	523	4.69E-04	590	5.43E-04	657	2.20E-04	724	2.95E-05
390	4.50E-06	457	8.06E-04	524	4.72E-04	591	5.42E-04	658	2.16E-04	725	2.86E-05
391	3.60E-06	458	7.39E-04	525	4.73E-04	592	5.40E-04	659	2.10E-04	726	2.77E-05
392	3.80E-06	459	6.74E-04	526	4.75E-04	593	5.39E-04	660	2.04E-04	727	2.67E-05
393	3.80E-06	460	6.20E-04	527	4.79E-04	594	5.37E-04	661	1.99E-04	728	2.63E-05
394	4.10E-06	461	5.77E-04	528	4.80E-04	595	5.34E-04	662	1.93E-04	729	2.54E-05
395	3.70E-06	462	5.41E-04	529	4.80E-04	596	5.32E-04	663	1.89E-04	730	2.41E-05
396	5.00E-06	463	5.16E-04	530	4.81E-04	597	5.33E-04	664	1.85E-04	731	2.36E-05
397	4.80E-06	464	4.98E-04	531	4.82E-04	598	5.31E-04	665	1.79E-04	732	2.27E-05
398	4.90E-06	465	4.79E-04	532	4.83E-04	599	5.29E-04	666	1.75E-04	733	2.22E-05
399	5.30E-06	466	4.66E-04	533	4.85E-04	600	5.27E-04	667	1.70E-04	734	2.14E-05
400	5.30E-06	467	4.52E-04	534	4.86E-04	601	5.26E-04	668	1.66E-04	735	2.07E-05
401	5.70E-06	468	4.35E-04	535	4.89E-04	602	5.22E-04	669	1.61E-04	736	2.01E-05
402	6.00E-06	469	4.10E-04	536	4.89E-04	603	5.20E-04	670	1.56E-04	737	1.94E-05
403	6.80E-06	470	3.91E-04	537	4.93E-04	604	5.16E-04	671	1.52E-04	738	1.88E-05
404	7.00E-06	471	3.52E-04	538	4.92E-04	605	5.13E-04	672	1.47E-04	739	1.79E-05
405	7.60E-06	472	3.28E-04	539	4.97E-04	606	5.10E-04	673	1.44E-04	740	1.78E-05
406	7.80E-06	473	3.05E-04	540	4.96E-04	607	5.05E-04	674	1.39E-04	741	1.70E-05
407	8.40E-06	474	2.83E-04	541	4.97E-04	608	5.01E-04	675	1.36E-04	742	1.65E-05
408	9.90E-06	475	2.64E-04	542	5.01E-04	609	4.99E-04	676	1.32E-04	743	1.58E-05
409	1.03E-05	476	2.52E-04	543	5.02E-04	610	4.93E-04	677	1.28E-04	744	1.57E-05
410	1.20E-05	477	2.41E-04	544	5.05E-04	611	4.91E-04	678	1.25E-04	745	1.50E-05
411	1.31E-05	478	2.32E-04	545	5.05E-04	612	4.87E-04	679	1.21E-04	746	1.45E-05
412	1.44E-05	479	2.28E-04	546	5.07E-04	613	4.82E-04	680	1.18E-04	747	1.42E-05
413	1.60E-05	480	2.27E-04	547	5.07E-04	614	4.78E-04	681	1.14E-04	748	1.36E-05
414	1.79E-05	481	2.23E-04	548	5.12E-04	615	4.76E-04	682	1.11E-04	749	1.32E-05
415	1.99E-05	482	2.25E-04	549	5.11E-04	616	4.70E-04	683	1.08E-04	750	1.27E-05
416	2.23E-05	483	2.27E-04	550	5.13E-04	617	4.64E-04	684	1.04E-04	751	1.23E-05
417	2.57E-05	484	2.29E-04	551	5.12E-04	618	4.58E-04	685	1.01E-04	752	1.19E-05
418	2.80E-05	485	2.32E-04	552	5.15E-04	619	4.54E-04	686	9.81E-05	753	1.16E-05
419	3.10E-05	486	2.34E-04	553	5.18E-04	620	4.47E-04	687	9.58E-05	754	1.14E-05
420	3.45E-05	487	2.39E-04	554	5.20E-04	621	4.41E-04	688	9.28E-05	755	1.08E-05
421	3.77E-05	488	2.42E-04	555	5.22E-04	622	4.36E-04	689	8.98E-05	756	1.05E-05
422	4.28E-05	489	2.46E-04	556	5.23E-04	623	4.30E-04	690	8.69E-05	757	1.02E-05
423	4.68E-05	490	2.52E-04	557	5.25E-04	624	4.24E-04	691	8.44E-05	758	1.00E-05
424	5.37E-05	491	2.58E-04	558	5.25E-04	625	4.19E-04	692	8.17E-05	759	9.70E-06
425	5.99E-05	492	2.62E-04	559	5.27E-04	626	4.15E-04	693	7.97E-05	760	9.10E-06
426	6.70E-05	493	2.72E-04	560	5.30E-04	627	4.08E-04	694	7.71E-05	761	9.10E-06
427	7.53E-05	494	2.78E-04	561	5.29E-04	628	4.02E-04	695	7.47E-05	762	8.70E-06
428	8.38E-05	495	2.87E-04	562	5.30E-04	629	3.96E-04	696	7.18E-05	763	8.50E-06
429	9.30E-05	496	2.97E-04	563	5.32E-04	630	3.90E-04	697	7.02E-05	764	8.00E-06
430	1.06E-04	497	3.05E-04	564	5.33E-04	631	3.85E-04	698	6.79E-05	765	8.00E-06
431	1.17E-04	498	3.15E-04	565	5.36E-04	632	3.77E-04	699	6.56E-05	766	7.70E-06
432	1.31E-04	499	3.25E-04	566	5.36E-04	633	3.70E-04	700	6.35E-05	767	7.50E-06
433	1.44E-04	500	3.36E-04	567	5.38E-04	634	3.63E-04	701	6.20E-05	768	7.30E-06
434	1.64E-04	501	3.44E-04	568	5.40E-04	635	3.57E-04	702	6.01E-05	769	7.00E-06
435	1.80E-04	502	3.52E-04	569	5.42E-04	636	3.50E-04	703	5.79E-05	770	6.70E-06
436	2.01E-04	503	3.62E-04	570	5.42E-04	637	3.45E-04	704	5.61E-05	771	6.70E-06
437	2.24E-04	504	3.68E-04	571	5.42E-04	638	3.38E-04	705	5.46E-05	772	6.50E-06
438	2.49E-04	505	3.76E-04	572	5.42E-04	639	3.30E-04	706	5.25E-05	773	6.20E-06
439	2.79E-04	506	3.85E-04	573	5.43E-04	640	3.24E-04	707	5.09E-05	774	6.10E-06
440	3.13E-04	507	3.92E-04	574	5.46E-04	641	3.16E-04	708	4.92E-05	775	5.80E-06
441	3.47E-04	508	3.97E-04	575	5.45E-04	642	3.09E-04	709	4.81E-05	776	5.70E-06
442	3.89E-04	509	4.06E-04	576	5.44E-04	643	3.04E-04	710	4.64E-05	777	5.50E-06
443	4.37E-04	510	4.14E-04	577	5.47E-04	644	2.97E-04	711	4.48E-05	778	5.40E-06
444	4.89E-04	511	4.17E-04	578	5.47E-04	645	2.92E-04	712	4.32E-05	779	5.40E-06
445	5.54E-04	512	4.23E-04	579	5.46E-04	646	2.86E-04	713	4.19E-05	780	5.40E-06
446	6.25E-04	513	4.27E-04	580	5.49E-04	647	2.79E-04	714	4.08E-05	N/A	N/A

## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	RPLED2X2 @30W5000K	<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	0.243	29.0	0.995
<b>NON-WORST CASE</b>	277.0	60	0.104	28.2	0.983

#### 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		( $0^\circ$ - $60^\circ$ )
3798	166.3	166.4	117.5	118.1	131.0	76.6%

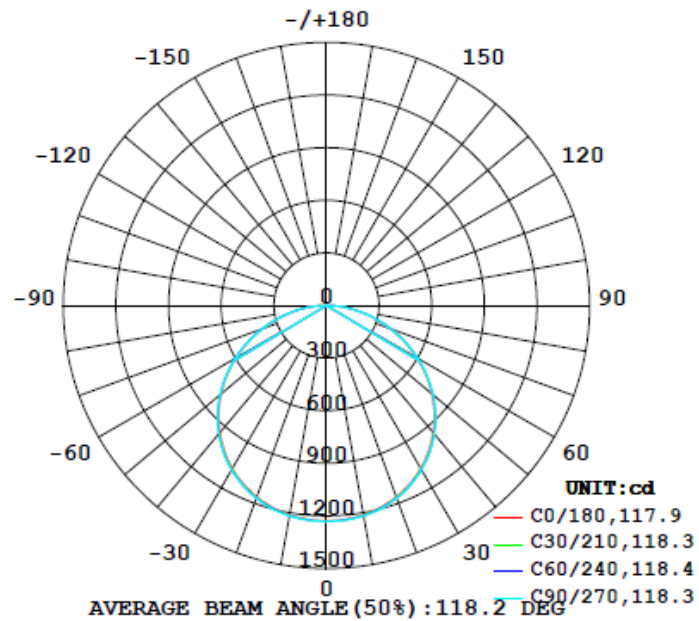
UGR		Spacing Criterion	
Crosswise	Endwise	( $0^\circ$ - $180^\circ$ )	( $90^\circ$ - $270^\circ$ )
21.8	21.8	1.30	1.32



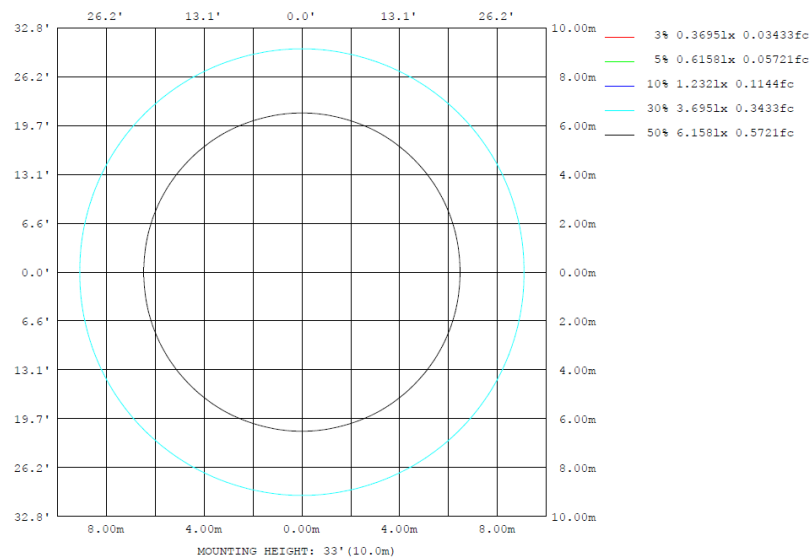
## 4.2 Goniophotometer Test

### 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	zone	total	%lum, lamp
10	1213	1216	1219	1216	1213	1216	1219	1216	0- 10	116.8	116.8	3.07,3.07
20	1161	1168	1170	1168	1161	1168	1170	1168	10- 20	337.9	454.6	12,12
30	1073	1080	1082	1080	1073	1080	1082	1080	20- 30	520.0	974.7	25.7,25.7
40	945.5	953.3	955.0	953.3	945.5	953.3	955.0	953.3	30- 40	638.5	1613	42.5,42.5
50	782.8	790.4	792.9	790.4	782.8	790.4	792.9	790.4	40- 50	674.9	2288	60.2,60.2
60	593.8	598.8	599.6	598.8	593.8	598.8	599.6	598.8	50- 60	622.5	2911	76.6,76.6
70	386.5	389.7	389.5	389.7	386.5	389.7	389.5	389.7	60- 70	489.5	3400	89.5,89.5
80	181.6	183.8	182.4	183.8	181.6	183.8	182.4	183.8	70- 80	301.2	3701	97.4,97.4
90	0	0	0	0	0	0	0	0	80- 90	97.20	3798	100,100
100	0	0	0	0	0	0	0	0	90-100	0	3798	100,100
110	0	0	0	0	0	0	0	0	100-110	0	3798	100,100
120	0	0	0	0	0	0	0	0	110-120	0	3798	100,100
130	0	0	0	0	0	0	0	0	120-130	0	3798	100,100
140	0	0	0	0	0	0	0	0	130-140	0	3798	100,100
150	0	0	0	0	0	0	0	0	140-150	0	3798	100,100
160	0	0	0	0	0	0	0	0	150-160	0	3798	100,100
170	0	0	0	0	0	0	0	0	160-170	0	3798	100,100
180	0	0	0	0	0	0	0	0	170-180	0	3798	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	116.75	0-10	116.75	3.07%
10-20	337.87	0-20	454.62	11.97%
20-30	520.04	0-30	974.66	25.66%
30-40	638.48	0-40	1613.14	42.47%
40-50	674.92	0-50	2288.06	60.24%
50-60	622.51	0-60	2910.57	76.63%
60-70	489.50	0-70	3400.07	89.51%
70-80	301.19	0-80	3701.26	97.44%
80-90	97.20	0-90	3798.46	100.00%
90-100	0.00	0-100	3798.46	100.00%
100-110	0.00	0-110	3798.46	100.00%
110-120	0.00	0-120	3798.46	100.00%
120-130	0.00	0-130	3798.46	100.00%
130-140	0.00	0-140	3798.46	100.00%
140-150	0.00	0-150	3798.46	100.00%
150-160	0.00	0-160	3798.46	100.00%
160-170	0.00	0-170	3798.46	100.00%
170-180	0.00	0-180	3798.46	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	16.5	14.4	15.9	14.7	16.2	16.6
	4H	15.1	16.5	15.5	16.9	17.3	15.1	16.6	15.5	16.9	17.3
	6H	15.7	17.0	16.1	17.4	17.8	15.7	17.1	16.1	17.4	17.8
	8H	15.9	17.2	16.3	17.6	18.0	15.9	17.2	16.4	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	18.5	19.0	17.2	18.1	17.7	18.6	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	16.5	17.4	17.0	17.9	18.3	16.6	17.4	17.0	17.9	18.4
	6H	17.4	18.2	17.9	18.7	19.1	17.5	18.2	17.9	18.7	19.2
	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	18.4
	6H	17.5	18.2	18.0	18.7	19.2	17.5	18.2	18.1	18.7	19.2
	8H	17.9	18.6	18.5	19.0	19.6	18.0	18.6	18.5	19.1	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	17.0	18.7	17.4	19.0	19.3	17.0	18.7	17.4	19.0	19.3
	3H	18.9	20.5	19.3	20.8	21.1	19.0	20.5	19.3	20.8	21.2
	4H	19.7	21.1	20.1	21.5	21.9	19.7	21.2	20.1	21.5	21.9
	6H	20.3	21.6	20.7	22.0	22.4	20.3	21.7	20.7	22.0	22.4
	8H	20.5	21.8	20.9	22.2	22.6	20.5	21.8	21.0	22.2	22.6
	12H	20.7	21.9	21.1	22.3	22.7	20.7	21.9	21.1	22.3	22.7
4H	2H	17.7	19.1	18.1	19.5	19.8	17.7	19.1	18.1	19.5	19.8
	3H	19.9	21.1	20.3	21.5	21.9	19.9	21.1	20.3	21.5	21.9
	4H	20.8	21.9	21.2	22.3	22.7	20.8	21.9	21.2	22.3	22.7
	6H	21.5	22.5	22.0	22.9	23.4	21.5	22.5	22.0	22.9	23.4
	8H	21.8	22.7	22.3	23.1	23.6	21.8	22.7	22.3	23.2	23.6
	12H	22.0	22.8	22.5	23.3	23.8	22.0	22.8	22.5	23.3	23.8
8H	4H	21.1	22.0	21.6	22.5	22.9	21.2	22.0	21.6	22.5	23.0
	6H	22.0	22.8	22.5	23.3	23.7	22.1	22.8	22.5	23.3	23.8
	8H	22.4	23.1	22.9	23.6	24.1	22.4	23.1	22.9	23.6	24.1
	12H	22.7	23.3	23.2	23.8	24.4	22.7	23.3	23.2	23.8	24.4
12H	4H	21.2	22.0	21.7	22.5	22.9	21.2	22.0	21.7	22.5	23.0
	6H	22.1	22.8	22.6	23.3	23.8	22.1	22.8	22.7	23.3	23.8
	8H	22.5	23.2	23.1	23.6	24.2	22.6	23.2	23.1	23.7	24.2

Maximum UGR = 24.4

## 4.2 Goniophotometer Test

### Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1227	1229	1230	1228	1230	1228	1231	1228	1230	1228	1230	1229	1227	1229	1230	1228	1230	1228	1231
5	1224	1227	1228	1226	1228	1226	1229	1226	1228	1226	1228	1227	1224	1227	1228	1226	1228	1226	1229
10	1213	1215	1215	1216	1217	1217	1219	1217	1217	1216	1215	1215	1213	1215	1215	1216	1217	1217	1219
15	1191	1194	1196	1197	1197	1197	1200	1197	1197	1197	1196	1194	1191	1194	1196	1197	1197	1197	1200
20	1161	1165	1166	1168	1169	1168	1170	1168	1169	1168	1166	1165	1161	1165	1166	1168	1169	1168	1170
25	1122	1126	1127	1129	1130	1130	1131	1130	1130	1129	1127	1126	1122	1126	1127	1129	1130	1130	1131
30	1073	1077	1078	1080	1082	1081	1082	1081	1082	1080	1078	1077	1073	1077	1078	1080	1082	1081	1082
35	1014	1017	1019	1022	1024	1022	1025	1022	1024	1022	1019	1017	1014	1017	1019	1022	1024	1022	1025
40	945	949	952	953	955	954	955	954	955	953	952	949	945	949	952	953	955	954	955
45	869	871	875	876	878	877	878	877	878	876	875	871	869	871	875	876	878	877	878
50	783	788	790	790	791	791	793	791	791	790	790	788	783	788	790	790	791	791	793
55	691	695	696	698	699	699	698	699	698	696	695	691	695	696	698	699	699	699	698
60	594	596	598	599	600	598	600	598	600	599	598	596	594	596	598	599	600	598	600
65	491	495	495	495	495	495	495	495	495	495	495	495	491	495	495	495	495	495	495
70	386	390	391	390	391	390	389	390	391	390	391	390	386	390	391	390	391	390	389
75	283	285	286	286	286	285	285	285	286	286	286	285	283	285	286	286	286	285	285
80	182	183	184	184	184	183	182	183	184	184	184	183	182	183	184	184	184	183	182
85	86.5	87.3	88.2	88.6	88.6	88.0	87.4	88.0	88.6	88.6	88.2	87.3	86.5	87.3	88.2	88.6	88.6	88.0	87.4
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) γ (DEG)	285	300	315	330	345														
0	1228	1230	1228	1230	1229														
5	1226	1228	1226	1228	1227														
10	1217	1217	1216	1215	1215														
15	1197	1197	1197	1196	1194														
20	1168	1169	1168	1166	1165														
25	1130	1130	1129	1127	1126														
30	1081	1082	1080	1078	1077														
35	1022	1024	1022	1019	1017														
40	954	955	953	952	949														
45	877	878	876	875	871														
50	791	791	790	790	788														
55	699	699	698	696	695														
60	598	600	599	598	596														
65	495	495	495	495	495														
70	390	391	390	391	390														
75	285	286	286	286	285														
80	183	184	184	184	183														
85	88.0	88.6	88.6	88.2	87.3														
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 @30W5000K	<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 <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	0.243	29.0	0.995	10.10
277.0	60	0.104	28.2	0.983	9.40

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