

## 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.**

Prepare by:

*Alan Wang*

Engineer: Alan Wang

Date: 2024-03-08

Review by:

*Vincent Yuan*

Technical Lead: Vincent Yuan

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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		2578
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	140.1
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		18.4
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	7.30
			277V	7.22
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.995
			277V	0.930
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		85.1
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%		76.7%
Discomfort Glare (UGR) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	20.5
		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	1.30
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		0.071
(Goniophotometer – Section 4.2)		Non-Worst Case		0.148
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		18.4
(Goniophotometer – Section 4.2)		Non-Worst Case		17.7

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-03-06	RPLED2X2 @18W4000K	240306002-S1
2	Goniophotometer Test	2024-03-06	RPLED2X2 @18W4000K	240306002-S1
3	THD and PF Test	2024-03-06	RPLED2X2 @18W4000K	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 @18W4000K, 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 @18W4000K	<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

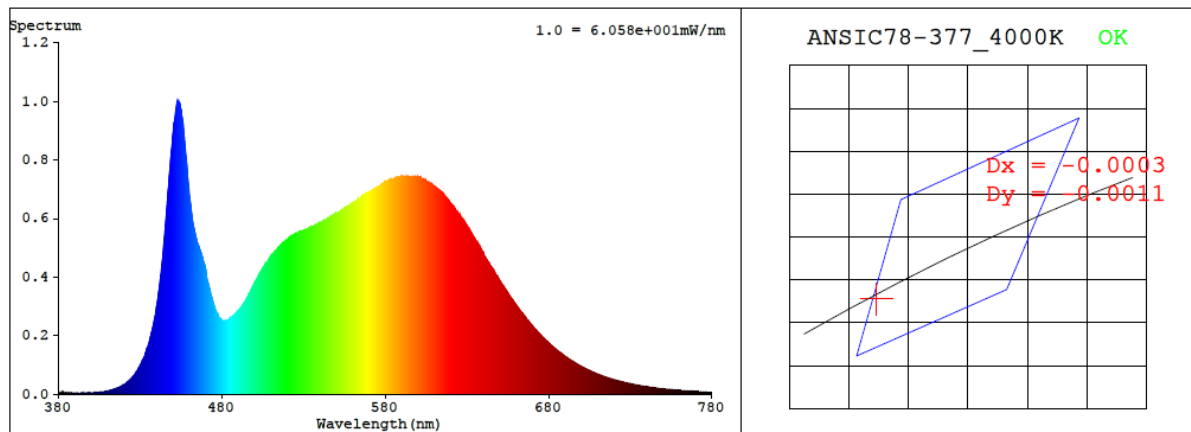
<b>Test Method</b>
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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	0.148	17.7	0.995
277.0	60	0.071	18.4	0.930

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4243	85.1	18	-0.0004	84	95	-11%

## 4.1 Integrating Sphere Test



### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.3701$   $y = 0.3691$  /  $u' = 0.2213$   $v' = 0.4966$  ( $duv = -4.46e-04$ )

CCT= 4243K Prcp WL: Ld=578.4nm Purity=21.8%

Peak WL: Lp=453nm FWHM: =22.0nm Ratio:R=18.0% G=78.0% B=4.1%

Render Index: Ra = 85.1 AvgR = 79.0 TM30:Rf=85 Rg=96

EEL: 0.09538 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

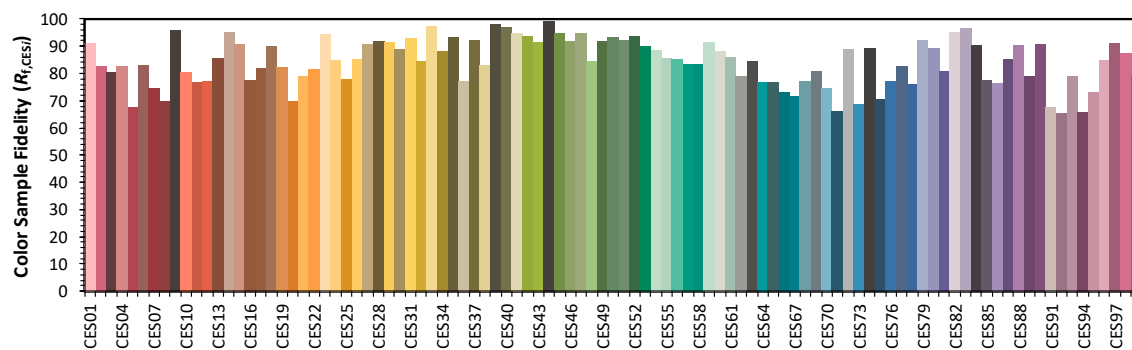
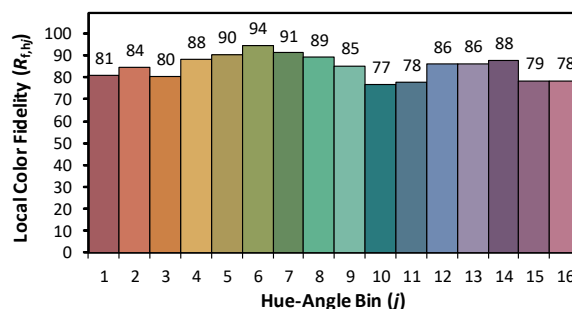
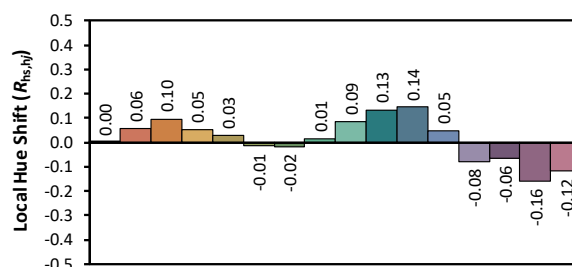
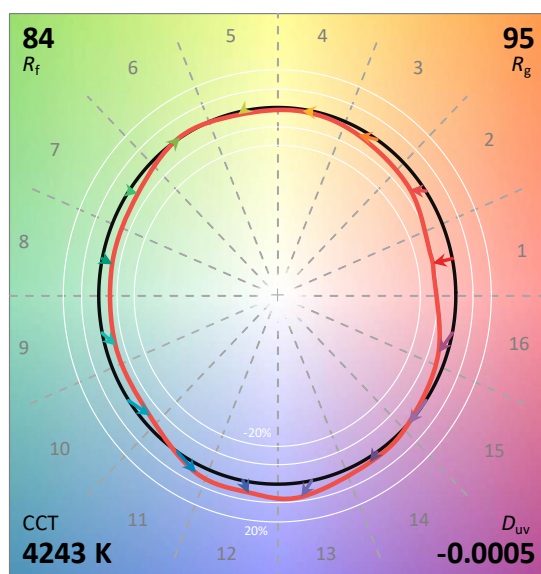
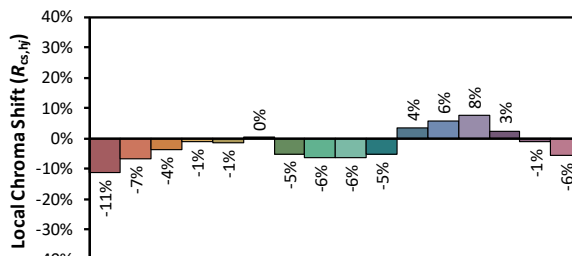
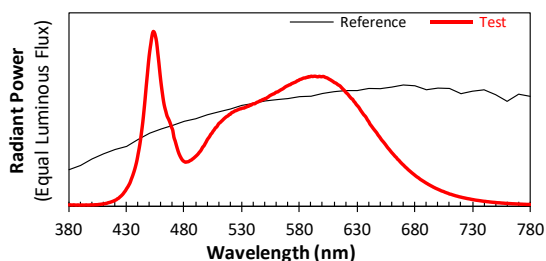
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/3/8

Model: RPLED2X2 @18W4000K



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

$x$  0.3700  
 $y$  0.3690  
 $u'$  0.2213  
 $v'$  0.4965

CIE 13.3-1995  
(CRI)

$R_a$  85  
 $R_9$  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	5.10E-06	447	6.87E-04	514	4.97E-04	581	7.26E-04	648	4.07E-04	715	5.80E-05
381	5.40E-06	448	7.55E-04	515	5.03E-04	582	7.29E-04	649	3.98E-04	716	5.61E-05
382	4.60E-06	449	8.27E-04	516	5.08E-04	583	7.32E-04	650	3.89E-04	717	5.46E-05
383	4.50E-06	450	8.85E-04	517	5.13E-04	584	7.34E-04	651	3.79E-04	718	5.24E-05
384	5.40E-06	451	9.30E-04	518	5.17E-04	585	7.34E-04	652	3.71E-04	719	5.09E-05
385	4.70E-06	452	9.75E-04	519	5.24E-04	586	7.37E-04	653	3.64E-04	720	4.94E-05
386	3.90E-06	453	1.00E-03	520	5.26E-04	587	7.37E-04	654	3.55E-04	721	4.77E-05
387	4.30E-06	454	9.95E-04	521	5.34E-04	588	7.42E-04	655	3.47E-04	722	4.63E-05
388	4.90E-06	455	9.73E-04	522	5.37E-04	589	7.40E-04	656	3.37E-04	723	4.49E-05
389	3.50E-06	456	9.38E-04	523	5.40E-04	590	7.44E-04	657	3.29E-04	724	4.35E-05
390	4.20E-06	457	8.78E-04	524	5.45E-04	591	7.42E-04	658	3.21E-04	725	4.20E-05
391	4.30E-06	458	8.18E-04	525	5.46E-04	592	7.43E-04	659	3.13E-04	726	4.08E-05
392	4.30E-06	459	7.53E-04	526	5.50E-04	593	7.44E-04	660	3.05E-04	727	3.97E-05
393	4.00E-06	460	6.95E-04	527	5.52E-04	594	7.43E-04	661	2.98E-04	728	3.84E-05
394	4.30E-06	461	6.46E-04	528	5.56E-04	595	7.41E-04	662	2.90E-04	729	3.69E-05
395	5.10E-06	462	6.00E-04	529	5.57E-04	596	7.40E-04	663	2.82E-04	730	3.58E-05
396	4.20E-06	463	5.66E-04	530	5.59E-04	597	7.43E-04	664	2.77E-04	731	3.46E-05
397	4.30E-06	464	5.42E-04	531	5.61E-04	598	7.42E-04	665	2.67E-04	732	3.32E-05
398	4.60E-06	465	5.17E-04	532	5.61E-04	599	7.41E-04	666	2.62E-04	733	3.22E-05
399	5.50E-06	466	5.02E-04	533	5.66E-04	600	7.42E-04	667	2.54E-04	734	3.13E-05
400	5.30E-06	467	4.88E-04	534	5.67E-04	601	7.42E-04	668	2.47E-04	735	3.05E-05
401	5.00E-06	468	4.70E-04	535	5.73E-04	602	7.38E-04	669	2.40E-04	736	2.95E-05
402	5.60E-06	469	4.50E-04	536	5.72E-04	603	7.36E-04	670	2.34E-04	737	2.86E-05
403	6.10E-06	470	4.33E-04	537	5.78E-04	604	7.33E-04	671	2.27E-04	738	2.75E-05
404	6.20E-06	471	3.94E-04	538	5.78E-04	605	7.29E-04	672	2.21E-04	739	2.65E-05
405	6.60E-06	472	3.74E-04	539	5.83E-04	606	7.25E-04	673	2.15E-04	740	2.57E-05
406	7.80E-06	473	3.50E-04	540	5.86E-04	607	7.22E-04	674	2.09E-04	741	2.53E-05
407	8.30E-06	474	3.27E-04	541	5.85E-04	608	7.17E-04	675	2.03E-04	742	2.42E-05
408	9.20E-06	475	3.06E-04	542	5.90E-04	609	7.14E-04	676	1.97E-04	743	2.34E-05
409	1.00E-05	476	2.90E-04	543	5.94E-04	610	7.08E-04	677	1.91E-04	744	2.29E-05
410	1.09E-05	477	2.77E-04	544	5.96E-04	611	7.05E-04	678	1.86E-04	745	2.18E-05
411	1.21E-05	478	2.66E-04	545	6.00E-04	612	7.02E-04	679	1.81E-04	746	2.12E-05
412	1.35E-05	479	2.58E-04	546	6.03E-04	613	6.96E-04	680	1.75E-04	747	2.04E-05
413	1.48E-05	480	2.54E-04	547	6.05E-04	614	6.92E-04	681	1.70E-04	748	1.99E-05
414	1.75E-05	481	2.50E-04	548	6.10E-04	615	6.88E-04	682	1.65E-04	749	1.94E-05
415	1.89E-05	482	2.52E-04	549	6.11E-04	616	6.81E-04	683	1.61E-04	750	1.87E-05
416	2.09E-05	483	2.53E-04	550	6.15E-04	617	6.74E-04	684	1.56E-04	751	1.79E-05
417	2.32E-05	484	2.55E-04	551	6.16E-04	618	6.67E-04	685	1.50E-04	752	1.74E-05
418	2.57E-05	485	2.60E-04	552	6.21E-04	619	6.61E-04	686	1.46E-04	753	1.71E-05
419	2.85E-05	486	2.62E-04	553	6.25E-04	620	6.52E-04	687	1.42E-04	754	1.66E-05
420	3.17E-05	487	2.68E-04	554	6.31E-04	621	6.46E-04	688	1.38E-04	755	1.58E-05
421	3.45E-05	488	2.73E-04	555	6.35E-04	622	6.39E-04	689	1.34E-04	756	1.54E-05
422	4.01E-05	489	2.78E-04	556	6.38E-04	623	6.30E-04	690	1.30E-04	757	1.50E-05
423	4.32E-05	490	2.84E-04	557	6.41E-04	624	6.22E-04	691	1.26E-04	758	1.43E-05
424	4.97E-05	491	2.91E-04	558	6.44E-04	625	6.15E-04	692	1.22E-04	759	1.38E-05
425	5.52E-05	492	2.98E-04	559	6.49E-04	626	6.11E-04	693	1.18E-04	760	1.36E-05
426	6.16E-05	493	3.06E-04	560	6.53E-04	627	6.00E-04	694	1.14E-04	761	1.32E-05
427	6.90E-05	494	3.14E-04	561	6.54E-04	628	5.93E-04	695	1.11E-04	762	1.27E-05
428	7.83E-05	495	3.24E-04	562	6.58E-04	629	5.83E-04	696	1.07E-04	763	1.24E-05
429	8.69E-05	496	3.37E-04	563	6.62E-04	630	5.75E-04	697	1.04E-04	764	1.19E-05
430	9.83E-05	497	3.44E-04	564	6.66E-04	631	5.68E-04	698	1.01E-04	765	1.15E-05
431	1.08E-04	498	3.55E-04	565	6.70E-04	632	5.58E-04	699	9.77E-05	766	1.13E-05
432	1.20E-04	499	3.67E-04	566	6.74E-04	633	5.47E-04	700	9.48E-05	767	1.09E-05
433	1.33E-04	500	3.80E-04	567	6.79E-04	634	5.38E-04	701	9.18E-05	768	1.05E-05
434	1.51E-04	501	3.89E-04	568	6.84E-04	635	5.28E-04	702	8.88E-05	769	1.03E-05
435	1.69E-04	502	3.98E-04	569	6.87E-04	636	5.20E-04	703	8.55E-05	770	1.01E-05
436	1.88E-04	503	4.10E-04	570	6.90E-04	637	5.14E-04	704	8.34E-05	771	9.70E-06
437	2.09E-04	504	4.17E-04	571	6.94E-04	638	5.03E-04	705	8.12E-05	772	9.20E-06
438	2.34E-04	505	4.28E-04	572	6.95E-04	639	4.91E-04	706	7.81E-05	773	9.20E-06
439	2.62E-04	506	4.37E-04	573	7.01E-04	640	4.83E-04	707	7.56E-05	774	8.70E-06
440	2.98E-04	507	4.47E-04	574	7.03E-04	641	4.69E-04	708	7.32E-05	775	8.50E-06
441	3.34E-04	508	4.52E-04	575	7.06E-04	642	4.61E-04	709	7.10E-05	776	8.30E-06
442	3.77E-04	509	4.62E-04	576	7.09E-04	643	4.52E-04	710	6.76E-05	777	7.80E-06
443	4.27E-04	510	4.72E-04	577	7.12E-04	644	4.43E-04	711	6.64E-05	778	7.80E-06
444	4.79E-04	511	4.77E-04	578	7.17E-04	645	4.34E-04	712	6.43E-05	779	7.80E-06
445	5.43E-04	512	4.84E-04	579	7.19E-04	646	4.26E-04	713	6.20E-05	780	7.80E-06
446	6.12E-04	513	4.90E-04	580	7.24E-04	647	4.18E-04	714	6.01E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	RPLED2X2 @18W4000K	<b>Sample ID</b>	240306002-S1
<b>Operate time (Min.)</b>	30	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	25.0	<b>Humidity (%RH)</b>	44.3

<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>	277.0	60	0.071	18.4	0.930
<b>NON-WORST CASE</b>	120.0	60	0.148	17.7	0.995

#### 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		( $0^{\circ}$ - $60^{\circ}$ )
2578	166.2	166.1	117.7	117.6	140.1	76.7%

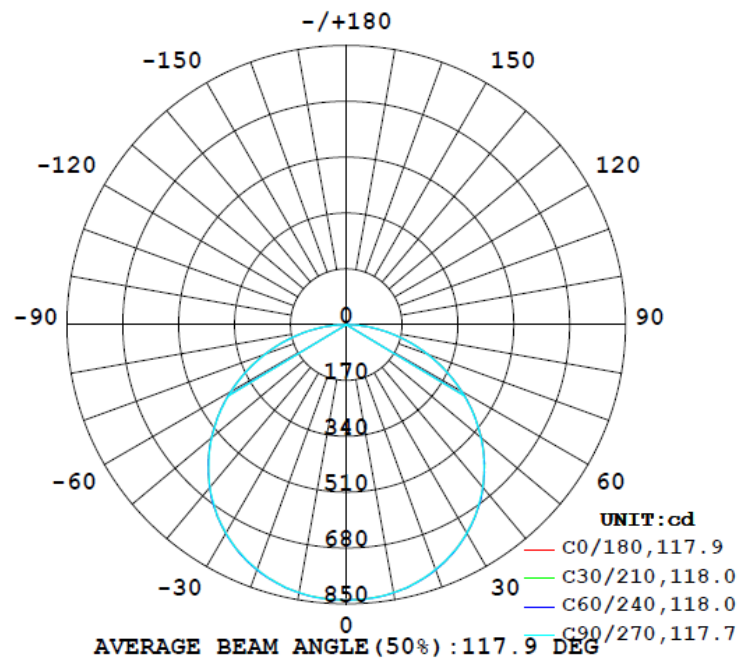
UGR		Spacing Criterion	
Crosswise	Endwise	( $0^{\circ}$ - $180^{\circ}$ )	( $90^{\circ}$ - $270^{\circ}$ )
20.5	20.5	1.30	1.30



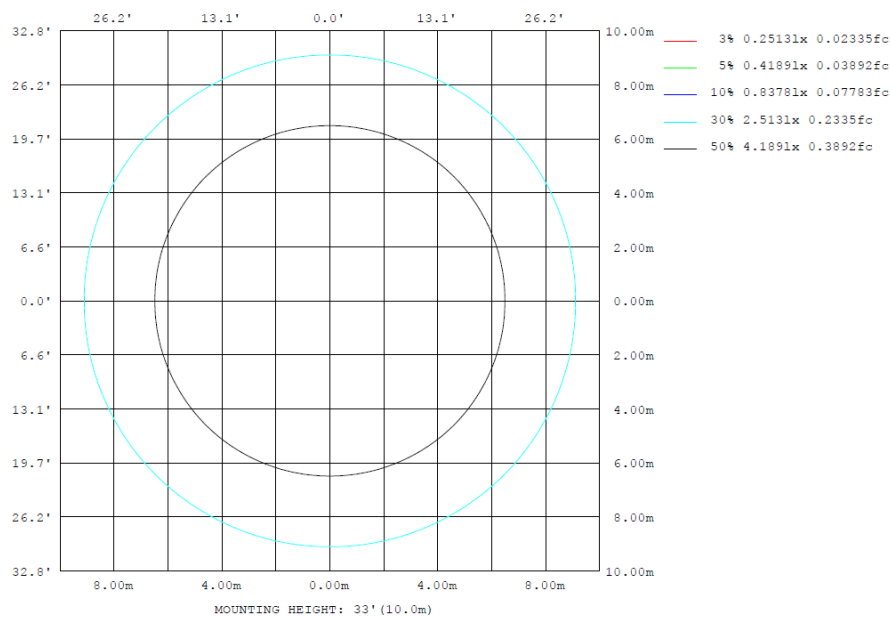
## 4.2 Goniophotometer Test

### 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	θlum, lamp
10	830.1	828.7	828.0	828.7	830.1	828.7	828.0	828.7	0- 10	79.58	79.58	3.09, 3.09
20	792.7	794.4	792.1	794.4	792.7	794.4	792.1	794.4	10- 20	230.0	309.6	12, 12
30	732.8	733.9	732.5	733.9	732.8	733.9	732.5	733.9	20- 30	353.7	663.3	25.7, 25.7
40	646.6	647.7	645.4	647.7	646.6	647.7	645.4	647.7	30- 40	433.9	1097	42.6, 42.6
50	536.1	536.4	533.9	536.4	536.1	536.4	533.9	536.4	40- 50	458.1	1555	60.3, 60.3
60	405.3	405.5	404.0	405.5	405.3	405.5	404.0	405.5	50- 60	422.2	1978	76.7, 76.7
70	264.0	264.3	262.2	264.3	264.0	264.3	262.2	264.3	60- 70	331.6	2309	89.6, 89.6
80	123.1	123.8	122.4	123.8	123.1	123.8	122.4	123.8	70- 80	203.5	2513	97.5, 97.5
90	0	0	0	0	0	0	0	0	80- 90	65.12	2578	100, 100
100	0	0	0	0	0	0	0	0	90-100	0	2578	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	2578	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	2578	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	2578	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	2578	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	2578	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	2578	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	2578	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	2578	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	79.58	0-10	79.58	3.09%
10-20	230.05	0-20	309.63	12.01%
20-30	353.72	0-30	663.35	25.73%
30-40	433.90	0-40	1097.25	42.57%
40-50	458.10	0-50	1555.35	60.34%
50-60	422.19	0-60	1977.54	76.71%
60-70	331.65	0-70	2309.19	89.58%
70-80	203.51	0-80	2512.70	97.47%
80-90	65.12	0-90	2577.82	100.00%
90-100	0.00	0-100	2577.82	100.00%
100-110	0.00	0-110	2577.82	100.00%
110-120	0.00	0-120	2577.82	100.00%
120-130	0.00	0-130	2577.82	100.00%
130-140	0.00	0-140	2577.82	100.00%
140-150	0.00	0-150	2577.82	100.00%
150-160	0.00	0-160	2577.82	100.00%
160-170	0.00	0-170	2577.82	100.00%
170-180	0.00	0-180	2577.82	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	15.8	14.7	16.2	16.5
	4H	15.1	16.6	15.5	16.9	17.3	15.1	16.5	15.5	16.9	17.2
	6H	15.7	17.1	16.1	17.4	17.8	15.7	17.0	16.1	17.4	17.8
	8H	16.0	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	15.2	16.4	15.7	16.8	17.2
	4H	16.2	17.3	16.6	17.7	18.1	16.1	17.2	16.6	17.6	18.1
	6H	16.9	17.9	17.4	18.3	18.8	16.9	17.9	17.3	18.3	18.7
	8H	17.2	18.1	17.7	18.5	19.0	17.2	18.1	17.6	18.5	19.0
	12H	17.4	18.2	17.9	18.7	19.2	17.4	18.2	17.9	18.7	19.1
8H	4H	16.5	17.4	17.0	17.9	18.3	16.5	17.4	17.0	17.9	18.3
	6H	17.4	18.2	17.9	18.7	19.1	17.4	18.2	17.9	18.6	19.1
	8H	17.8	18.5	18.3	19.0	19.5	17.8	18.4	18.3	18.9	19.4
	12H	18.1	18.7	18.6	19.2	19.8	18.1	18.7	18.6	19.2	19.7
12H	4H	16.6	17.4	17.1	17.9	18.3	16.6	17.4	17.0	17.8	18.3
	6H	17.5	18.2	18.0	18.7	19.2	17.5	18.2	18.0	18.6	19.2
	8H	17.9	18.5	18.4	19.0	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	15.7	17.4	16.1	17.7	18.0	15.7	17.4	16.1	17.7	18.0
	3H	17.6	19.2	18.0	19.5	19.9	17.6	19.1	18.0	19.5	19.8
	4H	18.4	19.9	18.8	20.2	20.6	18.4	19.8	18.8	20.2	20.5
	6H	19.0	20.4	19.4	20.7	21.1	19.0	20.3	19.4	20.7	21.1
	8H	19.3	20.5	19.7	20.9	21.3	19.2	20.5	19.6	20.9	21.3
	12H	19.4	20.6	19.8	21.0	21.4	19.4	20.6	19.8	21.0	21.4
4H	2H	16.4	17.8	16.8	18.2	18.5	16.4	17.8	16.8	18.2	18.5
	3H	18.6	19.8	19.0	20.2	20.6	18.5	19.7	19.0	20.1	20.5
	4H	19.5	20.6	19.9	21.0	21.4	19.4	20.5	19.9	20.9	21.4
	6H	20.2	21.2	20.7	21.6	22.1	20.2	21.2	20.6	21.6	22.0
	8H	20.5	21.4	21.0	21.8	22.3	20.5	21.4	20.9	21.8	22.3
	12H	20.7	21.5	21.2	22.0	22.5	20.7	21.5	21.2	22.0	22.4
8H	4H	19.8	20.7	20.3	21.2	21.6	19.8	20.7	20.3	21.2	21.6
	6H	20.7	21.5	21.2	22.0	22.4	20.7	21.5	21.2	21.9	22.4
	8H	21.1	21.8	21.6	22.3	22.8	21.1	21.7	21.6	22.2	22.7
	12H	21.4	22.0	21.9	22.5	23.1	21.4	22.0	21.9	22.5	23.0
12H	4H	19.9	20.7	20.4	21.2	21.6	19.9	20.7	20.3	21.1	21.6
	6H	20.8	21.5	21.3	22.0	22.5	20.8	21.5	21.3	21.9	22.5
	8H	21.2	21.8	21.7	22.3	22.9	21.2	21.8	21.7	22.3	22.9

Maximum UGR = 23.1

## 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	838	838	838	838	838	836	838	836	838	838	838	838	838	838	838	838	838	836	838
5	836	836	836	837	836	836	836	836	836	837	836	836	836	836	836	837	836	836	836
10	830	828	828	829	829	828	828	828	829	829	828	828	830	828	828	829	829	828	828
15	814	815	814	814	815	815	814	815	815	814	814	815	814	815	814	814	815	815	814
20	793	794	794	794	794	794	792	794	794	794	794	794	793	794	794	794	794	794	792
25	766	768	768	769	768	766	765	766	768	769	768	768	766	768	768	769	768	766	765
30	733	734	734	734	734	733	733	733	734	734	734	734	733	734	734	734	734	733	733
35	692	693	694	694	693	693	692	693	693	694	694	693	692	693	694	694	693	693	692
40	647	648	648	648	648	647	645	647	648	648	648	648	647	648	648	648	648	647	645
45	594	593	594	595	594	594	591	594	594	595	594	593	594	593	594	595	594	594	591
50	536	536	537	536	536	535	534	535	536	536	537	536	536	536	537	536	536	535	534
55	472	474	473	473	472	472	471	472	472	473	473	474	472	474	473	473	472	472	471
60	405	405	406	406	405	405	404	405	405	406	406	405	405	405	406	406	405	405	404
65	335	336	336	336	334	335	334	335	334	336	336	336	335	336	336	336	334	335	334
70	264	264	264	264	264	263	262	263	264	264	264	264	264	264	264	264	264	263	262
75	192	193	194	193	192	192	191	192	192	193	194	193	192	193	194	193	192	192	191
80	123	124	124	124	123	123	122	123	123	124	124	124	123	124	124	124	123	123	122
85	58.2	58.7	58.8	58.9	58.9	58.6	58.2	58.6	58.9	58.9	58.8	58.7	58.2	58.7	58.8	58.9	58.9	58.6	58.2
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	836	838	838	838	838														
5	836	836	837	836	836														
10	828	829	829	828	828														
15	815	815	814	814	815														
20	794	794	794	794	794														
25	766	768	769	768	768														
30	733	734	734	734	734														
35	693	693	694	694	693														
40	647	648	648	648	648														
45	594	594	595	594	593														
50	535	536	536	537	536														
55	472	472	473	473	474														
60	405	405	406	406	405														
65	335	334	336	336	336														
70	263	264	264	264	264														
75	192	192	193	194	193														
80	123	123	124	124	124														
85	58.6	58.9	58.9	58.8	58.7														
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>	RPLED2X2 @18W4000K	<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	0.148	17.7	0.995	7.30
277.0	60	0.071	18.4	0.930	7.22

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