

## 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

2x2 Luminaires for Ambient Lighting of Interior Commercial Spaces				
Requirement Category	Test Method	Requirements		Test Value
Luminaire Output (lm) (Goniophotometer – Section 4.2)	IES LM-79-2008	1500		3300
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	138.1
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		23.9
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	8.22
			277V	14.23
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.995
			277V	0.932
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3985±275	4065
		4 steps	3985±154	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		84.6
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥0		19
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		85
Minimum Rg (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥89		96
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%		74.5%
Discomfort Glare (UGR) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	22.9
		N/A	<22	
Spacing Criterion (Goniophotometer – Section 4.2)	IES LM-79-2008	0°-180°	1.0-2.0	1.26
		90°-270°	1.0-2.0	1.32
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		0.093
(Goniophotometer – Section 4.2)		Non-Worst Case		0.197
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		23.9
(Goniophotometer – Section 4.2)		Non-Worst Case		23.5

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-01-25	C-SWISH2X2@25W4000K	240119001-S1
2	Goniophotometer Test	2024-01-25	C-SWISH2X2@25W4000K	240119001-S1
3	THD and PF Test	2024-01-25	C-SWISH2X2@25W4000K	240119001-S1

### Remark (If any)

1. The results contained in this report pertain only to the tested samples.
2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.
3. 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. C-SWISH2X2@25W4000K, 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>	C-SWISH2X2@25W4000K	<b>Sample ID</b>	240119001-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

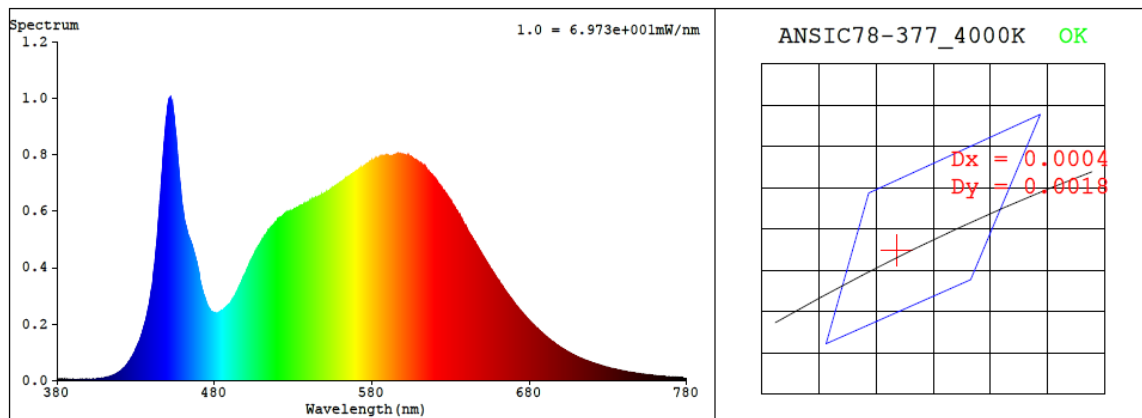
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at <math>25 \pm 1^\circ\text{C}</math>.</p> <p>The sample 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 <math>\pm 0.2</math> percent under load.</p> <p>The sample was measured using <math>4\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	0.197	23.5	0.995
277.0	60	0.093	23.9	0.932

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4065	84.6	19	0.0007	85	96	-11%

## 4.1 Integrating Sphere Test



### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.3781$   $y = 0.3768$  /  $u' = 0.2235$   $v' = 0.5012$  ( $duv=7.08e-04$ )

CCT= 4065K Prcp WL: Ld=578.4nm Purity=26.5%

Peak WL: Lp=452nm FWHM: =20.5nm Ratio:R=18.3% G=78.0% B=3.7%

Render Index: Ra = 84.6 AvgR = 78.3 TM30:Rf=85 Rg=96

EEL: 0.10045 A++ Highest

R1 =83 R2 =90 R3 =95 R4 =84 R5 =83 R6 =86 R7 =88

R8 =69 R9 =19 R10=76 R11=83 R12=61 R13=85 R14=97 R15=78

## 4.1 Integrating Sphere Test

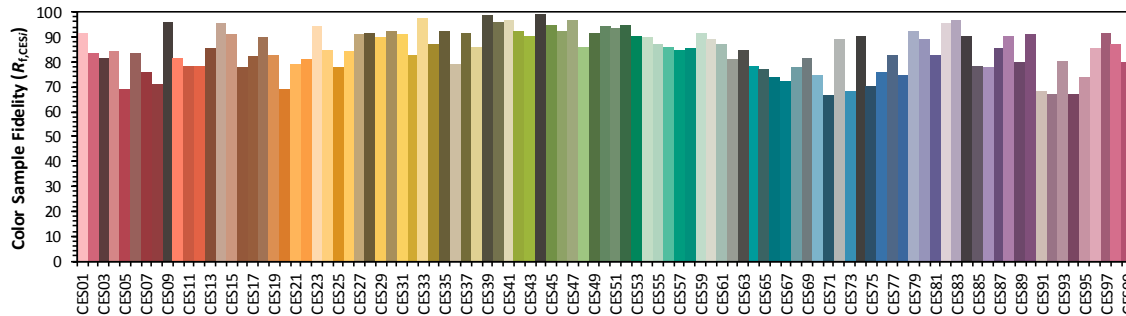
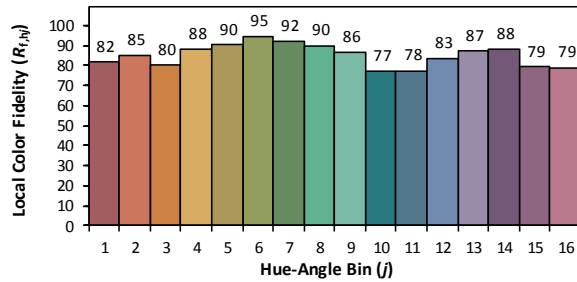
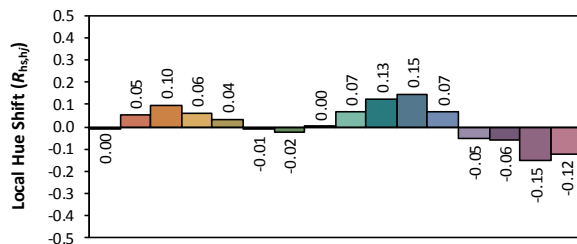
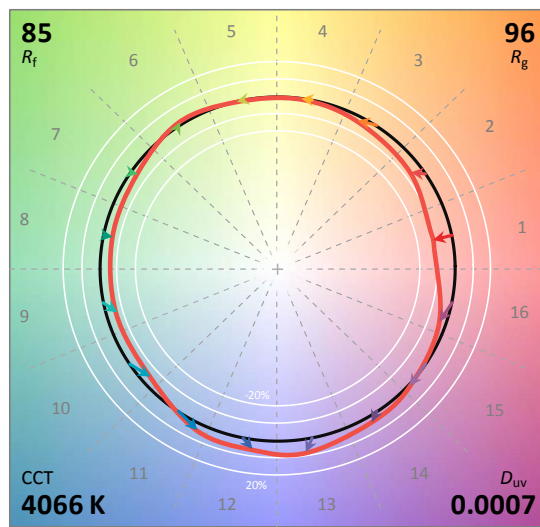
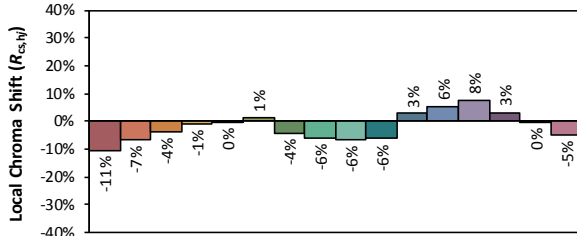
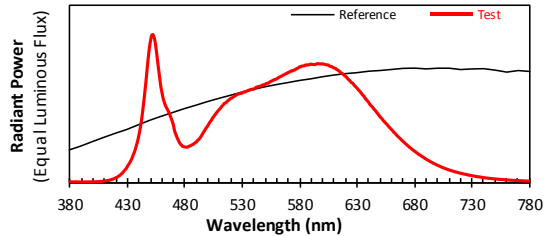
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/1/30

Model: C-SWISH2X2@25W4000K



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

$x$  0.3780  
 $y$  0.3766  
 $u'$  0.2236  
 $v'$  0.5012

CIE 13.3-1995  
(CRI)

$R_a$  85  
 $R_g$  19

## 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	6.00E-06	447	7.62E-04	514	5.31E-04	581	7.80E-04	648	4.65E-04	715	7.33E-05
381	4.50E-06	448	8.39E-04	515	5.35E-04	582	7.85E-04	649	4.56E-04	716	7.13E-05
382	4.20E-06	449	9.07E-04	516	5.41E-04	583	7.86E-04	650	4.45E-04	717	6.92E-05
383	3.50E-06	450	9.56E-04	517	5.48E-04	584	7.88E-04	651	4.37E-04	718	6.72E-05
384	3.80E-06	451	9.92E-04	518	5.55E-04	585	7.93E-04	652	4.28E-04	719	6.52E-05
385	4.90E-06	452	9.98E-04	519	5.61E-04	586	7.92E-04	653	4.17E-04	720	6.31E-05
386	4.50E-06	453	9.81E-04	520	5.68E-04	587	7.94E-04	654	4.10E-04	721	6.13E-05
387	3.70E-06	454	9.49E-04	521	5.70E-04	588	7.94E-04	655	4.01E-04	722	5.95E-05
388	3.70E-06	455	8.93E-04	522	5.77E-04	589	7.97E-04	656	3.93E-04	723	5.77E-05
389	3.00E-06	456	8.30E-04	523	5.81E-04	590	7.99E-04	657	3.84E-04	724	5.62E-05
390	4.20E-06	457	7.66E-04	524	5.86E-04	591	7.96E-04	658	3.75E-04	725	5.44E-05
391	3.10E-06	458	7.06E-04	525	5.91E-04	592	7.96E-04	659	3.66E-04	726	5.26E-05
392	3.40E-06	459	6.47E-04	526	5.95E-04	593	7.95E-04	660	3.58E-04	727	5.10E-05
393	3.70E-06	460	6.07E-04	527	5.98E-04	594	7.97E-04	661	3.51E-04	728	4.93E-05
394	3.50E-06	461	5.68E-04	528	6.01E-04	595	8.00E-04	662	3.40E-04	729	4.78E-05
395	4.20E-06	462	5.42E-04	529	6.01E-04	596	8.02E-04	663	3.34E-04	730	4.64E-05
396	4.30E-06	463	5.19E-04	530	6.04E-04	597	8.01E-04	664	3.25E-04	731	4.48E-05
397	3.90E-06	464	5.04E-04	531	6.09E-04	598	8.00E-04	665	3.16E-04	732	4.35E-05
398	4.20E-06	465	4.89E-04	532	6.11E-04	599	8.00E-04	666	3.08E-04	733	4.22E-05
399	4.70E-06	466	4.73E-04	533	6.12E-04	600	8.00E-04	667	3.01E-04	734	4.10E-05
400	5.40E-06	467	4.53E-04	534	6.17E-04	601	7.99E-04	668	2.94E-04	735	3.94E-05
401	5.50E-06	468	4.34E-04	535	6.21E-04	602	7.97E-04	669	2.86E-04	736	3.82E-05
402	5.10E-06	469	4.12E-04	536	6.21E-04	603	7.94E-04	670	2.79E-04	737	3.74E-05
403	5.80E-06	470	3.86E-04	537	6.27E-04	604	7.93E-04	671	2.71E-04	738	3.62E-05
404	5.70E-06	471	3.48E-04	538	6.28E-04	605	7.93E-04	672	2.64E-04	739	3.48E-05
405	6.30E-06	472	3.27E-04	539	6.30E-04	606	7.86E-04	673	2.58E-04	740	3.35E-05
406	7.10E-06	473	3.06E-04	540	6.30E-04	607	7.83E-04	674	2.50E-04	741	3.23E-05
407	7.50E-06	474	2.89E-04	541	6.35E-04	608	7.82E-04	675	2.44E-04	742	3.16E-05
408	8.30E-06	475	2.73E-04	542	6.42E-04	609	7.77E-04	676	2.36E-04	743	3.03E-05
409	9.30E-06	476	2.60E-04	543	6.43E-04	610	7.72E-04	677	2.31E-04	744	2.95E-05
410	1.00E-05	477	2.53E-04	544	6.48E-04	611	7.71E-04	678	2.24E-04	745	2.83E-05
411	1.12E-05	478	2.44E-04	545	6.47E-04	612	7.64E-04	679	2.19E-04	746	2.78E-05
412	1.26E-05	479	2.42E-04	546	6.51E-04	613	7.59E-04	680	2.12E-04	747	2.71E-05
413	1.35E-05	480	2.39E-04	547	6.54E-04	614	7.55E-04	681	2.07E-04	748	2.59E-05
414	1.54E-05	481	2.39E-04	548	6.59E-04	615	7.48E-04	682	2.01E-04	749	2.53E-05
415	1.73E-05	482	2.38E-04	549	6.59E-04	616	7.40E-04	683	1.95E-04	750	2.44E-05
416	2.03E-05	483	2.42E-04	550	6.62E-04	617	7.36E-04	684	1.89E-04	751	2.37E-05
417	2.21E-05	484	2.46E-04	551	6.68E-04	618	7.30E-04	685	1.85E-04	752	2.30E-05
418	2.57E-05	485	2.48E-04	552	6.70E-04	619	7.23E-04	686	1.80E-04	753	2.22E-05
419	2.88E-05	486	2.54E-04	553	6.72E-04	620	7.16E-04	687	1.75E-04	754	2.14E-05
420	3.29E-05	487	2.57E-04	554	6.78E-04	621	7.10E-04	688	1.69E-04	755	2.06E-05
421	3.61E-05	488	2.62E-04	555	6.83E-04	622	7.00E-04	689	1.64E-04	756	2.02E-05
422	4.24E-05	489	2.69E-04	556	6.86E-04	623	6.92E-04	690	1.59E-04	757	1.96E-05
423	4.69E-05	490	2.73E-04	557	6.90E-04	624	6.86E-04	691	1.54E-04	758	1.93E-05
424	5.39E-05	491	2.84E-04	558	6.94E-04	625	6.75E-04	692	1.50E-04	759	1.85E-05
425	6.10E-05	492	2.90E-04	559	6.96E-04	626	6.72E-04	693	1.46E-04	760	1.78E-05
426	6.89E-05	493	2.99E-04	560	6.99E-04	627	6.63E-04	694	1.41E-04	761	1.73E-05
427	7.81E-05	494	3.11E-04	561	7.04E-04	628	6.52E-04	695	1.37E-04	762	1.71E-05
428	8.70E-05	495	3.23E-04	562	7.09E-04	629	6.45E-04	696	1.33E-04	763	1.62E-05
429	9.69E-05	496	3.36E-04	563	7.14E-04	630	6.37E-04	697	1.28E-04	764	1.56E-05
430	1.11E-04	497	3.48E-04	564	7.17E-04	631	6.27E-04	698	1.25E-04	765	1.53E-05
431	1.22E-04	498	3.62E-04	565	7.21E-04	632	6.20E-04	699	1.21E-04	766	1.47E-05
432	1.35E-04	499	3.73E-04	566	7.26E-04	633	6.10E-04	700	1.17E-04	767	1.44E-05
433	1.50E-04	500	3.83E-04	567	7.30E-04	634	6.01E-04	701	1.14E-04	768	1.39E-05
434	1.67E-04	501	3.97E-04	568	7.34E-04	635	5.90E-04	702	1.10E-04	769	1.34E-05
435	1.88E-04	502	4.10E-04	569	7.37E-04	636	5.84E-04	703	1.07E-04	770	1.31E-05
436	2.07E-04	503	4.19E-04	570	7.42E-04	637	5.70E-04	704	1.03E-04	771	1.26E-05
437	2.31E-04	504	4.33E-04	571	7.45E-04	638	5.61E-04	705	1.00E-04	772	1.22E-05
438	2.58E-04	505	4.43E-04	572	7.50E-04	639	5.51E-04	706	9.71E-05	773	1.19E-05
439	2.88E-04	506	4.55E-04	573	7.54E-04	640	5.44E-04	707	9.41E-05	774	1.14E-05
440	3.25E-04	507	4.64E-04	574	7.53E-04	641	5.30E-04	708	9.12E-05	775	1.10E-05
441	3.65E-04	508	4.75E-04	575	7.59E-04	642	5.21E-04	709	8.83E-05	776	1.08E-05
442	4.12E-04	509	4.84E-04	576	7.60E-04	643	5.13E-04	710	8.57E-05	777	1.05E-05
443	4.71E-04	510	4.93E-04	577	7.67E-04	644	5.04E-04	711	8.28E-05	778	1.03E-05
444	5.37E-04	511	5.02E-04	578	7.70E-04	645	4.94E-04	712	8.03E-05	779	1.03E-05
445	6.07E-04	512	5.13E-04	579	7.74E-04	646	4.86E-04	713	7.85E-05	780	1.03E-05
446	6.81E-04	513	5.20E-04	580	7.81E-04	647	4.75E-04	714	7.61E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	C-SWISH2X2@25W4000K	<b>Sample ID</b>	240119001-S1
<b>Operate time (Min.)</b>	30	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	25.0	<b>Humidity (%RH)</b>	42.1

Test Method
<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	0.093	23.9	0.932
<b>NON-WORST CASE</b>	120.0	60	0.197	23.5	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°-60°)
3300	160.9	170.0	111.4	130.8	138.1	74.5%

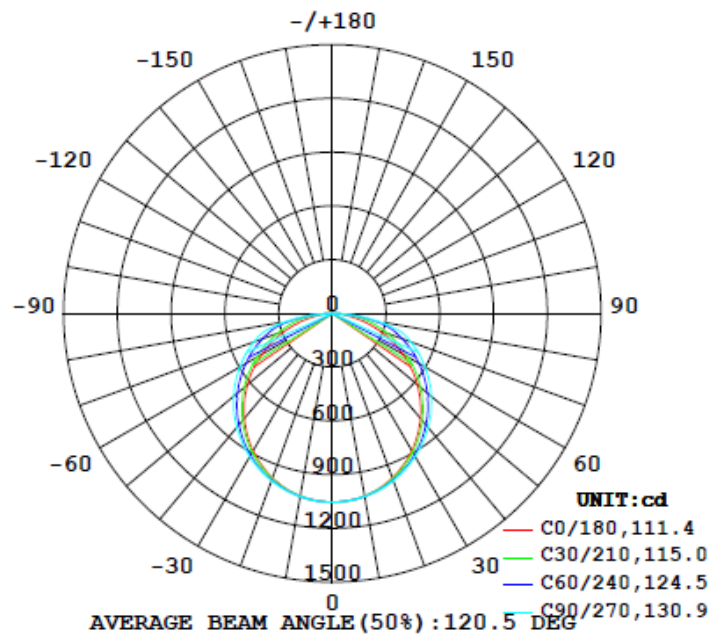
UGR		Spacing Criterion	
Crosswise	Endwise	(0°-180°)	(90°-270°)
19.7	22.9	1.26	1.32



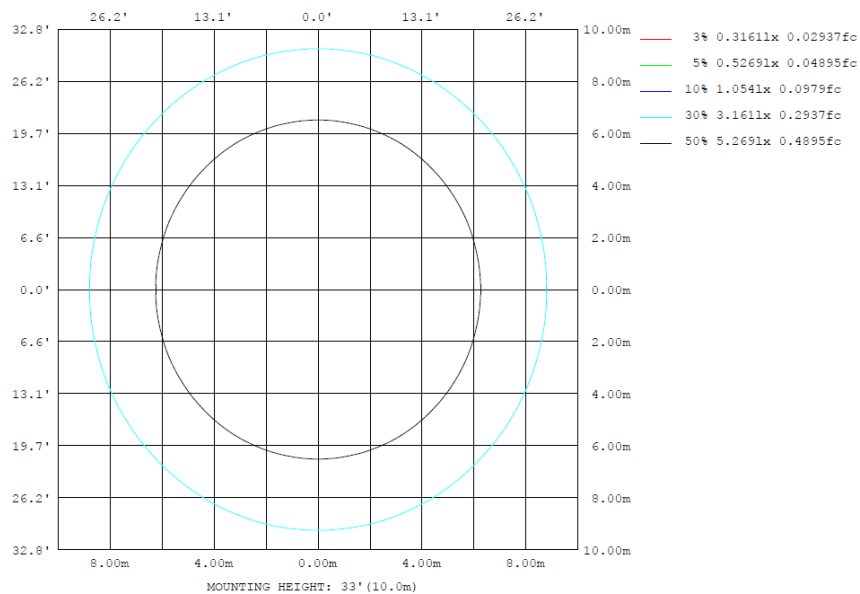
## 4.2 Goniophotometer Test

### 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	1035	1036	1039	1036	1035	1036	1039	1036	0- 10	99.74	99.74	3.02, 3.02
20	977.4	986.5	993.8	986.5	977.4	986.5	993.8	986.5	10- 20	286.7	386.4	11.7, 11.7
30	886.1	904.7	923.3	904.7	886.1	904.7	923.3	904.7	20- 30	437.5	823.9	25, 25
40	764.9	795.4	830.2	795.4	764.9	795.4	830.2	795.4	30- 40	534.3	1358	41.2, 41.2
50	619.3	665.6	719.6	665.6	619.3	665.6	719.6	665.6	40- 50	566.8	1925	58.3, 58.3
60	453.5	521.9	596.7	521.9	453.5	521.9	596.7	521.9	50- 60	534.0	2459	74.5, 74.5
70	275.5	371.4	466.5	371.4	275.5	371.4	466.5	371.4	60- 70	443.2	2902	88, 88
80	104.7	210.5	261.7	210.5	104.7	210.5	261.7	210.5	70- 80	305.5	3208	97.2, 97.2
90	0	0	0	0	0	0	0	0	80- 90	91.80	3300	100, 100
100	0	0	0	0	0	0	0	0	90-100	0	3300	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	3300	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	3300	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	3300	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	3300	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	3300	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	3300	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	3300	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	3300	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	99.74	0-10	99.74	3.02%
10-20	286.69	0-20	386.43	11.71%
20-30	437.52	0-30	823.95	24.97%
30-40	534.28	0-40	1358.23	41.16%
40-50	566.83	0-50	1925.06	58.34%
50-60	534.02	0-60	2459.08	74.53%
60-70	443.24	0-70	2902.32	87.96%
70-80	305.49	0-80	3207.81	97.22%
80-90	91.80	0-90	3299.61	100.00%
90-100	0.00	0-100	3299.61	100.00%
100-110	0.00	0-110	3299.61	100.00%
110-120	0.00	0-120	3299.61	100.00%
120-130	0.00	0-130	3299.61	100.00%
130-140	0.00	0-140	3299.61	100.00%
140-150	0.00	0-150	3299.61	100.00%
150-160	0.00	0-160	3299.61	100.00%
160-170	0.00	0-170	3299.61	100.00%
170-180	0.00	0-180	3299.61	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											
X=2H	Y=2H	UGR Viewed Crosswise					UGR Viewed Endwise				
		11.1	12.8	11.4	13.1	13.4	12.4	14.1	12.7	14.4	14.7
	3H	12.8	14.4	13.2	14.7	15.1	14.9	16.5	15.3	16.8	17.1
	4H	13.5	14.9	13.9	15.3	15.6	16.1	17.6	16.5	17.9	18.3
	6H	13.9	15.3	14.3	15.6	16.0	17.1	18.5	17.5	18.8	19.2
	8H	14.0	15.3	14.5	15.7	16.1	17.4	18.7	17.9	19.1	19.5
	12H	14.1	15.3	14.5	15.7	16.2	17.6	18.9	18.1	19.3	19.7
4H	2H	12.0	13.4	12.4	13.8	14.2	13.0	14.4	13.4	14.8	15.1
	3H	14.0	15.2	14.4	15.6	16.0	15.8	17.0	16.2	17.4	17.8
	4H	14.8	15.9	15.2	16.3	16.8	17.2	18.3	17.6	18.7	19.1
	6H	15.4	16.4	15.8	16.8	17.2	18.3	19.3	18.8	19.8	20.2
	8H	15.5	16.5	16.0	16.9	17.4	18.7	19.7	19.2	20.1	20.6
	12H	15.6	16.5	16.1	16.9	17.4	19.0	19.8	19.5	20.3	20.8
8H	4H	15.5	16.4	15.9	16.9	17.3	17.5	18.4	18.0	18.9	19.3
	6H	16.3	17.0	16.8	17.5	18.0	18.8	19.6	19.3	20.1	20.6
	8H	16.5	17.2	17.0	17.7	18.2	19.3	20.0	19.8	20.5	21.0
	12H	16.7	17.3	17.2	17.8	18.4	19.7	20.3	20.2	20.8	21.3
12H	4H	15.7	16.5	16.1	17.0	17.4	17.6	18.4	18.0	18.9	19.3
	6H	16.5	17.2	17.0	17.7	18.2	18.9	19.6	19.4	20.1	20.6
	8H	16.8	17.5	17.3	17.9	18.5	19.4	20.1	20.0	20.6	21.1

Maximum UGR = 21.3

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											
X=2H	Y=2H	UGR Viewed Crosswise					UGR Viewed Endwise				
		15.3	17.0	15.6	17.3	17.6	16.6	18.3	16.9	18.6	18.9
	3H	17.0	18.6	17.4	18.9	19.3	19.1	20.7	19.5	21.0	21.3
	4H	17.7	19.1	18.1	19.5	19.8	20.3	21.8	20.7	22.1	22.5
	6H	18.1	19.5	18.5	19.8	20.2	21.3	22.7	21.7	23.0	23.4
	8H	18.2	19.5	18.7	19.9	20.3	21.6	22.9	22.1	23.3	23.7
	12H	18.3	19.5	18.7	19.9	20.4	21.8	23.1	22.3	23.5	23.9
4H	2H	16.2	17.6	16.6	18.0	18.4	17.2	18.6	17.6	19.0	19.3
	3H	18.2	19.4	18.6	19.8	20.2	20.0	21.2	20.4	21.6	22.0
	4H	19.0	20.1	19.4	20.5	21.0	21.4	22.5	21.8	22.9	23.3
	6H	19.6	20.6	20.0	21.0	21.4	22.5	23.5	23.0	24.0	24.4
	8H	19.7	20.7	20.2	21.1	21.6	22.9	23.9	23.4	24.3	24.8
	12H	19.8	20.7	20.3	21.1	21.6	23.2	24.0	23.7	24.5	25.0
8H	4H	19.7	20.6	20.1	21.1	21.5	21.7	22.6	22.2	23.1	23.5
	6H	20.5	21.2	21.0	21.7	22.2	23.0	23.8	23.5	24.3	24.8
	8H	20.7	21.4	21.2	21.9	22.4	23.5	24.2	24.0	24.7	25.2
	12H	20.9	21.5	21.4	22.0	22.6	23.9	24.5	24.4	25.0	25.5
12H	4H	19.9	20.7	20.3	21.2	21.6	21.8	22.6	22.2	23.1	23.5
	6H	20.7	21.4	21.2	21.9	22.4	23.1	23.8	23.6	24.3	24.8
	8H	21.0	21.7	21.5	22.1	22.7	23.6	24.3	24.2	24.8	25.3

Maximum UGR = 25.5

## 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	1054	1053	1054	1053	1053	1053	1053	1053	1053	1053	1054	1053	1054	1053	1054	1053	1053	1053	1053
5	1049	1048	1050	1050	1049	1049	1049	1049	1049	1050	1050	1048	1049	1048	1050	1050	1049	1049	1049
10	1035	1034	1037	1036	1038	1039	1039	1039	1038	1036	1037	1034	1035	1034	1037	1036	1038	1039	1039
15	1011	1011	1015	1016	1019	1019	1019	1019	1019	1016	1015	1011	1011	1011	1015	1016	1019	1019	1019
20	977	978	982	986	990	993	994	993	990	986	982	978	977	978	982	986	990	993	994
25	935	938	943	949	957	960	962	960	957	949	943	938	935	938	943	949	957	960	962
30	886	888	896	905	915	920	923	920	915	905	896	888	886	888	896	905	915	920	923
35	829	832	841	854	867	875	879	875	867	854	841	832	829	832	841	854	867	875	879
40	765	768	780	795	813	826	830	826	813	795	780	768	765	768	780	795	813	826	830
45	694	699	713	733	755	771	777	771	755	733	713	699	694	699	713	733	755	771	777
50	619	625	642	666	693	713	720	713	693	666	642	625	619	625	642	666	693	713	720
55	539	546	566	595	626	650	660	650	626	595	566	546	539	546	566	595	626	650	660
60	454	462	488	522	558	586	597	586	558	522	488	462	454	462	488	522	558	586	597
65	366	376	407	447	488	519	532	519	488	447	407	376	366	376	407	447	488	519	532
70	276	290	326	371	416	451	467	451	416	371	326	290	276	290	326	371	416	451	467
75	187	204	246	296	343	381	398	381	343	296	246	204	187	204	246	296	343	381	398
80	105	125	168	211	234	252	262	252	234	211	168	125	105	125	168	211	234	252	262
85	38.0	50.6	75.0	87.9	95.4	101	105	101	95.4	87.9	75.0	50.6	38.0	50.6	75.0	87.9	95.4	101	105
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	1053	1053	1053	1054	1053														
5	1049	1049	1050	1050	1048														
10	1039	1038	1036	1037	1034														
15	1019	1019	1016	1015	1011														
20	993	990	986	982	978														
25	960	957	949	943	938														
30	920	915	905	896	888														
35	875	867	854	841	832														
40	826	813	795	780	768														
45	771	755	733	713	699														
50	713	693	666	642	625														
55	650	626	595	566	546														
60	586	558	522	488	462														
65	519	488	447	407	376														
70	451	416	371	326	290														
75	381	343	296	246	204														
80	252	234	211	168	125														
85	101	95.4	87.9	75.0	50.6														
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>	C-SWISH2X2@25W4000K	<b>Sample ID</b>	240119001-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	0.197	23.5	0.995	8.22
277.0	60	0.093	23.9	0.932	14.23

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