

## 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

1x4 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		3280
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	131.7
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		24.9
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	7.41
			277V	13.88
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.997
			277V	0.974
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3465±245	3409
		4 steps	3465±124	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		83.9
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥0		15
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		97
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%		78.1%
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	1.26
		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		0.092
(Goniophotometer – Section 4.2)		Non-Worst Case		0.207
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		24.9
(Goniophotometer – Section 4.2)		Non-Worst Case		24.8

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-01-26	C-SWISH1X4@25W3500K	240119003-S1
2	Goniophotometer Test	2024-01-26	C-SWISH1X4@25W3500K	240119003-S1
3	THD and PF Test	2024-01-26	C-SWISH1X4@25W3500K	240119003-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-SWISH1X4@25W3500K, 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-SWISH1X4@25W3500K	<b>Sample ID</b>	240119003-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

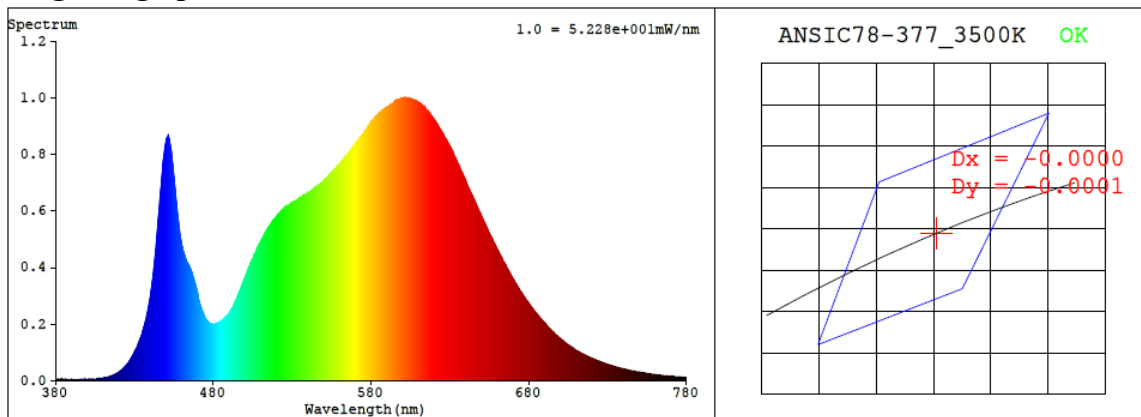
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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 4π 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	0.207	24.8	0.997
277.0	60	0.092	24.9	0.974

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
3409	83.9	15	-0.0001	85	97	-11%

#### 4.1 Integrating Sphere Test



#### Colorimetric Parameters

Chromaticity Coordinate:  $x = 0.4105$   $y = 0.3932$  /  $u' = 0.2381$   $v' = 0.5131$  ( $duv = -1.85e-05$ )

CCT= 3409K Prcp WL: Ld=581.2nm Purity=41.2%

Peak WL: Lp=602nm FWHM: =146.0nm Ratio: R=20.9% G=76.4% B=2.8%

Render Index: Ra = 83.9 AvgR = 77.8 TM30: Rf=85 Rg=97

EEI: 0.12171 A+

R1 =83 R2 =90 R3 =95 R4 =83 R5 =82 R6 =87 R7 =86

R8 =65 R9 =15 R10=76 R11=83 R12=64 R13=84 R14=97 R15=76

## 4.1 Integrating Sphere Test

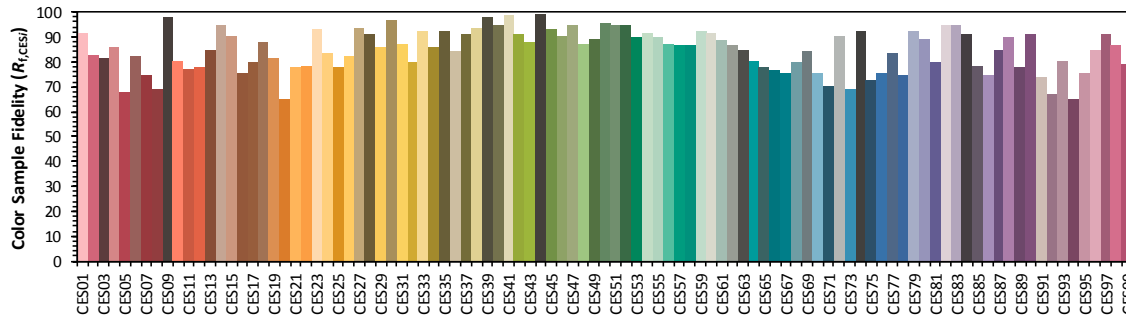
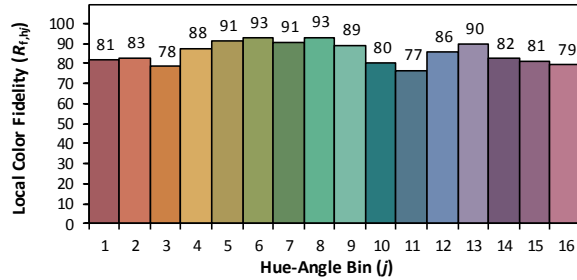
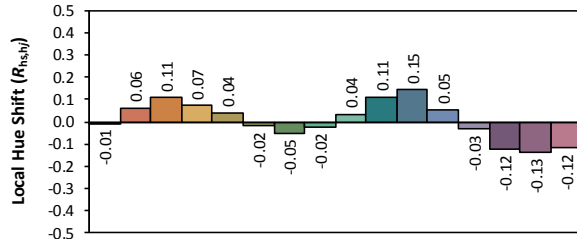
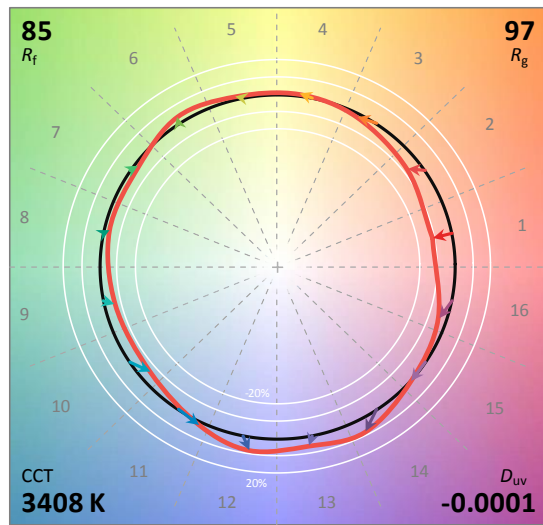
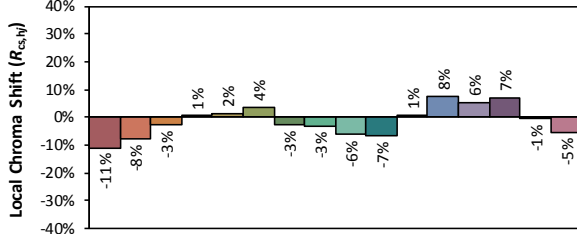
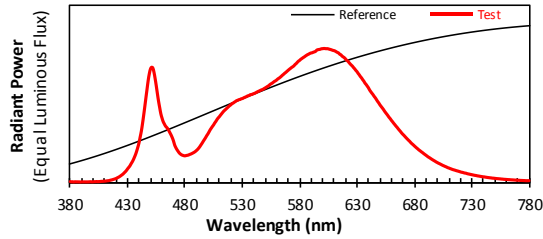
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/1/29

Model: C-SWISH1X4@25W3500K



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

$x$  0.4105

$y$  0.3931

$u'$  0.2381

$v'$  0.5130

CIE 13.3-1995  
(CRI)

$R_a$  84

$R_g$  15

## 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	5.90E-06	447	6.98E-04	514	5.33E-04	581	9.20E-04	648	6.05E-04	715	9.20E-05
381	3.70E-06	448	7.63E-04	515	5.41E-04	582	9.25E-04	649	5.93E-04	716	8.92E-05
382	4.50E-06	449	8.13E-04	516	5.49E-04	583	9.32E-04	650	5.79E-04	717	8.64E-05
383	2.40E-06	450	8.48E-04	517	5.57E-04	584	9.37E-04	651	5.68E-04	718	8.43E-05
384	4.20E-06	451	8.60E-04	518	5.65E-04	585	9.43E-04	652	5.57E-04	719	8.16E-05
385	3.80E-06	452	8.55E-04	519	5.73E-04	586	9.49E-04	653	5.46E-04	720	7.89E-05
386	3.80E-06	453	8.23E-04	520	5.79E-04	587	9.54E-04	654	5.32E-04	721	7.58E-05
387	3.50E-06	454	7.76E-04	521	5.87E-04	588	9.58E-04	655	5.21E-04	722	7.46E-05
388	3.50E-06	455	7.22E-04	522	5.92E-04	589	9.64E-04	656	5.10E-04	723	7.19E-05
389	2.20E-06	456	6.62E-04	523	5.99E-04	590	9.67E-04	657	4.98E-04	724	6.96E-05
390	4.30E-06	457	6.06E-04	524	6.04E-04	591	9.68E-04	658	4.86E-04	725	6.83E-05
391	3.10E-06	458	5.58E-04	525	6.10E-04	592	9.72E-04	659	4.76E-04	726	6.53E-05
392	3.60E-06	459	5.12E-04	526	6.13E-04	593	9.75E-04	660	4.63E-04	727	6.31E-05
393	3.30E-06	460	4.81E-04	527	6.18E-04	594	9.79E-04	661	4.53E-04	728	6.14E-05
394	3.30E-06	461	4.54E-04	528	6.19E-04	595	9.88E-04	662	4.42E-04	729	5.93E-05
395	3.30E-06	462	4.37E-04	529	6.24E-04	596	9.91E-04	663	4.31E-04	730	5.74E-05
396	3.60E-06	463	4.21E-04	530	6.26E-04	597	9.93E-04	664	4.20E-04	731	5.56E-05
397	4.30E-06	464	4.11E-04	531	6.30E-04	598	9.95E-04	665	4.11E-04	732	5.37E-05
398	4.60E-06	465	4.01E-04	532	6.35E-04	599	9.98E-04	666	4.00E-04	733	5.20E-05
399	3.50E-06	466	3.86E-04	533	6.38E-04	600	9.99E-04	667	3.89E-04	734	5.07E-05
400	3.90E-06	467	3.69E-04	534	6.43E-04	601	1.00E-03	668	3.79E-04	735	4.86E-05
401	5.00E-06	468	3.53E-04	535	6.47E-04	602	1.00E-03	669	3.68E-04	736	4.73E-05
402	5.10E-06	469	3.33E-04	536	6.49E-04	603	9.98E-04	670	3.59E-04	737	4.58E-05
403	5.90E-06	470	3.10E-04	537	6.55E-04	604	9.99E-04	671	3.51E-04	738	4.42E-05
404	5.00E-06	471	2.80E-04	538	6.56E-04	605	9.97E-04	672	3.41E-04	739	4.28E-05
405	5.70E-06	472	2.61E-04	539	6.59E-04	606	9.95E-04	673	3.32E-04	740	4.14E-05
406	6.20E-06	473	2.45E-04	540	6.63E-04	607	9.92E-04	674	3.23E-04	741	4.05E-05
407	7.40E-06	474	2.33E-04	541	6.66E-04	608	9.89E-04	675	3.14E-04	742	3.90E-05
408	7.70E-06	475	2.20E-04	542	6.71E-04	609	9.86E-04	676	3.06E-04	743	3.76E-05
409	8.20E-06	476	2.12E-04	543	6.75E-04	610	9.84E-04	677	2.96E-04	744	3.63E-05
410	8.90E-06	477	2.06E-04	544	6.80E-04	611	9.81E-04	678	2.88E-04	745	3.52E-05
411	9.80E-06	478	2.02E-04	545	6.84E-04	612	9.75E-04	679	2.81E-04	746	3.40E-05
412	1.12E-05	479	2.00E-04	546	6.88E-04	613	9.71E-04	680	2.73E-04	747	3.32E-05
413	1.21E-05	480	1.98E-04	547	6.92E-04	614	9.66E-04	681	2.65E-04	748	3.16E-05
414	1.34E-05	481	2.00E-04	548	6.95E-04	615	9.57E-04	682	2.57E-04	749	3.11E-05
415	1.61E-05	482	2.02E-04	549	7.01E-04	616	9.53E-04	683	2.50E-04	750	3.00E-05
416	1.79E-05	483	2.04E-04	550	7.05E-04	617	9.43E-04	684	2.42E-04	751	2.90E-05
417	2.04E-05	484	2.08E-04	551	7.11E-04	618	9.37E-04	685	2.36E-04	752	2.79E-05
418	2.31E-05	485	2.11E-04	552	7.17E-04	619	9.31E-04	686	2.29E-04	753	2.74E-05
419	2.58E-05	486	2.15E-04	553	7.22E-04	620	9.22E-04	687	2.23E-04	754	2.64E-05
420	2.92E-05	487	2.20E-04	554	7.30E-04	621	9.12E-04	688	2.16E-04	755	2.58E-05
421	3.38E-05	488	2.24E-04	555	7.36E-04	622	9.06E-04	689	2.10E-04	756	2.47E-05
422	3.80E-05	489	2.30E-04	556	7.41E-04	623	8.96E-04	690	2.04E-04	757	2.42E-05
423	4.30E-05	490	2.38E-04	557	7.47E-04	624	8.86E-04	691	1.97E-04	758	2.29E-05
424	4.90E-05	491	2.46E-04	558	7.54E-04	625	8.77E-04	692	1.91E-04	759	2.25E-05
425	5.54E-05	492	2.56E-04	559	7.59E-04	626	8.69E-04	693	1.85E-04	760	2.17E-05
426	6.19E-05	493	2.67E-04	560	7.65E-04	627	8.58E-04	694	1.80E-04	761	2.11E-05
427	7.07E-05	494	2.80E-04	561	7.73E-04	628	8.48E-04	695	1.74E-04	762	2.04E-05
428	7.91E-05	495	2.93E-04	562	7.78E-04	629	8.37E-04	696	1.69E-04	763	2.00E-05
429	8.90E-05	496	3.07E-04	563	7.85E-04	630	8.27E-04	697	1.63E-04	764	1.91E-05
430	1.01E-04	497	3.20E-04	564	7.92E-04	631	8.14E-04	698	1.58E-04	765	1.86E-05
431	1.12E-04	498	3.34E-04	565	8.00E-04	632	8.03E-04	699	1.53E-04	766	1.81E-05
432	1.23E-04	499	3.49E-04	566	8.07E-04	633	7.90E-04	700	1.48E-04	767	1.75E-05
433	1.38E-04	500	3.62E-04	567	8.15E-04	634	7.80E-04	701	1.43E-04	768	1.69E-05
434	1.52E-04	501	3.77E-04	568	8.22E-04	635	7.67E-04	702	1.39E-04	769	1.62E-05
435	1.69E-04	502	3.92E-04	569	8.30E-04	636	7.56E-04	703	1.35E-04	770	1.57E-05
436	1.88E-04	503	4.05E-04	570	8.37E-04	637	7.41E-04	704	1.30E-04	771	1.57E-05
437	2.10E-04	504	4.18E-04	571	8.45E-04	638	7.31E-04	705	1.26E-04	772	1.48E-05
438	2.35E-04	505	4.29E-04	572	8.51E-04	639	7.19E-04	706	1.22E-04	773	1.43E-05
439	2.64E-04	506	4.44E-04	573	8.58E-04	640	7.06E-04	707	1.18E-04	774	1.40E-05
440	2.97E-04	507	4.56E-04	574	8.64E-04	641	6.90E-04	708	1.15E-04	775	1.35E-05
441	3.40E-04	508	4.70E-04	575	8.70E-04	642	6.78E-04	709	1.10E-04	776	1.33E-05
442	3.82E-04	509	4.81E-04	576	8.80E-04	643	6.66E-04	710	1.08E-04	777	1.25E-05
443	4.38E-04	510	4.91E-04	577	8.87E-04	644	6.55E-04	711	1.04E-04	778	1.24E-05
444	5.00E-04	511	5.02E-04	578	8.97E-04	645	6.42E-04	712	1.01E-04	779	1.25E-05
445	5.65E-04	512	5.13E-04	579	9.05E-04	646	6.32E-04	713	9.73E-05	780	1.25E-05
446	6.33E-04	513	5.23E-04	580	9.11E-04	647	6.18E-04	714	9.43E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	C-SWISH1X4@25W3500K	<b>Sample ID</b>	240119003-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	0.092	24.9	0.974
<b>NON-WORST CASE</b>	120.0	60	0.207	24.8	0.997

#### 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°)
3280	161.4	163.6	111.5	117.0	131.7	78.1%

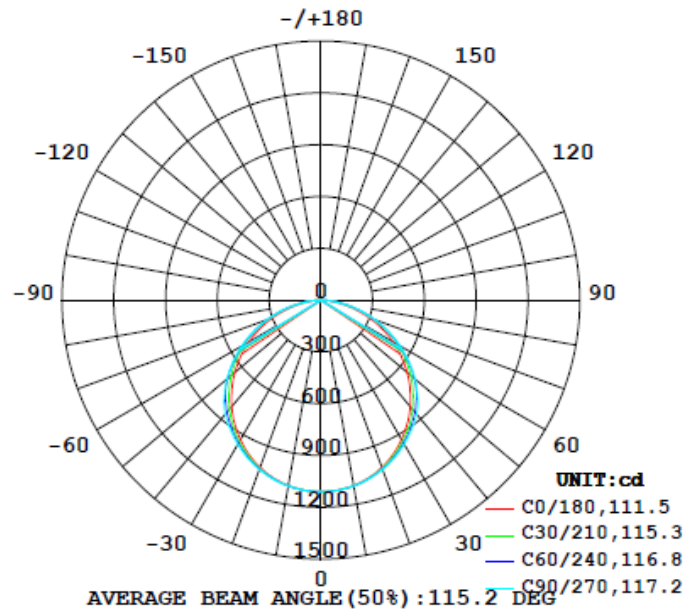
UGR		Spacing Criterion	
Crosswise	Endwise	(0°-180°)	(90°-270°)
20.0	20.5	1.26	1.30



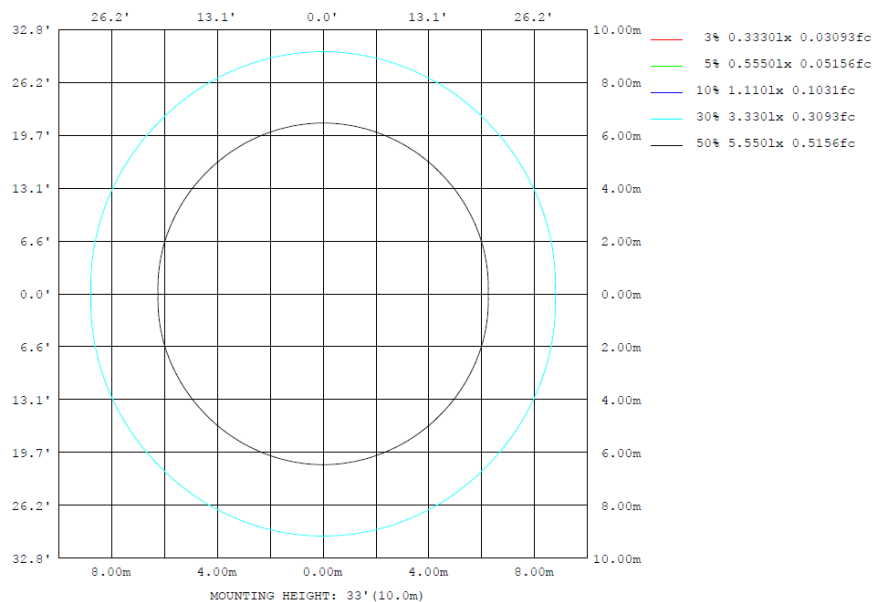
## 4.2 Goniophotometer Test

### 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	zone	total	lum, lamp
10	1090	1093	1093	1093	1090	1093	1093	1093	0- 10	105.1	105.1	3.21,3.21
20	1032	1039	1044	1039	1032	1039	1044	1039	10- 20	302.1	407.2	12.4,12.4
30	934.1	952.2	965.7	952.2	934.1	952.2	965.7	952.2	20- 30	460.6	867.7	26.5,26.5
40	805.5	834.7	862.3	834.7	805.5	834.7	862.3	834.7	30- 40	561.2	1429	43.6,43.6
50	651.4	696.7	712.1	696.7	651.4	696.7	712.1	696.7	40- 50	591.3	2020	61.6,61.6
60	480.8	521.1	528.6	521.1	480.8	521.1	528.6	521.1	50- 60	540.0	2560	78.1,78.1
70	296.3	328.5	331.8	328.5	296.3	328.5	331.8	328.5	60- 70	415.1	2975	90.7,90.7
80	113.3	139.8	141.5	139.8	113.3	139.8	141.5	139.8	70- 80	241.2	3217	98.1,98.1
90	0	0	0	0	0	0	0	0	80- 90	63.00	3280	100,100
100	0	0	0	0	0	0	0	0	90-100	0	3280	100,100
110	0	0	0	0	0	0	0	0	100-110	0	3280	100,100
120	0	0	0	0	0	0	0	0	110-120	0	3280	100,100
130	0	0	0	0	0	0	0	0	120-130	0	3280	100,100
140	0	0	0	0	0	0	0	0	130-140	0	3280	100,100
150	0	0	0	0	0	0	0	0	140-150	0	3280	100,100
160	0	0	0	0	0	0	0	0	150-160	0	3280	100,100
170	0	0	0	0	0	0	0	0	160-170	0	3280	100,100
180	0	0	0	0	0	0	0	0	170-180	0	3280	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	105.12	0-10	105.12	3.21%
10-20	302.07	0-20	407.19	12.42%
20-30	460.56	0-30	867.75	26.46%
30-40	561.16	0-40	1428.91	43.57%
40-50	591.35	0-50	2020.26	61.60%
50-60	539.95	0-60	2560.21	78.07%
60-70	415.12	0-70	2975.33	90.72%
70-80	241.19	0-80	3216.52	98.08%
80-90	63.00	0-90	3279.52	100.00%
90-100	0.00	0-100	3279.52	100.00%
100-110	0.00	0-110	3279.52	100.00%
110-120	0.00	0-120	3279.52	100.00%
120-130	0.00	0-130	3279.52	100.00%
130-140	0.00	0-140	3279.52	100.00%
140-150	0.00	0-150	3279.52	100.00%
150-160	0.00	0-160	3279.52	100.00%
160-170	0.00	0-170	3279.52	100.00%
170-180	0.00	0-180	3279.52	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	11.6	13.3	12.0	13.6	13.9	12.0	13.6	12.4	14.0
	3H	13.4	14.9	13.8	15.2	15.6	13.8	15.3	14.2	15.7
	4H	14.1	15.5	14.5	15.8	16.2	14.5	15.9	14.9	16.3
	6H	14.5	15.8	14.9	16.2	16.6	15.0	16.4	15.5	16.7
	8H	14.6	15.9	15.0	16.3	16.7	15.2	16.4	15.6	16.8
	12H	14.7	15.9	15.1	16.3	16.7	15.3	16.5	15.7	16.9
UGR Viewed Crosswise							UGR Viewed Endwise			
4H	2H	12.3	13.7	12.7	14.1	14.5	12.6	14.0	13.0	14.4
	3H	14.4	15.6	14.8	15.9	16.3	14.7	15.9	15.1	16.3
	4H	15.2	16.2	15.6	16.7	17.1	15.5	16.6	15.9	17.0
	6H	15.7	16.7	16.2	17.1	17.6	16.2	17.1	16.6	17.5
	8H	15.9	16.8	16.4	17.2	17.7	16.4	17.3	16.8	17.7
	12H	16.0	16.8	16.5	17.3	17.7	16.5	17.3	17.0	17.8
8H	4H	15.5	16.4	16.0	16.8	17.3	15.8	16.7	16.3	17.2
	6H	16.3	17.0	16.7	17.5	17.9	16.6	17.3	17.1	17.8
	8H	16.5	17.1	17.0	17.6	18.1	16.9	17.5	17.4	18.0
	12H	16.7	17.2	17.2	17.7	18.3	17.1	17.7	17.6	18.1
12H	4H	15.6	16.4	16.0	16.8	17.3	15.9	16.7	16.4	17.1
	6H	16.3	17.0	16.8	17.4	18.0	16.7	17.3	17.2	17.8
	8H	16.6	17.2	17.1	17.7	18.2	17.0	17.6	17.5	18.1

Maximum UGR = 18.7

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	15.7	17.4	16.1	17.7	18.0	16.1	17.7	16.5	18.1
	3H	17.5	19.0	17.9	19.3	19.7	17.9	19.4	18.3	19.8
	4H	18.2	19.6	18.6	19.9	20.3	18.6	20.0	19.0	20.4
	6H	18.6	19.9	19.0	20.3	20.7	19.1	20.5	19.6	20.8
	8H	18.7	20.0	19.1	20.4	20.8	19.3	20.5	19.7	20.9
	12H	18.8	20.0	19.2	20.4	20.8	19.4	20.6	19.8	21.0
UGR Viewed Crosswise							UGR Viewed Endwise			
4H	2H	16.4	17.8	16.8	18.2	18.6	16.7	18.1	17.1	18.5
	3H	18.5	19.7	18.9	20.0	20.4	18.8	20.0	19.2	20.4
	4H	19.3	20.3	19.7	20.8	21.2	19.6	20.7	20.0	21.1
	6H	19.8	20.8	20.3	21.2	21.7	20.3	21.2	20.7	21.6
	8H	20.0	20.9	20.5	21.3	21.8	20.5	21.4	20.9	21.8
	12H	20.1	20.9	20.6	21.4	21.8	20.6	21.4	21.1	21.9
8H	4H	19.6	20.5	20.1	20.9	21.4	19.9	20.8	20.4	21.3
	6H	20.4	21.1	20.8	21.6	22.0	20.7	21.4	21.2	21.9
	8H	20.6	21.2	21.1	21.7	22.2	21.0	21.6	21.5	22.1
	12H	20.8	21.3	21.3	21.8	22.4	21.2	21.8	21.7	22.2
12H	4H	19.7	20.5	20.1	20.9	21.4	20.0	20.8	20.5	21.2
	6H	20.4	21.1	20.9	21.5	22.1	20.8	21.4	21.3	21.9
	8H	20.7	21.3	21.2	21.8	22.3	21.1	21.7	21.6	22.2

Maximum UGR = 22.8

## 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	1109	1109	1109	1110	1109	1109	1110	1109	1109	1110	1109	1109	1109	1109	1109	1110	1109	1109	1110
5	1106	1106	1106	1106	1106	1105	1106	1105	1106	1106	1106	1106	1106	1106	1106	1106	1106	1105	1106
10	1090	1092	1091	1093	1092	1093	1093	1093	1092	1093	1091	1092	1090	1092	1091	1093	1092	1093	1093
15	1067	1068	1070	1070	1071	1072	1072	1072	1071	1070	1070	1068	1067	1068	1070	1070	1071	1072	1072
20	1032	1036	1038	1039	1041	1042	1044	1042	1041	1039	1038	1036	1032	1036	1038	1039	1041	1042	1044
25	987	993	996	1000	1003	1006	1008	1006	1003	1000	996	993	987	993	996	1000	1003	1006	1008
30	934	941	947	952	956	963	966	963	956	952	947	941	934	941	947	952	956	963	966
35	872	882	890	897	906	913	917	913	906	897	890	882	872	882	890	897	906	913	917
40	805	815	825	835	848	858	862	858	848	835	825	815	805	815	825	835	848	858	862
45	731	743	754	768	784	792	794	792	784	768	754	743	731	743	754	768	784	792	794
50	651	664	679	697	706	709	712	709	706	697	679	664	651	664	679	697	706	709	712
55	568	580	598	614	618	620	623	620	618	614	598	580	568	580	598	614	618	620	623
60	481	494	515	521	524	527	529	527	524	521	515	494	481	494	515	521	524	527	529
65	390	404	423	425	428	429	431	429	428	425	423	404	390	404	423	425	428	429	431
70	296	312	326	328	329	330	332	330	329	328	326	312	296	312	326	328	329	330	332
75	202	223	230	232	233	234	235	234	233	232	230	223	202	223	230	232	233	234	235
80	113	131	138	140	140	141	142	141	140	140	138	131	113	131	138	140	140	141	142
85	40.5	52.1	55.4	55.2	53.7	52.6	52.2	52.6	53.7	55.2	55.4	52.1	40.5	52.1	55.4	55.2	53.7	52.6	52.2
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) γ (DEG)	285	300	315	330	345														
0	1109	1109	1110	1109	1109														
5	1105	1106	1106	1106	1106														
10	1093	1092	1093	1091	1092														
15	1072	1071	1070	1070	1068														
20	1042	1041	1039	1038	1036														
25	1006	1003	1000	996	993														
30	963	956	952	947	941														
35	913	906	897	890	882														
40	858	848	835	825	815														
45	792	784	768	754	743														
50	709	706	697	679	664														
55	620	618	614	598	580														
60	527	524	521	515	494														
65	429	428	425	423	404														
70	330	329	328	326	312														
75	234	233	232	230	223														
80	141	140	140	138	131														
85	52.6	53.7	55.2	55.4	52.1														
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-SWISH1X4@25W3500K	<b>Sample ID</b>	240119003-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	0.207	24.8	0.997	7.41
277.0	60	0.092	24.9	0.974	13.88

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