

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

Prepared By

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Issue Date: 2024-01-29

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		3936
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	131.2
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		30.0
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	7.04
			277V	14.48
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.997
			277V	0.982
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3465±245	3411
		4 steps	3465±124	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		83.8
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥0		14
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	21.2
		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		120.0
(Goniophotometer – Section 4.2)		Non-Worst Case		277.0
Input Current (A)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		0.251
(Goniophotometer – Section 4.2)		Non-Worst Case		0.110
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		30.0
(Goniophotometer – Section 4.2)		Non-Worst Case		29.9

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-01-26	C-SWISH1X4@30W3500K	240119003-S1
2	Goniophotometer Test	2024-01-26	C-SWISH1X4@30W3500K	240119003-S1
3	THD and PF Test	2024-01-26	C-SWISH1X4@30W3500K	240119003-S1

Remark (If any)

- The results contained in this report pertain only to the tested samples.
- This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.
- 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@30W3500K, 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

Model No.	C-SWISH1X4@30W3500K	Sample ID	240119003-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

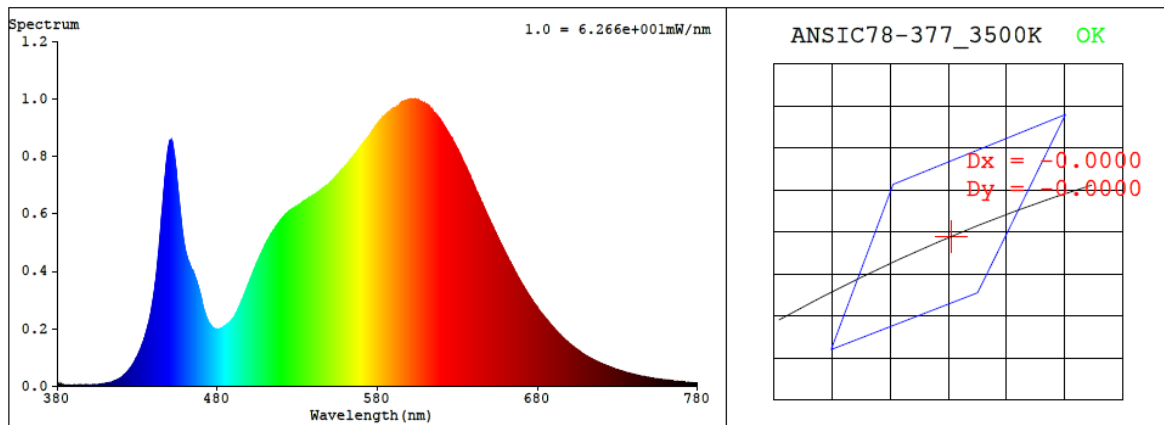
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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	0.251	30.0	0.997
277.0	60	0.110	29.9	0.982

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
3411	83.8	14	-0.0001	85	97	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4104$ $y = 0.3932$ / $u' = 0.2380$ $v' = 0.5130$ ($duv = -1.42e-05$)

CCT= 3411K Prcp WL: $L_d = 581.2\text{nm}$ Purity=41.2%

Peak WL: $L_p = 603\text{nm}$ FWHM: $\approx 146.0\text{nm}$ Ratio: R=20.8% G=76.4% B=2.8%

Render Index: $R_a = 83.8$ AvgR = 77.7 TM30: $R_f = 85$ $R_g = 97$

EEI: 0.12231 A+

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

R8 =65 R9 =14 R10=76 R11=82 R12=65 R13=84 R14=97 R15=76

4.1 Integrating Sphere Test

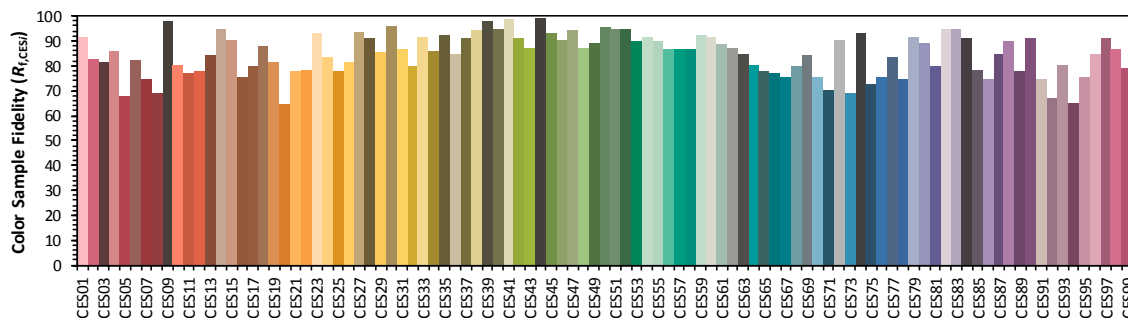
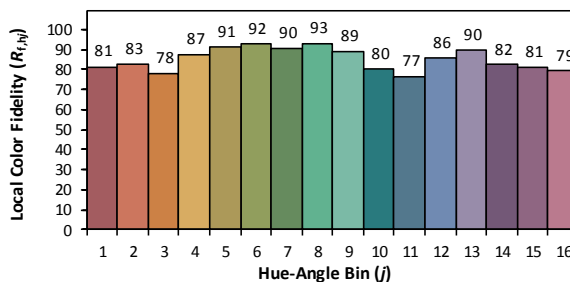
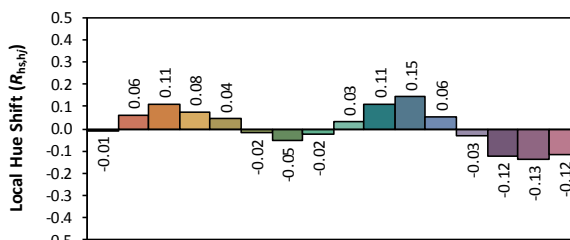
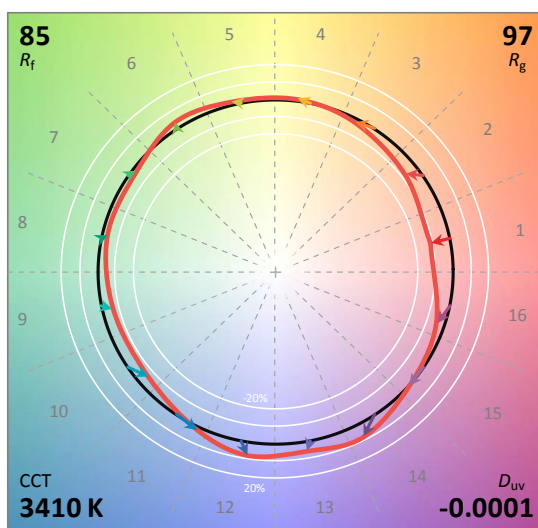
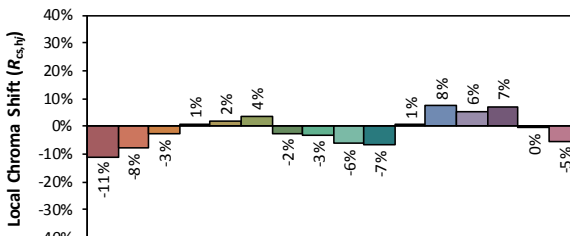
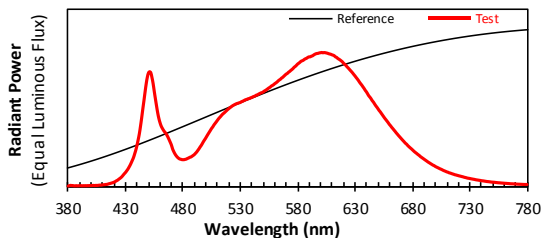
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/1/29

Model: C-SWISH1X4@30W3500K



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

x 0.4104
 y 0.3930
 u' 0.2380
 v' 0.5130

CIE 13.3-1995
(CRI)

R_a 84
 R_9 14

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-07	447	7.05E-04	514	5.33E-04	581	9.19E-04	648	6.03E-04	715	9.17E-05
381	3.80E-06	448	7.67E-04	515	5.41E-04	582	9.26E-04	649	5.92E-04	716	8.91E-05
382	5.70E-06	449	8.16E-04	516	5.48E-04	583	9.34E-04	650	5.80E-04	717	8.57E-05
383	4.40E-06	450	8.47E-04	517	5.57E-04	584	9.38E-04	651	5.67E-04	718	8.38E-05
384	4.30E-06	451	8.55E-04	518	5.65E-04	585	9.42E-04	652	5.56E-04	719	8.13E-05
385	2.40E-06	452	8.48E-04	519	5.73E-04	586	9.49E-04	653	5.44E-04	720	7.90E-05
386	2.50E-06	453	8.12E-04	520	5.80E-04	587	9.53E-04	654	5.32E-04	721	7.64E-05
387	3.40E-06	454	7.68E-04	521	5.87E-04	588	9.57E-04	655	5.20E-04	722	7.46E-05
388	2.30E-06	455	7.09E-04	522	5.93E-04	589	9.63E-04	656	5.08E-04	723	7.21E-05
389	3.20E-06	456	6.53E-04	523	6.00E-04	590	9.67E-04	657	4.97E-04	724	7.01E-05
390	3.20E-06	457	5.99E-04	524	6.05E-04	591	9.67E-04	658	4.86E-04	725	6.74E-05
391	4.00E-06	458	5.48E-04	525	6.10E-04	592	9.72E-04	659	4.74E-04	726	6.51E-05
392	2.30E-06	459	5.07E-04	526	6.14E-04	593	9.75E-04	660	4.62E-04	727	6.31E-05
393	3.50E-06	460	4.75E-04	527	6.18E-04	594	9.81E-04	661	4.52E-04	728	6.04E-05
394	3.00E-06	461	4.50E-04	528	6.20E-04	595	9.86E-04	662	4.41E-04	729	5.90E-05
395	3.60E-06	462	4.33E-04	529	6.23E-04	596	9.90E-04	663	4.30E-04	730	5.75E-05
396	3.10E-06	463	4.19E-04	530	6.26E-04	597	9.92E-04	664	4.20E-04	731	5.55E-05
397	3.80E-06	464	4.06E-04	531	6.31E-04	598	9.93E-04	665	4.10E-04	732	5.38E-05
398	3.80E-06	465	3.96E-04	532	6.35E-04	599	9.97E-04	666	3.98E-04	733	5.22E-05
399	4.60E-06	466	3.82E-04	533	6.39E-04	600	9.98E-04	667	3.89E-04	734	5.07E-05
400	4.40E-06	467	3.65E-04	534	6.44E-04	601	1.00E-03	668	3.78E-04	735	4.87E-05
401	4.70E-06	468	3.47E-04	535	6.47E-04	602	9.97E-04	669	3.69E-04	736	4.70E-05
402	5.80E-06	469	3.27E-04	536	6.50E-04	603	9.99E-04	670	3.59E-04	737	4.57E-05
403	4.30E-06	470	3.06E-04	537	6.54E-04	604	9.98E-04	671	3.49E-04	738	4.43E-05
404	5.70E-06	471	2.78E-04	538	6.56E-04	605	9.96E-04	672	3.40E-04	739	4.31E-05
405	5.40E-06	472	2.59E-04	539	6.61E-04	606	9.94E-04	673	3.31E-04	740	4.14E-05
406	6.10E-06	473	2.42E-04	540	6.63E-04	607	9.91E-04	674	3.21E-04	741	4.00E-05
407	7.50E-06	474	2.29E-04	541	6.68E-04	608	9.88E-04	675	3.14E-04	742	3.91E-05
408	7.80E-06	475	2.18E-04	542	6.71E-04	609	9.86E-04	676	3.04E-04	743	3.75E-05
409	8.00E-06	476	2.10E-04	543	6.75E-04	610	9.82E-04	677	2.96E-04	744	3.62E-05
410	9.50E-06	477	2.04E-04	544	6.81E-04	611	9.79E-04	678	2.88E-04	745	3.48E-05
411	1.06E-05	478	2.02E-04	545	6.83E-04	612	9.75E-04	679	2.81E-04	746	3.40E-05
412	1.13E-05	479	1.99E-04	546	6.89E-04	613	9.67E-04	680	2.73E-04	747	3.30E-05
413	1.29E-05	480	1.98E-04	547	6.93E-04	614	9.63E-04	681	2.64E-04	748	3.17E-05
414	1.35E-05	481	1.98E-04	548	6.97E-04	615	9.55E-04	682	2.57E-04	749	3.05E-05
415	1.67E-05	482	2.00E-04	549	7.00E-04	616	9.50E-04	683	2.50E-04	750	2.98E-05
416	1.88E-05	483	2.03E-04	550	7.05E-04	617	9.44E-04	684	2.43E-04	751	2.93E-05
417	2.13E-05	484	2.07E-04	551	7.11E-04	618	9.37E-04	685	2.36E-04	752	2.83E-05
418	2.38E-05	485	2.11E-04	552	7.16E-04	619	9.30E-04	686	2.30E-04	753	2.72E-05
419	2.66E-05	486	2.16E-04	553	7.22E-04	620	9.20E-04	687	2.22E-04	754	2.63E-05
420	3.00E-05	487	2.18E-04	554	7.29E-04	621	9.12E-04	688	2.16E-04	755	2.54E-05
421	3.46E-05	488	2.24E-04	555	7.35E-04	622	9.04E-04	689	2.10E-04	756	2.48E-05
422	4.00E-05	489	2.30E-04	556	7.40E-04	623	8.93E-04	690	2.03E-04	757	2.41E-05
423	4.46E-05	490	2.37E-04	557	7.48E-04	624	8.85E-04	691	1.97E-04	758	2.33E-05
424	5.13E-05	491	2.46E-04	558	7.53E-04	625	8.75E-04	692	1.91E-04	759	2.27E-05
425	5.78E-05	492	2.56E-04	559	7.58E-04	626	8.65E-04	693	1.85E-04	760	2.19E-05
426	6.45E-05	493	2.67E-04	560	7.66E-04	627	8.56E-04	694	1.79E-04	761	2.12E-05
427	7.30E-05	494	2.80E-04	561	7.72E-04	628	8.46E-04	695	1.74E-04	762	2.08E-05
428	8.36E-05	495	2.93E-04	562	7.78E-04	629	8.35E-04	696	1.68E-04	763	1.99E-05
429	9.38E-05	496	3.05E-04	563	7.87E-04	630	8.24E-04	697	1.63E-04	764	1.95E-05
430	1.03E-04	497	3.20E-04	564	7.94E-04	631	8.13E-04	698	1.57E-04	765	1.85E-05
431	1.15E-04	498	3.35E-04	565	7.99E-04	632	8.02E-04	699	1.54E-04	766	1.78E-05
432	1.27E-04	499	3.48E-04	566	8.08E-04	633	7.90E-04	700	1.48E-04	767	1.76E-05
433	1.42E-04	500	3.61E-04	567	8.14E-04	634	7.77E-04	701	1.43E-04	768	1.71E-05
434	1.58E-04	501	3.76E-04	568	8.22E-04	635	7.66E-04	702	1.39E-04	769	1.67E-05
435	1.76E-04	502	3.90E-04	569	8.30E-04	636	7.55E-04	703	1.35E-04	770	1.60E-05
436	1.96E-04	503	4.04E-04	570	8.38E-04	637	7.42E-04	704	1.30E-04	771	1.54E-05
437	2.16E-04	504	4.18E-04	571	8.43E-04	638	7.30E-04	705	1.27E-04	772	1.48E-05
438	2.44E-04	505	4.32E-04	572	8.51E-04	639	7.16E-04	706	1.23E-04	773	1.46E-05
439	2.72E-04	506	4.43E-04	573	8.57E-04	640	7.05E-04	707	1.18E-04	774	1.41E-05
440	3.08E-04	507	4.57E-04	574	8.65E-04	641	6.91E-04	708	1.14E-04	775	1.37E-05
441	3.48E-04	508	4.69E-04	575	8.72E-04	642	6.76E-04	709	1.11E-04	776	1.32E-05
442	3.92E-04	509	4.80E-04	576	8.80E-04	643	6.66E-04	710	1.07E-04	777	1.28E-05
443	4.48E-04	510	4.92E-04	577	8.89E-04	644	6.54E-04	711	1.05E-04	778	1.25E-05
444	5.09E-04	511	5.03E-04	578	8.96E-04	645	6.40E-04	712	1.00E-04	779	1.25E-05
445	5.76E-04	512	5.13E-04	579	9.04E-04	646	6.30E-04	713	9.79E-05	780	1.25E-05
446	6.39E-04	513	5.23E-04	580	9.13E-04	647	6.16E-04	714	9.48E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	C-SWISH1X4@30W3500K	Sample ID	240119003-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	25.0	Humidity (%RH)	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 $25 \pm 1^{\circ}\text{C}$, 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 ± 0.2 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 1.0° vertical intervals and 15° horizontal intervals.</p>

Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	120.0	60	0.251	30.0	0.997
NON-WORST CASE	277.0	60	0.110	29.9	0.982

Test Result

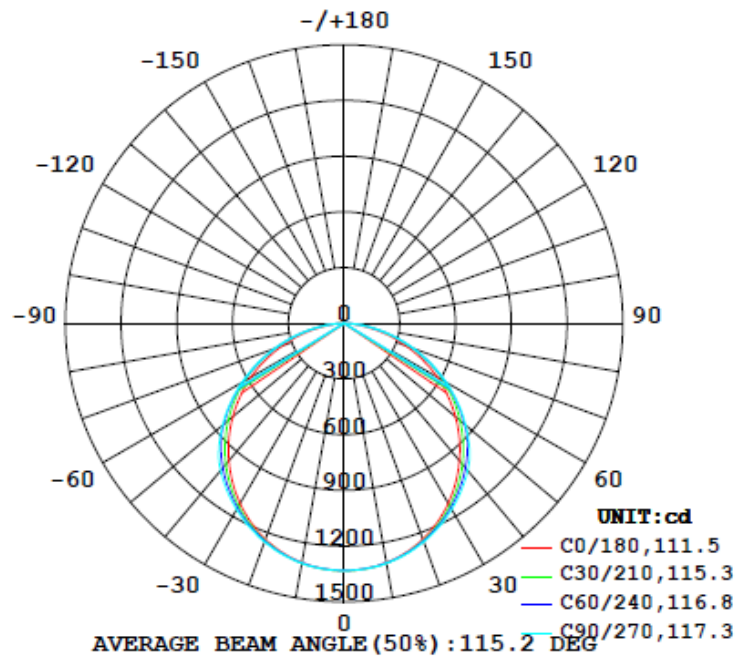
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement
	C0-180	C90-270	C0-180	C90-270		(0°-60°)
3936	161.4	163.6	111.6	117.1	131.2	78.1%

UGR		Spacing Criterion	
Crosswise	Endwise	(0°-180°)	(90°-270°)
20.7	21.2	1.26	1.30

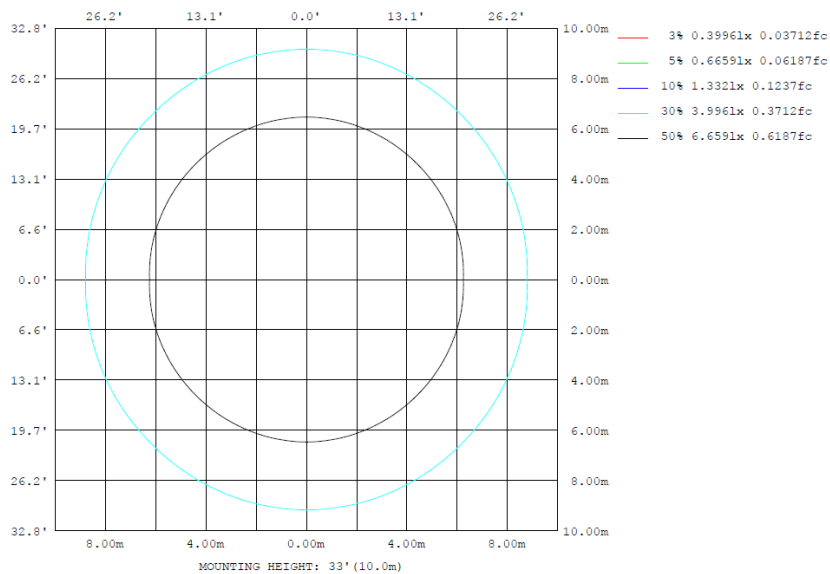
4.2 Goniophotometer Test

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	Φ zone	Φ total	lum, lamp
10	1309	1311	1311	1311	1309	1311	1311	1311	0- 10	126.1	126.1	3.2,3.2
20	1238	1247	1252	1247	1238	1247	1252	1247	10- 20	362.5	488.6	12.4,12.4
30	1121	1143	1158	1143	1121	1143	1158	1143	20- 30	552.7	1041	26.5,26.5
40	966.1	1002	1035	1002	966.1	1002	1035	1002	30- 40	673.3	1715	43.6,43.6
50	781.7	835.6	855.0	835.6	781.7	835.6	855.0	835.6	40- 50	709.7	2424	61.6,61.6
60	577.5	625.0	634.5	625.0	577.5	625.0	634.5	625.0	50- 60	648.0	3072	78.1,78.1
70	355.0	394.1	398.8	394.1	355.0	394.1	398.8	394.1	60- 70	498.1	3570	90.7,90.7
80	136.3	167.6	170.1	167.6	136.3	167.6	170.1	167.6	70- 80	289.4	3860	98.1,98.1
90	0	0	0	0	0	0	0	0	80- 90	75.96	3936	100,100
100	0	0	0	0	0	0	0	0	90-100	0	3936	100,100
110	0	0	0	0	0	0	0	0	100-110	0	3936	100,100
120	0	0	0	0	0	0	0	0	110-120	0	3936	100,100
130	0	0	0	0	0	0	0	0	120-130	0	3936	100,100
140	0	0	0	0	0	0	0	0	130-140	0	3936	100,100
150	0	0	0	0	0	0	0	0	140-150	0	3936	100,100
160	0	0	0	0	0	0	0	0	150-160	0	3936	100,100
170	0	0	0	0	0	0	0	0	160-170	0	3936	100,100
180	0	0	0	0	0	0	0	0	170-180	0	3936	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	126.13	0-10	126.13	3.20%
10-20	362.48	0-20	488.61	12.41%
20-30	552.66	0-30	1041.27	26.46%
30-40	673.34	0-40	1714.61	43.57%
40-50	709.68	0-50	2424.29	61.60%
50-60	648.01	0-60	3072.30	78.06%
60-70	498.12	0-70	3570.42	90.72%
70-80	289.37	0-80	3859.79	98.07%
80-90	75.96	0-90	3935.75	100.00%
90-100	0.00	0-100	3935.75	100.00%
100-110	0.00	0-110	3935.75	100.00%
110-120	0.00	0-120	3935.75	100.00%
120-130	0.00	0-130	3935.75	100.00%
130-140	0.00	0-140	3935.75	100.00%
140-150	0.00	0-150	3935.75	100.00%
150-160	0.00	0-160	3935.75	100.00%
160-170	0.00	0-170	3935.75	100.00%
170-180	0.00	0-180	3935.75	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	11.6	13.3	12.0	13.6	13.9	12.0	13.6	12.4	14.0	14.3
	3H	13.4	14.9	13.8	15.2	15.6	13.8	15.3	14.2	15.6	16.0
	4H	14.1	15.5	14.5	15.8	16.2	14.5	15.9	14.9	16.3	16.7
	6H	14.5	15.8	14.9	16.2	16.6	15.0	16.4	15.5	16.7	17.1
	8H	14.6	15.9	15.0	16.3	16.7	15.2	16.5	15.6	16.8	17.2
	12H	14.7	15.9	15.1	16.3	16.7	15.3	16.5	15.7	16.9	17.3
4H	2H	12.3	13.7	12.7	14.1	14.5	12.6	14.0	13.0	14.4	14.8
	3H	14.4	15.6	14.8	16.0	16.4	14.7	15.9	15.1	16.3	16.7
	4H	15.2	16.2	15.6	16.7	17.1	15.5	16.6	15.9	17.0	17.4
	6H	15.7	16.7	16.2	17.1	17.6	16.2	17.1	16.6	17.5	18.0
	8H	15.9	16.8	16.4	17.2	17.7	16.4	17.3	16.8	17.7	18.2
	12H	16.0	16.8	16.5	17.3	17.7	16.5	17.3	17.0	17.8	18.2
8H	4H	15.5	16.4	16.0	16.8	17.3	15.8	16.7	16.3	17.2	17.6
	6H	16.3	17.0	16.7	17.5	17.9	16.6	17.3	17.1	17.8	18.3
	8H	16.5	17.1	17.0	17.6	18.1	16.9	17.5	17.4	18.0	18.5
	12H	16.7	17.2	17.2	17.7	18.3	17.1	17.7	17.6	18.1	18.7
12H	4H	15.6	16.4	16.0	16.8	17.3	15.9	16.7	16.4	17.1	17.6
	6H	16.3	17.0	16.8	17.4	18.0	16.7	17.3	17.2	17.8	18.3
	8H	16.6	17.2	17.1	17.7	18.2	17.0	17.6	17.5	18.1	18.6

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		UGR Viewed Crosswise					UGR Viewed Endwise				
X=2H	Y=2H	16.4	18.1	16.8	18.4	18.7	16.8	18.4	17.2	18.8	19.1
	3H	18.2	19.7	18.6	20.0	20.4	18.6	20.1	19.0	20.4	20.8
	4H	18.9	20.3	19.3	20.6	21.0	19.3	20.7	19.7	21.1	21.5
	6H	19.3	20.6	19.7	21.0	21.4	19.8	21.2	20.3	21.5	21.9
	8H	19.4	20.7	19.8	21.1	21.5	20.0	21.3	20.4	21.6	22.0
	12H	19.5	20.7	19.9	21.1	21.5	20.1	21.3	20.5	21.7	22.1
4H	2H	17.1	18.5	17.5	18.9	19.3	17.4	18.8	17.8	19.2	19.6
	3H	19.2	20.4	19.6	20.8	21.2	19.5	20.7	19.9	21.1	21.5
	4H	20.0	21.0	20.4	21.5	21.9	20.3	21.4	20.7	21.8	22.2
	6H	20.5	21.5	21.0	21.9	22.4	21.0	21.9	21.4	22.3	22.8
	8H	20.7	21.6	21.2	22.0	22.5	21.2	22.1	21.6	22.5	23.0
	12H	20.8	21.6	21.3	22.1	22.5	21.3	22.1	21.8	22.6	23.0
8H	4H	20.3	21.2	20.8	21.6	22.1	20.6	21.5	21.1	22.0	22.4
	6H	21.1	21.8	21.5	22.3	22.7	21.4	22.1	21.9	22.6	23.1
	8H	21.3	21.9	21.8	22.4	22.9	21.7	22.3	22.2	22.8	23.3
	12H	21.5	22.0	22.0	22.5	23.1	21.9	22.5	22.4	22.9	23.5
12H	4H	20.4	21.2	20.8	21.6	22.1	20.7	21.5	21.2	21.9	22.4
	6H	21.1	21.8	21.6	22.2	22.8	21.5	22.1	22.0	22.6	23.1
	8H	21.4	22.0	21.9	22.5	23.0	21.8	22.4	22.3	22.9	23.4

Maximum UGR = 23.5

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	1332	1332	1331	1332	1330	1331	1332	1331	1330	1332	1331	1332	1332	1332	1331	1332	1330	1331	1332
5	1327	1327	1327	1328	1325	1326	1327	1326	1325	1328	1327	1327	1327	1327	1327	1328	1325	1326	1327
10	1309	1311	1311	1311	1311	1310	1311	1310	1311	1311	1311	1311	1309	1311	1311	1311	1311	1310	1311
15	1279	1282	1284	1285	1284	1287	1287	1287	1284	1285	1284	1282	1279	1282	1284	1285	1284	1287	1287
20	1238	1242	1245	1247	1248	1251	1252	1251	1248	1247	1245	1242	1238	1242	1245	1247	1248	1251	1252
25	1184	1191	1196	1199	1203	1207	1209	1207	1203	1199	1196	1191	1184	1191	1196	1199	1203	1207	1209
30	1121	1129	1136	1143	1149	1154	1158	1154	1149	1143	1136	1129	1121	1129	1136	1143	1149	1154	1158
35	1047	1058	1068	1075	1085	1095	1100	1095	1085	1075	1068	1058	1047	1058	1068	1075	1085	1095	1100
40	966	979	990	1002	1016	1028	1035	1028	1016	1002	990	979	966	979	990	1002	1016	1028	1035
45	878	892	907	921	940	951	955	951	940	921	907	892	878	892	907	921	940	951	955
50	782	797	815	836	847	852	855	852	847	836	815	797	782	797	815	836	847	852	855
55	682	698	718	737	741	744	748	744	741	737	718	698	682	698	718	737	741	744	748
60	577	593	619	625	628	632	635	632	628	625	619	593	577	593	619	625	628	632	635
65	468	485	507	510	513	515	517	515	513	510	507	485	468	485	507	510	513	515	517
70	355	375	391	394	395	396	399	396	395	394	391	375	355	375	391	394	395	396	399
75	242	267	276	279	279	281	282	281	279	279	276	267	242	267	276	279	279	281	282
80	136	157	166	168	168	169	170	169	168	168	166	157	136	157	166	168	168	169	170
85	48.5	62.4	67.2	66.8	65.0	63.8	63.6	63.8	65.0	66.8	67.2	62.4	48.5	62.4	67.2	66.8	65.0	63.8	63.6
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	1331	1330	1332	1331	1332														
5	1326	1325	1328	1327	1327														
10	1310	1311	1311	1311	1311														
15	1287	1284	1285	1284	1282														
20	1251	1248	1247	1245	1242														
25	1207	1203	1199	1196	1191														
30	1154	1149	1143	1136	1129														
35	1095	1085	1075	1068	1058														
40	1028	1016	1002	990	979														
45	951	940	921	907	892														
50	852	847	836	815	797														
55	744	741	737	718	698														
60	632	628	625	619	593														
65	515	513	510	507	485														
70	396	395	394	391	375														
75	281	279	279	276	267														
80	169	168	168	166	157														
85	63.8	65.0	66.8	67.2	62.4														
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

Model No.	C-SWISH1X4@30W3500K	Sample ID	240119003-S1
Temperature (°C)	25.4	Humidity (%RH)	41.0

Test Method
<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	0.251	30.0	0.997	7.04
277.0	60	0.110	29.9	0.982	14.48

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*****