

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

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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		4010
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	133.7
		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	7.09
			277V	14.07
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	5029±283	4922
		4 steps	5029±220	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		84.0
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥0		17
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		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%		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@30W5000K	240119003-S1
2	Goniophotometer Test	2024-01-26	C-SWISH1X4@30W5000K	240119003-S1
3	THD and PF Test	2024-01-26	C-SWISH1X4@30W5000K	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@30W5000K, color tunable from 3500K, 4000K and 5000K.

Electrical Specification: 120-277Vac, 50/60Hz

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	C-SWISH1X4@30W5000K	Sample ID	240119003-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

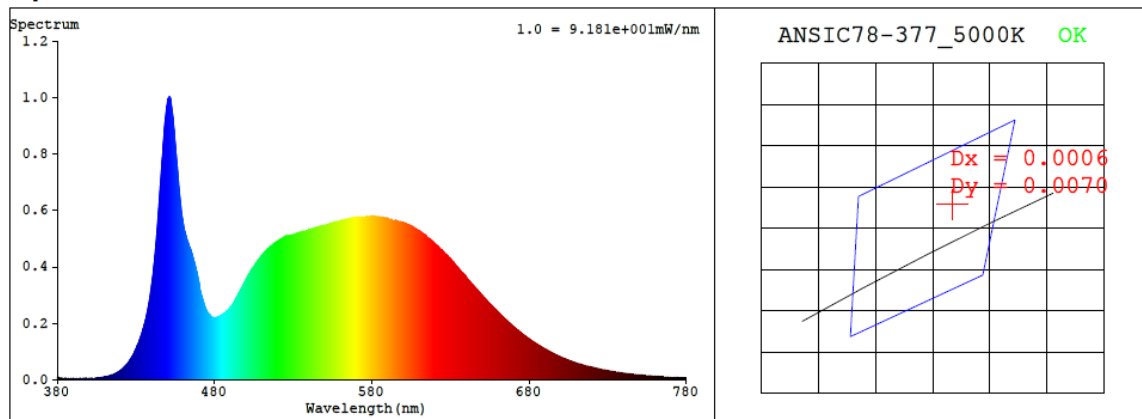
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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
4922	84.0	17	0.0033	84	96	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3480$ $y = 0.3605$ / $u' = 0.2099$ $v' = 0.4893$ ($duv=3.25e-03$)

CCT= 4922K Prp WL: Ld=570.8nm Purity=12.6%

Peak WL: Lp=451nm FWHM: =19.3nm Ratio:R=15.9% G=79.7% B=4.4%

Render Index: Ra = 84.0 AvgR = 77.1 TM30:Rf=85 Rg=96

EEL: 0.11976 A+

R1 =82 R2 =89 R3 =93 R4 =83 R5 =82 R6 =83 R7 =89

R8 =71 R9 =17 R10=72 R11=82 R12=56 R13=84 R14=96 R15=77

4.1 Integrating Sphere Test

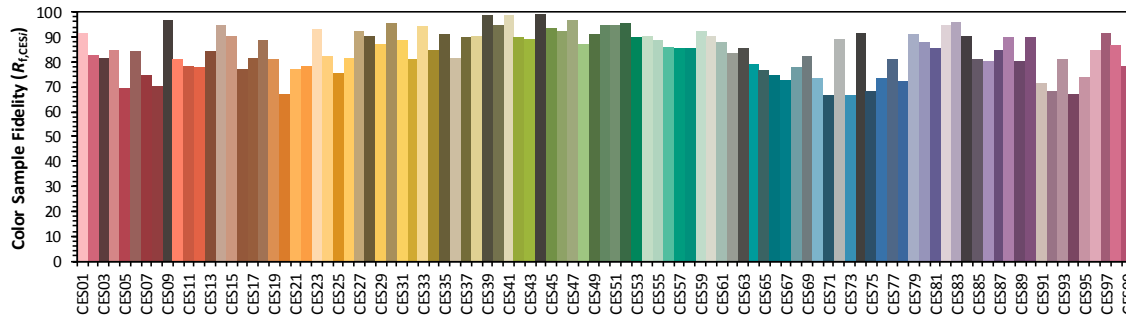
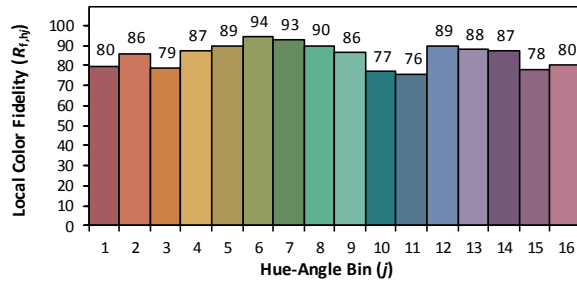
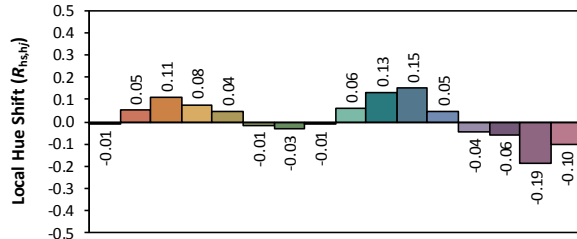
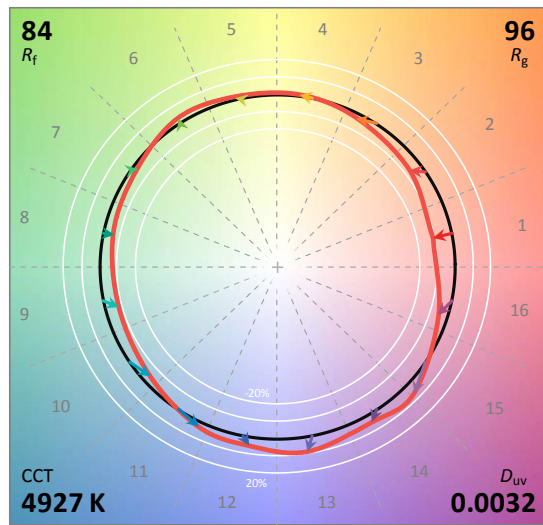
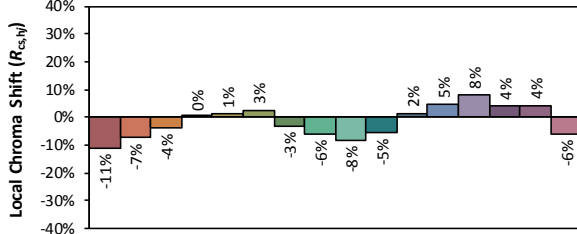
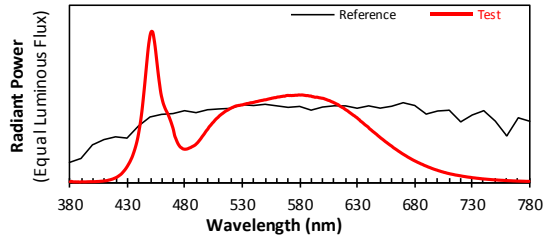
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/1/29

Model: C-SWISH1X4@30W5000K



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

x 0.3479
 y 0.3603
 u' 0.2100
 v' 0.4893

CIE 13.3-1995
(CRI)

R_a 84
 R_g 17

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	4.10E-06	447	8.12E-04	514	4.63E-04	581	5.78E-04	648	3.12E-04	715	5.06E-05
381	6.90E-06	448	8.88E-04	515	4.69E-04	582	5.79E-04	649	3.05E-04	716	4.89E-05
382	4.60E-06	449	9.45E-04	516	4.74E-04	583	5.78E-04	650	2.99E-04	717	4.79E-05
383	3.60E-06	450	9.86E-04	517	4.78E-04	584	5.77E-04	651	2.93E-04	718	4.65E-05
384	3.50E-06	451	1.00E-03	518	4.82E-04	585	5.76E-04	652	2.87E-04	719	4.53E-05
385	3.70E-06	452	9.93E-04	519	4.87E-04	586	5.74E-04	653	2.81E-04	720	4.39E-05
386	3.10E-06	453	9.52E-04	520	4.91E-04	587	5.75E-04	654	2.75E-04	721	4.25E-05
387	3.80E-06	454	9.00E-04	521	4.95E-04	588	5.73E-04	655	2.69E-04	722	4.10E-05
388	2.40E-06	455	8.34E-04	522	4.98E-04	589	5.72E-04	656	2.64E-04	723	3.98E-05
389	3.00E-06	456	7.67E-04	523	5.01E-04	590	5.72E-04	657	2.58E-04	724	3.87E-05
390	4.30E-06	457	7.01E-04	524	5.05E-04	591	5.68E-04	658	2.52E-04	725	3.75E-05
391	3.80E-06	458	6.45E-04	525	5.07E-04	592	5.67E-04	659	2.46E-04	726	3.62E-05
392	3.40E-06	459	5.91E-04	526	5.08E-04	593	5.64E-04	660	2.42E-04	727	3.51E-05
393	3.30E-06	460	5.56E-04	527	5.10E-04	594	5.64E-04	661	2.35E-04	728	3.42E-05
394	3.60E-06	461	5.26E-04	528	5.10E-04	595	5.64E-04	662	2.29E-04	729	3.34E-05
395	4.20E-06	462	5.04E-04	529	5.13E-04	596	5.63E-04	663	2.24E-04	730	3.20E-05
396	4.40E-06	463	4.85E-04	530	5.13E-04	597	5.60E-04	664	2.19E-04	731	3.09E-05
397	4.50E-06	464	4.70E-04	531	5.15E-04	598	5.59E-04	665	2.14E-04	732	3.01E-05
398	4.90E-06	465	4.55E-04	532	5.18E-04	599	5.58E-04	666	2.08E-04	733	2.93E-05
399	4.60E-06	466	4.37E-04	533	5.19E-04	600	5.57E-04	667	2.03E-04	734	2.82E-05
400	5.20E-06	467	4.18E-04	534	5.22E-04	601	5.55E-04	668	1.98E-04	735	2.73E-05
401	4.90E-06	468	3.97E-04	535	5.22E-04	602	5.52E-04	669	1.93E-04	736	2.66E-05
402	5.20E-06	469	3.73E-04	536	5.24E-04	603	5.49E-04	670	1.88E-04	737	2.56E-05
403	5.70E-06	470	3.47E-04	537	5.27E-04	604	5.46E-04	671	1.84E-04	738	2.50E-05
404	6.10E-06	471	3.11E-04	538	5.27E-04	605	5.43E-04	672	1.79E-04	739	2.38E-05
405	6.40E-06	472	2.91E-04	539	5.28E-04	606	5.41E-04	673	1.75E-04	740	2.33E-05
406	7.30E-06	473	2.72E-04	540	5.30E-04	607	5.38E-04	674	1.69E-04	741	2.25E-05
407	7.90E-06	474	2.56E-04	541	5.32E-04	608	5.34E-04	675	1.65E-04	742	2.19E-05
408	8.40E-06	475	2.44E-04	542	5.34E-04	609	5.31E-04	676	1.61E-04	743	2.12E-05
409	9.30E-06	476	2.34E-04	543	5.35E-04	610	5.27E-04	677	1.56E-04	744	2.06E-05
410	1.04E-05	477	2.29E-04	544	5.37E-04	611	5.24E-04	678	1.52E-04	745	1.99E-05
411	1.11E-05	478	2.23E-04	545	5.39E-04	612	5.20E-04	679	1.48E-04	746	1.93E-05
412	1.21E-05	479	2.21E-04	546	5.41E-04	613	5.17E-04	680	1.44E-04	747	1.86E-05
413	1.40E-05	480	2.20E-04	547	5.43E-04	614	5.12E-04	681	1.40E-04	748	1.80E-05
414	1.61E-05	481	2.20E-04	548	5.44E-04	615	5.06E-04	682	1.37E-04	749	1.75E-05
415	1.78E-05	482	2.22E-04	549	5.46E-04	616	5.02E-04	683	1.33E-04	750	1.69E-05
416	2.02E-05	483	2.25E-04	550	5.47E-04	617	4.97E-04	684	1.29E-04	751	1.63E-05
417	2.23E-05	484	2.28E-04	551	5.48E-04	618	4.93E-04	685	1.26E-04	752	1.62E-05
418	2.57E-05	485	2.31E-04	552	5.50E-04	619	4.88E-04	686	1.22E-04	753	1.54E-05
419	2.88E-05	486	2.36E-04	553	5.52E-04	620	4.82E-04	687	1.20E-04	754	1.50E-05
420	3.22E-05	487	2.39E-04	554	5.54E-04	621	4.77E-04	688	1.16E-04	755	1.45E-05
421	3.64E-05	488	2.43E-04	555	5.55E-04	622	4.73E-04	689	1.12E-04	756	1.40E-05
422	4.15E-05	489	2.48E-04	556	5.58E-04	623	4.66E-04	690	1.09E-04	757	1.38E-05
423	4.70E-05	490	2.56E-04	557	5.59E-04	624	4.61E-04	691	1.06E-04	758	1.33E-05
424	5.25E-05	491	2.63E-04	558	5.61E-04	625	4.55E-04	692	1.03E-04	759	1.28E-05
425	5.95E-05	492	2.72E-04	559	5.61E-04	626	4.50E-04	693	9.97E-05	760	1.24E-05
426	6.83E-05	493	2.82E-04	560	5.63E-04	627	4.44E-04	694	9.70E-05	761	1.21E-05
427	7.70E-05	494	2.91E-04	561	5.65E-04	628	4.40E-04	695	9.37E-05	762	1.16E-05
428	8.64E-05	495	3.03E-04	562	5.66E-04	629	4.33E-04	696	9.09E-05	763	1.13E-05
429	9.74E-05	496	3.12E-04	563	5.67E-04	630	4.28E-04	697	8.79E-05	764	1.11E-05
430	1.09E-04	497	3.23E-04	564	5.69E-04	631	4.21E-04	698	8.55E-05	765	1.07E-05
431	1.23E-04	498	3.35E-04	565	5.69E-04	632	4.15E-04	699	8.30E-05	766	1.02E-05
432	1.36E-04	499	3.45E-04	566	5.71E-04	633	4.07E-04	700	8.08E-05	767	1.00E-05
433	1.52E-04	500	3.54E-04	567	5.71E-04	634	4.01E-04	701	7.78E-05	768	9.70E-06
434	1.69E-04	501	3.66E-04	568	5.74E-04	635	3.95E-04	702	7.58E-05	769	9.20E-06
435	1.90E-04	502	3.75E-04	569	5.75E-04	636	3.88E-04	703	7.33E-05	770	9.10E-06
436	2.12E-04	503	3.84E-04	570	5.76E-04	637	3.82E-04	704	7.09E-05	771	8.70E-06
437	2.37E-04	504	3.93E-04	571	5.75E-04	638	3.76E-04	705	6.89E-05	772	8.50E-06
438	2.66E-04	505	4.01E-04	572	5.76E-04	639	3.71E-04	706	6.64E-05	773	8.30E-06
439	2.99E-04	506	4.10E-04	573	5.75E-04	640	3.64E-04	707	6.49E-05	774	8.10E-06
440	3.42E-04	507	4.18E-04	574	5.76E-04	641	3.55E-04	708	6.26E-05	775	7.90E-06
441	3.88E-04	508	4.25E-04	575	5.75E-04	642	3.50E-04	709	6.05E-05	776	7.70E-06
442	4.41E-04	509	4.32E-04	576	5.77E-04	643	3.43E-04	710	5.89E-05	777	7.30E-06
443	5.05E-04	510	4.40E-04	577	5.77E-04	644	3.36E-04	711	5.69E-05	778	7.10E-06
444	5.78E-04	511	4.46E-04	578	5.77E-04	645	3.31E-04	712	5.54E-05	779	7.10E-06
445	6.54E-04	512	4.52E-04	579	5.79E-04	646	3.25E-04	713	5.39E-05	780	7.20E-06
446	7.34E-04	513	4.58E-04	580	5.79E-04	647	3.19E-04	714	5.25E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	C-SWISH1X4@30W5000K	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

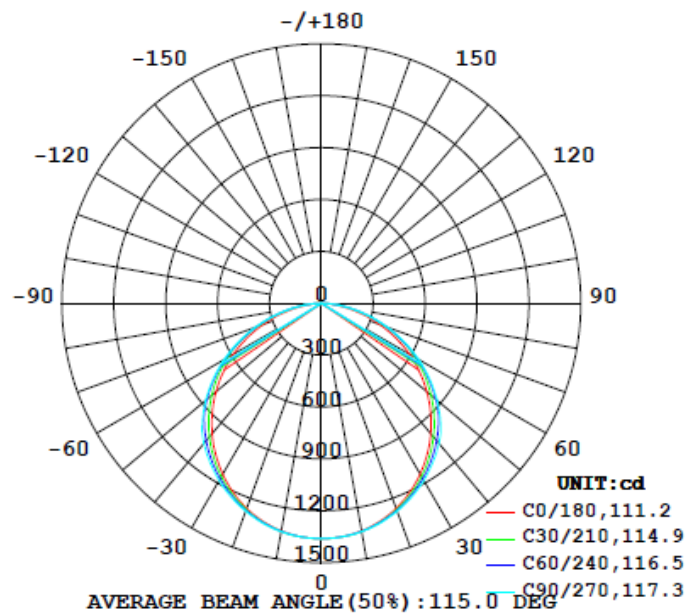
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement
	C0-180	C90-270	C0-180	C90-270		(0°-60°)
4010	161.2	163.6	111.2	117.1	133.7	78.1%

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

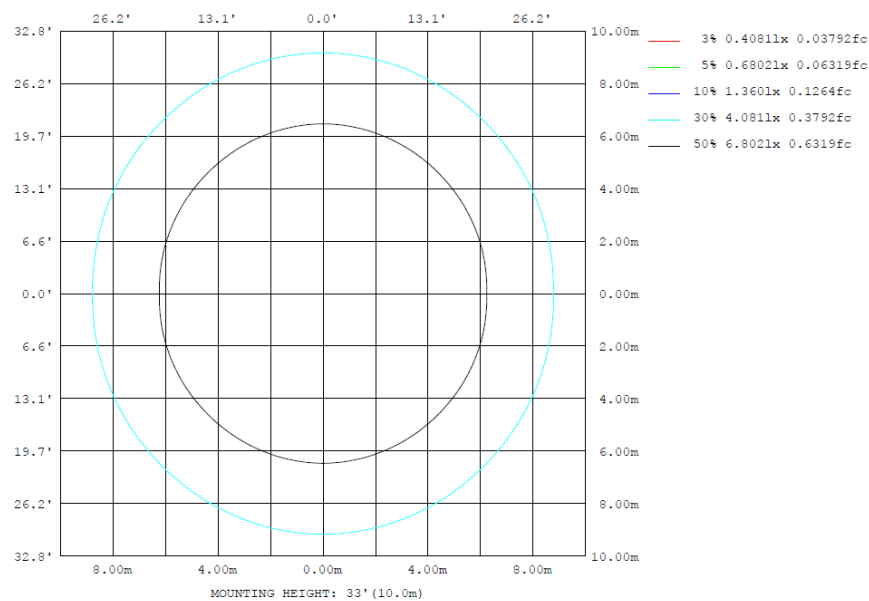
4.2 Goniophotometer Test

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	1337	1339	1340	1339	1337	1339	1340	1339	0- 10	128.9	128.9	3.21, 3.21
20	1263	1273	1280	1273	1263	1273	1280	1273	10- 20	370.1	498.9	12.4, 12.4
30	1141	1164	1183	1164	1141	1164	1183	1164	20- 30	563.9	1063	26.5, 26.5
40	982.7	1020	1058	1020	982.7	1020	1058	1020	30- 40	686.4	1749	43.6, 43.6
50	795.5	850.4	874.2	850.4	795.5	850.4	874.2	850.4	40- 50	723.1	2472	61.7, 61.7
60	586.1	636.1	648.9	636.1	586.1	636.1	648.9	636.1	50- 60	659.8	3132	78.1, 78.1
70	359.9	400.2	407.3	400.2	359.9	400.2	407.3	400.2	60- 70	506.7	3639	90.7, 90.7
80	137.3	170.2	173.7	170.2	137.3	170.2	173.7	170.2	70- 80	294.0	3933	98.1, 98.1
90	0	0	0	0	0	0	0	0	80- 90	76.96	4010	100, 100
100	0	0	0	0	0	0	0	0	90-100	0	4010	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	4010	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	4010	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	4010	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	4010	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	4010	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	4010	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	4010	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	4010	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	128.85	0-10	128.85	3.21%
10-20	370.09	0-20	498.94	12.44%
20-30	563.92	0-30	1062.86	26.51%
30-40	686.44	0-40	1749.30	43.62%
40-50	723.13	0-50	2472.43	61.66%
50-60	659.77	0-60	3132.20	78.11%
60-70	506.71	0-70	3638.91	90.75%
70-80	294.03	0-80	3932.94	98.08%
80-90	76.96	0-90	4009.90	100.00%
90-100	0.00	0-100	4009.90	100.00%
100-110	0.00	0-110	4009.90	100.00%
110-120	0.00	0-120	4009.90	100.00%
120-130	0.00	0-130	4009.90	100.00%
130-140	0.00	0-140	4009.90	100.00%
140-150	0.00	0-150	4009.90	100.00%
150-160	0.00	0-160	4009.90	100.00%
160-170	0.00	0-170	4009.90	100.00%
170-180	0.00	0-180	4009.90	100.00%

4.2 Goniophotometer Test

UGR – Uncorrected Table:

UGR TABLE - UNCORRECTED

Reflectances		70	70	50	50	30	70	70	50	50	30
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	13.2	12.0	13.6	13.9	12.0	13.7	12.4	14.0	14.3
	3H	13.4	14.9	13.7	15.2	15.6	13.8	15.3	14.2	15.7	16.0
	4H	14.0	15.4	14.4	15.8	16.2	14.5	16.0	14.9	16.3	16.7
	6H	14.5	15.8	14.9	16.1	16.5	15.1	16.4	15.5	16.7	17.1
	8H	14.6	15.8	15.0	16.2	16.6	15.2	16.5	15.6	16.9	17.3
	12H	14.6	15.8	15.1	16.2	16.7	15.3	16.5	15.7	16.9	17.3
4H	2H	12.3	13.7	12.7	14.1	14.4	12.6	14.0	13.0	14.4	14.8
	3H	14.3	15.5	14.7	15.9	16.3	14.7	15.9	15.1	16.3	16.7
	4H	15.1	16.2	15.6	16.6	17.1	15.5	16.6	16.0	17.0	17.4
	6H	15.7	16.6	16.2	17.1	17.5	16.2	17.1	16.6	17.6	18.0
	8H	15.9	16.8	16.3	17.2	17.7	16.4	17.3	16.9	17.7	18.2
	12H	16.0	16.8	16.5	17.2	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	16.2	16.9	16.7	17.4	17.9	16.6	17.3	17.1	17.8	18.3
	8H	16.4	17.1	16.9	17.6	18.1	16.9	17.5	17.4	18.0	18.5
	12H	16.6	17.2	17.1	17.7	18.2	17.1	17.7	17.6	18.2	18.7
12H	4H	15.5	16.3	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	17.9	16.7	17.3	17.2	17.8	18.3
	8H	16.6	17.2	17.1	17.6	18.2	17.0	17.6	17.5	18.1	18.6

Maximum UGR = 18.7

UGR – Corrected Table:

UGR TABLE - CORRECTED

Reflectances		70	70	50	50	30	70	70	50	50	30
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	18.0	16.8	18.4	18.7	16.8	18.5	17.2	18.8	19.1
	3H	18.2	19.7	18.5	20.0	20.4	18.6	20.1	19.0	20.5	20.8
	4H	18.8	20.2	19.2	20.6	21.0	19.3	20.8	19.7	21.1	21.5
	6H	19.3	20.6	19.7	20.9	21.3	19.9	21.2	20.3	21.5	21.9
	8H	19.4	20.6	19.8	21.0	21.4	20.0	21.3	20.4	21.7	22.1
	12H	19.4	20.6	19.9	21.0	21.5	20.1	21.3	20.5	21.7	22.1
4H	2H	17.1	18.5	17.5	18.9	19.2	17.4	18.8	17.8	19.2	19.6
	3H	19.1	20.3	19.5	20.7	21.1	19.5	20.7	19.9	21.1	21.5
	4H	19.9	21.0	20.4	21.4	21.9	20.3	21.4	20.8	21.8	22.2
	6H	20.5	21.4	21.0	21.9	22.3	21.0	21.9	21.4	22.4	22.8
	8H	20.7	21.6	21.1	22.0	22.5	21.2	22.1	21.7	22.5	23.0
	12H	20.8	21.6	21.3	22.0	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	21.0	21.7	21.5	22.2	22.7	21.4	22.1	21.9	22.6	23.1
	8H	21.2	21.9	21.7	22.4	22.9	21.7	22.3	22.2	22.8	23.3
	12H	21.4	22.0	21.9	22.5	23.0	21.9	22.5	22.4	23.0	23.5
12H	4H	20.3	21.1	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	22.7	21.5	22.1	22.0	22.6	23.1
	8H	21.4	22.0	21.9	22.4	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) y	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1360	1360	1361	1361	1360	1360	1360	1360	1360	1361	1361	1360	1360	1360	1361	1361	1360	1360	1360
5	1355	1355	1356	1355	1356	1355	1356	1355	1356	1355	1356	1355	1355	1355	1356	1355	1356	1355	1356
10	1337	1337	1339	1339	1339	1340	1340	1340	1339	1339	1339	1337	1337	1337	1339	1339	1339	1340	1340
15	1305	1309	1310	1311	1312	1314	1316	1314	1312	1311	1310	1309	1305	1309	1310	1311	1312	1314	1316
20	1263	1267	1271	1273	1275	1278	1280	1278	1275	1273	1271	1267	1263	1267	1271	1273	1275	1278	1280
25	1207	1215	1220	1224	1228	1233	1236	1233	1228	1224	1220	1215	1207	1215	1220	1224	1228	1233	1236
30	1141	1151	1158	1164	1172	1179	1183	1179	1172	1164	1158	1151	1141	1151	1158	1164	1172	1179	1183
35	1066	1078	1087	1096	1108	1118	1123	1118	1108	1096	1087	1078	1066	1078	1087	1096	1108	1118	1123
40	983	995	1008	1020	1038	1051	1058	1051	1038	1020	1008	995	983	995	1008	1020	1038	1051	1058
45	892	907	921	938	959	972	975	972	959	938	921	907	892	907	921	938	959	972	975
50	795	811	828	850	864	869	874	869	864	850	828	811	795	811	828	850	864	869	874
55	692	709	730	749	754	760	764	760	754	749	730	709	692	709	730	749	754	760	764
60	586	601	628	636	640	646	649	646	640	636	628	601	586	601	628	636	640	646	649
65	475	491	515	519	522	526	529	526	522	519	515	491	475	491	515	519	522	526	529
70	360	380	397	400	402	404	407	404	402	400	397	380	360	380	397	400	402	404	407
75	246	270	280	283	284	286	288	286	284	283	280	270	246	270	280	283	284	286	288
80	137	158	168	170	171	172	174	172	171	170	168	158	137	158	168	170	171	172	174
85	48.1	62.9	67.8	67.7	66.2	65.1	64.9	65.1	66.2	67.7	67.8	62.9	48.1	62.9	67.7	67.8	66.2	65.1	64.9
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	285	300	315	330	345														
0	1360	1360	1361	1361	1360														
5	1355	1356	1355	1356	1355														
10	1340	1339	1339	1339	1337														
15	1314	1312	1311	1310	1309														
20	1278	1275	1273	1271	1267														
25	1233	1228	1224	1220	1215														
30	1179	1172	1164	1158	1151														
35	1118	1108	1096	1087	1078														
40	1051	1038	1020	1008	995														
45	972	959	938	921	907														
50	869	864	850	828	811														
55	760	754	749	730	709														
60	646	640	636	628	601														
65	526	522	519	515	491														
70	404	402	400	397	380														
75	286	284	283	280	270														
80	172	171	170	168	158														
85	65.1	66.2	67.7	67.8	62.9														
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@30W5000K	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 $25 \pm 1^{\circ}\text{C}$. 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	7.09
277.0	60	0.110	29.9	0.982	14.07

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*****