

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

2x4 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		4170
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	143.8
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		29.0
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	7.13
			277V	13.96
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.997
			277V	0.948
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3985±275	4038
		4 steps	3985±154	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		84.8
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥0		20
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%		74.0%
Discomfort Glare (UGR) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	21.4
		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		120.0
(Goniophotometer – Section 4.2)		Non-Worst Case		277.0
Input Current (A)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		0.242
(Goniophotometer – Section 4.2)		Non-Worst Case		0.109
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		29.0
(Goniophotometer – Section 4.2)		Non-Worst Case		28.7

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-01-28	C-SWISH2X4@30W4000K	240119002-S1
2	Goniophotometer Test	2024-01-28	C-SWISH2X4@30W4000K	240119002-S1
3	THD and PF Test	2024-01-28	C-SWISH2X4@30W4000K	240119002-S1

Remark (If any)

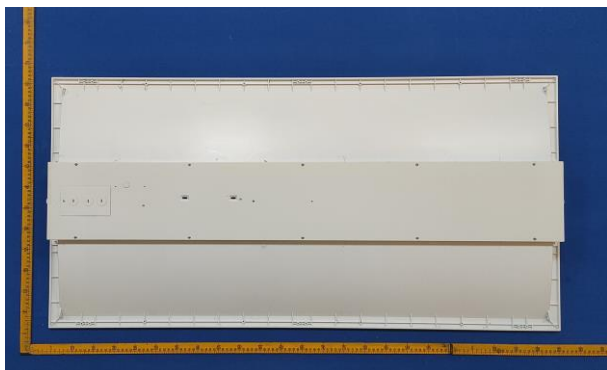
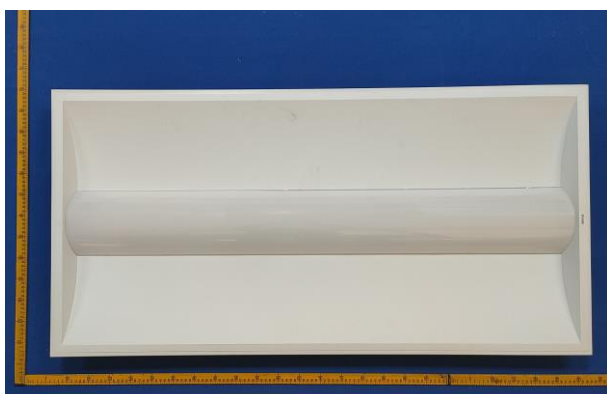
1. The results contained in this report pertain only to the tested samples.
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3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

3.0 Product Description

Luminaire Description: Model No. C-SWISH2X4@30W4000K, 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-SWISH2X4@30W4000K	Sample ID	240119002-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

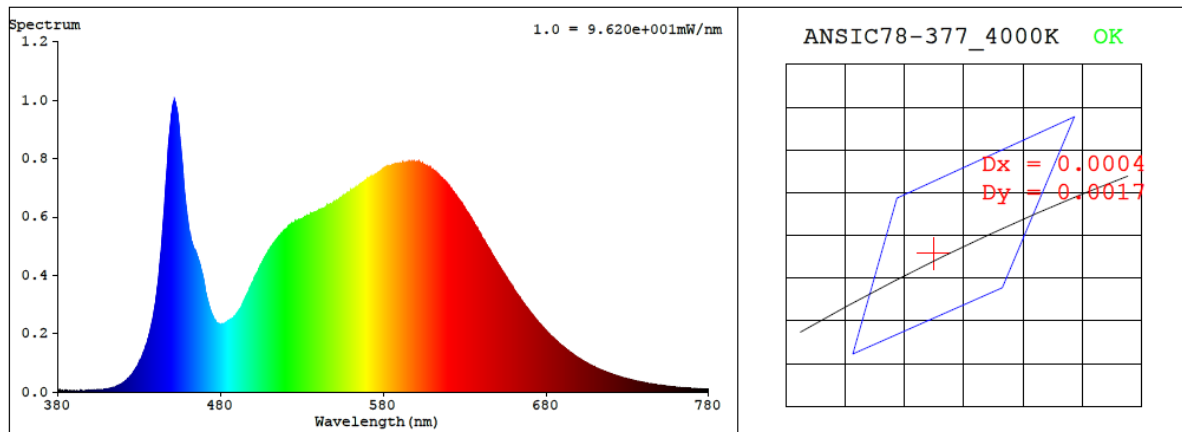
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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	0.242	29.0	0.997
277.0	60	0.109	28.7	0.948

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4038	84.8	20	0.0007	85	96	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3792$ $y = 0.3775$ / $u' = 0.2240$ $v' = 0.5017$ ($duv=7.00e-04$)

CCT= 4038K Prcp WL: Ld=578.5nm Purity=27.1%

Peak WL: Lp=452nm FWHM: =19.3nm Ratio:R=18.5% G=77.9% B=3.6%

Render Index: Ra = 84.8 AvgR = 78.5 TM30:Rf=85 Rg=96

EEL: 0.09214 A++ Highest

R1 =84	R2 =90	R3 =95	R4 =84	R5 =83	R6 =86	R7 =88
R8 =69	R9 =20	R10=76	R11=83	R12=61	R13=85	R14=97 R15=78

4.1 Integrating Sphere Test

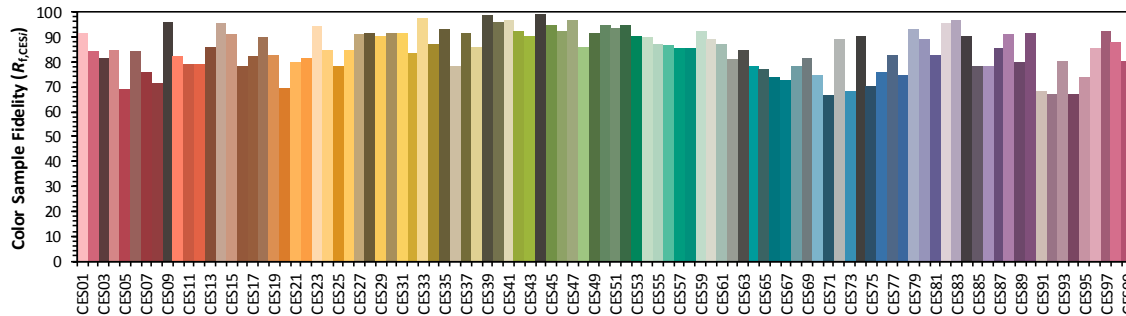
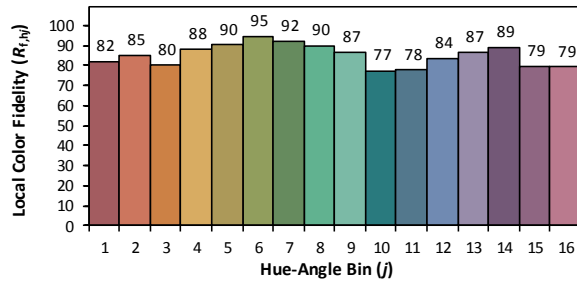
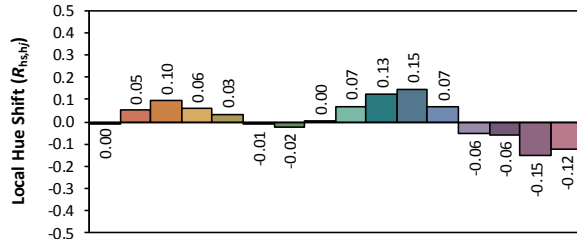
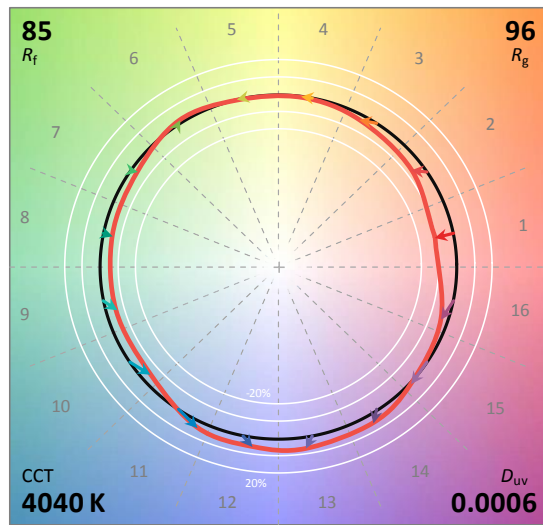
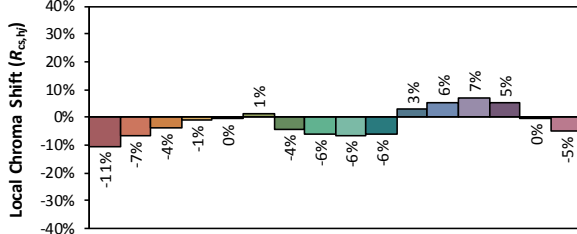
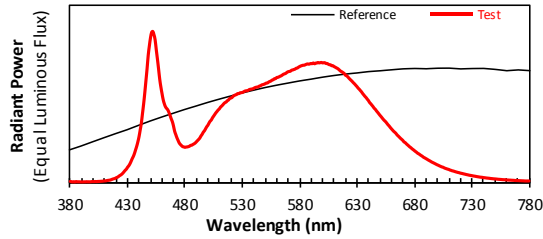
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/1/30

Model: C-SWISH2X4@30W4000K



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

x 0.3791
 y 0.3773
 u' 0.2240
 v' 0.5016

CIE 13.3-1995
(CRI)

R_a 85
 R_g 20

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	7.30E-06	447	7.49E-04	514	5.20E-04	581	7.67E-04	648	4.62E-04	715	7.31E-05
381	5.50E-06	448	8.38E-04	515	5.26E-04	582	7.70E-04	649	4.53E-04	716	7.06E-05
382	3.80E-06	449	9.00E-04	516	5.30E-04	583	7.72E-04	650	4.43E-04	717	6.85E-05
383	5.40E-06	450	9.54E-04	517	5.39E-04	584	7.72E-04	651	4.34E-04	718	6.63E-05
384	3.00E-06	451	9.88E-04	518	5.43E-04	585	7.75E-04	652	4.25E-04	719	6.48E-05
385	6.10E-06	452	9.94E-04	519	5.53E-04	586	7.79E-04	653	4.15E-04	720	6.22E-05
386	4.90E-06	453	9.73E-04	520	5.56E-04	587	7.80E-04	654	4.07E-04	721	6.05E-05
387	4.70E-06	454	9.39E-04	521	5.59E-04	588	7.79E-04	655	4.00E-04	722	5.89E-05
388	4.60E-06	455	8.75E-04	522	5.68E-04	589	7.81E-04	656	3.91E-04	723	5.68E-05
389	4.00E-06	456	8.14E-04	523	5.73E-04	590	7.83E-04	657	3.81E-04	724	5.52E-05
390	4.00E-06	457	7.49E-04	524	5.77E-04	591	7.82E-04	658	3.73E-04	725	5.32E-05
391	3.60E-06	458	6.81E-04	525	5.79E-04	592	7.87E-04	659	3.63E-04	726	5.15E-05
392	4.60E-06	459	6.30E-04	526	5.86E-04	593	7.81E-04	660	3.54E-04	727	4.99E-05
393	4.00E-06	460	5.87E-04	527	5.85E-04	594	7.86E-04	661	3.45E-04	728	4.80E-05
394	5.20E-06	461	5.46E-04	528	5.90E-04	595	7.87E-04	662	3.37E-04	729	4.68E-05
395	4.60E-06	462	5.19E-04	529	5.91E-04	596	7.90E-04	663	3.31E-04	730	4.53E-05
396	4.70E-06	463	4.99E-04	530	5.93E-04	597	7.87E-04	664	3.23E-04	731	4.39E-05
397	4.40E-06	464	4.88E-04	531	5.96E-04	598	7.89E-04	665	3.13E-04	732	4.25E-05
398	5.10E-06	465	4.79E-04	532	6.01E-04	599	7.90E-04	666	3.06E-04	733	4.13E-05
399	6.10E-06	466	4.63E-04	533	6.03E-04	600	7.87E-04	667	2.98E-04	734	3.98E-05
400	5.90E-06	467	4.43E-04	534	6.04E-04	601	7.88E-04	668	2.91E-04	735	3.85E-05
401	5.90E-06	468	4.20E-04	535	6.06E-04	602	7.88E-04	669	2.84E-04	736	3.72E-05
402	6.60E-06	469	4.01E-04	536	6.11E-04	603	7.83E-04	670	2.77E-04	737	3.59E-05
403	6.00E-06	470	3.73E-04	537	6.13E-04	604	7.83E-04	671	2.67E-04	738	3.49E-05
404	6.80E-06	471	3.38E-04	538	6.15E-04	605	7.79E-04	672	2.63E-04	739	3.42E-05
405	7.10E-06	472	3.16E-04	539	6.16E-04	606	7.75E-04	673	2.55E-04	740	3.28E-05
406	7.50E-06	473	2.95E-04	540	6.20E-04	607	7.75E-04	674	2.48E-04	741	3.18E-05
407	8.30E-06	474	2.78E-04	541	6.24E-04	608	7.69E-04	675	2.42E-04	742	3.08E-05
408	8.70E-06	475	2.61E-04	542	6.27E-04	609	7.69E-04	676	2.35E-04	743	2.96E-05
409	9.60E-06	476	2.51E-04	543	6.28E-04	610	7.63E-04	677	2.29E-04	744	2.89E-05
410	1.06E-05	477	2.43E-04	544	6.30E-04	611	7.59E-04	678	2.22E-04	745	2.81E-05
411	1.12E-05	478	2.36E-04	545	6.35E-04	612	7.55E-04	679	2.17E-04	746	2.70E-05
412	1.28E-05	479	2.34E-04	546	6.38E-04	613	7.51E-04	680	2.10E-04	747	2.60E-05
413	1.41E-05	480	2.32E-04	547	6.42E-04	614	7.45E-04	681	2.04E-04	748	2.53E-05
414	1.51E-05	481	2.34E-04	548	6.44E-04	615	7.38E-04	682	1.99E-04	749	2.44E-05
415	1.66E-05	482	2.34E-04	549	6.47E-04	616	7.32E-04	683	1.92E-04	750	2.39E-05
416	1.95E-05	483	2.36E-04	550	6.50E-04	617	7.28E-04	684	1.88E-04	751	2.32E-05
417	2.24E-05	484	2.39E-04	551	6.55E-04	618	7.22E-04	685	1.83E-04	752	2.24E-05
418	2.47E-05	485	2.45E-04	552	6.55E-04	619	7.17E-04	686	1.77E-04	753	2.15E-05
419	2.69E-05	486	2.46E-04	553	6.61E-04	620	7.06E-04	687	1.73E-04	754	2.09E-05
420	3.11E-05	487	2.51E-04	554	6.65E-04	621	7.03E-04	688	1.67E-04	755	2.03E-05
421	3.43E-05	488	2.55E-04	555	6.68E-04	622	6.95E-04	689	1.62E-04	756	1.97E-05
422	3.90E-05	489	2.60E-04	556	6.74E-04	623	6.87E-04	690	1.58E-04	757	1.88E-05
423	4.50E-05	490	2.68E-04	557	6.77E-04	624	6.79E-04	691	1.54E-04	758	1.86E-05
424	4.94E-05	491	2.76E-04	558	6.83E-04	625	6.72E-04	692	1.49E-04	759	1.82E-05
425	5.52E-05	492	2.84E-04	559	6.83E-04	626	6.64E-04	693	1.45E-04	760	1.75E-05
426	6.28E-05	493	2.93E-04	560	6.91E-04	627	6.56E-04	694	1.40E-04	761	1.66E-05
427	7.19E-05	494	3.07E-04	561	6.92E-04	628	6.48E-04	695	1.36E-04	762	1.64E-05
428	8.10E-05	495	3.17E-04	562	6.95E-04	629	6.40E-04	696	1.32E-04	763	1.57E-05
429	8.86E-05	496	3.31E-04	563	6.99E-04	630	6.31E-04	697	1.28E-04	764	1.55E-05
430	1.01E-04	497	3.40E-04	564	7.03E-04	631	6.22E-04	698	1.24E-04	765	1.48E-05
431	1.10E-04	498	3.54E-04	565	7.08E-04	632	6.14E-04	699	1.20E-04	766	1.46E-05
432	1.23E-04	499	3.67E-04	566	7.13E-04	633	6.05E-04	700	1.16E-04	767	1.41E-05
433	1.39E-04	500	3.77E-04	567	7.16E-04	634	5.96E-04	701	1.13E-04	768	1.33E-05
434	1.56E-04	501	3.91E-04	568	7.19E-04	635	5.85E-04	702	1.09E-04	769	1.31E-05
435	1.72E-04	502	4.04E-04	569	7.25E-04	636	5.76E-04	703	1.06E-04	770	1.28E-05
436	1.91E-04	503	4.12E-04	570	7.29E-04	637	5.67E-04	704	1.03E-04	771	1.24E-05
437	2.16E-04	504	4.26E-04	571	7.31E-04	638	5.59E-04	705	1.01E-04	772	1.20E-05
438	2.40E-04	505	4.37E-04	572	7.33E-04	639	5.48E-04	706	9.67E-05	773	1.17E-05
439	2.69E-04	506	4.48E-04	573	7.39E-04	640	5.39E-04	707	9.33E-05	774	1.12E-05
440	3.03E-04	507	4.59E-04	574	7.41E-04	641	5.27E-04	708	9.08E-05	775	1.10E-05
441	3.46E-04	508	4.68E-04	575	7.44E-04	642	5.19E-04	709	8.81E-05	776	1.04E-05
442	3.91E-04	509	4.78E-04	576	7.46E-04	643	5.09E-04	710	8.62E-05	777	1.01E-05
443	4.55E-04	510	4.85E-04	577	7.52E-04	644	5.00E-04	711	8.25E-05	778	1.01E-05
444	5.18E-04	511	4.96E-04	578	7.53E-04	645	4.89E-04	712	8.01E-05	779	1.02E-05
445	5.91E-04	512	5.03E-04	579	7.59E-04	646	4.82E-04	713	7.72E-05	780	1.02E-05
446	6.70E-04	513	5.11E-04	580	7.63E-04	647	4.71E-04	714	7.55E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	C-SWISH2X4@30W4000K	Sample ID	240119002-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	24.9	Humidity (%RH)	43.8

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	0.242	29.0	0.997
NON-WORST CASE	277.0	60	0.109	28.7	0.948

Test Result

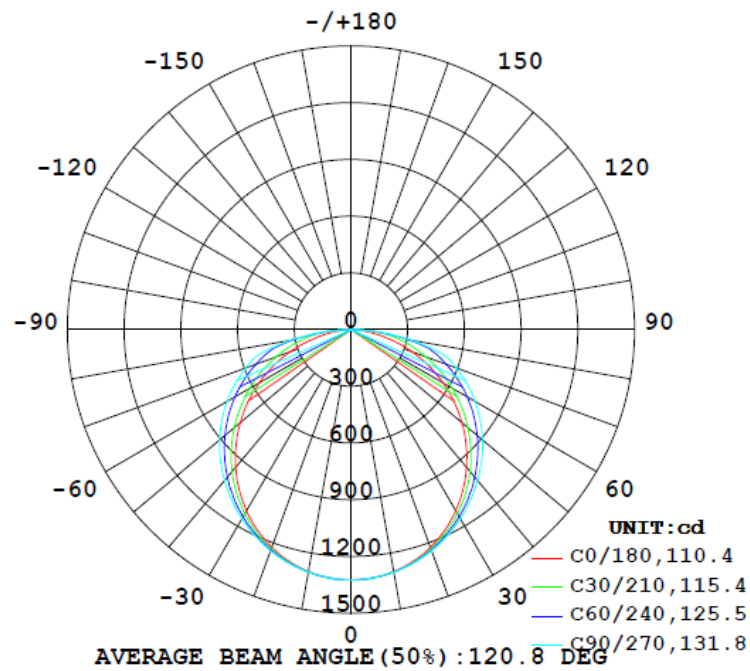
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement
	C0-180	C90-270	C0-180	C90-270		(0°-60°)
4170	161.1	170.0	110.5	131.7	143.8	74.0%

UGR		Spacing Criterion	
Crosswise	Endwise	(0°-180°)	(90°-270°)
18.2	21.4	1.26	1.32

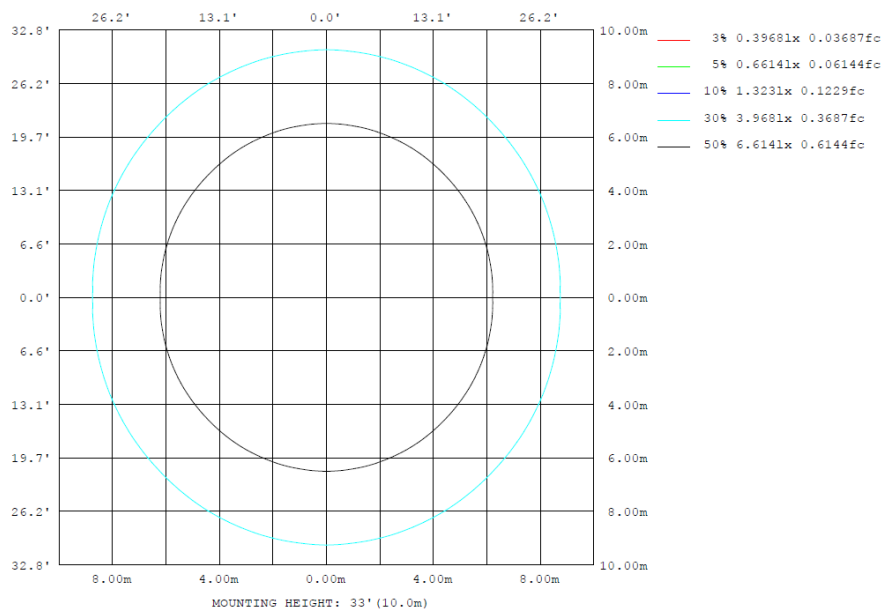
4.2 Goniophotometer Test

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	Φ zone	Φ total	%lum, lamp
10	1298	1300	1303	1300	1298	1300	1303	1300	0- 10	125.2	125.2	3,3
20	1225	1235	1245	1235	1225	1235	1245	1235	10- 20	359.6	484.8	11.6,11.6
30	1107	1133	1156	1133	1107	1133	1156	1133	20- 30	548.2	1033	24.8,24.8
40	950.8	995.5	1041	995.5	950.8	995.5	1041	995.5	30- 40	669.0	1702	40.8,40.8
50	765.6	836.8	908.3	836.8	765.6	836.8	908.3	836.8	40- 50	710.6	2413	57.9,57.9
60	560.7	662.7	756.3	662.7	560.7	662.7	756.3	662.7	50- 60	672.4	3085	74,74
70	342.2	481.4	594.2	481.4	342.2	481.4	594.2	481.4	60- 70	563.4	3649	87.5,87.5
80	131.0	286.8	327.1	286.8	131.0	286.8	327.1	286.8	70- 80	396.2	4045	97,97
90	0	0	0	0	0	0	0	0	80- 90	125.3	4170	100,100
100	0	0	0	0	0	0	0	0	90-100	0	4170	100,100
110	0	0	0	0	0	0	0	0	100-110	0	4170	100,100
120	0	0	0	0	0	0	0	0	110-120	0	4170	100,100
130	0	0	0	0	0	0	0	0	120-130	0	4170	100,100
140	0	0	0	0	0	0	0	0	130-140	0	4170	100,100
150	0	0	0	0	0	0	0	0	140-150	0	4170	100,100
160	0	0	0	0	0	0	0	0	150-160	0	4170	100,100
170	0	0	0	0	0	0	0	0	160-170	0	4170	100,100
180	0	0	0	0	0	0	0	0	170-180	0	4170	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	125.25	0-10	125.25	3.00%
10-20	359.57	0-20	484.82	11.63%
20-30	548.21	0-30	1033.03	24.77%
30-40	669.05	0-40	1702.08	40.82%
40-50	710.64	0-50	2412.72	57.86%
50-60	672.41	0-60	3085.13	73.98%
60-70	563.43	0-70	3648.56	87.49%
70-80	396.24	0-80	4044.80	97.00%
80-90	125.27	0-90	4170.07	100.00%
90-100	0.00	0-100	4170.07	100.00%
100-110	0.00	0-110	4170.07	100.00%
110-120	0.00	0-120	4170.07	100.00%
120-130	0.00	0-130	4170.07	100.00%
130-140	0.00	0-140	4170.07	100.00%
140-150	0.00	0-150	4170.07	100.00%
150-160	0.00	0-160	4170.07	100.00%
160-170	0.00	0-170	4170.07	100.00%
170-180	0.00	0-180	4170.07	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				
	8.6	10.3	9.0	10.6	10.9	10.0	11.7	10.3	12.0	12.3	
	3H	10.4	11.9	10.8	12.3	12.6	12.5	14.1	12.9	14.4	14.8
	4H	11.0	12.5	11.4	12.8	13.2	13.8	15.2	14.2	15.6	16.0
	6H	11.5	12.9	11.9	13.2	13.6	14.7	16.1	15.1	16.5	16.8
	8H	11.6	12.9	12.0	13.3	13.7	15.1	16.4	15.5	16.7	17.1
	12H	11.7	12.9	12.1	13.3	13.8	15.3	16.5	15.7	16.9	17.3
4H	2H	9.6	11.0	10.0	11.4	11.7	10.6	12.0	11.0	12.4	12.8
	3H	11.6	12.9	12.0	13.3	13.7	13.4	14.7	13.8	15.1	15.5
	4H	12.4	13.6	12.9	14.0	14.4	14.8	16.0	15.3	16.4	16.8
	6H	13.0	14.0	13.5	14.5	14.9	16.0	17.0	16.4	17.4	17.9
	8H	13.2	14.2	13.7	14.6	15.1	16.4	17.3	16.8	17.7	18.2
	12H	13.3	14.2	13.8	14.7	15.1	16.6	17.5	17.1	17.9	18.4
8H	4H	13.2	14.1	13.7	14.6	15.0	15.2	16.1	15.7	16.6	17.0
	6H	14.0	14.8	14.5	15.3	15.8	16.5	17.3	17.0	17.8	18.3
	8H	14.3	15.0	14.8	15.5	16.0	17.0	17.7	17.5	18.2	18.7
	12H	14.6	15.2	15.1	15.7	16.2	17.4	18.0	17.9	18.5	19.0
12H	4H	13.3	14.2	13.8	14.7	15.1	15.2	16.1	15.7	16.6	17.0
	6H	14.3	15.0	14.8	15.5	16.0	16.6	17.3	17.1	17.8	18.3
	8H	14.7	15.3	15.2	15.8	16.4	17.2	17.8	17.7	18.3	18.8

Maximum UGR = 19.0

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				
	13.6	15.3	14.0	15.6	15.9	15.0	16.7	15.3	17.0	17.3	
	3H	15.4	16.9	15.8	17.3	17.6	17.5	19.1	17.9	19.4	19.8
	4H	16.0	17.5	16.4	17.8	18.2	18.8	20.2	19.2	20.6	21.0
	6H	16.5	17.9	16.9	18.2	18.6	19.7	21.1	20.1	21.5	21.8
	8H	16.6	17.9	17.0	18.3	18.7	20.1	21.4	20.5	21.7	22.1
	12H	16.7	17.9	17.1	18.3	18.8	20.3	21.5	20.7	21.9	22.3
4H	2H	14.6	16.0	15.0	16.4	16.7	15.6	17.0	16.0	17.4	17.8
	3H	16.6	17.9	17.0	18.3	18.7	18.4	19.7	18.8	20.1	20.5
	4H	17.4	18.6	17.9	19.0	19.4	19.8	21.0	20.3	21.4	21.8
	6H	18.0	19.0	18.5	19.5	19.9	21.0	22.0	21.4	22.4	22.9
	8H	18.2	19.2	18.7	19.6	20.1	21.4	22.3	21.8	22.7	23.2
	12H	18.3	19.2	18.8	19.7	20.1	21.6	22.5	22.1	22.9	23.4
8H	4H	18.2	19.1	18.7	19.6	20.0	20.2	21.1	20.7	21.6	22.0
	6H	19.0	19.8	19.5	20.3	20.8	21.5	22.3	22.0	22.8	23.3
	8H	19.3	20.0	19.8	20.5	21.0	22.0	22.7	22.5	23.2	23.7
	12H	19.6	20.2	20.1	20.7	21.2	22.4	23.0	22.9	23.5	24.0
12H	4H	18.3	19.2	18.8	19.7	20.1	20.2	21.1	20.7	21.6	22.0
	6H	19.3	20.0	19.8	20.5	21.0	21.6	22.3	22.1	22.8	23.3
	8H	19.7	20.3	20.2	20.8	21.4	22.2	22.8	22.7	23.3	23.8

Maximum UGR = 24.0

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	1323	1324	1325	1322	1324	1324	1324	1324	1324	1322	1325	1324	1323	1324	1325	1322	1324	1324	1324
5	1317	1318	1319	1318	1318	1316	1318	1316	1318	1318	1319	1318	1317	1318	1319	1318	1318	1316	1318
10	1298	1301	1303	1300	1302	1301	1303	1301	1302	1300	1303	1301	1298	1301	1303	1300	1302	1301	1303
15	1268	1271	1273	1273	1275	1276	1277	1276	1275	1273	1273	1271	1268	1271	1273	1273	1275	1276	1277
20	1225	1230	1235	1235	1240	1242	1245	1242	1240	1235	1235	1230	1225	1230	1235	1235	1240	1242	1245
25	1171	1179	1184	1188	1195	1200	1203	1200	1195	1188	1184	1179	1171	1179	1184	1188	1195	1200	1203
30	1107	1116	1125	1133	1144	1152	1156	1152	1144	1133	1125	1116	1107	1116	1125	1133	1144	1152	1156
35	1033	1044	1056	1067	1084	1096	1101	1096	1084	1067	1056	1044	1033	1044	1056	1067	1084	1096	1101
40	951	964	980	996	1018	1033	1041	1033	1018	996	980	964	951	964	980	996	1018	1033	1041
45	861	877	896	918	947	967	978	967	947	918	896	877	861	877	896	918	947	967	978
50	766	783	807	837	871	896	908	896	871	837	807	783	766	783	807	837	871	896	908
55	665	683	714	751	792	821	834	821	792	751	714	683	665	683	714	751	792	821	834
60	561	580	617	663	708	742	756	742	708	663	617	580	561	580	617	663	708	742	756
65	453	475	520	572	623	660	677	660	623	572	520	475	453	475	520	572	623	660	677
70	342	368	422	481	536	577	594	577	536	481	422	368	342	368	422	481	536	577	594
75	233	264	327	391	448	491	504	491	448	391	327	264	233	264	327	391	448	491	504
80	131	168	235	287	307	320	327	320	307	287	235	168	131	168	235	287	307	320	327
85	47.3	83.8	116	124	128	130	132	130	128	124	116	83.8	47.3	83.8	116	124	128	130	132
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	1324	1324	1322	1325	1324														
5	1316	1318	1318	1319	1318														
10	1301	1302	1300	1303	1301														
15	1276	1275	1273	1273	1271														
20	1242	1240	1235	1235	1230														
25	1200	1195	1188	1184	1179														
30	1152	1144	1133	1125	1116														
35	1096	1084	1067	1056	1044														
40	1033	1018	996	980	964														
45	967	947	918	896	877														
50	896	871	837	807	783														
55	821	792	751	714	683														
60	742	708	663	617	580														
65	660	623	572	520	475														
70	577	536	481	422	368														
75	491	448	391	327	264														
80	320	307	287	235	168														
85	130	128	124	116	83.8														
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-SWISH2X4@30W4000K	Sample ID	240119002-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	0.242	29.0	0.997	7.13
277.0	60	0.109	28.7	0.948	13.96

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*****