

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		2661
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	132.4
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		20.1
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	11.76
			277V	15.04
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.992
			277V	0.961
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3465±245	3408
		4 steps	3465±124	
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		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	19.8
		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		0.076
(Goniophotometer – Section 4.2)		Non-Worst Case		0.165
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		20.1
(Goniophotometer – Section 4.2)		Non-Worst Case		19.6

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-01-26	C-SWISH1X4@20W3500K	240119003-S1
2	Goniophotometer Test	2024-01-26	C-SWISH1X4@20W3500K	240119003-S1
3	THD and PF Test	2024-01-26	C-SWISH1X4@20W3500K	240119003-S1

Remark (If any)

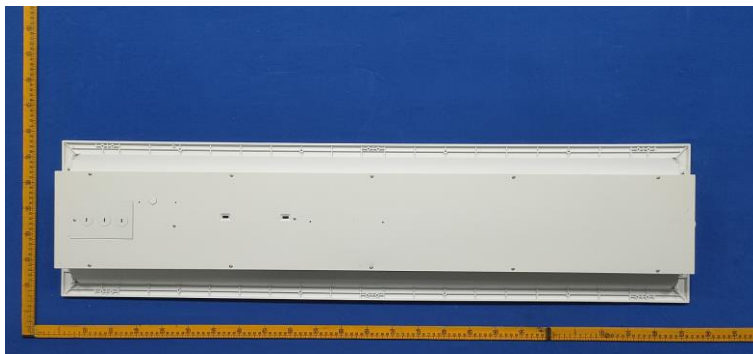
1. The results contained in this report pertain only to the tested samples.
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3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

3.0 Product Description

Luminaire Description: Model No. C-SWISH1X4@20W3500K, 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@20W3500K	Sample ID	240119003-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

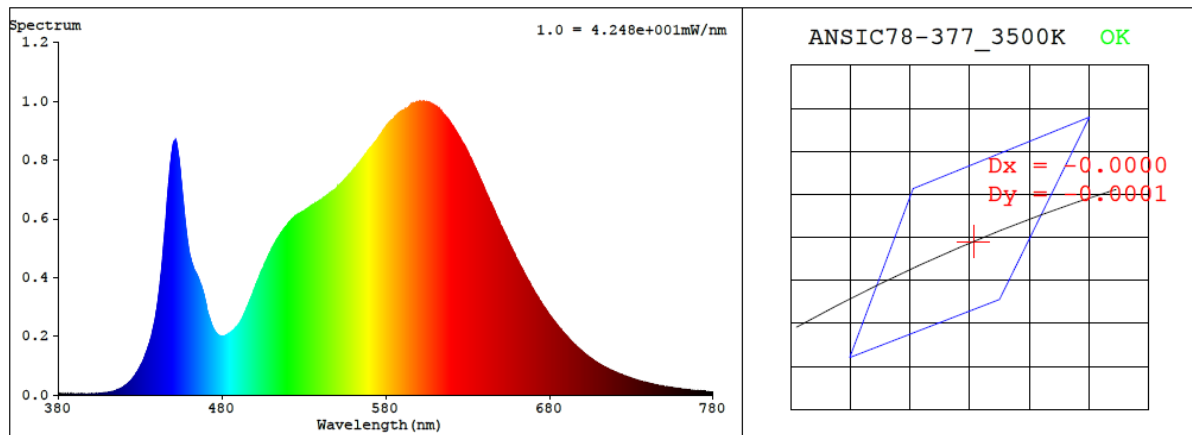
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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	0.165	19.6	0.992
277.0	60	0.076	20.1	0.961

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
3408	84.0	15	-0.0001	85	97	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4106$ $y = 0.3932$ / $u' = 0.2381$ $v' = 0.5131$ ($duv = -2.97e-05$)

CCT= 3408K Prcp WL: Ld=581.2nm Purity=41.3%

Peak WL: Lp=603nm FWHM: =146.1nm Ratio:R=20.9% G=76.3% B=2.8%

Render Index: Ra = 84.0 AvgR = 77.9 TM30:Rf=85 Rg=97

EEL: 0.11853 A+

R1 =83	R2 =90	R3 =96	R4 =83	R5 =82	R6 =87	R7 =86
R8 =65	R9 =15	R10=76	R11=83	R12=65	R13=85	R14=98 R15=77

4.1 Integrating Sphere Test

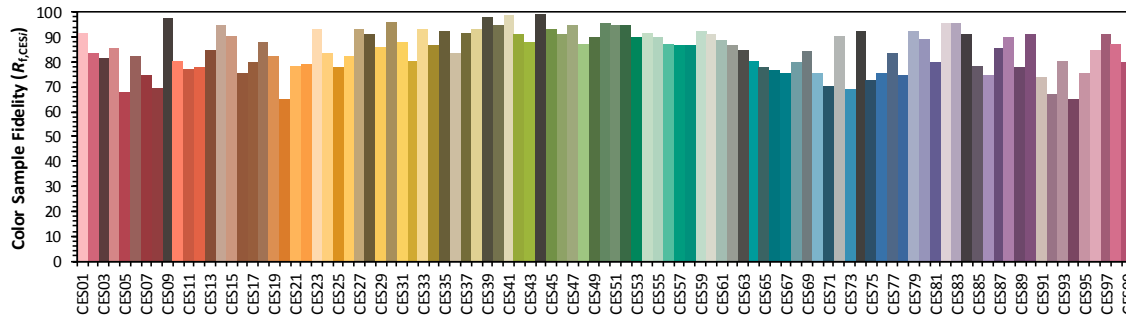
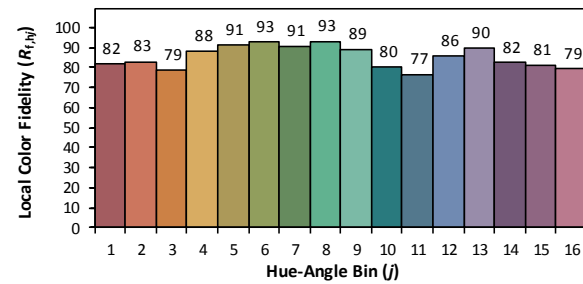
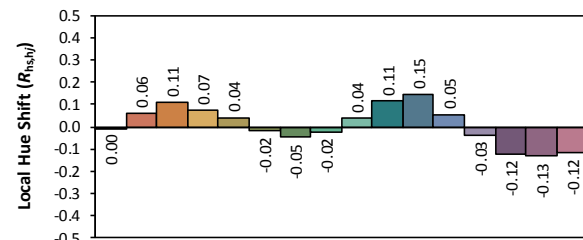
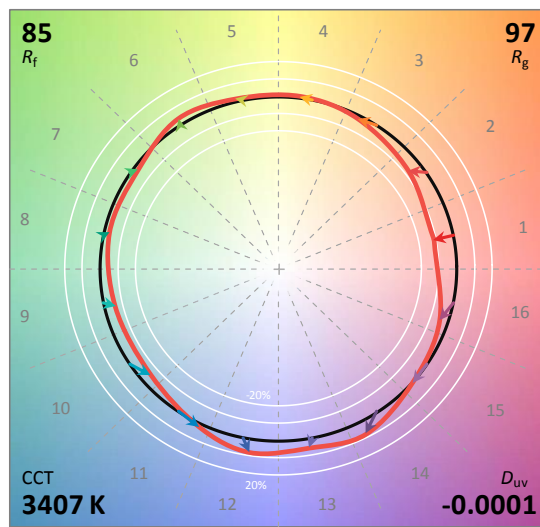
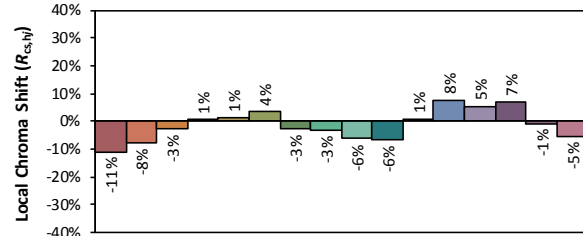
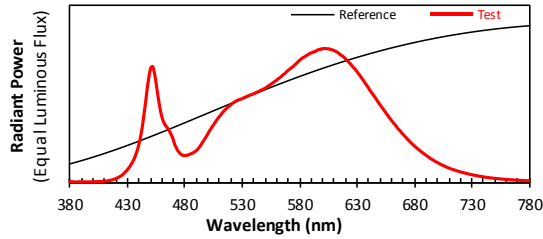
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/1/29

Model: C-SWISH1X4@20W3500K



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

x 0.4106
 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	2.00E-06	447	6.94E-04	514	5.33E-04	581	9.19E-04	648	6.06E-04	715	9.21E-05
381	5.60E-06	448	7.56E-04	515	5.41E-04	582	9.26E-04	649	5.94E-04	716	8.94E-05
382	4.90E-06	449	8.08E-04	516	5.50E-04	583	9.33E-04	650	5.80E-04	717	8.58E-05
383	3.10E-06	450	8.50E-04	517	5.58E-04	584	9.36E-04	651	5.70E-04	718	8.42E-05
384	3.00E-06	451	8.64E-04	518	5.66E-04	585	9.41E-04	652	5.57E-04	719	8.16E-05
385	2.40E-06	452	8.64E-04	519	5.72E-04	586	9.48E-04	653	5.46E-04	720	7.84E-05
386	2.90E-06	453	8.32E-04	520	5.80E-04	587	9.52E-04	654	5.34E-04	721	7.66E-05
387	3.80E-06	454	7.90E-04	521	5.88E-04	588	9.58E-04	655	5.22E-04	722	7.38E-05
388	4.20E-06	455	7.32E-04	522	5.93E-04	589	9.63E-04	656	5.09E-04	723	7.18E-05
389	3.10E-06	456	6.75E-04	523	5.98E-04	590	9.67E-04	657	4.99E-04	724	6.94E-05
390	2.50E-06	457	6.16E-04	524	6.05E-04	591	9.69E-04	658	4.87E-04	725	6.72E-05
391	2.70E-06	458	5.67E-04	525	6.09E-04	592	9.75E-04	659	4.76E-04	726	6.53E-05
392	4.00E-06	459	5.22E-04	526	6.14E-04	593	9.75E-04	660	4.63E-04	727	6.30E-05
393	3.30E-06	460	4.87E-04	527	6.16E-04	594	9.80E-04	661	4.53E-04	728	6.10E-05
394	3.70E-06	461	4.60E-04	528	6.20E-04	595	9.85E-04	662	4.41E-04	729	5.95E-05
395	2.70E-06	462	4.41E-04	529	6.23E-04	596	9.90E-04	663	4.32E-04	730	5.75E-05
396	3.70E-06	463	4.26E-04	530	6.26E-04	597	9.93E-04	664	4.21E-04	731	5.52E-05
397	3.60E-06	464	4.15E-04	531	6.30E-04	598	9.93E-04	665	4.10E-04	732	5.35E-05
398	3.20E-06	465	4.04E-04	532	6.34E-04	599	9.98E-04	666	3.99E-04	733	5.18E-05
399	4.20E-06	466	3.89E-04	533	6.38E-04	600	9.97E-04	667	3.90E-04	734	5.01E-05
400	4.50E-06	467	3.74E-04	534	6.42E-04	601	1.00E-03	668	3.81E-04	735	4.87E-05
401	4.40E-06	468	3.58E-04	535	6.46E-04	602	9.99E-04	669	3.69E-04	736	4.68E-05
402	4.60E-06	469	3.38E-04	536	6.48E-04	603	9.99E-04	670	3.61E-04	737	4.54E-05
403	5.60E-06	470	3.15E-04	537	6.54E-04	604	9.98E-04	671	3.50E-04	738	4.45E-05
404	5.00E-06	471	2.85E-04	538	6.55E-04	605	9.98E-04	672	3.41E-04	739	4.29E-05
405	5.70E-06	472	2.68E-04	539	6.59E-04	606	9.96E-04	673	3.32E-04	740	4.12E-05
406	5.80E-06	473	2.49E-04	540	6.63E-04	607	9.93E-04	674	3.22E-04	741	4.00E-05
407	6.10E-06	474	2.34E-04	541	6.65E-04	608	9.91E-04	675	3.14E-04	742	3.83E-05
408	7.00E-06	475	2.23E-04	542	6.71E-04	609	9.88E-04	676	3.06E-04	743	3.72E-05
409	8.20E-06	476	2.14E-04	543	6.74E-04	610	9.85E-04	677	2.97E-04	744	3.59E-05
410	9.00E-06	477	2.07E-04	544	6.79E-04	611	9.81E-04	678	2.89E-04	745	3.48E-05
411	9.80E-06	478	2.03E-04	545	6.82E-04	612	9.76E-04	679	2.80E-04	746	3.40E-05
412	1.06E-05	479	2.00E-04	546	6.88E-04	613	9.71E-04	680	2.72E-04	747	3.27E-05
413	1.20E-05	480	2.01E-04	547	6.90E-04	614	9.66E-04	681	2.65E-04	748	3.20E-05
414	1.37E-05	481	2.01E-04	548	6.95E-04	615	9.57E-04	682	2.58E-04	749	3.10E-05
415	1.50E-05	482	2.02E-04	549	6.99E-04	616	9.51E-04	683	2.51E-04	750	2.98E-05
416	1.77E-05	483	2.05E-04	550	7.03E-04	617	9.45E-04	684	2.43E-04	751	2.90E-05
417	1.97E-05	484	2.10E-04	551	7.10E-04	618	9.40E-04	685	2.36E-04	752	2.79E-05
418	2.20E-05	485	2.12E-04	552	7.16E-04	619	9.32E-04	686	2.29E-04	753	2.71E-05
419	2.51E-05	486	2.16E-04	553	7.21E-04	620	9.23E-04	687	2.23E-04	754	2.64E-05
420	2.86E-05	487	2.20E-04	554	7.27E-04	621	9.15E-04	688	2.16E-04	755	2.58E-05
421	3.32E-05	488	2.25E-04	555	7.33E-04	622	9.06E-04	689	2.10E-04	756	2.48E-05
422	3.72E-05	489	2.31E-04	556	7.39E-04	623	8.97E-04	690	2.03E-04	757	2.40E-05
423	4.21E-05	490	2.38E-04	557	7.46E-04	624	8.88E-04	691	1.98E-04	758	2.32E-05
424	4.64E-05	491	2.47E-04	558	7.52E-04	625	8.78E-04	692	1.91E-04	759	2.22E-05
425	5.30E-05	492	2.57E-04	559	7.57E-04	626	8.67E-04	693	1.85E-04	760	2.16E-05
426	6.03E-05	493	2.68E-04	560	7.63E-04	627	8.57E-04	694	1.79E-04	761	2.10E-05
427	6.80E-05	494	2.81E-04	561	7.72E-04	628	8.50E-04	695	1.73E-04	762	2.05E-05
428	7.67E-05	495	2.94E-04	562	7.77E-04	629	8.39E-04	696	1.69E-04	763	1.99E-05
429	8.60E-05	496	3.07E-04	563	7.85E-04	630	8.28E-04	697	1.63E-04	764	1.90E-05
430	9.65E-05	497	3.21E-04	564	7.91E-04	631	8.16E-04	698	1.58E-04	765	1.86E-05
431	1.07E-04	498	3.34E-04	565	8.00E-04	632	8.05E-04	699	1.54E-04	766	1.83E-05
432	1.18E-04	499	3.49E-04	566	8.06E-04	633	7.93E-04	700	1.48E-04	767	1.73E-05
433	1.34E-04	500	3.62E-04	567	8.12E-04	634	7.80E-04	701	1.44E-04	768	1.66E-05
434	1.47E-04	501	3.78E-04	568	8.21E-04	635	7.69E-04	702	1.39E-04	769	1.60E-05
435	1.63E-04	502	3.92E-04	569	8.30E-04	636	7.56E-04	703	1.35E-04	770	1.58E-05
436	1.81E-04	503	4.05E-04	570	8.37E-04	637	7.43E-04	704	1.30E-04	771	1.53E-05
437	2.04E-04	504	4.19E-04	571	8.44E-04	638	7.31E-04	705	1.26E-04	772	1.48E-05
438	2.28E-04	505	4.30E-04	572	8.50E-04	639	7.19E-04	706	1.22E-04	773	1.43E-05
439	2.55E-04	506	4.44E-04	573	8.58E-04	640	7.07E-04	707	1.18E-04	774	1.40E-05
440	2.89E-04	507	4.56E-04	574	8.63E-04	641	6.91E-04	708	1.15E-04	775	1.36E-05
441	3.27E-04	508	4.69E-04	575	8.71E-04	642	6.81E-04	709	1.11E-04	776	1.30E-05
442	3.72E-04	509	4.81E-04	576	8.80E-04	643	6.68E-04	710	1.07E-04	777	1.29E-05
443	4.25E-04	510	4.91E-04	577	8.87E-04	644	6.55E-04	711	1.04E-04	778	1.25E-05
444	4.88E-04	511	5.02E-04	578	8.96E-04	645	6.44E-04	712	1.00E-04	779	1.25E-05
445	5.53E-04	512	5.13E-04	579	9.05E-04	646	6.32E-04	713	9.77E-05	780	1.25E-05
446	6.19E-04	513	5.24E-04	580	9.12E-04	647	6.19E-04	714	9.49E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	C-SWISH1X4@20W3500K	Sample ID	240119003-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	24.8	Humidity (%RH)	42.3

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	277.0	60	0.076	20.1	0.961
NON-WORST CASE	120.0	60	0.165	19.6	0.992

Test Result

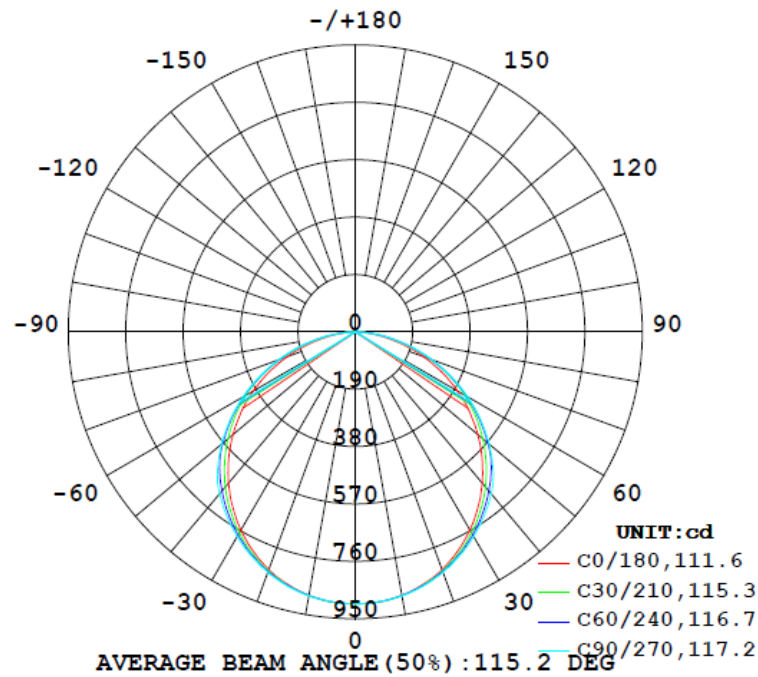
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement
	C0-180	C90-270	C0-180	C90-270		(0°-60°)
2661	161.4	163.5	111.6	117.0	132.4	78.1%

UGR		Spacing Criterion	
Crosswise	Endwise	(0°-180°)	(90°-270°)
19.3	19.8	1.26	1.30

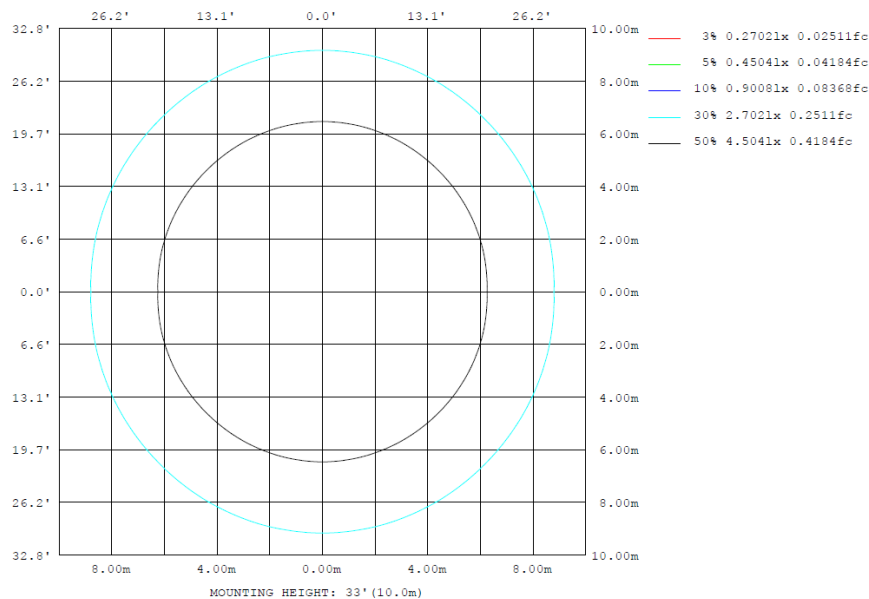
4.2 Goniophotometer Test

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	885.3	886.6	887.3	886.6	885.3	886.6	887.3	886.6	0- 10	85.32	85.32	3.21,3.21
20	837.3	843.5	847.2	843.5	837.3	843.5	847.2	843.5	10- 20	245.2	330.5	12.4,12.4
30	757.9	772.0	782.8	772.0	757.9	772.0	782.8	772.0	20- 30	373.8	704.3	26.5,26.5
40	653.7	677.5	699.5	677.5	653.7	677.5	699.5	677.5	30- 40	455.4	1160	43.6,43.6
50	528.8	565.2	577.9	565.2	528.8	565.2	577.9	565.2	40- 50	480.0	1640	61.6,61.6
60	390.0	422.8	428.7	422.8	390.0	422.8	428.7	422.8	50- 60	438.1	2078	78.1,78.1
70	239.9	266.3	269.1	266.3	239.9	266.3	269.1	266.3	60- 70	336.7	2415	90.7,90.7
80	92.04	113.1	114.6	113.1	92.04	113.1	114.6	113.1	70- 80	195.4	2610	98.1,98.1
90	0	0	0	0	0	0	0	0	80- 90	51.23	2661	100,100
100	0	0	0	0	0	0	0	0	90-100	0	2661	100,100
110	0	0	0	0	0	0	0	0	100-110	0	2661	100,100
120	0	0	0	0	0	0	0	0	110-120	0	2661	100,100
130	0	0	0	0	0	0	0	0	120-130	0	2661	100,100
140	0	0	0	0	0	0	0	0	130-140	0	2661	100,100
150	0	0	0	0	0	0	0	0	140-150	0	2661	100,100
160	0	0	0	0	0	0	0	0	150-160	0	2661	100,100
170	0	0	0	0	0	0	0	0	160-170	0	2661	100,100
180	0	0	0	0	0	0	0	0	170-180	0	2661	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	85.32	0-10	85.32	3.21%
10-20	245.17	0-20	330.49	12.42%
20-30	373.77	0-30	704.26	26.46%
30-40	455.45	0-40	1159.71	43.58%
40-50	480.03	0-50	1639.74	61.62%
50-60	438.10	0-60	2077.84	78.08%
60-70	336.69	0-70	2414.53	90.73%
70-80	195.44	0-80	2609.97	98.07%
80-90	51.23	0-90	2661.20	100.00%
90-100	0.00	0-100	2661.20	100.00%
100-110	0.00	0-110	2661.20	100.00%
110-120	0.00	0-120	2661.20	100.00%
120-130	0.00	0-130	2661.20	100.00%
130-140	0.00	0-140	2661.20	100.00%
140-150	0.00	0-150	2661.20	100.00%
150-160	0.00	0-160	2661.20	100.00%
160-170	0.00	0-170	2661.20	100.00%
170-180	0.00	0-180	2661.20	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	16.3	15.4	16.7	17.1
	8H	14.6	15.9	15.0	16.3	16.7	15.2	16.4	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	15.9	16.3	14.7	15.9	15.1	16.3	16.7
	4H	15.2	16.2	15.6	16.6	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	17.2	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	16.2	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	17.6	17.6	18.1	18.7
12H	4H	15.6	16.4	16.0	16.8	17.3	15.9	16.7	16.3	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	15.0	16.7	15.4	17.0	17.3	15.4	17.0	15.8	17.4	17.7
	3H	16.8	18.3	17.2	18.6	19.0	17.2	18.7	17.6	19.0	19.4
	4H	17.5	18.9	17.9	19.2	19.6	17.9	19.3	18.3	19.7	20.1
	6H	17.9	19.2	18.3	19.6	20.0	18.4	19.7	18.8	20.1	20.5
	8H	18.0	19.3	18.4	19.7	20.1	18.6	19.8	19.0	20.2	20.6
	12H	18.1	19.3	18.5	19.7	20.1	18.7	19.9	19.1	20.3	20.7
4H	2H	15.7	17.1	16.1	17.5	17.9	16.0	17.4	16.4	17.8	18.2
	3H	17.8	19.0	18.2	19.3	19.7	18.1	19.3	18.5	19.7	20.1
	4H	18.6	19.6	19.0	20.0	20.5	18.9	20.0	19.3	20.4	20.8
	6H	19.1	20.1	19.6	20.5	21.0	19.6	20.5	20.0	20.9	21.4
	8H	19.3	20.2	19.8	20.6	21.1	19.8	20.6	20.2	21.1	21.6
	12H	19.4	20.2	19.9	20.7	21.1	19.9	20.7	20.4	21.2	21.6
8H	4H	18.9	19.8	19.4	20.2	20.7	19.2	20.1	19.7	20.6	21.0
	6H	19.6	20.4	20.1	20.9	21.3	20.0	20.7	20.5	21.2	21.7
	8H	19.9	20.5	20.4	21.0	21.5	20.3	20.9	20.8	21.4	21.9
	12H	20.1	20.6	20.6	21.1	21.7	20.5	21.0	21.0	21.5	22.1
12H	4H	19.0	19.8	19.4	20.2	20.7	19.3	20.1	19.7	20.5	21.0
	6H	19.7	20.4	20.2	20.8	21.4	20.1	20.7	20.6	21.2	21.7
	8H	20.0	20.6	20.5	21.1	21.6	20.4	21.0	20.9	21.5	22.0

Maximum UGR = 22.1

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	901	900	900	901	900	900	900	900	900	901	900	900	901	900	900	901	900	900	900
5	897	897	897	897	897	897	897	897	897	897	897	897	897	897	897	897	897	897	897
10	885	886	887	887	887	887	887	887	887	887	887	886	885	886	887	887	887	887	887
15	866	867	868	869	868	870	871	870	868	869	868	867	866	867	868	869	868	870	871
20	837	840	841	844	845	846	847	846	845	844	841	840	837	840	841	844	845	846	847
25	801	806	809	812	814	816	818	816	814	812	809	806	801	806	809	812	814	816	818
30	758	764	768	772	777	781	783	781	777	772	768	764	758	764	768	772	777	781	783
35	708	715	722	727	734	741	743	741	734	727	722	715	708	715	722	727	734	741	743
40	654	662	670	677	687	696	700	696	687	677	670	662	654	662	670	677	687	696	700
45	593	603	612	623	636	644	646	644	636	623	612	603	593	603	612	623	636	644	646
50	529	539	551	565	573	576	578	576	573	565	551	539	529	539	551	565	573	576	578
55	461	471	486	498	500	503	506	503	500	498	486	471	461	471	486	498	500	503	506
60	390	401	418	423	425	427	429	427	425	423	418	401	390	401	418	423	425	427	429
65	316	328	343	345	346	348	349	348	346	345	343	328	316	328	343	345	346	348	349
70	240	253	264	266	267	268	269	268	267	266	264	253	240	253	264	266	267	268	269
75	164	181	187	188	189	189	190	189	188	187	181	164	181	187	188	189	189	190	190
80	92.0	106	112	113	114	114	115	114	114	113	112	106	92.0	106	112	113	114	114	115
85	33.0	42.5	45.4	45.0	43.7	42.8	42.3	42.8	43.7	45.0	45.4	42.5	33.0	42.5	45.4	45.0	43.7	42.8	42.3
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	900	900	901	900	900														
5	897	897	897	897	897														
10	887	887	887	887	886														
15	870	868	869	868	867														
20	846	845	844	841	840														
25	816	814	812	809	806														
30	781	777	772	768	764														
35	741	734	727	722	715														
40	696	687	677	670	662														
45	644	636	623	612	603														
50	576	573	565	551	539														
55	503	500	498	486	471														
60	427	425	423	418	401														
65	348	346	345	343	328														
70	268	267	266	264	253														
75	189	189	188	187	181														
80	114	114	113	112	106														
85	42.8	43.7	45.0	45.4	42.5														
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@20W3500K	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	0.165	19.6	0.992	11.76
277.0	60	0.076	20.1	0.961	15.04

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*****