

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

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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		4028
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	137.9
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		29.2
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	7.05
			277V	14.02
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.997
			277V	0.980
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3985±275	4080
		4 steps	3985±154	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		85.1
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥0		21
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%		-10%
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		0.244
(Goniophotometer – Section 4.2)		Non-Worst Case		0.107
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		29.2
(Goniophotometer – Section 4.2)		Non-Worst Case		29.1

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-01-26	C-SWISH1X4@30W4000K	240119003-S1
2	Goniophotometer Test	2024-01-26	C-SWISH1X4@30W4000K	240119003-S1
3	THD and PF Test	2024-01-26	C-SWISH1X4@30W4000K	240119003-S1

Remark (If any)

1. The results contained in this report pertain only to the tested samples.
2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.
3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

3.0 Product Description

Luminaire Description: Model No. C-SWISH1X4@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-SWISH1X4@30W4000K	Sample ID	240119003-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

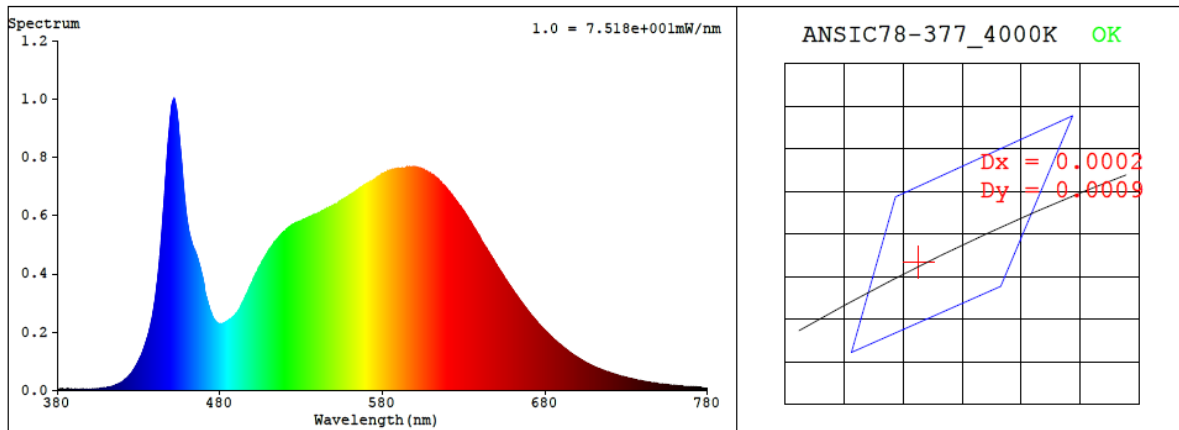
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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	0.244	29.2	0.997
277.0	60	0.107	29.1	0.980

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4080	85.1	21	0.0004	85	96	-10%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3772$ $y = 0.3755$ / $u' = 0.2235$ $v' = 0.5005$ ($duv=3.51e-04$)

CCT= 4080K Prcp WL: $L_d=578.6nm$ Purity=25.9%

Peak WL: $L_p=452nm$ FWHM: $=19.4nm$ Ratio: R=18.4% G=77.9% B=3.7%

Render Index: $R_a = 85.1$ AvgR = 78.9 TM30: $R_f=85$ $R_g=96$

EEL: 0.11599 A+

R1 =84 R2 =90 R3 =95 R4 =84 R5 =84 R6 =86 R7 =88

R8 =70 R9 =21 R10=76 R11=83 R12=61 R13=86 R14=97 R15=79

4.1 Integrating Sphere Test

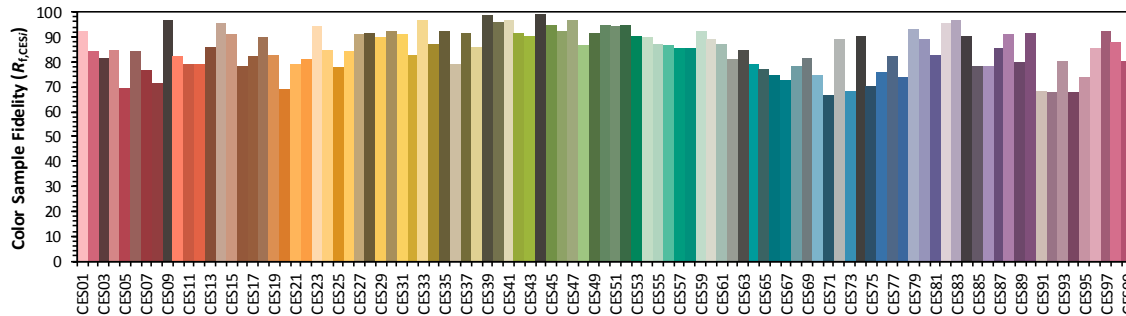
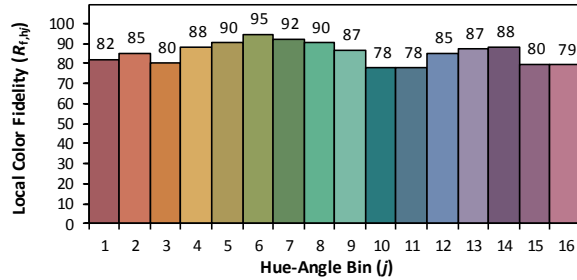
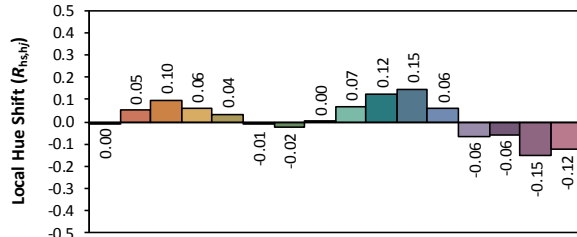
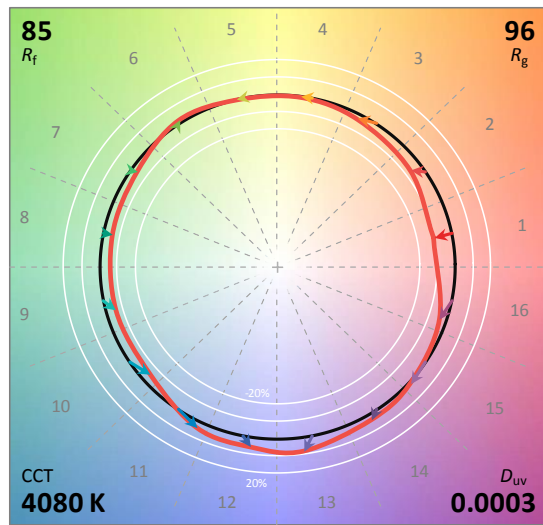
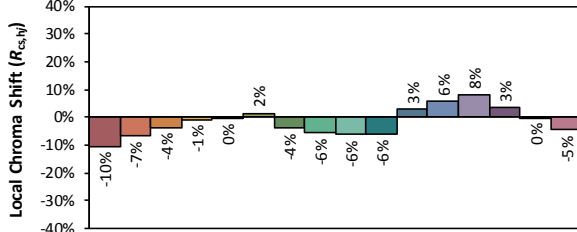
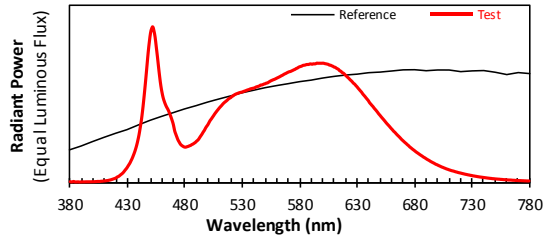
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/1/29

Model: C-SWISH1X4@30W4000K



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

x 0.3772
 y 0.3753
 u' 0.2235
 v' 0.5005

CIE 13.3-1995
(CRI)

R_a 85
 R_g 21

4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength											
WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)
380	5.10E-06	447	7.57E-04	514	5.11E-04	581	7.45E-04	648	4.51E-04	715	7.08E-05
381	3.10E-06	448	8.38E-04	515	5.17E-04	582	7.48E-04	649	4.40E-04	716	6.83E-05
382	4.20E-06	449	9.04E-04	516	5.23E-04	583	7.52E-04	650	4.32E-04	717	6.67E-05
383	6.30E-06	450	9.60E-04	517	5.30E-04	584	7.53E-04	651	4.23E-04	718	6.42E-05
384	3.20E-06	451	9.88E-04	518	5.37E-04	585	7.55E-04	652	4.14E-04	719	6.24E-05
385	3.10E-06	452	1.00E-03	519	5.41E-04	586	7.57E-04	653	4.06E-04	720	6.08E-05
386	3.30E-06	453	9.73E-04	520	5.46E-04	587	7.58E-04	654	3.97E-04	721	5.90E-05
387	3.80E-06	454	9.34E-04	521	5.53E-04	588	7.58E-04	655	3.88E-04	722	5.70E-05
388	2.40E-06	455	8.71E-04	522	5.56E-04	589	7.61E-04	656	3.79E-04	723	5.54E-05
389	3.20E-06	456	8.09E-04	523	5.62E-04	590	7.61E-04	657	3.71E-04	724	5.34E-05
390	3.00E-06	457	7.41E-04	524	5.66E-04	591	7.60E-04	658	3.63E-04	725	5.19E-05
391	4.00E-06	458	6.77E-04	525	5.70E-04	592	7.62E-04	659	3.54E-04	726	5.03E-05
392	3.20E-06	459	6.21E-04	526	5.72E-04	593	7.62E-04	660	3.46E-04	727	4.86E-05
393	3.80E-06	460	5.79E-04	527	5.75E-04	594	7.63E-04	661	3.38E-04	728	4.74E-05
394	4.00E-06	461	5.45E-04	528	5.78E-04	595	7.66E-04	662	3.29E-04	729	4.56E-05
395	4.10E-06	462	5.21E-04	529	5.79E-04	596	7.66E-04	663	3.22E-04	730	4.45E-05
396	4.00E-06	463	5.01E-04	530	5.81E-04	597	7.66E-04	664	3.14E-04	731	4.25E-05
397	4.00E-06	464	4.85E-04	531	5.84E-04	598	7.66E-04	665	3.06E-04	732	4.16E-05
398	4.10E-06	465	4.72E-04	532	5.87E-04	599	7.66E-04	666	2.99E-04	733	4.01E-05
399	4.40E-06	466	4.56E-04	533	5.90E-04	600	7.66E-04	667	2.92E-04	734	3.91E-05
400	4.60E-06	467	4.37E-04	534	5.93E-04	601	7.66E-04	668	2.84E-04	735	3.75E-05
401	4.70E-06	468	4.17E-04	535	5.95E-04	602	7.63E-04	669	2.76E-04	736	3.65E-05
402	5.40E-06	469	3.95E-04	536	5.97E-04	603	7.62E-04	670	2.69E-04	737	3.52E-05
403	5.60E-06	470	3.69E-04	537	6.01E-04	604	7.60E-04	671	2.62E-04	738	3.43E-05
404	6.50E-06	471	3.33E-04	538	6.03E-04	605	7.59E-04	672	2.55E-04	739	3.32E-05
405	6.20E-06	472	3.11E-04	539	6.05E-04	606	7.54E-04	673	2.49E-04	740	3.22E-05
406	6.40E-06	473	2.91E-04	540	6.06E-04	607	7.53E-04	674	2.42E-04	741	3.13E-05
407	7.80E-06	474	2.72E-04	541	6.09E-04	608	7.49E-04	675	2.36E-04	742	3.02E-05
408	7.90E-06	475	2.60E-04	542	6.13E-04	609	7.47E-04	676	2.28E-04	743	2.92E-05
409	9.20E-06	476	2.47E-04	543	6.15E-04	610	7.41E-04	677	2.23E-04	744	2.81E-05
410	9.70E-06	477	2.39E-04	544	6.18E-04	611	7.40E-04	678	2.17E-04	745	2.73E-05
411	1.07E-05	478	2.34E-04	545	6.21E-04	612	7.34E-04	679	2.11E-04	746	2.62E-05
412	1.17E-05	479	2.29E-04	546	6.26E-04	613	7.30E-04	680	2.05E-04	747	2.57E-05
413	1.26E-05	480	2.27E-04	547	6.26E-04	614	7.26E-04	681	1.99E-04	748	2.44E-05
414	1.45E-05	481	2.27E-04	548	6.29E-04	615	7.17E-04	682	1.94E-04	749	2.40E-05
415	1.61E-05	482	2.30E-04	549	6.32E-04	616	7.15E-04	683	1.89E-04	750	2.32E-05
416	1.85E-05	483	2.32E-04	550	6.34E-04	617	7.06E-04	684	1.83E-04	751	2.23E-05
417	2.09E-05	484	2.36E-04	551	6.38E-04	618	7.03E-04	685	1.78E-04	752	2.19E-05
418	2.34E-05	485	2.38E-04	552	6.40E-04	619	6.96E-04	686	1.73E-04	753	2.11E-05
419	2.60E-05	486	2.43E-04	553	6.44E-04	620	6.89E-04	687	1.69E-04	754	2.08E-05
420	2.95E-05	487	2.47E-04	554	6.49E-04	621	6.82E-04	688	1.63E-04	755	1.98E-05
421	3.50E-05	488	2.52E-04	555	6.53E-04	622	6.75E-04	689	1.59E-04	756	1.94E-05
422	3.81E-05	489	2.57E-04	556	6.56E-04	623	6.68E-04	690	1.54E-04	757	1.87E-05
423	4.33E-05	490	2.64E-04	557	6.60E-04	624	6.60E-04	691	1.49E-04	758	1.79E-05
424	4.96E-05	491	2.70E-04	558	6.62E-04	625	6.54E-04	692	1.45E-04	759	1.76E-05
425	5.52E-05	492	2.78E-04	559	6.66E-04	626	6.46E-04	693	1.41E-04	760	1.71E-05
426	6.20E-05	493	2.90E-04	560	6.70E-04	627	6.37E-04	694	1.36E-04	761	1.65E-05
427	7.08E-05	494	3.01E-04	561	6.73E-04	628	6.32E-04	695	1.32E-04	762	1.58E-05
428	8.06E-05	495	3.12E-04	562	6.77E-04	629	6.23E-04	696	1.28E-04	763	1.55E-05
429	8.94E-05	496	3.25E-04	563	6.81E-04	630	6.15E-04	697	1.24E-04	764	1.53E-05
430	1.00E-04	497	3.35E-04	564	6.85E-04	631	6.06E-04	698	1.20E-04	765	1.47E-05
431	1.12E-04	498	3.50E-04	565	6.88E-04	632	5.97E-04	699	1.16E-04	766	1.39E-05
432	1.24E-04	499	3.61E-04	566	6.93E-04	633	5.88E-04	700	1.13E-04	767	1.38E-05
433	1.39E-04	500	3.71E-04	567	6.97E-04	634	5.80E-04	701	1.09E-04	768	1.31E-05
434	1.54E-04	501	3.85E-04	568	7.00E-04	635	5.69E-04	702	1.06E-04	769	1.27E-05
435	1.73E-04	502	3.98E-04	569	7.05E-04	636	5.61E-04	703	1.02E-04	770	1.24E-05
436	1.92E-04	503	4.08E-04	570	7.08E-04	637	5.52E-04	704	9.90E-05	771	1.17E-05
437	2.15E-04	504	4.19E-04	571	7.11E-04	638	5.43E-04	705	9.64E-05	772	1.17E-05
438	2.41E-04	505	4.29E-04	572	7.13E-04	639	5.34E-04	706	9.30E-05	773	1.14E-05
439	2.72E-04	506	4.41E-04	573	7.17E-04	640	5.25E-04	707	9.04E-05	774	1.09E-05
440	3.07E-04	507	4.51E-04	574	7.20E-04	641	5.12E-04	708	8.70E-05	775	1.08E-05
441	3.51E-04	508	4.60E-04	575	7.24E-04	642	5.04E-04	709	8.48E-05	776	1.02E-05
442	3.98E-04	509	4.69E-04	576	7.27E-04	643	4.95E-04	710	8.19E-05	777	1.01E-05
443	4.57E-04	510	4.79E-04	577	7.32E-04	644	4.87E-04	711	7.94E-05	778	9.70E-06
444	5.24E-04	511	4.87E-04	578	7.35E-04	645	4.77E-04	712	7.69E-05	779	9.60E-06
445	5.98E-04	512	4.95E-04	579	7.40E-04	646	4.69E-04	713	7.47E-05	780	9.60E-06
446	6.76E-04	513	5.03E-04	580	7.43E-04	647	4.60E-04	714	7.31E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	C-SWISH1X4@30W4000K	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	0.244	29.2	0.997
NON-WORST CASE	277.0	60	0.107	29.1	0.980

Test Result

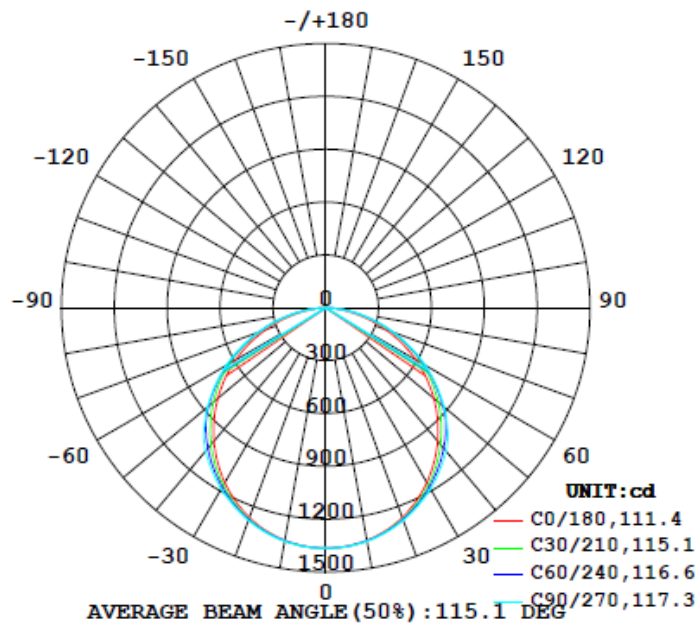
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement
	C0-180	C90-270	C0-180	C90-270		(0°-60°)
4028	161.3	163.6	111.4	117.1	137.9	78.1%

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

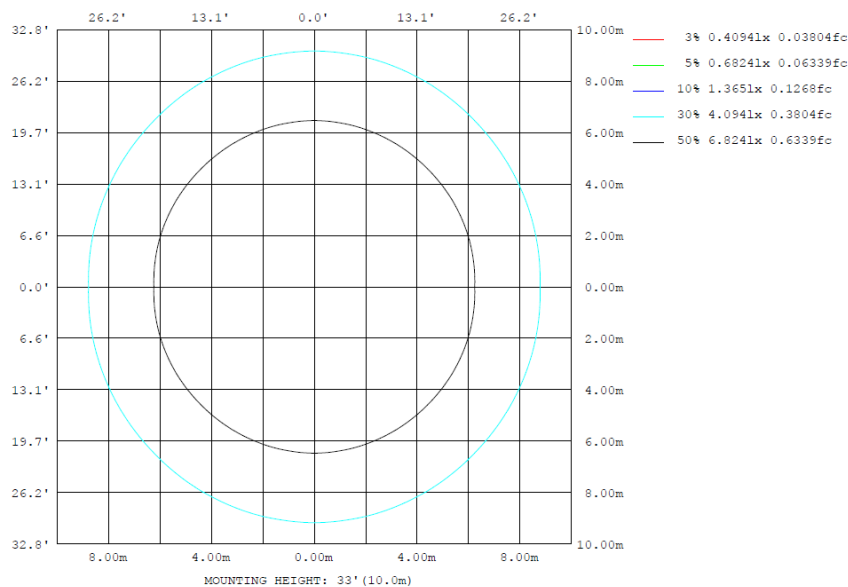
4.2 Goniophotometer Test

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	1342	1343	1345	1343	1342	1343	1345	1343	0- 10	129.3	129.3	3.21, 3.21
20	1267	1276	1285	1276	1267	1276	1285	1276	10- 20	371.4	500.7	12.4, 12.4
30	1146	1169	1188	1169	1146	1169	1188	1169	20- 30	566.1	1067	26.5, 26.5
40	987.7	1024	1061	1024	987.7	1024	1061	1024	30- 40	689.4	1756	43.6, 43.6
50	799.4	854.5	876.2	854.5	799.4	854.5	876.2	854.5	40- 50	726.4	2483	61.6, 61.6
60	589.7	638.7	651.3	638.7	589.7	638.7	651.3	638.7	50- 60	663.0	3146	78.1, 78.1
70	362.2	402.4	408.5	402.4	362.2	402.4	408.5	402.4	60- 70	509.4	3655	90.7, 90.7
80	138.6	170.9	174.2	170.9	138.6	170.9	174.2	170.9	70- 80	295.6	3951	98.1, 98.1
90	0	0	0	0	0	0	0	0	80- 90	77.44	4028	100, 100
100	0	0	0	0	0	0	0	0	90-100	0	4028	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	4028	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	4028	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	4028	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	4028	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	4028	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	4028	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	4028	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	4028	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	129.27	0-10	129.27	3.21%
10-20	371.42	0-20	500.69	12.43%
20-30	566.10	0-30	1066.79	26.48%
30-40	689.40	0-40	1756.19	43.60%
40-50	726.41	0-50	2482.60	61.63%
50-60	662.99	0-60	3145.59	78.09%
60-70	509.40	0-70	3654.99	90.74%
70-80	295.63	0-80	3950.62	98.08%
80-90	77.44	0-90	4028.06	100.00%
90-100	0.00	0-100	4028.06	100.00%
100-110	0.00	0-110	4028.06	100.00%
110-120	0.00	0-120	4028.06	100.00%
120-130	0.00	0-130	4028.06	100.00%
130-140	0.00	0-140	4028.06	100.00%
140-150	0.00	0-150	4028.06	100.00%
150-160	0.00	0-160	4028.06	100.00%
160-170	0.00	0-170	4028.06	100.00%
170-180	0.00	0-180	4028.06	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	15.7	16.0
	4H	14.0	15.5	14.4	15.8	16.2	14.5	15.9	14.9	16.3	16.7
	6H	14.5	15.8	14.9	16.2	16.5	15.0	16.4	15.5	16.7	17.1
	8H	14.6	15.9	15.0	16.2	16.6	15.2	16.5	15.6	16.8	17.2
	12H	14.7	15.9	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	14.4	15.5	14.8	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	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	16.2	17.0	16.7	17.4	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	16.6	17.2	17.1	17.7	18.3	17.1	17.7	17.6	18.1	18.7
12H	4H	15.6	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	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	20.5	20.8
	4H	18.8	20.3	19.2	20.6	21.0	19.3	20.7	19.7	21.1	21.5
	6H	19.3	20.6	19.7	21.0	21.3	19.8	21.2	20.3	21.5	21.9
	8H	19.4	20.7	19.8	21.0	21.4	20.0	21.3	20.4	21.6	22.0
	12H	19.5	20.7	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	19.2	20.3	19.6	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	20.7	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	21.0	21.8	21.5	22.2	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	21.4	22.0	21.9	22.5	23.1	21.9	22.5	22.4	22.9	23.5
12H	4H	20.4	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	22.8	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) y (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1365	1365	1365	1364	1363	1365	1366	1365	1363	1364	1365	1365	1365	1365	1365	1364	1363	1365	1366
5	1359	1360	1360	1359	1360	1360	1361	1360	1360	1359	1360	1360	1359	1360	1360	1359	1360	1360	1361
10	1342	1342	1343	1343	1342	1344	1345	1344	1342	1343	1343	1342	1342	1342	1343	1343	1342	1344	1345
15	1311	1314	1316	1315	1317	1318	1320	1318	1317	1315	1316	1314	1311	1314	1316	1315	1317	1318	1320
20	1267	1273	1276	1276	1278	1282	1285	1282	1278	1276	1276	1273	1267	1273	1276	1276	1278	1282	1285
25	1212	1221	1225	1227	1232	1237	1241	1237	1232	1227	1225	1221	1212	1221	1225	1227	1232	1237	1241
30	1146	1156	1163	1169	1176	1183	1188	1183	1176	1169	1163	1156	1146	1156	1163	1169	1176	1183	1188
35	1071	1083	1093	1100	1112	1122	1126	1122	1112	1100	1093	1083	1071	1083	1093	1100	1112	1122	1126
40	988	1001	1014	1024	1041	1055	1061	1055	1041	1024	1014	1001	988	1001	1014	1024	1041	1055	1061
45	897	912	927	942	963	975	979	975	963	942	927	912	897	912	927	942	963	975	979
50	799	816	832	854	867	872	876	872	867	854	832	816	799	816	832	854	867	872	876
55	697	712	734	753	758	763	767	763	758	753	734	712	697	712	734	753	758	763	767
60	590	605	633	639	644	648	651	648	644	639	633	605	590	605	633	639	644	648	651
65	478	495	519	521	525	528	530	528	525	521	519	495	478	495	519	521	525	528	530
70	362	383	399	402	404	406	409	406	404	402	399	383	362	383	399	402	404	406	409
75	247	272	282	284	286	287	289	287	286	284	282	272	247	272	282	284	286	287	289
80	139	160	169	171	172	173	174	173	172	171	169	160	139	160	169	171	172	173	174
85	48.8	63.6	68.4	68.1	66.6	65.3	64.9	65.3	66.6	68.1	68.4	63.6	48.8	63.6	68.4	68.1	66.6	65.3	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 (DEG)	285	300	315	330	345														
0	1365	1363	1364	1365	1365														
5	1360	1360	1359	1360	1360														
10	1344	1342	1343	1343	1342														
15	1318	1317	1315	1316	1314														
20	1282	1278	1276	1276	1273														
25	1237	1232	1227	1225	1221														
30	1183	1176	1169	1163	1156														
35	1122	1112	1100	1093	1083														
40	1055	1041	1024	1014	1001														
45	975	963	942	927	912														
50	872	867	854	832	816														
55	763	758	753	734	712														
60	648	644	639	633	605														
65	528	525	521	519	495														
70	406	404	402	399	383														
75	287	286	284	282	272														
80	173	172	171	169	160														
85	65.3	66.6	68.1	68.4	63.6														
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@30W4000K	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	0.244	29.2	0.997	7.05
277.0	60	0.107	29.1	0.980	14.02

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*****