

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

Prepared By

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Issue Date: 2024-01-29

Revised Date: N/A

1.0 Test Summary

DLC Technical Requirements V5.1

2x2 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		3955
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	138.3
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		28.6
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	7.14
			277V	13.09
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.997
			277V	0.952
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3985±275	4065
		4 steps	3985±154	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥80		84.5
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥0		18
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%		74.5%
Discomfort Glare (UGR) (Goniophotometer – Section 4.2)	IES LM-79-2008	Standard	Premium	23.5
		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		0.239
(Goniophotometer – Section 4.2)		Non-Worst Case		0.108
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		28.6
(Goniophotometer – Section 4.2)		Non-Worst Case		28.5

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2024-01-25	C-SWISH2X2@30W4000K	240119001-S1
2	Goniophotometer Test	2024-01-25	C-SWISH2X2@30W4000K	240119001-S1
3	THD and PF Test	2024-01-25	C-SWISH2X2@30W4000K	240119001-S1

Remark (If any)

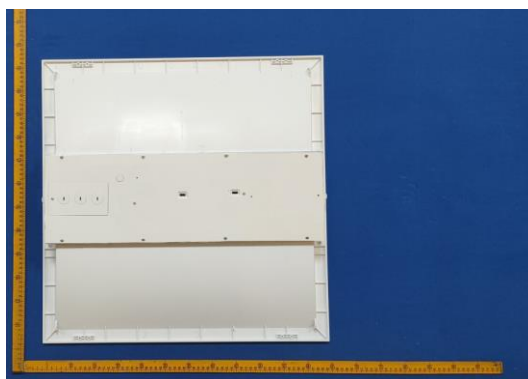
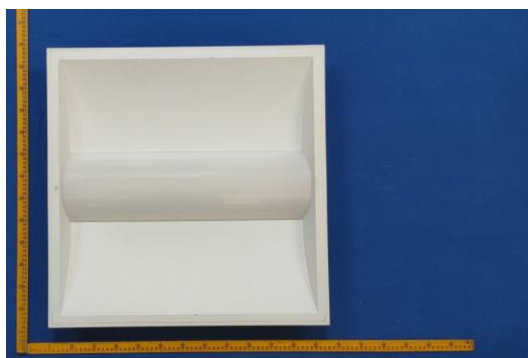
1. The results contained in this report pertain only to the tested samples.
2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.
3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency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

3.0 Product Description

Luminaire Description: Model No. C-SWISH2X2@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-SWISH2X2@30W4000K	Sample ID	240119001-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

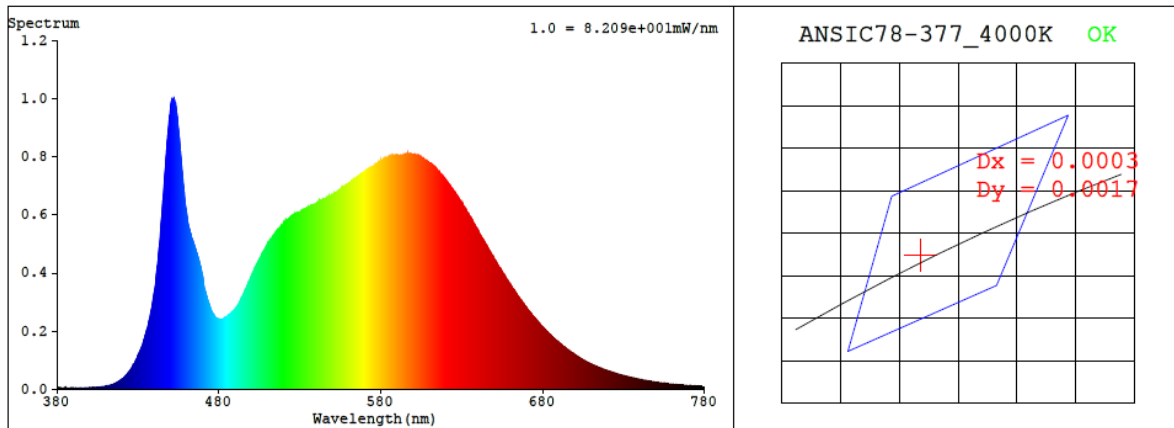
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at $25\pm1^{\circ}\text{C}$.</p> <p>The sample measurements 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	0.239	28.6	0.997
277.0	60	0.108	28.5	0.952

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4065	84.5	18	0.0007	85	96	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3780$ $y = 0.3767$ / $u' = 0.2235$ $v' = 0.5012$ ($duv=6.83e-04$)

CCT= 4065K Prcp WL: $L_d=578.4nm$ Purity=26.5%

Peak WL: $L_p=452nm$ FWHM: $=20.9nm$ Ratio:R=18.3% G=78.0% B=3.6%

Render Index: $R_a = 84.5$ AvgR = 78.2 TM30:Rf=85 Rg=96

EEL: 0.10063 A++ Highest

R1 =83 R2 =90 R3 =95 R4 =84 R5 =83 R6 =86 R7 =88
R8 =69 R9 =18 R10=76 R11=82 R12=61 R13=85 R14=97 R15=78

4.1 Integrating Sphere Test

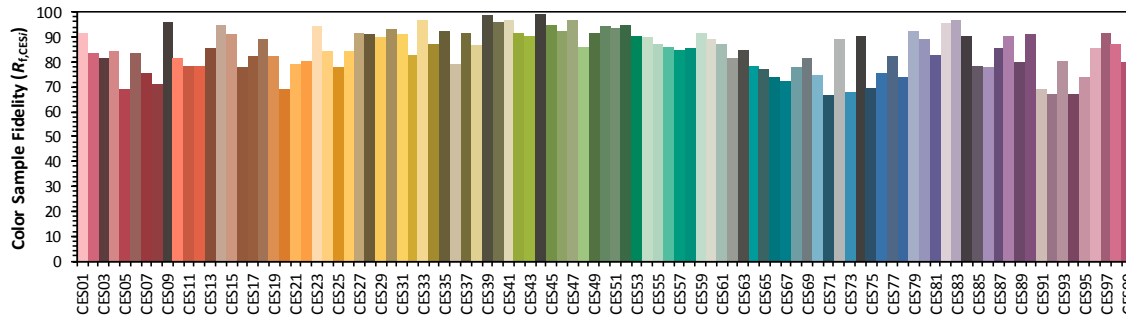
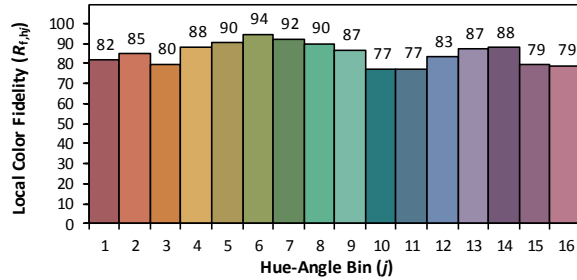
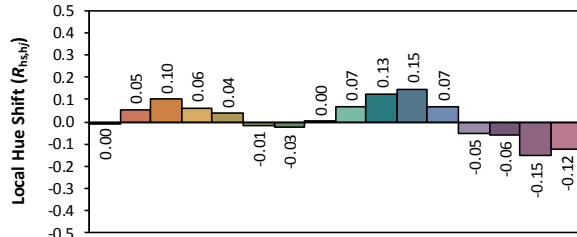
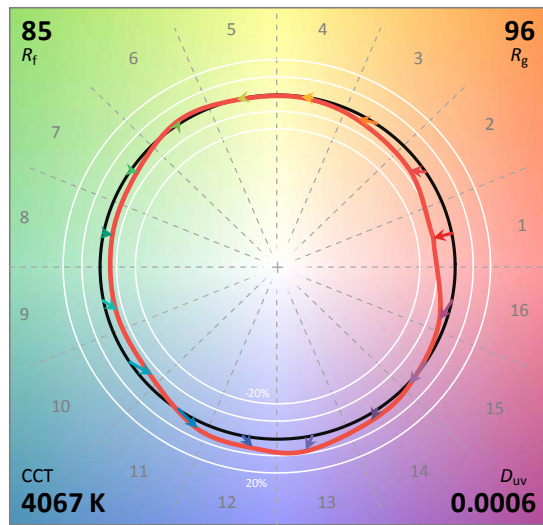
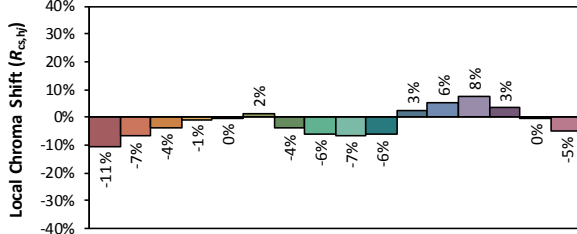
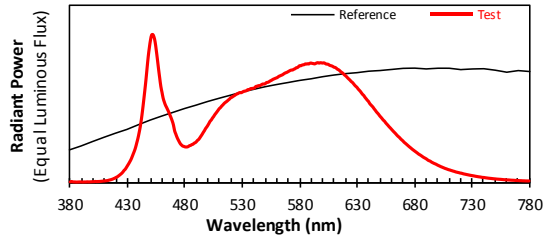
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/1/30

Model: C-SWISH2X2@30W4000K



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

x 0.3780
 y 0.3765
 u' 0.2236
 v' 0.5011

CIE 13.3-1995
(CRI)

R_a 85
 R_g 18

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	3.90E-06	447	7.72E-04	514	5.32E-04	581	7.88E-04	648	4.68E-04	715	7.46E-05
381	6.40E-06	448	8.50E-04	515	5.39E-04	582	7.92E-04	649	4.59E-04	716	7.16E-05
382	5.00E-06	449	9.11E-04	516	5.45E-04	583	7.94E-04	650	4.48E-04	717	6.97E-05
383	3.50E-06	450	9.63E-04	517	5.51E-04	584	7.96E-04	651	4.40E-04	718	6.78E-05
384	3.70E-06	451	9.96E-04	518	5.58E-04	585	8.01E-04	652	4.31E-04	719	6.62E-05
385	2.90E-06	452	9.99E-04	519	5.64E-04	586	8.00E-04	653	4.21E-04	720	6.37E-05
386	3.00E-06	453	9.83E-04	520	5.73E-04	587	8.02E-04	654	4.14E-04	721	6.28E-05
387	3.30E-06	454	9.49E-04	521	5.76E-04	588	8.00E-04	655	4.03E-04	722	6.04E-05
388	3.80E-06	455	8.93E-04	522	5.82E-04	589	8.05E-04	656	3.95E-04	723	5.81E-05
389	3.70E-06	456	8.32E-04	523	5.86E-04	590	8.06E-04	657	3.86E-04	724	5.65E-05
390	3.70E-06	457	7.66E-04	524	5.92E-04	591	8.04E-04	658	3.77E-04	725	5.49E-05
391	2.80E-06	458	7.06E-04	525	5.97E-04	592	8.03E-04	659	3.69E-04	726	5.31E-05
392	3.60E-06	459	6.48E-04	526	5.99E-04	593	8.01E-04	660	3.60E-04	727	5.16E-05
393	3.30E-06	460	6.09E-04	527	6.04E-04	594	8.04E-04	661	3.52E-04	728	4.99E-05
394	3.80E-06	461	5.70E-04	528	6.07E-04	595	8.07E-04	662	3.43E-04	729	4.84E-05
395	4.50E-06	462	5.44E-04	529	6.06E-04	596	8.09E-04	663	3.35E-04	730	4.69E-05
396	3.80E-06	463	5.23E-04	530	6.10E-04	597	8.06E-04	664	3.27E-04	731	4.56E-05
397	4.00E-06	464	5.07E-04	531	6.14E-04	598	8.09E-04	665	3.18E-04	732	4.43E-05
398	4.60E-06	465	4.90E-04	532	6.17E-04	599	8.08E-04	666	3.11E-04	733	4.27E-05
399	5.00E-06	466	4.74E-04	533	6.18E-04	600	8.06E-04	667	3.04E-04	734	4.12E-05
400	5.60E-06	467	4.54E-04	534	6.22E-04	601	8.08E-04	668	2.95E-04	735	4.00E-05
401	5.60E-06	468	4.35E-04	535	6.28E-04	602	8.05E-04	669	2.88E-04	736	3.86E-05
402	7.00E-06	469	4.14E-04	536	6.26E-04	603	8.00E-04	670	2.81E-04	737	3.76E-05
403	5.80E-06	470	3.88E-04	537	6.33E-04	604	7.99E-04	671	2.72E-04	738	3.65E-05
404	6.40E-06	471	3.49E-04	538	6.34E-04	605	7.98E-04	672	2.66E-04	739	3.48E-05
405	6.60E-06	472	3.28E-04	539	6.36E-04	606	7.92E-04	673	2.59E-04	740	3.40E-05
406	7.30E-06	473	3.07E-04	540	6.37E-04	607	7.89E-04	674	2.52E-04	741	3.34E-05
407	8.00E-06	474	2.90E-04	541	6.41E-04	608	7.87E-04	675	2.46E-04	742	3.19E-05
408	9.00E-06	475	2.75E-04	542	6.49E-04	609	7.83E-04	676	2.39E-04	743	3.09E-05
409	9.80E-06	476	2.62E-04	543	6.49E-04	610	7.78E-04	677	2.33E-04	744	2.98E-05
410	1.03E-05	477	2.53E-04	544	6.54E-04	611	7.77E-04	678	2.26E-04	745	2.88E-05
411	1.18E-05	478	2.46E-04	545	6.54E-04	612	7.71E-04	679	2.20E-04	746	2.80E-05
412	1.22E-05	479	2.44E-04	546	6.57E-04	613	7.65E-04	680	2.14E-04	747	2.72E-05
413	1.39E-05	480	2.41E-04	547	6.62E-04	614	7.61E-04	681	2.08E-04	748	2.62E-05
414	1.62E-05	481	2.40E-04	548	6.65E-04	615	7.55E-04	682	2.03E-04	749	2.54E-05
415	1.80E-05	482	2.40E-04	549	6.65E-04	616	7.47E-04	683	1.97E-04	750	2.46E-05
416	2.03E-05	483	2.43E-04	550	6.67E-04	617	7.42E-04	684	1.91E-04	751	2.39E-05
417	2.30E-05	484	2.49E-04	551	6.74E-04	618	7.36E-04	685	1.86E-04	752	2.29E-05
418	2.65E-05	485	2.51E-04	552	6.76E-04	619	7.27E-04	686	1.81E-04	753	2.24E-05
419	3.00E-05	486	2.56E-04	553	6.78E-04	620	7.21E-04	687	1.76E-04	754	2.17E-05
420	3.45E-05	487	2.58E-04	554	6.84E-04	621	7.14E-04	688	1.70E-04	755	2.13E-05
421	3.81E-05	488	2.65E-04	555	6.88E-04	622	7.05E-04	689	1.66E-04	756	2.06E-05
422	4.40E-05	489	2.69E-04	556	6.93E-04	623	6.98E-04	690	1.62E-04	757	1.99E-05
423	4.99E-05	490	2.76E-04	557	6.97E-04	624	6.91E-04	691	1.56E-04	758	1.91E-05
424	5.62E-05	491	2.85E-04	558	7.00E-04	625	6.82E-04	692	1.50E-04	759	1.86E-05
425	6.29E-05	492	2.91E-04	559	7.04E-04	626	6.76E-04	693	1.47E-04	760	1.79E-05
426	7.17E-05	493	3.02E-04	560	7.07E-04	627	6.67E-04	694	1.43E-04	761	1.74E-05
427	8.21E-05	494	3.14E-04	561	7.11E-04	628	6.57E-04	695	1.38E-04	762	1.72E-05
428	8.97E-05	495	3.25E-04	562	7.17E-04	629	6.49E-04	696	1.34E-04	763	1.66E-05
429	1.02E-04	496	3.38E-04	563	7.20E-04	630	6.42E-04	697	1.30E-04	764	1.59E-05
430	1.15E-04	497	3.50E-04	564	7.24E-04	631	6.32E-04	698	1.27E-04	765	1.53E-05
431	1.27E-04	498	3.64E-04	565	7.27E-04	632	6.23E-04	699	1.23E-04	766	1.51E-05
432	1.41E-04	499	3.75E-04	566	7.33E-04	633	6.15E-04	700	1.19E-04	767	1.47E-05
433	1.56E-04	500	3.86E-04	567	7.38E-04	634	6.04E-04	701	1.15E-04	768	1.41E-05
434	1.74E-04	501	4.00E-04	568	7.41E-04	635	5.94E-04	702	1.11E-04	769	1.36E-05
435	1.94E-04	502	4.14E-04	569	7.44E-04	636	5.87E-04	703	1.07E-04	770	1.33E-05
436	2.14E-04	503	4.22E-04	570	7.49E-04	637	5.75E-04	704	1.04E-04	771	1.29E-05
437	2.38E-04	504	4.35E-04	571	7.53E-04	638	5.66E-04	705	1.01E-04	772	1.23E-05
438	2.68E-04	505	4.45E-04	572	7.57E-04	639	5.56E-04	706	9.78E-05	773	1.22E-05
439	2.97E-04	506	4.58E-04	573	7.59E-04	640	5.48E-04	707	9.45E-05	774	1.16E-05
440	3.34E-04	507	4.67E-04	574	7.60E-04	641	5.34E-04	708	9.21E-05	775	1.12E-05
441	3.75E-04	508	4.78E-04	575	7.65E-04	642	5.25E-04	709	8.90E-05	776	1.11E-05
442	4.25E-04	509	4.89E-04	576	7.68E-04	643	5.17E-04	710	8.62E-05	777	1.06E-05
443	4.84E-04	510	4.99E-04	577	7.74E-04	644	5.08E-04	711	8.42E-05	778	1.05E-05
444	5.50E-04	511	5.06E-04	578	7.76E-04	645	4.97E-04	712	8.14E-05	779	1.04E-05
445	6.19E-04	512	5.16E-04	579	7.82E-04	646	4.88E-04	713	7.92E-05	780	1.04E-05
446	6.92E-04	513	5.23E-04	580	7.89E-04	647	4.77E-04	714	7.65E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	C-SWISH2X2@30W4000K	Sample ID	240119001-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	0.239	28.6	0.997
NON-WORST CASE	277.0	60	0.108	28.5	0.952

Test Result

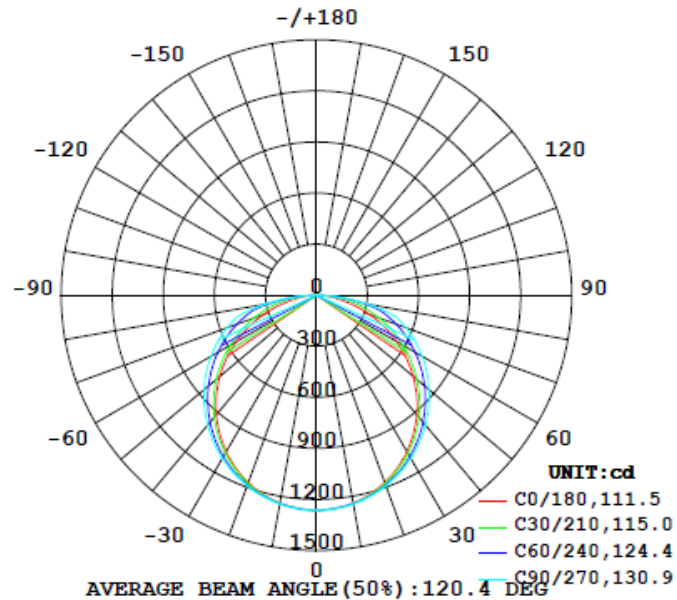
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement
	C0-180	C90-270	C0-180	C90-270		(0°-60°)
3955	161.1	169.9	111.5	130.9	138.3	74.5%

UGR		Spacing Criterion	
Crosswise	Endwise	(0°-180°)	(90°-270°)
20.3	23.5	1.26	1.32

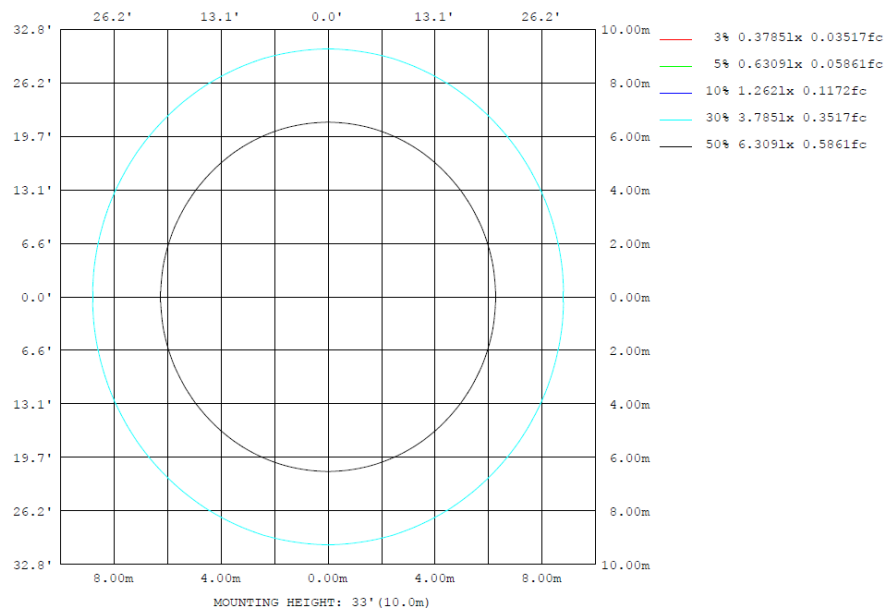
4.2 Goniophotometer Test

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	Φlum, lamp
10	1240	1242	1245	1242	1240	1242	1245	1242	0~ 10	119.6	119.6	3.02,3.02
20	1172	1183	1192	1183	1172	1183	1192	1183	10~ 20	343.6	463.2	11.7,11.7
30	1062	1084	1107	1084	1062	1084	1107	1084	20~ 30	524.5	987.6	25,25
40	916.6	953.1	996.1	953.1	916.6	953.1	996.1	953.1	30~ 40	640.4	1628	41.2,41.2
50	742.2	797.9	863.0	797.9	742.2	797.9	863.0	797.9	40~ 50	679.4	2307	58.3,58.3
60	543.9	625.6	716.0	625.6	543.9	625.6	716.0	625.6	50~ 60	640.1	2948	74.5,74.5
70	330.1	445.1	559.3	445.1	330.1	445.1	559.3	445.1	60~ 70	531.4	3479	88,88
80	125.5	252.3	312.4	252.3	125.5	252.3	312.4	252.3	70~ 80	366.1	3845	97.2,97.2
90	0	0	0	0	0	0	0	0	80~ 90	109.5	3955	100,100
100	0	0	0	0	0	0	0	0	90~100	0	3955	100,100
110	0	0	0	0	0	0	0	0	100~110	0	3955	100,100
120	0	0	0	0	0	0	0	0	110~120	0	3955	100,100
130	0	0	0	0	0	0	0	0	120~130	0	3955	100,100
140	0	0	0	0	0	0	0	0	130~140	0	3955	100,100
150	0	0	0	0	0	0	0	0	140~150	0	3955	100,100
160	0	0	0	0	0	0	0	0	150~160	0	3955	100,100
170	0	0	0	0	0	0	0	0	160~170	0	3955	100,100
180	0	0	0	0	0	0	0	0	170~180	0	3955	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	119.56	0-10	119.56	3.02%
10-20	343.62	0-20	463.18	11.71%
20-30	524.45	0-30	987.63	24.97%
30-40	640.38	0-40	1628.01	41.17%
40-50	679.37	0-50	2307.38	58.35%
50-60	640.14	0-60	2947.52	74.54%
60-70	531.39	0-70	3478.91	87.97%
70-80	366.11	0-80	3845.02	97.23%
80-90	109.49	0-90	3954.51	100.00%
90-100	0.00	0-100	3954.51	100.00%
100-110	0.00	0-110	3954.51	100.00%
110-120	0.00	0-120	3954.51	100.00%
120-130	0.00	0-130	3954.51	100.00%
130-140	0.00	0-140	3954.51	100.00%
140-150	0.00	0-150	3954.51	100.00%
150-160	0.00	0-160	3954.51	100.00%
160-170	0.00	0-170	3954.51	100.00%
170-180	0.00	0-180	3954.51	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			
		11.1	12.8	11.4	13.1	13.4	12.4	14.1	12.7	14.4
	3H	12.8	14.4	13.2	14.7	15.1	14.9	16.5	15.3	16.8
	4H	13.5	14.9	13.9	15.3	15.7	16.1	17.6	16.5	17.9
	6H	13.9	15.3	14.3	15.6	16.0	17.1	18.5	17.5	18.8
	8H	14.0	15.3	14.5	15.7	16.1	17.4	18.7	17.8	19.1
	12H	14.1	15.3	14.5	15.7	16.2	17.6	18.9	18.1	19.2
4H	2H	12.0	13.4	12.4	13.8	14.2	13.0	14.4	13.4	14.8
	3H	14.0	15.2	14.4	15.6	16.0	15.8	17.0	16.2	17.4
	4H	14.8	15.9	15.2	16.3	16.8	17.2	18.3	17.6	18.7
	6H	15.4	16.4	15.8	16.8	17.3	18.3	19.3	18.8	19.8
	8H	15.5	16.5	16.0	16.9	17.4	18.7	19.6	19.2	20.1
	12H	15.6	16.5	16.1	16.9	17.4	19.0	19.8	19.5	20.3
8H	4H	15.5	16.4	16.0	16.9	17.3	17.5	18.4	18.0	18.9
	6H	16.3	17.1	16.8	17.5	18.0	18.8	19.6	19.3	20.1
	8H	16.5	17.2	17.0	17.7	18.2	19.3	20.0	19.8	20.5
	12H	16.7	17.3	17.2	17.8	18.4	19.7	20.3	20.2	20.8
12H	4H	15.7	16.5	16.1	17.0	17.4	17.6	18.4	18.0	18.9
	6H	16.5	17.2	17.0	17.7	18.2	18.9	19.6	19.4	20.1
	8H	16.8	17.5	17.3	17.9	18.5	19.4	20.1	19.9	20.6

Maximum UGR = 21.3

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			
		15.9	17.6	16.2	17.9	18.2	17.2	18.9	17.5	19.2
	3H	17.6	19.2	18.0	19.5	19.9	19.7	21.3	20.1	21.6
	4H	18.3	19.7	18.7	20.1	20.5	20.9	22.4	21.3	22.7
	6H	18.7	20.1	19.1	20.4	20.8	21.9	23.3	22.3	23.6
	8H	18.8	20.1	19.3	20.5	20.9	22.2	23.5	22.6	23.9
	12H	18.9	20.1	19.3	20.5	21.0	22.4	23.7	22.9	24.0
4H	2H	16.8	18.2	17.2	18.6	19.0	17.8	19.2	18.2	19.6
	3H	18.8	20.0	19.2	20.4	20.8	20.6	21.8	21.0	22.2
	4H	19.6	20.7	20.0	21.1	21.6	22.0	23.1	22.4	23.5
	6H	20.2	21.2	20.6	21.6	22.1	23.1	24.1	23.6	24.6
	8H	20.3	21.3	20.8	21.7	22.2	23.5	24.4	24.0	24.9
	12H	20.4	21.3	20.9	21.7	22.2	23.8	24.6	24.3	25.1
8H	4H	20.3	21.2	20.8	21.7	22.1	22.3	23.2	22.8	23.7
	6H	21.1	21.9	21.6	22.3	22.8	23.6	24.4	24.1	24.9
	8H	21.3	22.0	21.8	22.5	23.0	24.1	24.8	24.6	25.3
	12H	21.5	22.1	22.0	22.6	23.2	24.5	25.1	25.0	25.6
12H	4H	20.5	21.3	20.9	21.8	22.2	22.4	23.2	22.8	23.7
	6H	21.3	22.0	21.8	22.5	23.0	23.7	24.4	24.2	24.9
	8H	21.6	22.3	22.1	22.7	23.3	24.2	24.9	24.7	25.4

Maximum UGR = 26.1

4.2 Goniophotometer Test

Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) γ (DEG)	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270
0	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262	1262
5	1257	1257	1258	1257	1259	1258	1259	1258	1259	1257	1258	1257	1257	1257	1258	1257	1259	1258	1259
10	1240	1241	1243	1242	1243	1244	1245	1244	1243	1242	1243	1241	1240	1241	1243	1242	1243	1244	1245
15	1212	1213	1215	1217	1220	1221	1222	1221	1220	1217	1215	1213	1212	1213	1215	1217	1220	1221	1222
20	1172	1174	1178	1183	1187	1191	1192	1191	1187	1183	1178	1174	1172	1174	1178	1183	1187	1191	1192
25	1121	1125	1129	1137	1146	1152	1154	1152	1146	1137	1129	1125	1121	1125	1129	1137	1146	1152	1154
30	1062	1066	1073	1084	1097	1103	1107	1103	1097	1084	1073	1066	1062	1066	1073	1084	1097	1103	1107
35	994	997	1008	1022	1038	1049	1055	1049	1038	1022	1008	997	994	997	1008	1022	1038	1049	1055
40	917	922	935	953	974	990	996	990	974	953	935	922	917	922	935	953	974	990	996
45	833	839	855	878	904	924	932	924	904	878	855	839	833	839	855	878	904	924	932
50	742	750	770	798	829	854	863	854	829	798	770	750	742	750	770	798	829	854	863
55	646	655	679	713	750	780	791	780	750	713	679	655	646	655	679	713	750	780	791
60	544	555	584	626	669	702	716	702	669	626	584	555	544	555	584	626	669	702	716
65	438	451	488	536	585	623	638	623	585	536	488	451	438	451	488	536	585	623	638
70	330	347	391	445	498	541	559	541	498	445	391	347	330	347	391	445	498	541	559
75	224	246	296	354	411	456	477	456	411	354	296	246	224	246	296	354	411	456	477
80	125	150	201	252	280	300	312	300	280	252	201	150	125	150	201	252	280	300	312
85	45.3	60.7	89.2	105	113	120	125	120	113	105	89.2	60.7	45.3	60.7	89.2	105	113	120	125
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
95	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
105	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
115	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
125	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
135	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
145	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
155	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
165	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
175	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Table--2

UNIT: cd

C (DEG) γ (DEG)	285	300	315	330	345														
0	1262	1262	1262	1262	1262														
5	1258	1259	1257	1258	1257														
10	1244	1243	1242	1243	1241														
15	1221	1220	1217	1215	1213														
20	1191	1187	1183	1178	1174														
25	1152	1146	1137	1129	1125														
30	1103	1097	1084	1073	1066														
35	1049	1038	1022	1008	997														
40	990	974	953	935	922														
45	924	904	878	855	839														
50	854	829	798	770	750														
55	780	750	713	679	655														
60	702	669	626	584	555														
65	623	585	536	488	451														
70	541	498	445	391	347														
75	456	411	354	296	246														
80	300	280	252	201	150														
85	120	113	105	89.2	60.7														
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-SWISH2X2@30W4000K	Sample ID	240119001-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	0.239	28.6	0.997	7.14
277.0	60	0.108	28.5	0.952	13.09

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*****