

Photometric Test Report

Relevant Standards

- ☒ ANSI/IES LM-79-2019
- ☒ 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)	ANSI/IES LM-79:2019	1500		2916
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Standard	Premium	156.8
		110	125	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		18.6
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	120V	6.56
			277V	7.07
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	120V	0.996
			277V	0.901
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	3465±245	3512
		4 steps	3465±124	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥80		83.7
Minimum R9 (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥0		12
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		84
Minimum Rg (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥89		94
IES Rcs,h1 (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	-12%≤IES Rcs,h1≤+23%		-12%
Zonal Lumen Requirement (0°-60°) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	≥75%		74.9%
Discomfort Glare (UGR) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Standard	Premium	22.2
		N/A	<22	
Spacing Criterion (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	0°-180°	1.0-2.0	1.20
		90°-270°	1.0-2.0	1.28
Input Voltage (V)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Cast		277.0
(Goniophotometer – Section 4.2)		Non-Worst Case		120.0
Input Current (A)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		0.075
(Goniophotometer – Section 4.2)		Non-Worst Case		0.148
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		18.6
(Goniophotometer – Section 4.2)		Non-Worst Case		17.7

2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2025-07-19	SWISHFA1X4 @19W3500K	-	250715001-S1
2	Goniophotometer Test	2025-07-19	SWISHFA1X4 @19W3500K	-	250715001-S1
3	THD and PF Test	2025-07-19	SWISHFA1X4 @19W3500K	-	250715001-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 must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. Government.

3.0 Product Description

Luminaire Description: Model No. SWISHFA1X4 @19W3500K, 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.	SWISHFA1X4 @19W3500K	Sample ID	250715001-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

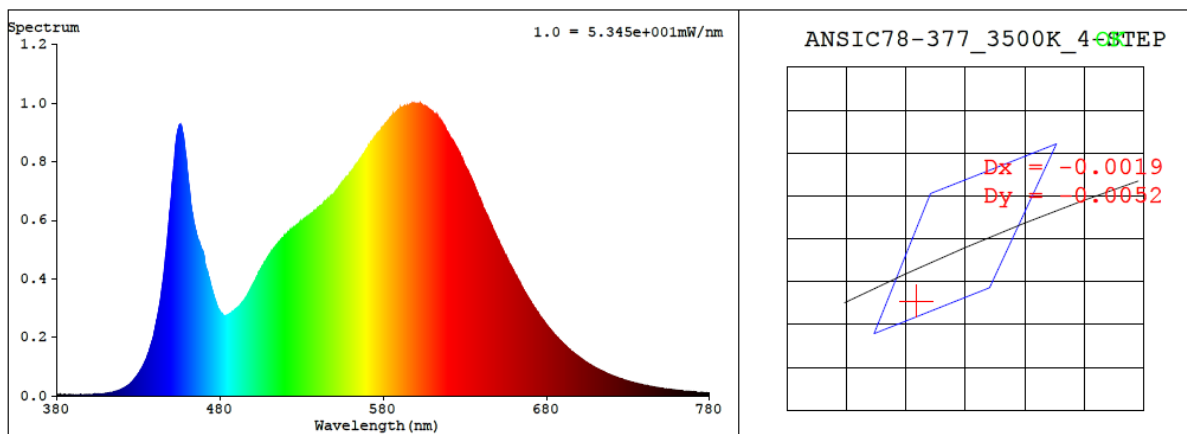
Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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	0.148	17.7	0.996
277.0	60	0.075	18.6	0.901

CCT (K)	CRI	R9	Duv	SDCM	Rf	Rg	IES Rcs,h1
3512	83.7	12	-0.0019	3.0	84	94	-12%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4028$ $y = 0.3852$ / $u' = 0.2363$ $v' = 0.5086$ ($duv = -1.86e-03$)

CCT= 3512K Prcp WL: $L_d = 581.7\text{nm}$ Purity=36.5%

Peak WL: $L_p = 603\text{nm}$ FWHM: $=140.0\text{nm}$ Ratio: R=20.5% G=76.0% B=3.5%

Render Index: $R_a = 83.7$ AvgR = 78.0 TM30: $R_f = 84$ $R_g = 95$

EEL: 0.08971 A++ Highest

R1=83	R2=93	R3=95	R4=80	R5=83	R6=90	R7=83
R8=62	R9=12	R10=82	R11=79	R12=66	R13=86	R14=98
R15=77						

4.1 Integrating Sphere Test

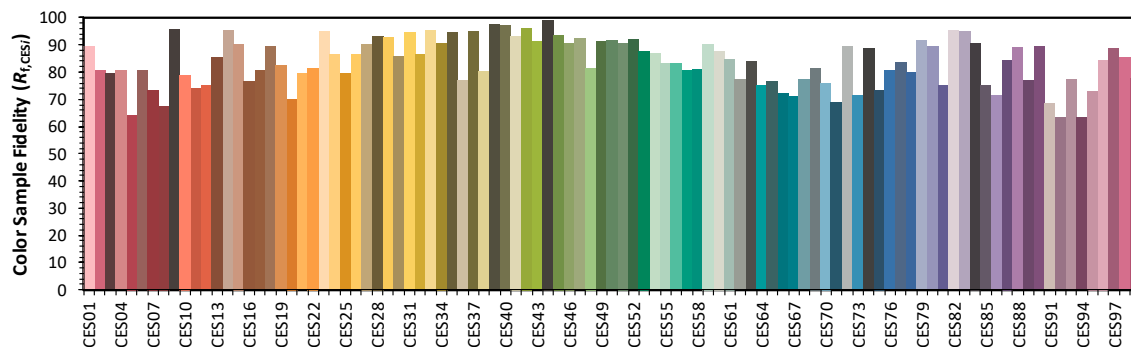
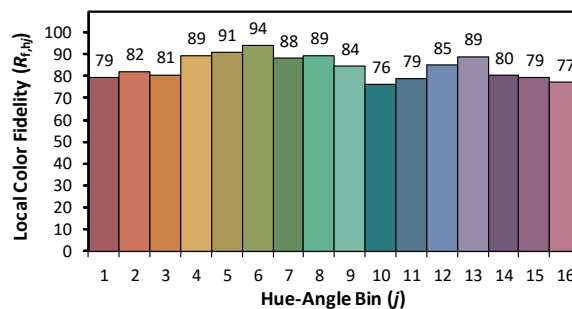
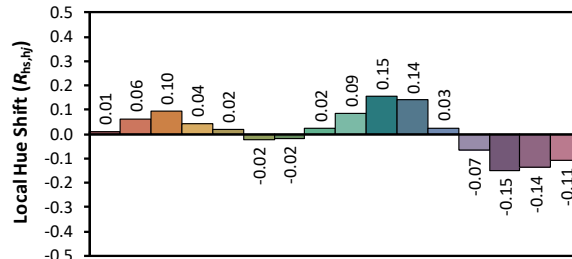
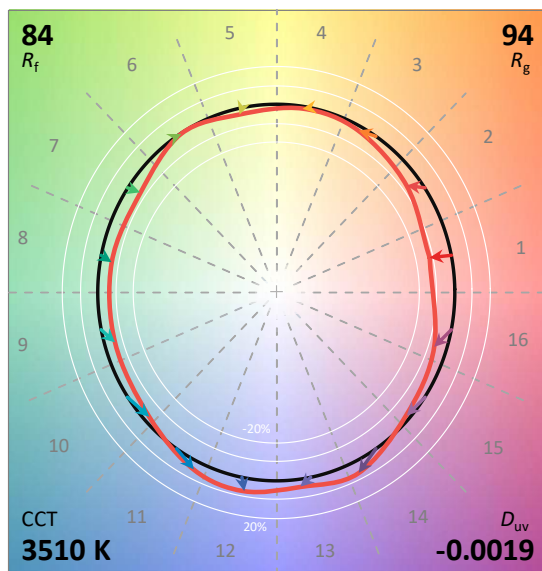
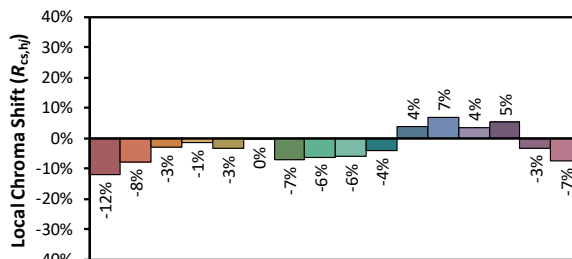
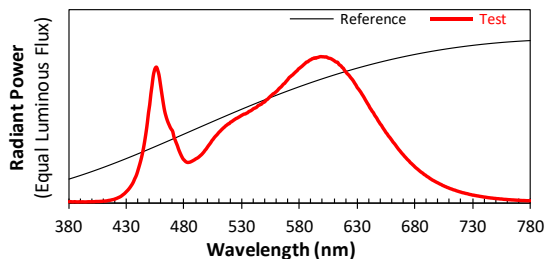
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2025/7/22

Model: SWISHFA1X4 @19W3500K



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

x 0.4028
 y 0.3851
 u' 0.2364
 v' 0.5085

CIE 13.3-1995
(CRI)

R_a 84
 R_g 12

4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength											
WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)
380	4.40E-06	447	4.88E-04	514	5.10E-04	581	9.26E-04	648	5.61E-04	715	8.30E-05
381	5.00E-06	448	5.48E-04	515	5.17E-04	582	9.32E-04	649	5.50E-04	716	7.93E-05
382	4.40E-06	449	6.16E-04	516	5.25E-04	583	9.39E-04	650	5.37E-04	717	7.72E-05
383	3.50E-06	450	6.69E-04	517	5.30E-04	584	9.47E-04	651	5.27E-04	718	7.44E-05
384	3.80E-06	451	7.41E-04	518	5.37E-04	585	9.53E-04	652	5.14E-04	719	7.22E-05
385	4.70E-06	452	7.99E-04	519	5.39E-04	586	9.61E-04	653	5.02E-04	720	6.98E-05
386	3.50E-06	453	8.62E-04	520	5.49E-04	587	9.62E-04	654	4.90E-04	721	6.71E-05
387	3.40E-06	454	9.01E-04	521	5.53E-04	588	9.69E-04	655	4.77E-04	722	6.56E-05
388	2.90E-06	455	9.22E-04	522	5.58E-04	589	9.75E-04	656	4.69E-04	723	6.37E-05
389	4.20E-06	456	9.26E-04	523	5.64E-04	590	9.78E-04	657	4.56E-04	724	6.13E-05
390	3.10E-06	457	9.03E-04	524	5.69E-04	591	9.84E-04	658	4.47E-04	725	6.01E-05
391	3.50E-06	458	8.75E-04	525	5.75E-04	592	9.86E-04	659	4.36E-04	726	5.82E-05
392	3.80E-06	459	8.25E-04	526	5.78E-04	593	9.90E-04	660	4.26E-04	727	5.56E-05
393	3.10E-06	460	7.71E-04	527	5.83E-04	594	9.87E-04	661	4.14E-04	728	5.38E-05
394	2.90E-06	461	7.19E-04	528	5.87E-04	595	9.92E-04	662	4.05E-04	729	5.23E-05
395	3.10E-06	462	6.68E-04	529	5.92E-04	596	9.93E-04	663	3.95E-04	730	4.99E-05
396	3.90E-06	463	6.25E-04	530	5.97E-04	597	9.96E-04	664	3.84E-04	731	4.94E-05
397	4.30E-06	464	5.94E-04	531	6.02E-04	598	9.98E-04	665	3.73E-04	732	4.74E-05
398	4.20E-06	465	5.68E-04	532	6.05E-04	599	9.98E-04	666	3.62E-04	733	4.62E-05
399	4.20E-06	466	5.46E-04	533	6.06E-04	600	9.97E-04	667	3.53E-04	734	4.46E-05
400	4.50E-06	467	5.28E-04	534	6.11E-04	601	9.97E-04	668	3.43E-04	735	4.36E-05
401	4.50E-06	468	5.11E-04	535	6.14E-04	602	9.95E-04	669	3.34E-04	736	4.18E-05
402	4.50E-06	469	4.98E-04	536	6.22E-04	603	9.97E-04	670	3.25E-04	737	4.06E-05
403	6.00E-06	470	4.85E-04	537	6.25E-04	604	9.93E-04	671	3.15E-04	738	3.93E-05
404	5.90E-06	471	4.50E-04	538	6.30E-04	605	9.88E-04	672	3.07E-04	739	3.79E-05
405	6.00E-06	472	4.28E-04	539	6.35E-04	606	9.87E-04	673	2.98E-04	740	3.65E-05
406	6.10E-06	473	4.08E-04	540	6.42E-04	607	9.85E-04	674	2.90E-04	741	3.57E-05
407	6.80E-06	474	3.89E-04	541	6.45E-04	608	9.81E-04	675	2.83E-04	742	3.45E-05
408	7.10E-06	475	3.65E-04	542	6.49E-04	609	9.76E-04	676	2.73E-04	743	3.31E-05
409	7.80E-06	476	3.45E-04	543	6.54E-04	610	9.71E-04	677	2.66E-04	744	3.20E-05
410	8.50E-06	477	3.27E-04	544	6.63E-04	611	9.64E-04	678	2.59E-04	745	3.10E-05
411	9.00E-06	478	3.11E-04	545	6.66E-04	612	9.61E-04	679	2.51E-04	746	3.00E-05
412	9.60E-06	479	2.97E-04	546	6.70E-04	613	9.59E-04	680	2.43E-04	747	2.94E-05
413	1.07E-05	480	2.89E-04	547	6.74E-04	614	9.47E-04	681	2.36E-04	748	2.82E-05
414	1.26E-05	481	2.81E-04	548	6.83E-04	615	9.40E-04	682	2.30E-04	749	2.73E-05
415	1.39E-05	482	2.76E-04	549	6.85E-04	616	9.34E-04	683	2.23E-04	750	2.68E-05
416	1.51E-05	483	2.73E-04	550	6.91E-04	617	9.24E-04	684	2.16E-04	751	2.54E-05
417	1.71E-05	484	2.74E-04	551	7.01E-04	618	9.18E-04	685	2.10E-04	752	2.52E-05
418	1.88E-05	485	2.76E-04	552	7.05E-04	619	9.04E-04	686	2.04E-04	753	2.45E-05
419	2.06E-05	486	2.80E-04	553	7.13E-04	620	8.95E-04	687	1.99E-04	754	2.33E-05
420	2.35E-05	487	2.84E-04	554	7.21E-04	621	8.84E-04	688	1.91E-04	755	2.33E-05
421	2.63E-05	488	2.88E-04	555	7.29E-04	622	8.77E-04	689	1.87E-04	756	2.22E-05
422	2.95E-05	489	2.93E-04	556	7.35E-04	623	8.69E-04	690	1.81E-04	757	2.10E-05
423	3.33E-05	490	2.98E-04	557	7.43E-04	624	8.58E-04	691	1.75E-04	758	2.06E-05
424	3.68E-05	491	3.02E-04	558	7.47E-04	625	8.48E-04	692	1.71E-04	759	2.02E-05
425	4.13E-05	492	3.07E-04	559	7.54E-04	626	8.39E-04	693	1.64E-04	760	1.94E-05
426	4.71E-05	493	3.14E-04	560	7.60E-04	627	8.27E-04	694	1.60E-04	761	1.87E-05
427	5.35E-05	494	3.21E-04	561	7.68E-04	628	8.14E-04	695	1.54E-04	762	1.82E-05
428	5.92E-05	495	3.28E-04	562	7.78E-04	629	8.02E-04	696	1.50E-04	763	1.77E-05
429	6.71E-05	496	3.36E-04	563	7.85E-04	630	7.87E-04	697	1.46E-04	764	1.69E-05
430	7.53E-05	497	3.46E-04	564	7.92E-04	631	7.77E-04	698	1.41E-04	765	1.67E-05
431	8.33E-05	498	3.57E-04	565	8.01E-04	632	7.66E-04	699	1.37E-04	766	1.62E-05
432	9.27E-05	499	3.66E-04	566	8.10E-04	633	7.56E-04	700	1.33E-04	767	1.56E-05
433	1.03E-04	500	3.78E-04	567	8.15E-04	634	7.43E-04	701	1.29E-04	768	1.52E-05
434	1.15E-04	501	3.89E-04	568	8.25E-04	635	7.30E-04	702	1.25E-04	769	1.47E-05
435	1.27E-04	502	3.99E-04	569	8.34E-04	636	7.17E-04	703	1.22E-04	770	1.46E-05
436	1.42E-04	503	4.10E-04	570	8.44E-04	637	7.03E-04	704	1.16E-04	771	1.35E-05
437	1.61E-04	504	4.23E-04	571	8.55E-04	638	6.90E-04	705	1.13E-04	772	1.31E-05
438	1.77E-04	505	4.32E-04	572	8.61E-04	639	6.76E-04	706	1.09E-04	773	1.25E-05
439	1.98E-04	506	4.43E-04	573	8.68E-04	640	6.64E-04	707	1.06E-04	774	1.27E-05
440	2.24E-04	507	4.53E-04	574	8.74E-04	641	6.48E-04	708	1.02E-04	775	1.24E-05
441	2.51E-04	508	4.60E-04	575	8.82E-04	642	6.37E-04	709	9.99E-05	776	1.19E-05
442	2.79E-04	509	4.69E-04	576	8.89E-04	643	6.24E-04	710	9.62E-05	777	1.14E-05
443	3.10E-04	510	4.79E-04	577	8.97E-04	644	6.14E-04	711	9.33E-05	778	1.15E-05
444	3.47E-04	511	4.87E-04	578	9.03E-04	645	5.99E-04	712	9.09E-05	779	1.15E-05
445	3.88E-04	512	4.95E-04	579	9.14E-04	646	5.87E-04	713	8.74E-05	780	1.16E-05
446	4.36E-04	513	5.03E-04	580	9.19E-04	647	5.76E-04	714	8.50E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	SWISHFA1X4 @19W3500K	Sample ID	250715001-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	25.0	Humidity (%RH)	40.4

Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</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	0.075	18.6	0.901
NON-WORST CASE	120.0	60	0.148	17.7	0.996

Test Result

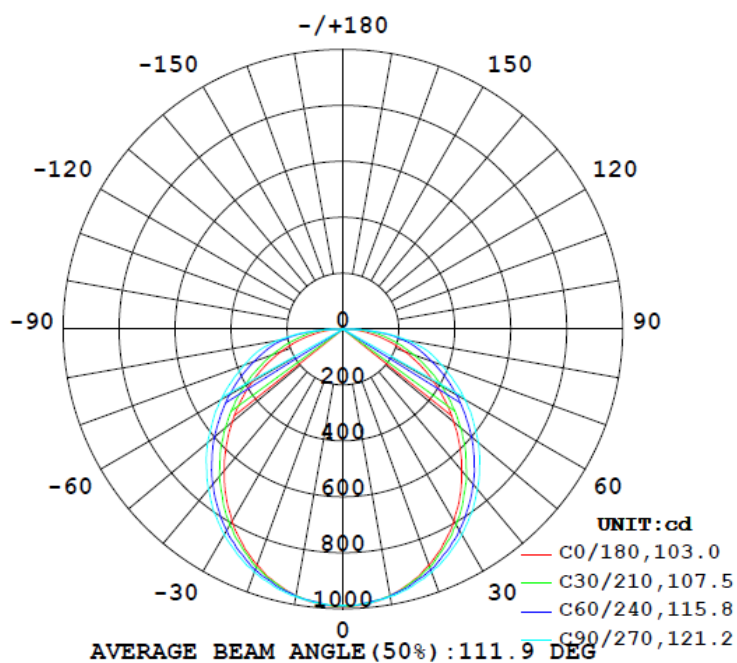
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement (0° - 60°)
	C0-180	C90-270	C0-180	C90-270		
2916	161.9	172.6	103.0	120.8	156.8	74.9%

UGR		Spacing Criterion	
Crosswise	Endwise	(0° - 180°)	(90° - 270°)
19.2	22.2	1.20	1.28

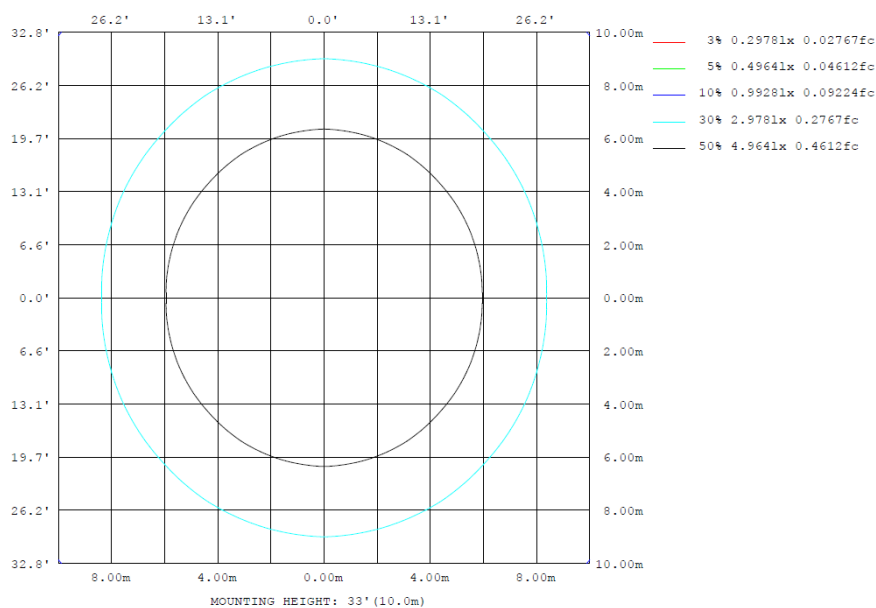
4.2 Goniophotometer Test

Lighting Distribution Curve

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	Φ lum, lamp
10	968.6	967.7	970.9	967.7	968.6	967.7	970.9	967.7	0- 10	93.41	93.41	3.2,3.2
20	897.8	908.3	925.7	908.3	897.8	908.3	925.7	908.3	10- 20	266.1	359.5	12.3,12.3
30	792.6	819.3	848.7	819.3	792.6	819.3	848.7	819.3	20- 30	400.1	759.6	26.1,26.1
40	660.2	702.1	747.5	702.1	660.2	702.1	747.5	702.1	30- 40	478.2	1238	42.5,42.5
50	516.9	572.7	632.2	572.7	516.9	572.7	632.2	572.7	40- 50	494.3	1732	59.4,59.4
60	373.4	435.8	503.3	435.8	373.4	435.8	503.3	435.8	50- 60	452.6	2185	74.9,74.9
70	236.3	304.1	375.7	304.1	236.3	304.1	375.7	304.1	60- 70	366.9	2552	87.5,87.5
80	107.6	187.0	239.0	187.0	107.6	187.0	239.0	187.0	70- 80	256.5	2808	96.3,96.3
90	0	0	0	0	0	0	0	0	80- 90	107.6	2916	100,100
100	0	0	0	0	0	0	0	0	90-100	0	2916	100,100
110	0	0	0	0	0	0	0	0	100-110	0	2916	100,100
120	0	0	0	0	0	0	0	0	110-120	0	2916	100,100
130	0	0	0	0	0	0	0	0	120-130	0	2916	100,100
140	0	0	0	0	0	0	0	0	130-140	0	2916	100,100
150	0	0	0	0	0	0	0	0	140-150	0	2916	100,100
160	0	0	0	0	0	0	0	0	150-160	0	2916	100,100
170	0	0	0	0	0	0	0	0	160-170	0	2916	100,100
180	0	0	0	0	0	0	0	0	170-180	0	2916	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	93.41	0-10	93.41	3.20%
10-20	266.12	0-20	359.53	12.33%
20-30	400.07	0-30	759.60	26.05%
30-40	478.20	0-40	1237.80	42.45%
40-50	494.34	0-50	1732.14	59.41%
50-60	452.64	0-60	2184.78	74.93%
60-70	366.94	0-70	2551.72	87.51%
70-80	256.50	0-80	2808.22	96.31%
80-90	107.58	0-90	2915.80	100.00%
90-100	0.00	0-100	2915.80	100.00%
100-110	0.00	0-110	2915.80	100.00%
110-120	0.00	0-120	2915.80	100.00%
120-130	0.00	0-130	2915.80	100.00%
130-140	0.00	0-140	2915.80	100.00%
140-150	0.00	0-150	2915.80	100.00%
150-160	0.00	0-160	2915.80	100.00%
160-170	0.00	0-170	2915.80	100.00%
170-180	0.00	0-180	2915.80	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				
		10.7	12.4	11.1	12.7	13.0	12.1	13.8	12.5	14.1
	3H	12.5	14.0	12.9	14.4	14.7	14.5	16.0	14.9	16.3
	4H	13.2	14.7	13.6	15.0	15.4	15.6	17.1	16.0	17.4
	6H	13.8	15.1	14.2	15.5	15.9	16.7	18.1	17.1	18.4
	8H	14.0	15.3	14.4	15.7	16.1	17.2	18.5	17.6	18.9
	12H	14.1	15.4	14.6	15.8	16.2	17.6	18.8	18.0	19.2
4H	2H	11.6	13.0	12.0	13.4	13.8	12.7	14.1	13.1	14.5
	3H	13.6	14.9	14.1	15.3	15.7	15.3	16.6	15.7	16.9
	4H	14.5	15.6	14.9	16.0	16.5	16.7	17.8	17.1	18.2
	6H	15.2	16.2	15.6	16.6	17.1	18.0	19.0	18.4	19.4
	8H	15.5	16.4	15.9	16.8	17.3	18.5	19.5	19.0	19.9
	12H	15.7	16.5	16.2	17.0	17.4	19.0	19.8	19.5	20.3
8H	4H	15.2	16.1	15.6	16.5	17.0	17.0	17.9	17.5	18.4
	6H	16.1	16.9	16.6	17.3	17.8	18.5	19.3	19.0	19.8
	8H	16.5	17.2	17.0	17.7	18.1	19.2	19.9	19.7	20.4
	12H	16.8	17.4	17.3	17.9	18.4	19.9	20.5	20.4	21.0
12H	4H	15.4	16.2	15.8	16.7	17.1	17.1	17.9	17.5	18.4
	6H	16.4	17.1	16.9	17.5	18.1	18.6	19.3	19.1	19.8
	8H	16.8	17.5	17.3	18.0	18.5	19.4	20.0	19.9	20.5

Maximum UGR = 21.5

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				
		14.4	16.1	14.8	16.4	16.7	15.8	17.5	16.2	17.8
	3H	16.2	17.7	16.6	18.1	18.4	18.2	19.7	18.6	20.0
	4H	16.9	18.4	17.3	18.7	19.1	19.3	20.8	19.7	21.1
	6H	17.5	18.8	17.9	19.2	19.6	20.4	21.8	20.8	22.1
	8H	17.7	19.0	18.1	19.4	19.8	20.9	22.2	21.3	22.6
	12H	17.8	19.1	18.3	19.5	19.9	21.3	22.5	21.7	22.9
4H	2H	15.3	16.7	15.7	17.1	17.5	16.4	17.8	16.8	18.2
	3H	17.3	18.6	17.8	19.0	19.4	19.0	20.3	19.4	20.6
	4H	18.2	19.3	18.6	19.7	20.2	20.4	21.5	20.8	21.9
	6H	18.9	19.9	19.3	20.3	20.8	21.7	22.7	22.1	23.1
	8H	19.2	20.1	19.6	20.5	21.0	22.2	23.2	22.7	23.6
	12H	19.4	20.2	19.9	20.7	21.1	22.7	23.5	23.2	24.0
8H	4H	18.9	19.8	19.3	20.2	20.7	20.7	21.6	21.2	22.1
	6H	19.8	20.6	20.3	21.0	21.5	22.2	23.0	22.7	23.5
	8H	20.2	20.9	20.7	21.4	21.8	22.9	23.6	23.4	24.1
	12H	20.5	21.1	21.0	21.6	22.1	23.6	24.2	24.1	24.7
12H	4H	19.1	19.9	19.5	20.4	20.8	20.8	21.6	21.2	22.1
	6H	20.1	20.8	20.6	21.2	21.8	22.3	23.0	22.8	23.5
	8H	20.5	21.2	21.0	21.7	22.2	23.1	23.7	23.6	24.2

Maximum UGR = 25.2

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	993	991	990	991	990	988	988	988	990	991	990	991	993	991	990	991	990	988	988
5	987	985	984	985	981	982	983	982	981	985	984	985	987	985	984	985	981	982	983
10	969	967	968	968	969	970	971	970	969	968	968	967	969	967	968	968	969	970	971
15	938	938	939	943	946	948	952	948	946	943	939	938	938	938	939	943	946	948	952
20	898	899	906	908	916	921	926	921	916	908	906	899	898	899	906	908	916	921	926
25	849	854	859	866	877	884	890	884	877	866	859	854	849	854	859	866	877	884	890
30	793	799	810	819	831	841	849	841	831	819	810	799	793	799	810	819	831	841	849
35	729	735	749	762	781	794	802	794	781	762	749	735	729	735	749	762	781	794	802
40	660	671	687	702	724	738	748	738	724	702	687	671	660	671	687	702	724	738	748
45	590	600	620	639	662	681	690	681	662	639	620	600	590	600	620	639	662	681	690
50	517	530	549	573	600	620	632	620	600	573	549	530	517	530	549	573	600	620	632
55	445	459	476	504	534	556	568	556	534	504	476	459	445	459	476	504	534	556	568
60	373	386	407	436	469	491	503	491	469	436	407	386	373	386	407	436	469	491	503
65	304	315	337	369	403	427	437	427	403	369	337	315	304	315	337	369	403	427	437
70	236	245	270	304	337	364	376	364	337	304	270	245	236	245	270	304	337	364	376
75	170	180	207	243	280	306	318	306	280	243	207	180	170	180	207	243	280	306	318
80	108	118	149	187	215	232	239	232	215	187	149	118	108	118	149	187	215	232	239
85	51.4	64.7	93.2	113	126	132	134	132	126	113	93.2	64.7	51.4	64.7	93.2	113	126	132	134
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	988	990	991	990	991														
5	982	981	985	984	985														
10	970	969	968	968	967														
15	948	946	943	939	938														
20	921	916	908	906	899														
25	884	877	866	859	854														
30	841	831	819	810	799														
35	794	781	762	749	735														
40	738	724	702	687	671														
45	681	662	639	620	600														
50	620	600	573	549	530														
55	556	534	504	476	459														
60	491	469	436	407	386														
65	427	403	369	337	315														
70	364	337	304	270	245														
75	306	280	243	207	180														
80	232	215	187	149	118														
85	132	126	113	93.2	64.7														
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.	SWISHFA1X4 @19W3500K	Sample ID	250715001-S1
Temperature (°C)	25.4	Humidity (%RH)	41.0

Test Method
<p>The samples were tested according to the and Ansi C82.77: 2002 and ANSI C82.77-10:2020</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	0.148	17.7	0.996	6.56
277.0	60	0.075	18.6	0.901	7.07

5.0 Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2024-11-07	2025-11-06
NTC-F01-006	2.0 meter Integrating Sphere	2024-11-07	2025-11-06
NTC-F01-012	Standard Lamp	2024-10-28	2025-10-27
NTC-F01-013	Standard Lamp	2024-10-28	2025-10-27
NTC-F01-031	Digital Power Meter	2024-08-06	2025-08-05
NTC-F01-019	Temperature & Humidity Meter	2024-10-29	2025-10-28

*****End of Report*****