

Photometric Test Report

Relevant Standards

- ☒ ANSI/IES LM-79-2019
- ☒ ANSI C82.77-2017

Prepared For

RAB Lighting Inc.

Address: 408 W 14th St New York, NY 10014

Prepared By

Dongguan New Testing Centre Co., Ltd.

Address: 3F No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China

Prepare by:

Alan Wang

Engineer: Alan Wang

Date: 2025-07-22

Review by:

Vincent Yuan

Technical Lead: Vincent Yuan

Issue Date: 2025-07-22

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		2980
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Standard	Premium	160.2
		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	6.55
			277V	7.08
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	5029±283	4969
		4 steps	5029±220	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥80		83.8
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		95
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%		74.1%
Discomfort Glare (UGR) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Standard	Premium	22.6
		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	1.30
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 @19W5000K	-	250715001-S1
2	Goniophotometer Test	2025-07-19	SWISHFA1X4 @19W5000K	-	250715001-S1
3	THD and PF Test	2025-07-19	SWISHFA1X4 @19W5000K	-	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 @19W5000K, 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 @19W5000K	Sample ID	250715001-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

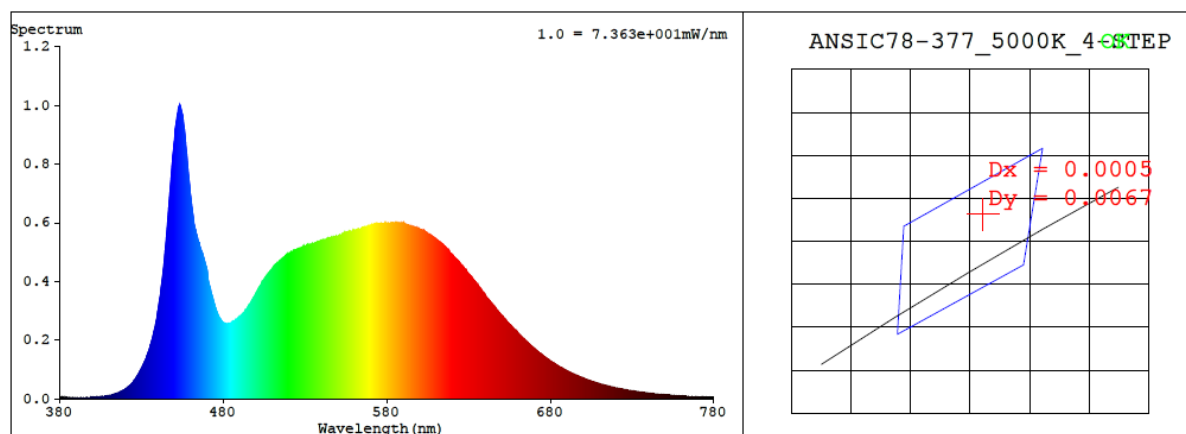
Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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
4969	83.8	12	0.0031	1.6	84	95	-12%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3465$ $y = 0.3590$ / $u' = 0.2095$ $v' = 0.4884$ ($duv=3.12e-03$)

CCT= 4969K Prcp WL: Ld=570.3nm Purity=11.7%

Peak WL: Lp=453nm FWHM: =22.9nm Ratio:R=15.8% G=79.5% B=4.7%

Render Index: Ra = 83.8 AvgR = 76.8 TM30:Rf=84 Rg=95

EEl: 0.08828 A++ Highest

R1 =82 R2 =90 R3 =95 R4 =81 R5 =81 R6 =85 R7 =88

R8 =68 R9 =12 R10=75 R11=80 R12=56 R13=84 R14=97 R15=76

4.1 Integrating Sphere Test

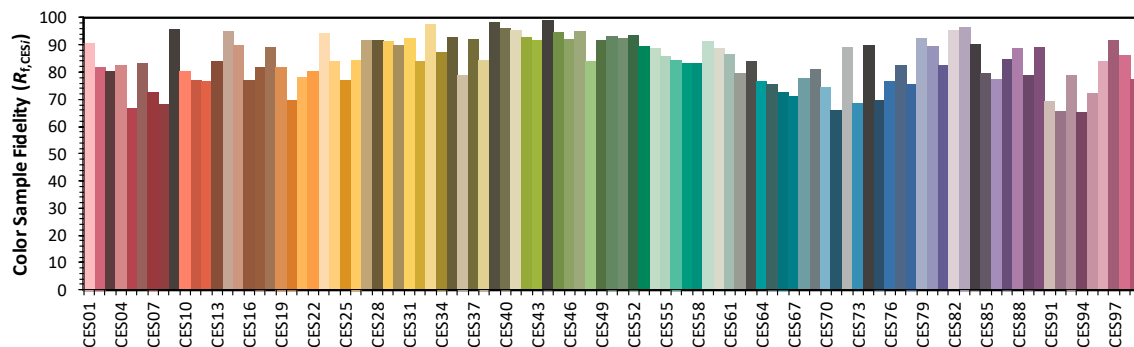
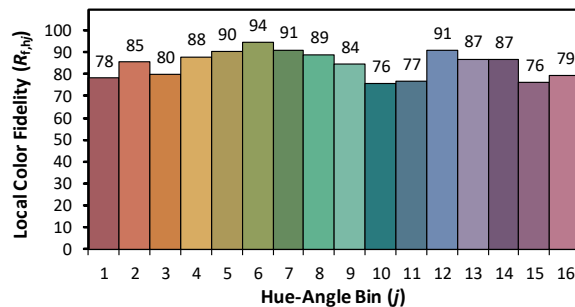
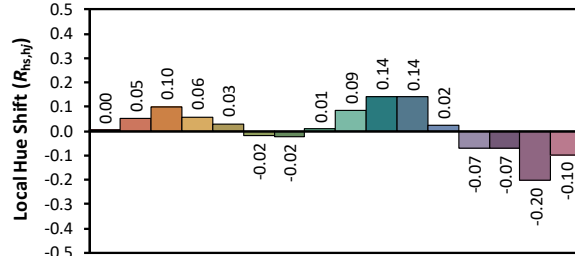
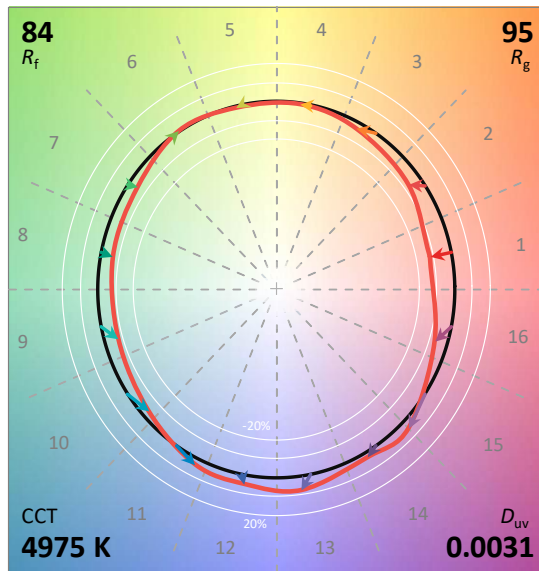
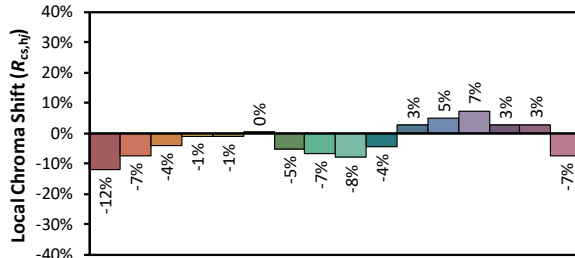
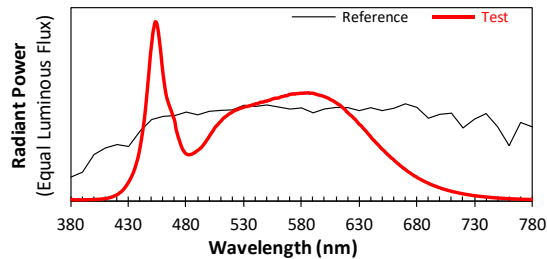
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2025/7/22

Model: SWISHFA1X4 @19W5000K



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

x 0.3464
 y 0.3588
 u' 0.2095
 v' 0.4884

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	5.70E-06	447	6.74E-04	514	4.67E-04	581	5.98E-04	648	2.99E-04	715	4.44E-05
381	5.60E-06	448	7.45E-04	515	4.72E-04	582	5.98E-04	649	2.92E-04	716	4.27E-05
382	5.40E-06	449	8.19E-04	516	4.77E-04	583	6.00E-04	650	2.85E-04	717	4.12E-05
383	4.40E-06	450	8.73E-04	517	4.82E-04	584	5.99E-04	651	2.81E-04	718	4.01E-05
384	3.60E-06	451	9.32E-04	518	4.87E-04	585	6.00E-04	652	2.74E-04	719	3.87E-05
385	3.50E-06	452	9.66E-04	519	4.89E-04	586	6.01E-04	653	2.67E-04	720	3.73E-05
386	4.70E-06	453	9.95E-04	520	4.94E-04	587	5.98E-04	654	2.60E-04	721	3.63E-05
387	4.30E-06	454	9.93E-04	521	4.98E-04	588	5.98E-04	655	2.54E-04	722	3.53E-05
388	4.00E-06	455	9.70E-04	522	5.01E-04	589	5.99E-04	656	2.50E-04	723	3.39E-05
389	3.60E-06	456	9.28E-04	523	5.04E-04	590	5.98E-04	657	2.43E-04	724	3.32E-05
390	3.60E-06	457	8.74E-04	524	5.06E-04	591	5.97E-04	658	2.37E-04	725	3.20E-05
391	4.20E-06	458	8.19E-04	525	5.09E-04	592	5.93E-04	659	2.33E-04	726	3.10E-05
392	4.40E-06	459	7.53E-04	526	5.12E-04	593	5.93E-04	660	2.27E-04	727	3.00E-05
393	4.70E-06	460	6.98E-04	527	5.14E-04	594	5.89E-04	661	2.20E-04	728	2.89E-05
394	4.50E-06	461	6.50E-04	528	5.16E-04	595	5.88E-04	662	2.15E-04	729	2.80E-05
395	4.90E-06	462	6.08E-04	529	5.19E-04	596	5.86E-04	663	2.09E-04	730	2.74E-05
396	5.10E-06	463	5.76E-04	530	5.20E-04	597	5.85E-04	664	2.04E-04	731	2.65E-05
397	5.10E-06	464	5.53E-04	531	5.23E-04	598	5.83E-04	665	1.98E-04	732	2.56E-05
398	5.30E-06	465	5.34E-04	532	5.25E-04	599	5.81E-04	666	1.92E-04	733	2.47E-05
399	5.90E-06	466	5.16E-04	533	5.24E-04	600	5.78E-04	667	1.87E-04	734	2.40E-05
400	6.10E-06	467	4.99E-04	534	5.27E-04	601	5.76E-04	668	1.82E-04	735	2.33E-05
401	6.20E-06	468	4.81E-04	535	5.28E-04	602	5.73E-04	669	1.78E-04	736	2.23E-05
402	6.50E-06	469	4.61E-04	536	5.30E-04	603	5.71E-04	670	1.73E-04	737	2.19E-05
403	7.10E-06	470	4.44E-04	537	5.32E-04	604	5.67E-04	671	1.68E-04	738	2.12E-05
404	7.10E-06	471	4.02E-04	538	5.34E-04	605	5.63E-04	672	1.63E-04	739	2.03E-05
405	7.70E-06	472	3.78E-04	539	5.36E-04	606	5.60E-04	673	1.58E-04	740	1.96E-05
406	8.50E-06	473	3.54E-04	540	5.40E-04	607	5.57E-04	674	1.55E-04	741	1.91E-05
407	8.50E-06	474	3.36E-04	541	5.40E-04	608	5.53E-04	675	1.50E-04	742	1.85E-05
408	9.60E-06	475	3.15E-04	542	5.40E-04	609	5.49E-04	676	1.45E-04	743	1.79E-05
409	1.06E-05	476	2.98E-04	543	5.43E-04	610	5.45E-04	677	1.41E-04	744	1.73E-05
410	1.14E-05	477	2.84E-04	544	5.47E-04	611	5.40E-04	678	1.37E-04	745	1.70E-05
411	1.25E-05	478	2.74E-04	545	5.48E-04	612	5.36E-04	679	1.34E-04	746	1.63E-05
412	1.36E-05	479	2.65E-04	546	5.49E-04	613	5.33E-04	680	1.29E-04	747	1.57E-05
413	1.50E-05	480	2.60E-04	547	5.50E-04	614	5.27E-04	681	1.26E-04	748	1.52E-05
414	1.69E-05	481	2.57E-04	548	5.52E-04	615	5.21E-04	682	1.22E-04	749	1.49E-05
415	1.91E-05	482	2.55E-04	549	5.54E-04	616	5.16E-04	683	1.19E-04	750	1.44E-05
416	2.10E-05	483	2.56E-04	550	5.54E-04	617	5.10E-04	684	1.15E-04	751	1.38E-05
417	2.41E-05	484	2.57E-04	551	5.58E-04	618	5.05E-04	685	1.12E-04	752	1.35E-05
418	2.68E-05	485	2.59E-04	552	5.58E-04	619	4.95E-04	686	1.08E-04	753	1.32E-05
419	2.88E-05	486	2.64E-04	553	5.61E-04	620	4.91E-04	687	1.06E-04	754	1.26E-05
420	3.27E-05	487	2.66E-04	554	5.64E-04	621	4.84E-04	688	1.02E-04	755	1.22E-05
421	3.66E-05	488	2.70E-04	555	5.66E-04	622	4.78E-04	689	9.92E-05	756	1.19E-05
422	4.20E-05	489	2.75E-04	556	5.68E-04	623	4.73E-04	690	9.66E-05	757	1.16E-05
423	4.63E-05	490	2.81E-04	557	5.71E-04	624	4.68E-04	691	9.30E-05	758	1.12E-05
424	5.18E-05	491	2.84E-04	558	5.70E-04	625	4.61E-04	692	9.04E-05	759	1.08E-05
425	5.80E-05	492	2.90E-04	559	5.71E-04	626	4.55E-04	693	8.73E-05	760	1.06E-05
426	6.54E-05	493	2.96E-04	560	5.72E-04	627	4.48E-04	694	8.53E-05	761	1.00E-05
427	7.40E-05	494	3.03E-04	561	5.74E-04	628	4.40E-04	695	8.26E-05	762	9.90E-06
428	8.29E-05	495	3.12E-04	562	5.78E-04	629	4.33E-04	696	8.02E-05	763	9.50E-06
429	9.28E-05	496	3.20E-04	563	5.80E-04	630	4.25E-04	697	7.82E-05	764	9.40E-06
430	1.03E-04	497	3.29E-04	564	5.80E-04	631	4.21E-04	698	7.51E-05	765	8.90E-06
431	1.15E-04	498	3.39E-04	565	5.82E-04	632	4.14E-04	699	7.29E-05	766	8.80E-06
432	1.27E-04	499	3.48E-04	566	5.84E-04	633	4.06E-04	700	7.09E-05	767	8.40E-06
433	1.40E-04	500	3.59E-04	567	5.84E-04	634	4.00E-04	701	6.83E-05	768	8.30E-06
434	1.55E-04	501	3.69E-04	568	5.86E-04	635	3.92E-04	702	6.60E-05	769	8.10E-06
435	1.72E-04	502	3.78E-04	569	5.90E-04	636	3.86E-04	703	6.43E-05	770	7.70E-06
436	1.91E-04	503	3.87E-04	570	5.91E-04	637	3.78E-04	704	6.21E-05	771	7.40E-06
437	2.14E-04	504	3.98E-04	571	5.94E-04	638	3.70E-04	705	6.07E-05	772	7.20E-06
438	2.37E-04	505	4.07E-04	572	5.93E-04	639	3.62E-04	706	5.86E-05	773	6.80E-06
439	2.65E-04	506	4.16E-04	573	5.95E-04	640	3.56E-04	707	5.66E-05	774	6.70E-06
440	2.99E-04	507	4.21E-04	574	5.93E-04	641	3.46E-04	708	5.50E-05	775	6.60E-06
441	3.36E-04	508	4.29E-04	575	5.95E-04	642	3.40E-04	709	5.32E-05	776	6.50E-06
442	3.79E-04	509	4.36E-04	576	5.96E-04	643	3.33E-04	710	5.15E-05	777	6.10E-06
443	4.22E-04	510	4.42E-04	577	5.96E-04	644	3.27E-04	711	4.97E-05	778	6.00E-06
444	4.74E-04	511	4.50E-04	578	5.97E-04	645	3.20E-04	712	4.84E-05	779	6.00E-06
445	5.36E-04	512	4.57E-04	579	5.99E-04	646	3.14E-04	713	4.69E-05	780	6.00E-06
446	6.04E-04	513	4.62E-04	580	5.97E-04	647	3.07E-04	714	4.57E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	SWISHFA1X4 @19W5000K	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

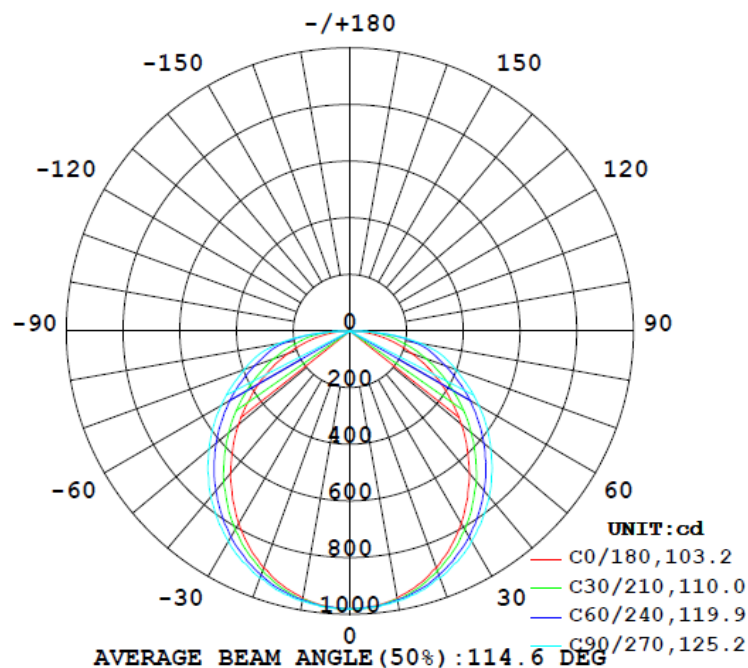
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement (0° - 60°)
	C0-180	C90-270	C0-180	C90-270		
2980	162.6	172.9	103.8	125.0	160.2	74.1%

UGR		Spacing Criterion	
Crosswise	Endwise	(0° - 180°)	(90° - 270°)
19.3	22.6	1.20	1.30

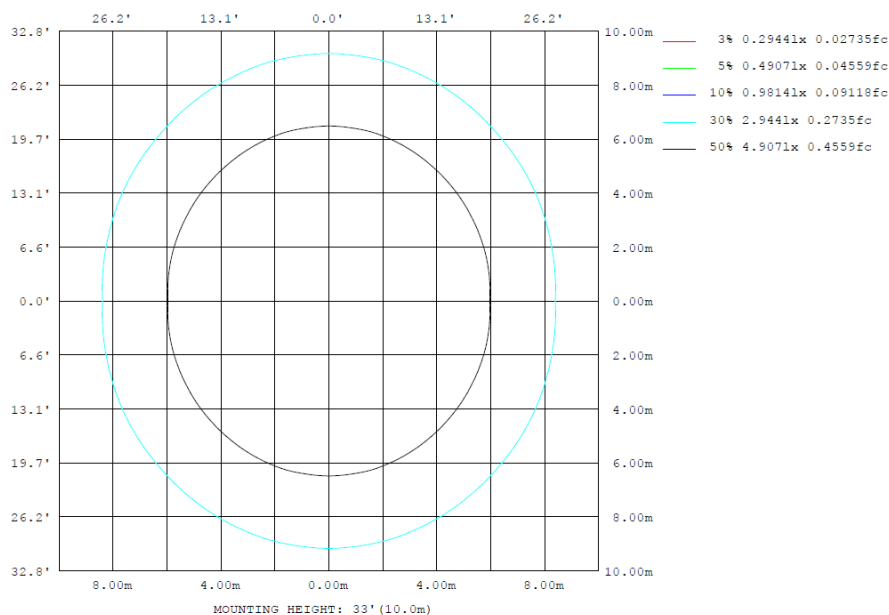
4.2 Goniophotometer Test

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	± zone	± total	±lum, lamp
10	957.8	963.0	967.6	963.0	957.8	963.0	967.6	963.0	0- 10	92.84	92.84	3.12, 3.12
20	889.3	909.5	927.8	909.5	889.3	909.5	927.8	909.5	10- 20	265.6	358.4	12, 12
30	784.9	823.5	857.1	823.5	784.9	823.5	857.1	823.5	20- 30	401.2	759.6	25.5, 25.5
40	655.3	713.0	763.4	713.0	655.3	713.0	763.4	713.0	30- 40	482.3	1242	41.7, 41.7
50	513.4	587.1	648.9	587.1	513.4	587.1	648.9	587.1	40- 50	502.5	1744	58.5, 58.5
60	371.4	455.6	524.9	455.6	371.4	455.6	524.9	455.6	50- 60	465.2	2210	74.1, 74.1
70	234.2	323.3	396.5	323.3	234.2	323.3	396.5	323.3	60- 70	382.8	2592	87, 87
80	108.4	205.3	255.9	205.3	108.4	205.3	255.9	205.3	70- 80	272.9	2865	96.1, 96.1
90	0	0	0	0	0	0	0	0	80- 90	115.0	2980	100, 100
100	0	0	0	0	0	0	0	0	90-100	0	2980	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	2980	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	2980	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	2980	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	2980	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	2980	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	2980	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	2980	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	2980	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

	Zonal (lm)		Total (lm)	Percent
0-10	92.84	0-10	92.84	3.12%
10-20	265.59	0-20	358.43	12.03%
20-30	401.15	0-30	759.58	25.49%
30-40	482.26	0-40	1241.84	41.67%
40-50	502.49	0-50	1744.33	58.53%
50-60	465.21	0-60	2209.54	74.14%
60-70	382.77	0-70	2592.31	86.98%
70-80	272.90	0-80	2865.21	96.14%
80-90	114.99	0-90	2980.20	100.00%
90-100	0.00	0-100	2980.20	100.00%
100-110	0.00	0-110	2980.20	100.00%
110-120	0.00	0-120	2980.20	100.00%
120-130	0.00	0-130	2980.20	100.00%
130-140	0.00	0-140	2980.20	100.00%
140-150	0.00	0-150	2980.20	100.00%
150-160	0.00	0-160	2980.20	100.00%
160-170	0.00	0-170	2980.20	100.00%
170-180	0.00	0-180	2980.20	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										
X=2H	Y=2H	10.7	12.4	11.0	12.7	13.0	12.2	13.9	12.6	14.2
	3H	12.5	14.0	12.9	14.3	14.7	14.7	16.2	15.0	16.5
	4H	13.2	14.6	13.6	15.0	15.4	15.8	17.3	16.2	17.7
	6H	13.7	15.1	14.2	15.5	15.9	17.0	18.3	17.4	18.7
	8H	14.0	15.3	14.4	15.6	16.0	17.4	18.7	17.9	19.1
	12H	14.1	15.4	14.5	15.7	16.2	17.8	19.1	18.2	19.4
UGR Viewed Endwise										
4H	2H	11.6	13.1	12.0	13.4	13.8	12.8	14.3	13.2	14.6
	3H	13.7	14.9	14.1	15.3	15.7	15.5	16.8	15.9	17.1
	4H	14.6	15.7	15.0	16.1	16.5	16.9	18.0	17.3	18.4
	6H	15.3	16.3	15.7	16.7	17.2	18.3	19.2	18.7	19.7
	8H	15.5	16.5	16.0	16.9	17.4	18.8	19.7	19.3	20.2
	12H	15.7	16.6	16.2	17.1	17.5	19.3	20.1	19.7	20.6
8H	4H	15.3	16.2	15.8	16.7	17.1	17.3	18.2	17.7	18.6
	6H	16.2	17.0	16.7	17.5	18.0	18.8	19.6	19.3	20.1
	8H	16.6	17.3	17.1	17.9	18.3	19.5	20.2	20.0	20.7
	12H	17.0	17.6	17.5	18.1	18.6	20.1	20.8	20.6	21.3
12H	4H	15.5	16.3	16.0	16.8	17.3	17.3	18.1	17.8	18.6
	6H	16.6	17.3	17.1	17.7	18.3	18.9	19.6	19.5	20.1
	8H	17.1	17.7	17.6	18.2	18.7	19.7	20.3	20.2	20.8

Maximum UGR = 21.8

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										
X=2H	Y=2H	14.5	16.2	14.8	16.5	16.8	16.0	17.7	16.4	18.0
	3H	16.3	17.8	16.7	18.1	18.5	18.5	20.0	18.8	20.3
	4H	17.0	18.4	17.4	18.8	19.2	19.6	21.1	20.0	21.5
	6H	17.5	18.9	18.0	19.3	19.7	20.8	22.1	21.2	22.5
	8H	17.8	19.1	18.2	19.4	19.8	21.2	22.5	21.7	22.9
	12H	17.9	19.2	18.3	19.5	20.0	21.6	22.9	22.0	23.2
UGR Viewed Endwise										
4H	2H	15.4	16.9	15.8	17.2	17.6	16.6	18.1	17.0	18.4
	3H	17.5	18.7	17.9	19.1	19.5	19.3	20.6	19.7	20.9
	4H	18.4	19.5	18.8	19.9	20.3	20.7	21.8	21.1	22.2
	6H	19.1	20.1	19.5	20.5	21.0	22.1	23.0	22.5	23.5
	8H	19.3	20.3	19.8	20.7	21.2	22.6	23.5	23.1	24.0
	12H	19.5	20.4	20.0	20.9	21.3	23.1	23.9	23.5	24.4
8H	4H	19.1	20.0	19.6	20.5	20.9	21.1	22.0	21.5	22.4
	6H	20.0	20.8	20.5	21.3	21.8	22.6	23.4	23.1	23.9
	8H	20.4	21.1	20.9	21.7	22.1	23.3	24.0	23.8	24.5
	12H	20.8	21.4	21.3	21.9	22.4	23.9	24.6	24.4	25.1
12H	4H	19.3	20.1	19.8	20.6	21.1	21.1	21.9	21.6	22.4
	6H	20.4	21.1	20.9	21.5	22.1	22.7	23.4	23.3	23.9
	8H	20.9	21.5	21.4	22.0	22.5	23.5	24.1	24.0	24.6

Maximum UGR = 25.6

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	981	982	981	983	979	982	981	982	979	983	981	982	981	982	981	983	979	982	981
5	974	976	977	978	977	983	978	983	977	978	977	976	974	976	977	978	977	983	978
10	958	958	962	963	964	971	968	971	964	963	962	958	958	958	962	963	964	971	968
15	927	934	938	940	946	952	952	952	946	940	938	934	927	934	938	940	946	952	952
20	889	895	901	910	916	927	928	927	916	910	901	895	889	895	901	910	916	927	928
25	841	850	859	871	880	894	898	894	880	871	859	850	841	850	859	871	880	894	898
30	785	797	811	823	840	853	857	853	840	823	811	797	785	797	811	823	840	853	857
35	723	734	752	771	790	808	813	808	790	771	752	734	723	734	752	771	790	808	813
40	655	671	693	713	736	756	763	756	736	713	693	671	655	671	693	713	736	756	763
45	584	606	627	652	678	700	709	700	678	652	627	606	584	606	627	652	678	700	709
50	513	535	559	587	616	639	649	639	616	587	559	535	513	535	559	587	616	639	649
55	442	462	490	522	552	579	589	579	552	522	490	462	442	462	490	522	552	579	589
60	371	392	420	456	489	516	525	516	489	456	420	392	371	392	420	456	489	516	525
65	301	322	352	389	422	450	459	450	422	389	352	322	301	322	352	389	422	450	459
70	234	252	287	323	358	386	397	386	358	323	287	252	234	252	287	323	358	386	397
75	169	189	222	261	300	330	340	330	300	261	222	189	169	189	222	261	300	330	340
80	108	128	164	205	234	251	256	251	234	205	164	128	108	128	164	205	234	251	256
85	50.3	71.9	103	123	132	137	137	137	132	123	103	71.9	50.3	71.9	103	123	132	137	137
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	982	979	983	981	982														
5	983	977	978	977	976														
10	971	964	963	962	958														
15	952	946	940	938	934														
20	927	916	910	901	895														
25	894	880	871	859	850														
30	853	840	823	811	797														
35	808	790	771	752	734														
40	756	736	713	693	671														
45	700	678	652	627	606														
50	639	616	587	559	535														
55	579	552	522	490	462														
60	516	489	456	420	392														
65	450	422	389	352	322														
70	386	358	323	287	252														
75	330	300	261	222	189														
80	251	234	205	164	128														
85	137	132	123	103	71.9														
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 @19W5000K	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	6.55
277.0	60	0.075	18.6	0.901	7.08

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*****