

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

Prepared By

Dongguan New Testing Centre Co., Ltd.

Prepare by:

Alan Wang

Engineer: Alan Wang

Date: 2023-06-14

Review by:

Vincent Yuan

Technical Lead: Vincent Yuan

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Revised Date: N/A

1.0 Test Summary

DLC Technical Requirements V5.1

Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires				
Requirement Category	Test Method	Requirements		Test Value
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-180° zones)	IES LM-79-2008	N/A		4020
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	IES LM-79-2008	N/A		137.7
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	300		3908
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard	Premium	133.8
		105	120	
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	3.10
			277V	9.22
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.994
			277V	0.878
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3045±175	3093
		4 steps	3045±100	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥70		73.6
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	N/A		-28
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		77
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	-18%≤IES Rcs,h1≤+23%		-16%
Zonal Lumen Requirement (80°-90°) (Goniophotometer – Section 4.2)	IES LM-79-2008	≤10%		4.6%
Input Voltage (V)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Cast		277.0
(Goniophotometer – Section 4.2)		Non-Worst Case		120.0
Input Current (A)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		0.120
(Goniophotometer – Section 4.2)		Non-Worst Case		0.244
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	2023-06-13	W34S @ 25W / 3000K	230612003-S1
2	Goniophotometer Test	2023-06-13	W34S @ 25W / 3000K	230612003-S1
3	THD and PF Test	2023-06-13	W34S @ 25W / 3000K	230612003-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. W34S @ 25W / 3000K, color tunable from 3000K, 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.	W34S @ 25W / 3000K	Sample ID	230612003-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

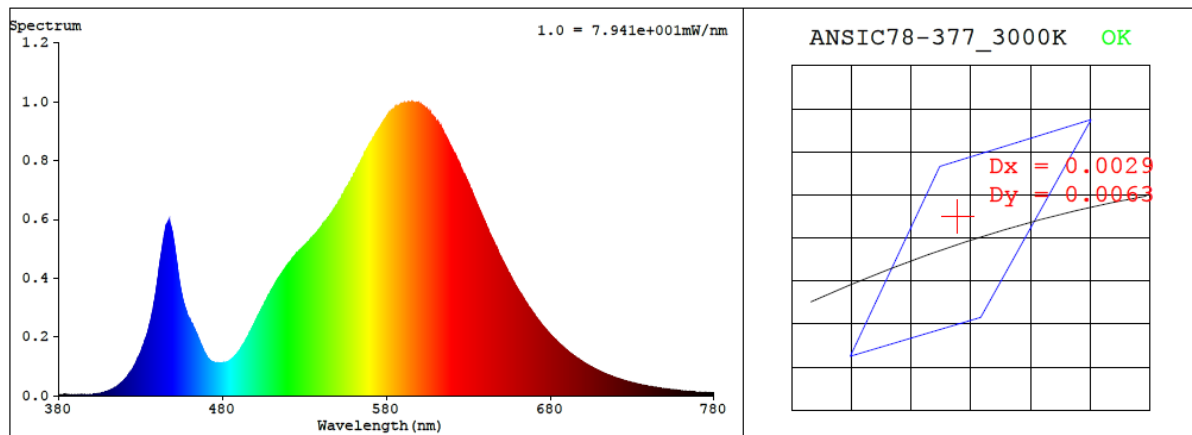
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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.</p> <p>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	29.1	0.994
277.0	60	0.120	29.2	0.878

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
3093	73.6	-28	0.0021	77	95	-16%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4334$ $y = 0.4080$ / $u' = 0.2466$ $v' = 0.5224$ ($duv=2.09e-03$)

CCT= 3093K Prcp WL: $L_d=581.7nm$ Purity=52.6%

Peak WL: $L_p=596nm$ FWHM: $=119.6nm$ Ratio: $R=20.8\%$ $G=77.3\%$ $B=1.9\%$

Render Index: $R_a = 73.6$ AvgR = 64.7 TM30: $R_f=77$ $R_g=94$

EEL: 0.10097 A++ Highest

R1 =70	R2 =82	R3 =94	R4 =71	R5 =69	R6 =76	R7 =80
R8 =47	R9 =-28	R10=60	R11=67	R12=53	R13=72	R14=97 R15=62

4.1 Integrating Sphere Test

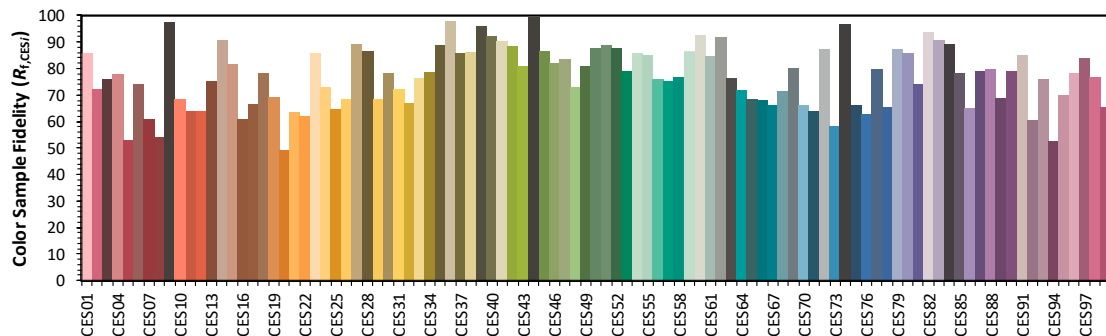
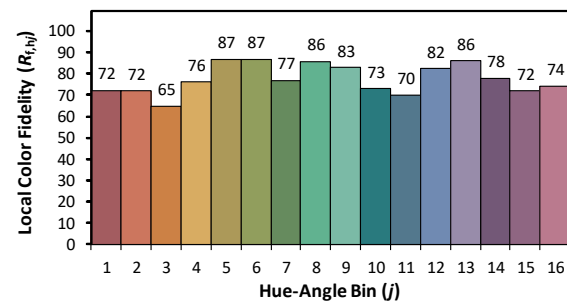
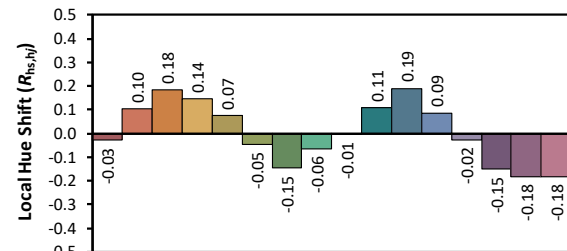
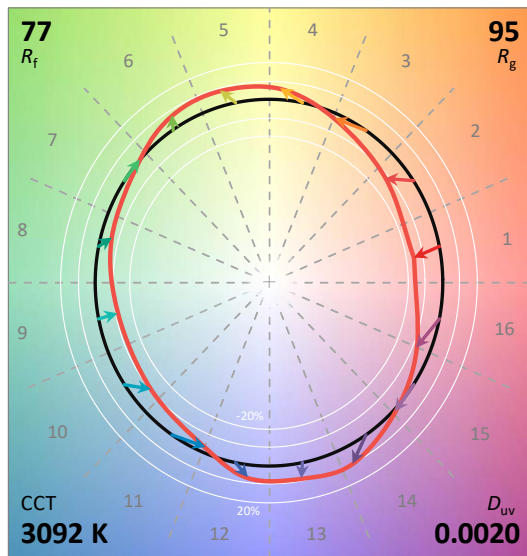
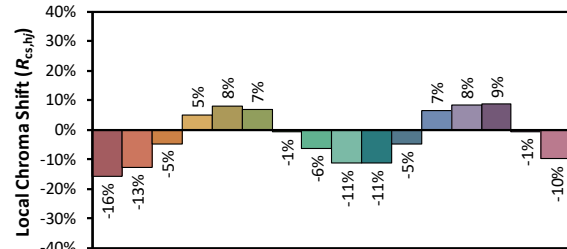
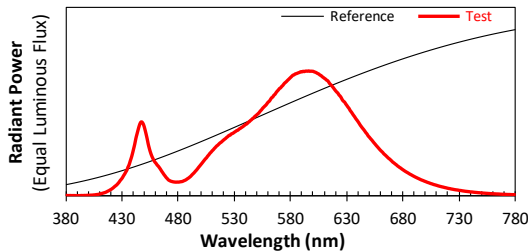
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2023/6/14

Model: W34S @ 25W / 3000K



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

x 0.4334

y 0.4079

u' 0.2467

v' 0.5224

CIE 13.3-1995
(CRI)

R_a 74

R_g -28

Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.00.

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	5.00E-06	447	5.91E-04	514	3.99E-04	581	9.55E-04	648	4.94E-04	715	7.19E-05
381	3.10E-06	448	5.84E-04	515	4.05E-04	582	9.64E-04	649	4.79E-04	716	7.01E-05
382	2.60E-06	449	5.65E-04	516	4.14E-04	583	9.67E-04	650	4.70E-04	717	6.75E-05
383	3.10E-06	450	5.35E-04	517	4.23E-04	584	9.74E-04	651	4.58E-04	718	6.57E-05
384	3.20E-06	451	4.99E-04	518	4.29E-04	585	9.76E-04	652	4.49E-04	719	6.33E-05
385	2.40E-06	452	4.60E-04	519	4.37E-04	586	9.80E-04	653	4.38E-04	720	6.11E-05
386	3.00E-06	453	4.16E-04	520	4.45E-04	587	9.84E-04	654	4.26E-04	721	5.92E-05
387	2.70E-06	454	3.80E-04	521	4.52E-04	588	9.87E-04	655	4.16E-04	722	5.78E-05
388	2.70E-06	455	3.49E-04	522	4.59E-04	589	9.92E-04	656	4.05E-04	723	5.54E-05
389	1.60E-06	456	3.23E-04	523	4.68E-04	590	9.90E-04	657	3.95E-04	724	5.39E-05
390	1.50E-06	457	3.03E-04	524	4.74E-04	591	9.95E-04	658	3.85E-04	725	5.21E-05
391	2.60E-06	458	2.85E-04	525	4.83E-04	592	9.92E-04	659	3.74E-04	726	5.04E-05
392	2.00E-06	459	2.70E-04	526	4.85E-04	593	9.96E-04	660	3.64E-04	727	4.90E-05
393	3.20E-06	460	2.60E-04	527	4.94E-04	594	9.97E-04	661	3.55E-04	728	4.77E-05
394	3.30E-06	461	2.47E-04	528	4.98E-04	595	9.96E-04	662	3.47E-04	729	4.66E-05
395	2.90E-06	462	2.38E-04	529	5.03E-04	596	9.98E-04	663	3.36E-04	730	4.45E-05
396	3.90E-06	463	2.25E-04	530	5.10E-04	597	9.95E-04	664	3.28E-04	731	4.36E-05
397	3.60E-06	464	2.12E-04	531	5.16E-04	598	9.96E-04	665	3.20E-04	732	4.23E-05
398	4.20E-06	465	1.98E-04	532	5.22E-04	599	9.95E-04	666	3.11E-04	733	4.05E-05
399	5.00E-06	466	1.85E-04	533	5.25E-04	600	9.95E-04	667	3.02E-04	734	3.94E-05
400	3.00E-06	467	1.71E-04	534	5.34E-04	601	9.90E-04	668	2.95E-04	735	3.79E-05
401	5.50E-06	468	1.60E-04	535	5.39E-04	602	9.87E-04	669	2.87E-04	736	3.67E-05
402	6.20E-06	469	1.48E-04	536	5.45E-04	603	9.83E-04	670	2.79E-04	737	3.58E-05
403	6.30E-06	470	1.38E-04	537	5.51E-04	604	9.77E-04	671	2.69E-04	738	3.47E-05
404	7.40E-06	471	1.28E-04	538	5.58E-04	605	9.73E-04	672	2.63E-04	739	3.38E-05
405	8.10E-06	472	1.23E-04	539	5.65E-04	606	9.65E-04	673	2.56E-04	740	3.22E-05
406	9.20E-06	473	1.18E-04	540	5.72E-04	607	9.61E-04	674	2.49E-04	741	3.18E-05
407	1.06E-05	474	1.16E-04	541	5.76E-04	608	9.52E-04	675	2.41E-04	742	3.09E-05
408	1.16E-05	475	1.13E-04	542	5.86E-04	609	9.46E-04	676	2.34E-04	743	2.97E-05
409	1.34E-05	476	1.12E-04	543	5.92E-04	610	9.39E-04	677	2.28E-04	744	2.86E-05
410	1.55E-05	477	1.10E-04	544	6.01E-04	611	9.33E-04	678	2.22E-04	745	2.78E-05
411	1.81E-05	478	1.10E-04	545	6.08E-04	612	9.24E-04	679	2.15E-04	746	2.71E-05
412	2.05E-05	479	1.11E-04	546	6.17E-04	613	9.19E-04	680	2.09E-04	747	2.59E-05
413	2.32E-05	480	1.10E-04	547	6.24E-04	614	9.06E-04	681	2.03E-04	748	2.54E-05
414	2.59E-05	481	1.12E-04	548	6.34E-04	615	8.94E-04	682	1.97E-04	749	2.46E-05
415	2.87E-05	482	1.13E-04	549	6.41E-04	616	8.86E-04	683	1.91E-04	750	2.37E-05
416	3.31E-05	483	1.15E-04	550	6.49E-04	617	8.75E-04	684	1.86E-04	751	2.29E-05
417	3.79E-05	484	1.17E-04	551	6.57E-04	618	8.63E-04	685	1.81E-04	752	2.22E-05
418	4.20E-05	485	1.22E-04	552	6.67E-04	619	8.51E-04	686	1.75E-04	753	2.17E-05
419	4.76E-05	486	1.25E-04	553	6.79E-04	620	8.39E-04	687	1.70E-04	754	2.08E-05
420	5.25E-05	487	1.31E-04	554	6.88E-04	621	8.29E-04	688	1.65E-04	755	2.05E-05
421	5.90E-05	488	1.37E-04	555	7.00E-04	622	8.21E-04	689	1.60E-04	756	1.96E-05
422	6.59E-05	489	1.43E-04	556	7.09E-04	623	8.06E-04	690	1.56E-04	757	1.92E-05
423	7.40E-05	490	1.50E-04	557	7.18E-04	624	7.97E-04	691	1.51E-04	758	1.82E-05
424	8.11E-05	491	1.58E-04	558	7.26E-04	625	7.84E-04	692	1.46E-04	759	1.79E-05
425	8.85E-05	492	1.68E-04	559	7.39E-04	626	7.67E-04	693	1.42E-04	760	1.72E-05
426	9.85E-05	493	1.77E-04	560	7.50E-04	627	7.56E-04	694	1.38E-04	761	1.67E-05
427	1.09E-04	494	1.86E-04	561	7.57E-04	628	7.49E-04	695	1.34E-04	762	1.65E-05
428	1.22E-04	495	1.96E-04	562	7.71E-04	629	7.35E-04	696	1.29E-04	763	1.58E-05
429	1.33E-04	496	2.06E-04	563	7.84E-04	630	7.23E-04	697	1.26E-04	764	1.56E-05
430	1.45E-04	497	2.17E-04	564	7.90E-04	631	7.09E-04	698	1.23E-04	765	1.54E-05
431	1.61E-04	498	2.29E-04	565	8.04E-04	632	6.98E-04	699	1.18E-04	766	1.47E-05
432	1.74E-04	499	2.40E-04	566	8.11E-04	633	6.82E-04	700	1.15E-04	767	1.39E-05
433	1.91E-04	500	2.51E-04	567	8.25E-04	634	6.70E-04	701	1.11E-04	768	1.36E-05
434	2.06E-04	501	2.62E-04	568	8.36E-04	635	6.57E-04	702	1.08E-04	769	1.29E-05
435	2.30E-04	502	2.74E-04	569	8.46E-04	636	6.43E-04	703	1.05E-04	770	1.28E-05
436	2.49E-04	503	2.85E-04	570	8.57E-04	637	6.31E-04	704	1.02E-04	771	1.25E-05
437	2.78E-04	504	2.96E-04	571	8.63E-04	638	6.17E-04	705	9.82E-05	772	1.20E-05
438	3.06E-04	505	3.05E-04	572	8.74E-04	639	6.05E-04	706	9.57E-05	773	1.16E-05
439	3.38E-04	506	3.18E-04	573	8.83E-04	640	5.93E-04	707	9.22E-05	774	1.13E-05
440	3.75E-04	507	3.28E-04	574	8.95E-04	641	5.79E-04	708	8.96E-05	775	1.14E-05
441	4.12E-04	508	3.40E-04	575	9.04E-04	642	5.65E-04	709	8.71E-05	776	1.07E-05
442	4.58E-04	509	3.49E-04	576	9.11E-04	643	5.53E-04	710	8.45E-05	777	1.03E-05
443	4.93E-04	510	3.60E-04	577	9.21E-04	644	5.41E-04	711	8.16E-05	778	1.02E-05
444	5.27E-04	511	3.68E-04	578	9.29E-04	645	5.30E-04	712	7.89E-05	779	1.00E-05
445	5.59E-04	512	3.79E-04	579	9.38E-04	646	5.18E-04	713	7.64E-05	780	1.00E-05
446	5.82E-04	513	3.88E-04	580	9.47E-04	647	5.05E-04	714	7.43E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	W34S @ 25W / 3000K	Sample ID	230612003-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	25.0	Humidity (%RH)	40.1

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	277.0	60	0.120	29.2	0.878
NON-WORST CASE	120.0	60	0.244	29.1	0.994

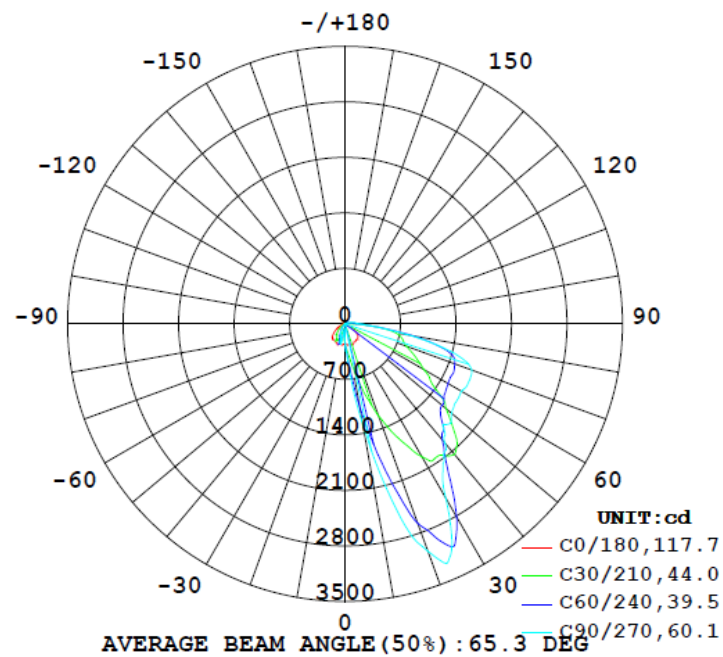
Test Result

Result Type	Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement (80°-90°)	BUG
		C0-180	C90-270	C0-180	C90-270			
0°-180° zones	4020	83.8	132.0	55.8	80.1	137.7	4.5%	B0-U3-G2
0°-90° zones	3908	83.8	132.0	55.8	80.1	133.8	4.6%	B0-U3-G2

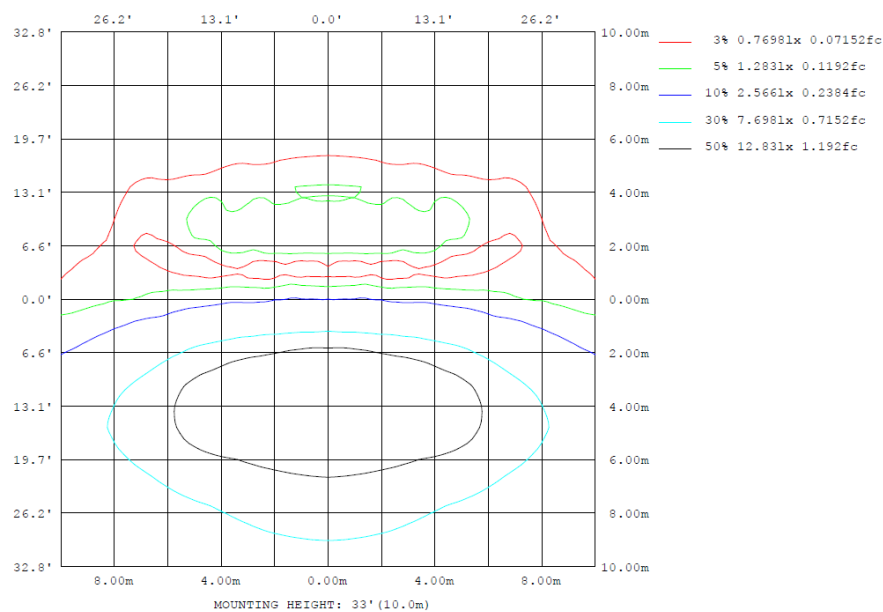
4.2 Goniophotometer Test

Lighting Distribution Curve

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

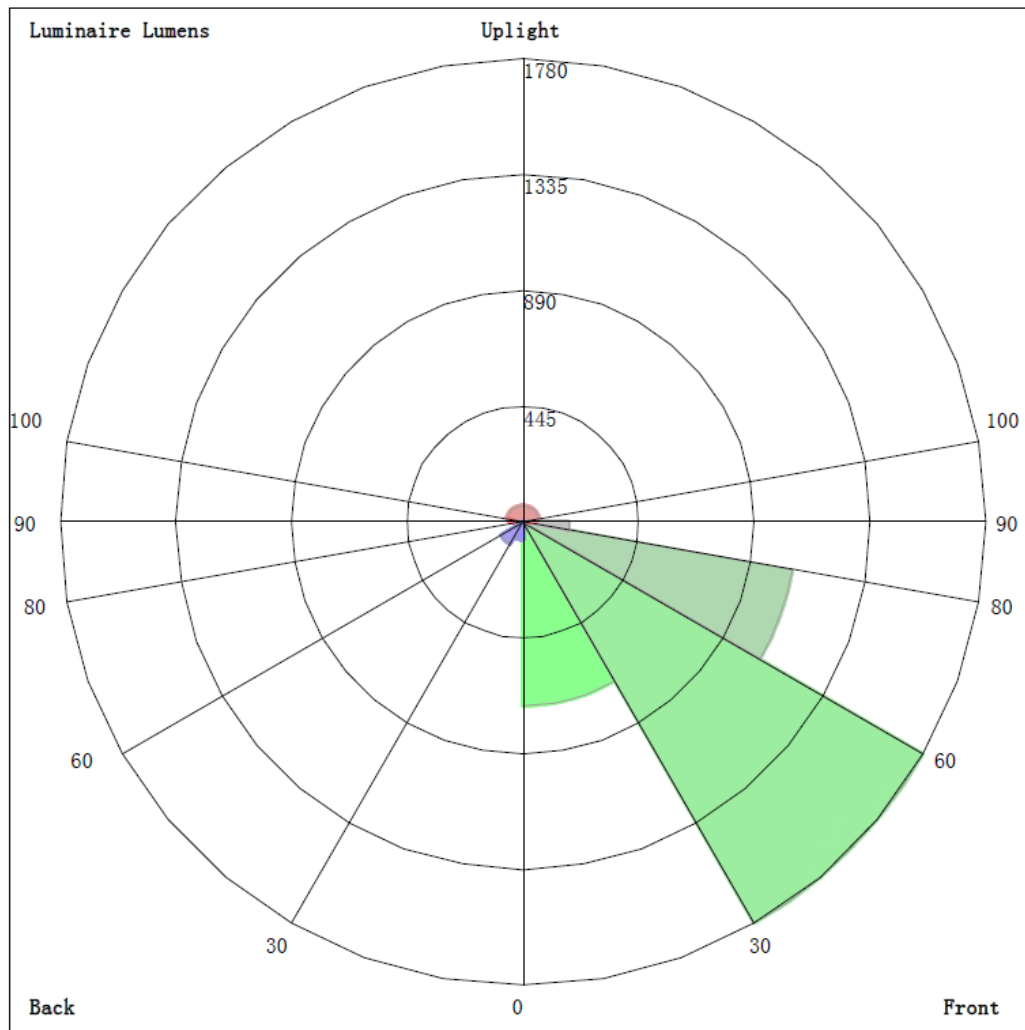
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	ℓlum, lamp
10	262.6	797.4	1282	797.4	262.6	62.94	148.4	62.94	0- 10	32.04	32.04	0.80,0.80
20	282.3	1937	3048	1937	282.3	230.1	153.6	230.1	10- 20	221.6	253.6	6.31,6.31
30	260.3	2823	2538	2823	260.3	176.1	83.63	176.1	20- 30	519.8	773.3	19.2,19.2
40	247.3	2232	1957	2232	247.3	92.25	30.08	92.25	30- 40	629.4	1403	34.9,34.9
50	194.5	1600	1755	1600	194.5	40.71	4.003	40.71	40- 50	635.4	2038	50.7,50.7
60	122.0	1344	1697	1344	122.0	14.55	1.119	14.55	50- 60	612.4	2651	65.9,65.9
70	65.35	1251	1697	1251	65.35	8.009	0.2401	8.009	60- 70	586.3	3237	80.5,80.5
80	21.38	891.6	825.5	891.6	21.38	4.900	0.6311	4.900	70- 80	489.2	3726	92.7,92.7
90	6.842	159.5	174.6	159.5	6.842	2.991	1.134	2.991	80- 90	181.4	3908	97.2,97.2
100	4.638	70.90	116.1	70.90	4.638	2.149	1.477	2.149	90-100	50.17	3958	98.5,98.5
110	3.804	32.19	49.72	32.19	3.804	2.046	1.557	2.046	100-110	25.42	3983	99.1,99.1
120	2.803	26.56	36.26	26.56	2.803	2.030	1.546	2.030	110-120	14.42	3998	99.5,99.5
130	2.329	18.03	29.26	18.03	2.329	2.083	1.816	2.083	120-130	10.15	4008	99.7,99.7
140	1.855	10.53	18.00	10.53	1.855	1.924	1.963	1.924	130-140	6.820	4014	99.9,99.9
150	1.440	6.400	10.45	6.400	1.440	1.667	1.814	1.667	140-150	3.125	4018	100,100
160	1.136	2.876	5.002	2.876	1.136	1.507	1.393	1.507	150-160	1.405	4019	100,100
170	0.9804	0.7234	0.5863	0.7234	0.9804	1.166	0.7915	1.166	160-170	0.4354	4019	100,100
180	1.102	0.9846	0.9145	0.9846	1.102	1.033	0.8766	1.033	170-180	0.0863	4020	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	32.04	0-10	32.04	0.80%
10-20	221.55	0-20	253.59	6.31%
20-30	519.75	0-30	773.34	19.24%
30-40	629.43	0-40	1402.77	34.90%
40-50	635.37	0-50	2038.14	50.71%
50-60	612.45	0-60	2650.59	65.94%
60-70	586.30	0-70	3236.89	80.53%
70-80	489.16	0-80	3726.05	92.70%
80-90	181.45	0-90	3907.50	97.22%
90-100	50.17	0-100	3957.67	98.46%
100-110	25.42	0-110	3983.09	99.10%
110-120	14.42	0-120	3997.51	99.45%
120-130	10.15	0-130	4007.66	99.71%
130-140	6.82	0-140	4014.48	99.88%
140-150	3.12	0-150	4017.60	99.95%
150-160	1.40	0-160	4019.00	99.99%
160-170	0.44	0-170	4019.44	100.00%
170-180	0.09	0-180	4019.53	100.00%

4.2 Goniophotometer Test

LCS/BUG

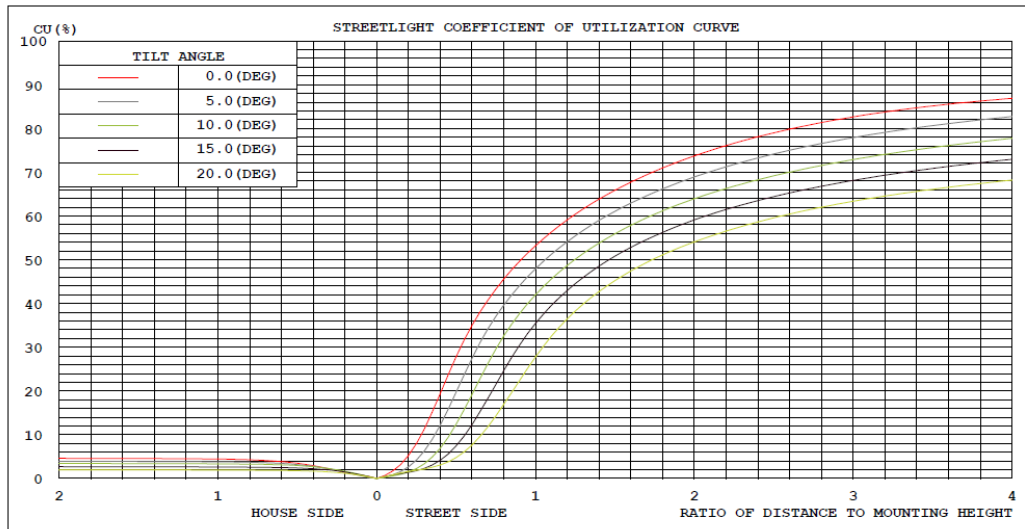


LUMINAIRE CLASSIFICATION SYSTEM (LCS)

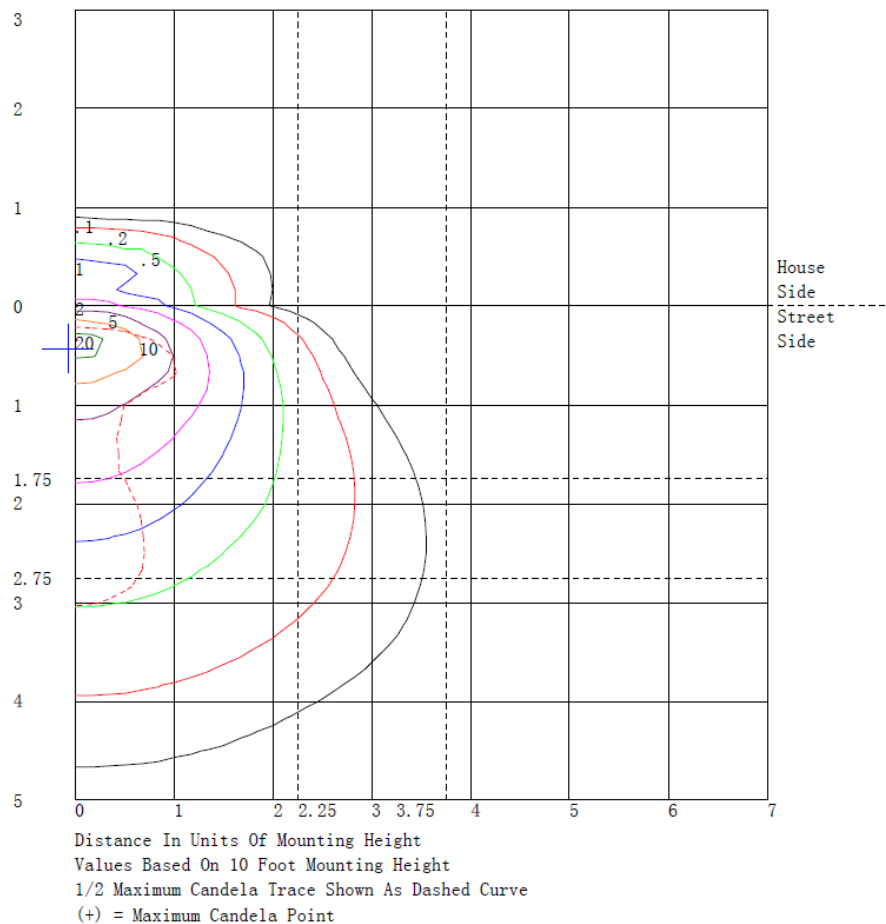
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	705.7	N.A.	17.6
FM - Front-Medium (30-60)	1780.4	N.A.	44.3
FH - Front-High (60-80)	1054.0	N.A.	26.2
FVH - Front-Very High (80-90)	178.5	N.A.	4.4
BL - Back-Low (0-30)	67.7	N.A.	1.7
BM - Back-Medium (30-60)	96.9	N.A.	2.4
BH - Back-High (60-80)	21.4	N.A.	0.5
BVH - Back-Very High (80-90)	3.0	N.A.	0.1
UL - Uplight-Low (90-100)	50.2	N.A.	1.2
UH - Uplight-High (100-180)	61.9	N.A.	1.5
Total	4019.7	N.A.	100.0
BUG Rating	B0-U3-G2		

4.2 Goniophotometer Test

Coefficients of Utilization



Isolines



4.2 Goniophotometer Test

Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	257	258	258	258	258	259	259	259	259	260	260	260	260	261	262	262	263	263	264
5	259	272	286	301	319	337	356	371	386	401	421	442	463	483	502	518	530	538	542
10	263	292	328	371	419	475	540	621	707	797	889	977	1059	1129	1187	1233	1262	1278	1282
15	265	305	369	457	577	716	865	1010	1160	1318	1497	1675	1844	1991	2116	2216	2276	2309	2318
20	282	355	463	605	793	1007	1237	1465	1698	1937	2202	2452	2672	2811	2909	2974	3020	3043	3048
25	263	386	547	749	1004	1288	1588	1896	2197	2478	2720	2924	3084	3171	3216	3229	3216	3193	3172
30	260	401	597	849	1189	1558	1932	2285	2591	2823	2883	2871	2813	2760	2698	2635	2588	2554	2538
35	242	412	633	906	1278	1666	2037	2342	2571	2701	2607	2443	2263	2199	2164	2149	2142	2144	2152
40	247	412	638	924	1354	1782	2146	2265	2285	2232	2130	2013	1910	1916	1948	1987	1978	1965	1957
45	236	425	653	921	1304	1669	1962	1991	1934	1835	1791	1752	1724	1723	1732	1747	1766	1783	1796
50	195	433	673	917	1205	1464	1664	1690	1658	1600	1589	1587	1597	1634	1676	1717	1738	1751	1755
55	154	386	605	812	1024	1210	1360	1422	1449	1459	1483	1508	1536	1579	1623	1663	1688	1704	1711
60	122	343	544	726	889	1031	1149	1230	1293	1344	1399	1451	1500	1556	1607	1651	1677	1692	1697
65	94.8	261	419	570	715	851	976	1086	1185	1275	1356	1430	1497	1564	1622	1670	1699	1716	1722
70	65.4	144	241	358	504	662	824	979	1123	1251	1341	1413	1474	1540	1598	1644	1674	1692	1697
75	39.5	73.1	141	242	396	570	750	914	1063	1188	1263	1314	1347	1375	1394	1406	1413	1417	1418
80	21.4	44.2	99.7	188	334	495	649	757	838	892	900	888	867	858	849	841	834	828	826
85	13.7	38.2	75.5	126	203	282	353	384	400	402	394	380	365	360	356	354	351	349	348
90	6.84	13.9	25.4	41.4	65.6	91.6	117	135	150	159	160	158	156	160	166	171	173	174	175
95	5.28	8.02	13.6	21.9	34.0	48.2	63.8	81.3	97.8	112	117	120	122	128	135	141	144	146	146
100	4.64	7.39	11.2	16.1	21.9	28.8	37.1	48.2	59.8	70.9	78.6	85.3	91.5	99.1	106	112	115	116	116
105	4.49	6.74	9.67	13.3	18.0	23.0	28.2	32.5	36.9	41.6	47.3	53.4	59.9	67.3	74.3	80.0	82.6	83.7	83.6
110	3.80	5.49	7.87	10.9	15.3	19.9	24.3	27.1	29.7	32.2	35.7	39.2	42.6	45.4	47.7	49.3	49.9	50.0	49.7
115	3.17	4.53	6.56	9.28	13.3	17.5	21.5	23.9	25.9	27.7	30.2	32.7	35.3	37.9	40.2	42.0	42.2	42.0	41.6
120	2.80	4.08	5.71	7.70	10.0	12.7	15.7	19.5	23.2	26.6	28.2	29.4	30.5	32.5	34.5	36.1	36.5	36.5	36.3
125	2.54	3.32	4.49	6.07	7.96	10.3	13.2	17.3	21.6	25.3	27.0	28.1	28.7	29.8	30.7	31.3	31.3	31.0	30.7
130	2.33	2.66	3.45	4.70	6.62	8.85	11.3	13.3	15.5	18.0	22.2	26.3	29.7	30.5	30.4	29.8	29.6	29.4	29.3
135	2.07	2.14	2.66	3.64	5.37	7.34	9.33	10.5	11.7	13.2	15.3	17.9	21.0	25.6	30.2	34.2	36.1	37.0	37.3
140	1.86	1.74	2.04	2.74	4.12	5.72	7.34	8.46	9.50	10.5	11.8	13.1	14.4	15.6	16.6	17.4	17.8	18.0	18.0
145	1.64	1.19	1.18	1.61	2.75	4.13	5.56	6.48	7.33	8.16	9.21	10.3	11.3	12.1	12.8	13.4	13.5	13.5	13.5
150	1.44	1.01	0.91	1.16	1.92	2.90	3.96	4.81	5.62	6.40	7.17	7.91	8.59	9.21	9.75	10.2	10.4	10.5	10.5
155	1.25	1.01	0.94	1.06	1.40	1.90	2.51	3.26	4.04	4.80	5.42	5.94	6.37	6.66	6.86	6.98	7.03	7.03	7.00
160	1.14	1.09	1.06	1.05	0.98	0.99	1.13	1.63	2.24	2.88	3.37	3.81	4.20	4.53	4.79	4.97	5.03	5.03	5.00
165	1.03	1.02	1.00	0.98	0.94	0.91	0.89	0.88	0.92	1.03	1.30	1.62	1.94	2.19	2.40	2.56	2.66	2.72	2.75
170	0.98	0.96	0.94	0.92	0.89	0.86	0.83	0.79	0.76	0.72	0.69	0.66	0.63	0.61	0.59	0.58	0.57	0.57	0.59
175	1.03	1.02	1.01	0.99	0.98	0.96	0.94	0.91	0.89	0.87	0.84	0.81	0.79	0.76	0.74	0.73	0.72	0.72	0.73
180	1.10	1.10	1.10	1.09	1.08	1.06	1.05	1.03	1.01	0.98	0.96	0.94	0.92	0.90	0.89	0.88	0.88	0.90	0.91

Table--2																	UNIT: cd			
C (DEG)	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	
0	263	263	262	262	261	260	260	260	260	259	259	259	259	258	258	258	258	257	262	
5	538	530	518	502	483	463	442	421	401	386	371	356	337	319	301	286	272	259	261	
10	1278	1262	1233	1187	1129	1059	977	889	797	707	621	540	475	419	371	328	292	263	215	
15	2309	2276	2216	2116	1991	1844	1675	1497	1318	1160	1010	865	716	577	457	369	305	265	191	
20	3043	3020	2974	2909	2811	2672	2452	2202	1937	1698	1465	1237	1007	793	605	463	355	282	186	
25	3193	3216	3229	3216	3171	3084	2924	2720	2478	2197	1896	1588	1288	1004	749	547	386	263	164	
30	2554	2588	2635	2698	2760	2813	2871	2883	2823	2591	2285	1932	1558	1189	849	597	401	260	170	
35	2144	2142	2149	2164	2199	2263	2443	2607	2701	2571	2342	2037	1666	1278	906	633	412	242	188	
40	1965	1978	1987	1948	1916	1910	2013	2130	2232	2285	2265	2146	1782	1354	924	638	412	247	215	
45	1783	1766	1747	1732	1723	1724	1752	1791	1835	1934	1991	1962	1669	1304	921	653	425	236	217	
50	1751	1738	1717	1676	1634	1597	1587	1589	1600	1658	1690	1664	1464	1205	917	673	433	195	191	
55	1704	1688	1663	1623	1579	1536	1508	1483	1459	1449	1422	1360	1210	1024	812	605	386	154	154	
60	1692	1677	1651	1607	1556	1500	1451	1399	1344	1293	1230	1149	1031	889	726	544	343	122	129	
65	1716	1699	1670	1622	1564	1497	1430	1356	1275	1185	1086	976	851	715	570	419	261	94.8	101	
70	1692	1674	1644	1598	1540	1474	1413	1341	1251	1123	979	824	662	504	358	241	144	65.4	64.2	
75	1417	1413	1406	1394	1375	1347	1314	1263	1188	1063	914	750	570	396	242	141	73.1	39.5	36.5	
80	828	834	841	849	858	867	888	900	892	838	757	649	495	334	188	99.7	44.2	21.4	20.6	
85	349	351	354	356	360	365	380	394	402	400	384	353	282	203	126	75.5	38.2	13.7	13.8	
90	174	173	171	166	160	156	158	160	159	150	135	117	91.6	65.6	41.4	25.4	13.9	6.84	6.57	
95	146	144	141	135	128	122	120	117	112	97.8	81.3	63.8	48.2	34.0	21.9	13.6	8.02	5.28	5.28	
100	116	115	112	106	99.1	91.5	85.3	78.6	70.9	59.8	48.2	37.1	28.8	21.9	16.1	11.2	7.39	4.64	4.48	
105	83.7	82.6	80.0	74.3	67.3	59.9	53.4	47.3	41.6	36.9	32.5	28.2	23.0	18.0	13.3	9.67	6.74	4.49	4.44	
110	50.0	49.9	49.3	47.7	45.4	42.6	39.2	35.7	32.2	29.7	27.1	24.3	19.9	15.3	10.9	7.87	5.49	3.80	3.98	
115	42.0	42.2	42.0	40.2	37.9	35.3	32.7	30.2	27.7	25.9	23.9	21.5	17.5	13.3	9.28	6.56	4.53	3.17	3.75	
120	36.5	36.5	36.1	34.5	32.5	30.5	29.4	28.2	26.6	23.2	19.5	15.7	12.7	10.0	7.70	5.71	4.08	2.80	3.86	
125	31.0	31.3	31.3	30.7	29.8	28.7	28.1	27.0	25.3	21.6	17.3	13.2	10.3	7.96	6.07	4.49	3.32	2.54	3.21	
130	29.4	29.6	29.8	30.4	30.5	29.7	26.3	22.2	18.0	15.5	13.3	11.3	8.85	6.62	4.70	3.45	2.66	2.33	2.75	
135	37.0	36.1	34.2	30.2	25.6	21.0	17.9	15.3	13.2	11.7	10.5	9.33	7.34	5.37	3.64	2.66	2.14	2.07	2.50	
140	18.0	17.8	17.4	16.6	15.6	14.4	13.1	11.8	10.5	9.50	8.46	7.34	5.72	4.12	2.74	1.64	1.04	1.74	1.86	
145	13.5	13.5	13.4	12.8	12.1	11.3	10.3	9.21	8.16	7.33	6.48	5.56	4.13	2.75	1.61	1.18	1.19	1.64	1.78	
150	10.5	10.5	10.2	9.75	9.21	8.59	7.91	7.17	6.40	5.62	4.81	3.96	2.90	1.92	1.16	0.91	1.01	1.44	1.61	
155	7.03	7.03	6.98	6.86	6.66	6.37	5.94	5.42	4.80	4.04	3.26	2.51	1.90	1.40	1.06	0.94	1.01	1.25	1.46	
160	5.03	5.03	4.97	4.79	4.53	4.20	3.81	3.37	2.88	2.24	1.63	1.13	0.99	0.98	1.05	1.06	1.09	1.14	1.34	
165	2.72	2.66	2.56	2.40	2.19	1.94	1.62	1.30	1.03	0.92	0.88	0.89	0.91	0.94	0.98	1.00	1.02	1.03	1.20	
170	0.57	0.57	0.58	0.59	0.61	0.63	0.66	0.69	0.72	0.76	0.79	0.83	0.86	0.89	0.92	0.94	0.96	0.98	1.07	
175	0.72	0.72	0.73	0.74	0.76	0.79	0.81	0.84	0.87	0.89	0.91	0.94	0.96	0.98	0.99	1.01	1.02	1.03	1.08	
180	0.90	0.88	0.88	0.89	0.90	0.92	0.94	0.96	0.98	1.01	1.03	1.05	1.06	1.08	1.09	1.10	1.10	1.10	1.06	

Table--3

UNIT: °C

C (DEG) y (DEG)	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280
0	265	267	268	268	267	267	267	267	267	266	266	265	265	264	264	264	264	264	264
5	254	240	211	179	147	126	109	96.6	89.3	84.9	82.6	80.2	78.7	77.8	77.2	76.9	76.9	76.9	77.2
10	174	140	114	94.5	80.4	69.8	64.0	62.9	68.2	77.4	89.5	105	120	134	142	147	148	147	142
15	134	93.0	69.2	61.6	69.6	102	142	183	209	227	239	238	234	230	238	247	254	247	238
20	120	85.6	95.8	126	165	192	215	230	229	221	207	191	174	160	155	153	154	153	155
25	101	76.0	114	169	222	216	197	174	171	170	169	158	146	135	129	125	124	125	129
30	114	92.9	131	185	235	228	206	176	156	137	121	109	99.8	93.1	87.8	84.6	83.6	84.6	87.8
35	151	131	140	157	174	163	145	125	107	90.1	76.7	71.1	68.7	68.1	66.4	65.3	64.8	65.3	66.4
40	191	175	177	180	180	154	123	92.2	75.7	63.3	54.0	44.2	36.4	30.9	29.1	29.1	30.1	29.1	29.1
45	198	180	164	147	130	108	87.3	67.4	52.2	39.6	29.6	22.4	17.4	14.2	12.2	11.3	11.3	11.3	12.2
50	182	169	148	124	99.8	77.9	58.0	40.7	28.2	18.8	12.1	8.11	5.91	4.96	4.16	3.89	4.00	3.89	4.16
55	149	137	117	92.8	68.8	50.4	34.9	22.5	15.3	10.7	8.02	5.37	3.57	2.48	2.01	1.94	2.12	1.94	2.01
60	128	119	97.3	71.6	46.4	32.1	21.7	14.5	9.85	7.01	5.39	3.53	2.19	1.33	1.00	0.97	1.12	0.97	1.00
65	99.7	91.6	70.6	46.8	24.6	16.3	12.2	10.6	7.76	5.59	3.93	2.44	1.32	0.56	0.29	0.28	0.40	0.28	0.29
70	60.4	53.8	41.9	29.2	17.5	12.5	9.59	8.01	5.93	4.27	2.95	1.77	0.87	0.25	0.08	0.11	0.24	0.11	0.08
75	32.8	28.6	22.9	17.2	12.1	9.25	7.29	5.91	4.54	3.44	2.52	1.63	0.92	0.40	0.27	0.30	0.40	0.30	0.27
80	19.3	17.5	14.8	11.9	9.10	7.36	5.99	4.90	3.91	3.07	2.35	1.64	1.06	0.63	0.52	0.55	0.63	0.55	0.52
85	13.5	12.6	10.8	8.76	6.77	5.62	4.73	4.01	3.28	2.64	2.08	1.57	1.16	0.87	0.80	0.82	0.88	0.82	0.80
90	6.23	5.82	5.29	4.74	4.19	3.77	3.37	2.99	2.54	2.10	1.72	1.45	1.25	1.12	1.09	1.10	1.13	1.10	1.09
95	5.14	4.87	4.38	3.83	3.28	2.92	2.62	2.36	2.05	1.77	1.54	1.42	1.34	1.31	1.30	1.32	1.33	1.32	1.30
100	4.30	4.08	3.83	3.55	3.24	2.86	2.49	2.15	1.90	1.70	1.55	1.48	1.45	1.45	1.45	1.46	1.48	1.46	1.45
105	4.29	4.05	3.64	3.20	2.77	2.50	2.28	2.10	1.90	1.73	1.60	1.55	1.53	1.54	1.54	1.56	1.57	1.56	1.54
110	4.01	3.89	3.52	3.08	2.63	2.39	2.20	2.05	1.87	1.72	1.60	1.55	1.53	1.54	1.54	1.55	1.56	1.55	1.54
115	4.06	4.09	3.66	3.09	2.51	2.28	2.14	2.04	1.87	1.72	1.60	1.55	1.54	1.54	1.54	1.54	1.54	1.54	1.54
120	4.46	4.62	4.06	3.26	2.44	2.19	2.08	2.03	1.88	1.75	1.63	1.58	1.56	1.55	1.55	1.55	1.55	1.55	1.55
125	3.61	3.73	3.40	2.92	2.42	2.24	2.13	2.06	1.94	1.83	1.74	1.70	1.68	1.67	1.66	1.65	1.65	1.65	1.66
130	3.00	3.10	2.93	2.67	2.39	2.26	2.16	2.08	1.99	1.92	1.86	1.84	1.83	1.84	1.83	1.82	1.82	1.82	1.83
135	2.77	2.89	2.77	2.57	2.33	2.21	2.11	2.04	1.97	1.92	1.89	1.90	1.92	1.94	1.94	1.94	1.94	1.94	1.94
140	2.18	2.26	2.24	2.19	2.11	2.04	1.98	1.92	1.89	1.87	1.86	1.88	1.91	1.94	1.96	1.96	1.96	1.96	1.96
145	1.89	1.95	1.96	1.94	1.90	1.86	1.81	1.78	1.77	1.77	1.79	1.82	1.86	1.89	1.91	1.92	1.92	1.92	1.91
150	1.74	1.81	1.82	1.79	1.75	1.72	1.69	1.67	1.67	1.69	1.72	1.74	1.77	1.79	1.81	1.82	1.81	1.82	1.81
155	1.60	1.69	1.69	1.65	1.59	1.57	1.56	1.56	1.57	1.59	1.60	1.61	1.62	1.62	1.63	1.62	1.61	1.62	1.63
160	1.48	1.57	1.57	1.54	1.49	1.49	1.50	1.51	1.51	1.51	1.51	1.51	1.50	1.48	1.47	1.44	1.42	1.39	1.42
165	1.32	1.39	1.41	1.39	1.36	1.37	1.39	1.39	1.38	1.36	1.33	1.30	1.26	1.22	1.18	1.15	1.12	1.15	1.18
170	1.14	1.19	1.20	1.19	1.17	1.17	1.18	1.17	1.13	1.08	1.02	0.95	0.89	0.84	0.81	0.79	0.79	0.79	0.81
175	1.11	1.14	1.14	1.13	1.12	1.11	1.10	1.08	1.03	0.97	0.91	0.87	0.84	0.82	0.81	0.81	0.82	0.81	0.81
180	1.03	1.01	1.00	1.01	1.01	1.02	1.03	1.03	1.02	1.01	0.99	0.96	0.93	0.90	0.89	0.88	0.88	0.88	0.89

C (DEG) y (DEG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355					
0	265	265	266	266	266	267	267	267	267	267	268	268	267	265	262					
5	77.8	78.7	80.2	82.6	84.9	89.3	96.6	109	126	147	179	211	240	254	261					
10	134	120	105	89.5	77.4	68.2	62.9	64.0	69.8	80.4	94.5	114	140	174	215					
15	230	234	238	239	227	209	183	142	102	69.6	61.6	69.2	93.0	134	191					
20	160	174	191	207	221	229	230	215	192	165	126	95.8	85.6	120	186					
25	135	146	158	169	170	171	174	197	216	222	169	114	76.0	101	164					
30	93.1	99.8	109	121	137	156	176	206	228	235	185	131	92.9	114	170					
35	68.1	68.7	71.1	76.7	90.1	107	125	145	163	174	157	140	131	151	188					
40	30.9	36.4	44.2	54.0	63.3	75.7	92.2	123	154	180	180	177	175	191	215					
45	14.2	17.4	22.4	29.6	39.6	52.2	67.4	87.3	108	130	147	164	180	198	217					
50	4.96	5.91	8.11	12.1	18.8	28.2	40.7	58.0	77.9	99.8	124	148	169	182	191					
55	2.48	3.57	5.37	8.02	10.7	15.3	22.5	34.9	50.4	68.8	92.8	117	137	149	154					
60	1.33	2.19	3.53	5.39	7.01	9.85	14.5	21.7	32.1	46.4	71.6	97.3	119	128	129					
65	0.56	1.32	2.44	3.93	5.59	7.76	10.6	12.2	16.3	24.6	46.8	70.6	91.6	99.7	101					
70	0.25	0.87	1.77	2.95	4.27	5.93	8.01	9.59	12.5	17.5	29.2	41.9	53.8	60.4	64.2					
75	0.40	0.92	1.63	2.52	3.44	4.54	5.91	7.29	9.25	12.1	17.2	22.9	28.6	32.8	36.5					
80	0.63	1.06	1.64	2.35	3.07	3.91	4.90	5.99	7.36	9.10	11.9	14.8	17.5	19.3	20.6					
85	0.87	1.16	1.57	2.08	2.64	3.28	4.01	4.73	5.62	6.77	8.76	10.8	12.6	13.5	13.8					
90	1.12	1.25	1.45	1.72	2.10	2.54	2.99	3.37	3.77	4.19	4.74	5.29	5.82	6.23	6.57					
95	1.31	1.34	1.42	1.54	1.77	2.05	2.36	2.62	2.92	3.28	3.83	4.38	4.87	5.14	5.28					
100	1.45	1.45	1.48	1.55	1.70	1.90	2.15	2.49	2.86	3.24	3.55	3.83	4.08	4.30	4.48					
105	1.54	1.53	1.55	1.60	1.73	1.90	2.10	2.28	2.50	2.77	3.20	3.64	4.05	4.29	4.44					
110	1.54	1.53	1.55	1.60	1.72	1.87	2.05	2.20	2.39	2.63	3.08	3.52	3.89	4.01	3.98					
115	1.54	1.54	1.55	1.60	1.72	1.87	2.04	2.14	2.28	2.51	3.09	3.66	4.09	4.06	3.75					
120	1.55	1.56	1.58	1.63	1.75	1.88	2.03	2.08	2.19	2.44	3.26	4.06	4.62	4.46	3.86					
125	1.67	1.68	1.70	1.74	1.83	1.94	2.06	2.13	2.24	2.42	2.92	3.40	3.73	3.61	3.21					
130	1.84	1.83	1.84	1.86	1.92	1.99	2.08	2.16	2.26	2.39	2.67	2.93	3.10	3.00	2.75					
135	1.94	1.92	1.90	1.89	1.92	1.97	2.04	2.11	2.21	2.33	2.57	2.77	2.89	2.77	2.50					
140	1.94	1.91	1.88	1.86	1.87	1.89	1.92	1.98	2.04	2.11	2.19	2.24	2.26	2.18	2.05					
145	1.89	1.86	1.82	1.79	1.77	1.77	1.78	1.81	1.86	1.90	1.94	1.96	1.95	1.89	1.78					
150	1.79	1.77	1.74	1.72	1.69	1.67	1.67	1.69	1.72	1.75	1.79	1.82	1.81	1.74	1.61					
155	1.62	1.62	1.61	1.60	1.59	1.57	1.56	1.56	1.57	1.59	1.65	1.69	1.69	1.69	1.60	1.46				
160	1.47	1.48	1.50	1.51	1.51	1.51	1.51	1.50	1.49	1.49	1.54	1.57	1.57	1.48	1.34					
165	1.22	1.26	1.30	1.33	1.36	1.38	1.39	1.39	1.37	1.36	1.39	1.41	1.39	1.32	1.20					
170	0.84	0.89	0.95	1.02	1.08	1.13	1.17	1.18	1.17	1.17	1.19	1.20	1.19	1.14	1.07					
175	0.82	0.84	0.87	0.91	0.97	1.03	1.08	1.10	1.11	1.12	1.13	1.14	1.14	1.11	1.08					
180	0.90	0.93	0.96	0.99	1.01	1.02	1.03	1.03	1.02	1.01	1.01	1.00	1.01	1.03	1.06					

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	W34S @ 25W / 3000K	Sample ID	230612003-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	29.1	0.994	3.10
277.0	60	0.120	29.2	0.878	9.22

5.0 Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2022-11-09	2023-11-08
NTC-F01-006	2.0 meter Integrating Sphere	2022-11-09	2023-11-08
NTC-F01-012	Standard Lamp	2022-11-09	2023-11-08
NTC-F01-013	Standard Lamp	2022-11-09	2023-11-08
NTC-F01-031	Digital Power Meter	2022-08-31	2023-08-30
NTC-F01-019	Temperature & Humidity Meter	2022-11-12	2023-11-11

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