

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

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Revised Date: N/A

1.0 Test Summary

DLC Technical Requirements V5.1

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		14761
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	IES LM-79-2008	N/A		152.2
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	300		14365
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard	Premium	148.1
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		97.0
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	4.35
			277V	8.89
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.997
			277V	0.937
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3985±275	4109
		4 steps	3985±154	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥70		85.7
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	N/A		20
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	-18%≤IES Rcs,h1≤+23%		-11%
Zonal Lumen Requirement (80°-90°) (Goniophotometer – Section 4.2)	IES LM-79-2008	≤10%		2.2%
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		0.811
(Goniophotometer – Section 4.2)		Non-Worst Case		0.364
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		97.0
(Goniophotometer – Section 4.2)		Non-Worst Case		94.5

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2023-10-20	WPX3 @ 100W / 4000K	231020001-S1
2	Goniophotometer Test	2023-10-20	WPX3 @ 100W / 4000K	231020001-S1
3	THD and PF Test	2023-10-20	WPX3 @ 100W / 4000K	231020001-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. WPX3 @ 100W / 4000K, 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.	WPX3 @ 100W / 4000K	Sample ID	231020001-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

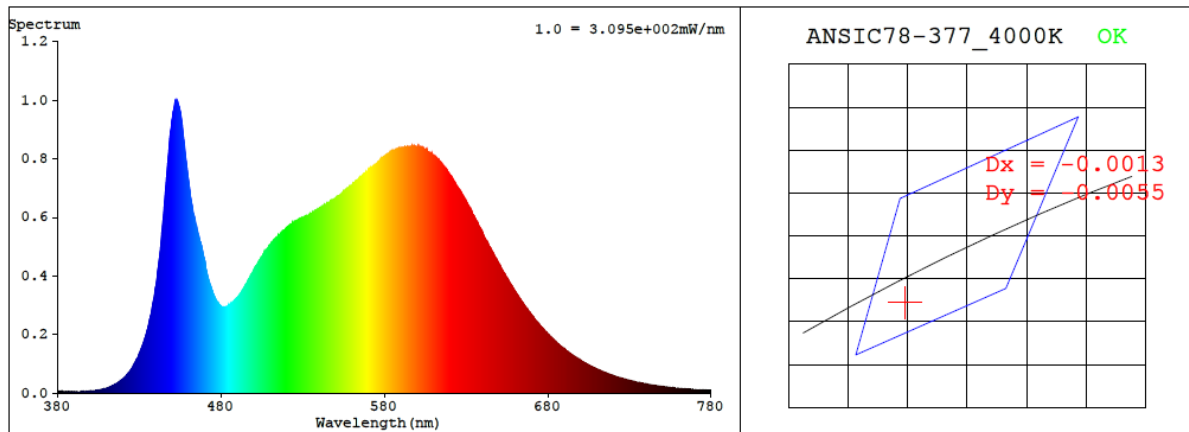
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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	0.811	97.0	0.997
277.0	60	0.364	94.5	0.937

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4109	85.7	20	-0.0022	85	96	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3744$ $y = 0.3683$ / $u' = 0.2245$ $v' = 0.4969$ ($duv = -2.24e-03$)

CCT= 4109K Prp WL: Ld=580.1nm Purity=22.9%

Peak WL: Lp=452nm FWHM: =25.0nm Ratio:R=18.6% G=77.3% B=4.1%

Render Index: Ra = 85.7 AvgR = 80.1 TM30:Rf=85 Rg=96

EEL: 0.08805 A++ Highest

R1 =85	R2 =93	R3 =96	R4 =84	R5 =85	R6 =89	R7 =86
R8 =68	R9 =20	R10=81	R11=83	R12=66	R13=87	R14=98 R15=80

4.1 Integrating Sphere Test

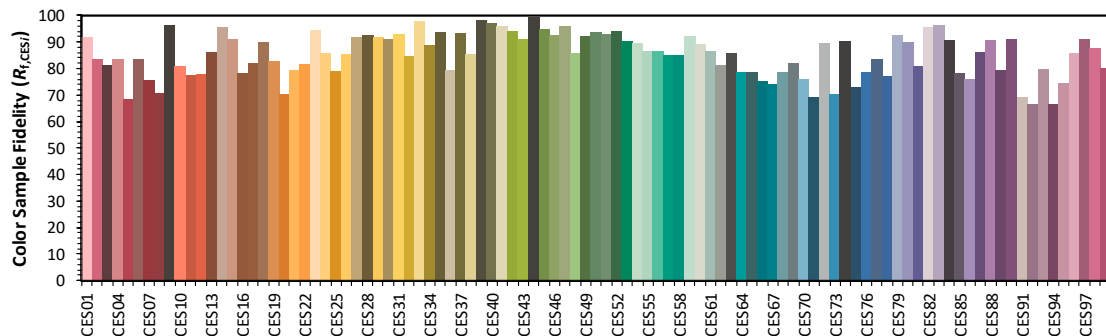
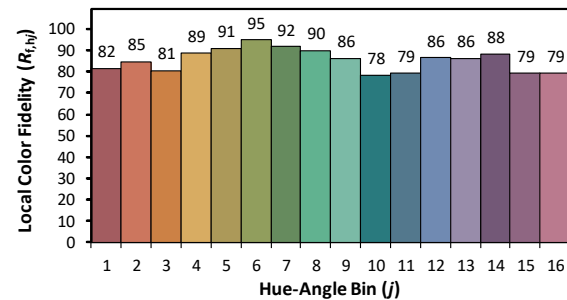
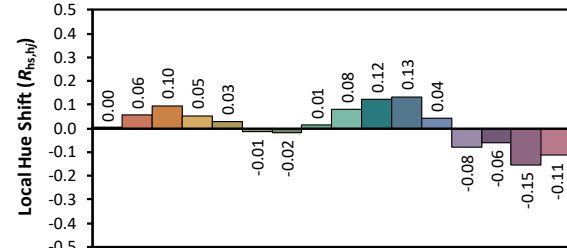
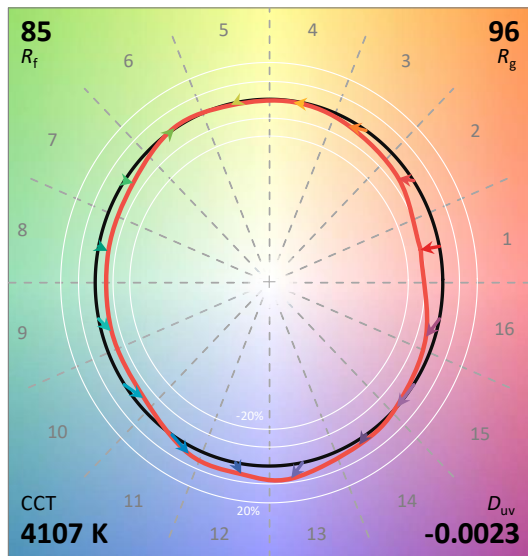
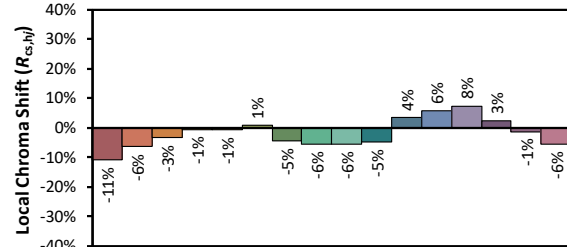
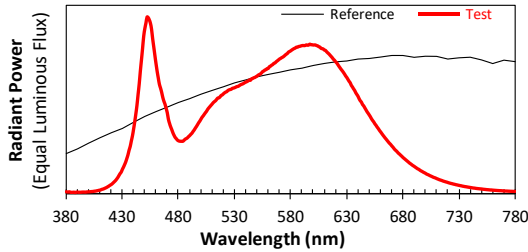
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2023/10/26

Model: WPX3 @ 100W / 4000K



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

x 0.3744

y 0.3681

u' 0.2246

v' 0.4968

CIE 13.3-1995
(CRI)

R_a 86

R_9 20

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	7.30E-06	447	7.56E-04	514	5.32E-04	581	8.12E-04	648	4.62E-04	715	7.04E-05
381	6.10E-06	448	8.21E-04	515	5.39E-04	582	8.16E-04	649	4.53E-04	716	6.77E-05
382	6.30E-06	449	8.90E-04	516	5.41E-04	583	8.20E-04	650	4.43E-04	717	6.59E-05
383	6.80E-06	450	9.33E-04	517	5.46E-04	584	8.23E-04	651	4.33E-04	718	6.38E-05
384	3.90E-06	451	9.65E-04	518	5.54E-04	585	8.28E-04	652	4.21E-04	719	6.21E-05
385	4.10E-06	452	9.99E-04	519	5.57E-04	586	8.28E-04	653	4.12E-04	720	6.00E-05
386	4.30E-06	453	9.96E-04	520	5.63E-04	587	8.32E-04	654	4.03E-04	721	5.78E-05
387	4.90E-06	454	9.83E-04	521	5.69E-04	588	8.33E-04	655	3.93E-04	722	5.60E-05
388	2.70E-06	455	9.64E-04	522	5.73E-04	589	8.35E-04	656	3.84E-04	723	5.43E-05
389	4.90E-06	456	9.29E-04	523	5.76E-04	590	8.37E-04	657	3.75E-04	724	5.29E-05
390	5.50E-06	457	8.75E-04	524	5.82E-04	591	8.38E-04	658	3.66E-04	725	5.09E-05
391	4.60E-06	458	8.28E-04	525	5.85E-04	592	8.37E-04	659	3.56E-04	726	4.97E-05
392	4.70E-06	459	7.80E-04	526	5.88E-04	593	8.38E-04	660	3.48E-04	727	4.78E-05
393	4.50E-06	460	7.34E-04	527	5.89E-04	594	8.41E-04	661	3.39E-04	728	4.66E-05
394	5.40E-06	461	6.91E-04	528	5.94E-04	595	8.39E-04	662	3.30E-04	729	4.50E-05
395	5.60E-06	462	6.53E-04	529	5.96E-04	596	8.40E-04	663	3.22E-04	730	4.36E-05
396	5.60E-06	463	6.17E-04	530	5.98E-04	597	8.45E-04	664	3.14E-04	731	4.22E-05
397	5.20E-06	464	5.96E-04	531	6.01E-04	598	8.42E-04	665	3.06E-04	732	4.12E-05
398	6.00E-06	465	5.72E-04	532	6.04E-04	599	8.42E-04	666	2.98E-04	733	3.94E-05
399	6.70E-06	466	5.43E-04	533	6.05E-04	600	8.40E-04	667	2.90E-04	734	3.83E-05
400	6.90E-06	467	5.21E-04	534	6.09E-04	601	8.41E-04	668	2.82E-04	735	3.69E-05
401	7.40E-06	468	5.04E-04	535	6.14E-04	602	8.40E-04	669	2.76E-04	736	3.60E-05
402	8.10E-06	469	4.80E-04	536	6.17E-04	603	8.37E-04	670	2.68E-04	737	3.49E-05
403	8.60E-06	470	4.56E-04	537	6.19E-04	604	8.36E-04	671	2.61E-04	738	3.38E-05
404	9.20E-06	471	4.19E-04	538	6.22E-04	605	8.31E-04	672	2.53E-04	739	3.27E-05
405	1.05E-05	472	3.96E-04	539	6.27E-04	606	8.29E-04	673	2.45E-04	740	3.16E-05
406	1.11E-05	473	3.76E-04	540	6.30E-04	607	8.22E-04	674	2.40E-04	741	3.06E-05
407	1.25E-05	474	3.61E-04	541	6.33E-04	608	8.20E-04	675	2.33E-04	742	2.93E-05
408	1.37E-05	475	3.43E-04	542	6.37E-04	609	8.18E-04	676	2.26E-04	743	2.84E-05
409	1.54E-05	476	3.29E-04	543	6.41E-04	610	8.12E-04	677	2.21E-04	744	2.78E-05
410	1.66E-05	477	3.16E-04	544	6.40E-04	611	8.10E-04	678	2.14E-04	745	2.66E-05
411	1.90E-05	478	3.09E-04	545	6.48E-04	612	8.02E-04	679	2.09E-04	746	2.58E-05
412	2.15E-05	479	3.01E-04	546	6.50E-04	613	7.96E-04	680	2.02E-04	747	2.50E-05
413	2.31E-05	480	2.97E-04	547	6.54E-04	614	7.90E-04	681	1.97E-04	748	2.44E-05
414	2.60E-05	481	2.95E-04	548	6.56E-04	615	7.83E-04	682	1.91E-04	749	2.37E-05
415	2.89E-05	482	2.94E-04	549	6.60E-04	616	7.76E-04	683	1.86E-04	750	2.31E-05
416	3.20E-05	483	2.94E-04	550	6.64E-04	617	7.68E-04	684	1.81E-04	751	2.22E-05
417	3.60E-05	484	2.94E-04	551	6.69E-04	618	7.60E-04	685	1.75E-04	752	2.14E-05
418	3.98E-05	485	3.00E-04	552	6.73E-04	619	7.54E-04	686	1.70E-04	753	2.08E-05
419	4.43E-05	486	3.06E-04	553	6.76E-04	620	7.45E-04	687	1.65E-04	754	2.00E-05
420	4.81E-05	487	3.09E-04	554	6.82E-04	621	7.39E-04	688	1.60E-04	755	1.93E-05
421	5.30E-05	488	3.14E-04	555	6.90E-04	622	7.29E-04	689	1.56E-04	756	1.88E-05
422	5.92E-05	489	3.21E-04	556	6.93E-04	623	7.19E-04	690	1.52E-04	757	1.81E-05
423	6.53E-05	490	3.26E-04	557	6.99E-04	624	7.10E-04	691	1.47E-04	758	1.76E-05
424	7.18E-05	491	3.34E-04	558	7.01E-04	625	7.01E-04	692	1.43E-04	759	1.74E-05
425	8.01E-05	492	3.40E-04	559	7.07E-04	626	6.93E-04	693	1.38E-04	760	1.65E-05
426	8.91E-05	493	3.50E-04	560	7.07E-04	627	6.84E-04	694	1.35E-04	761	1.61E-05
427	1.00E-04	494	3.58E-04	561	7.17E-04	628	6.75E-04	695	1.30E-04	762	1.55E-05
428	1.11E-04	495	3.69E-04	562	7.20E-04	629	6.64E-04	696	1.26E-04	763	1.51E-05
429	1.19E-04	496	3.78E-04	563	7.26E-04	630	6.56E-04	697	1.23E-04	764	1.45E-05
430	1.35E-04	497	3.89E-04	564	7.30E-04	631	6.45E-04	698	1.19E-04	765	1.41E-05
431	1.47E-04	498	3.99E-04	565	7.36E-04	632	6.34E-04	699	1.16E-04	766	1.37E-05
432	1.62E-04	499	4.09E-04	566	7.39E-04	633	6.26E-04	700	1.12E-04	767	1.35E-05
433	1.77E-04	500	4.19E-04	567	7.45E-04	634	6.11E-04	701	1.08E-04	768	1.32E-05
434	1.97E-04	501	4.30E-04	568	7.50E-04	635	6.02E-04	702	1.05E-04	769	1.24E-05
435	2.17E-04	502	4.38E-04	569	7.55E-04	636	5.91E-04	703	1.02E-04	770	1.21E-05
436	2.44E-04	503	4.47E-04	570	7.61E-04	637	5.82E-04	704	9.89E-05	771	1.16E-05
437	2.65E-04	504	4.56E-04	571	7.64E-04	638	5.69E-04	705	9.61E-05	772	1.14E-05
438	2.96E-04	505	4.64E-04	572	7.69E-04	639	5.59E-04	706	9.32E-05	773	1.13E-05
439	3.25E-04	506	4.75E-04	573	7.72E-04	640	5.49E-04	707	9.00E-05	774	1.07E-05
440	3.63E-04	507	4.83E-04	574	7.77E-04	641	5.35E-04	708	8.77E-05	775	1.05E-05
441	4.04E-04	508	4.91E-04	575	7.83E-04	642	5.24E-04	709	8.55E-05	776	1.00E-05
442	4.49E-04	509	4.98E-04	576	7.88E-04	643	5.16E-04	710	8.23E-05	777	1.00E-05
443	4.98E-04	510	5.05E-04	577	7.92E-04	644	5.03E-04	711	7.98E-05	778	9.50E-06
444	5.60E-04	511	5.13E-04	578	8.00E-04	645	4.95E-04	712	7.70E-05	779	9.50E-06
445	6.19E-04	512	5.19E-04	579	8.03E-04	646	4.84E-04	713	7.46E-05	780	9.50E-06
446	6.91E-04	513	5.24E-04	580	8.07E-04	647	4.73E-04	714	7.26E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	WPX3 @ 100W / 4000K	Sample ID	231020001-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	24.8	Humidity (%RH)	42.9

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±1°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	0.811	97.0	0.997
NON-WORST CASE	277.0	60	0.364	94.5	0.937

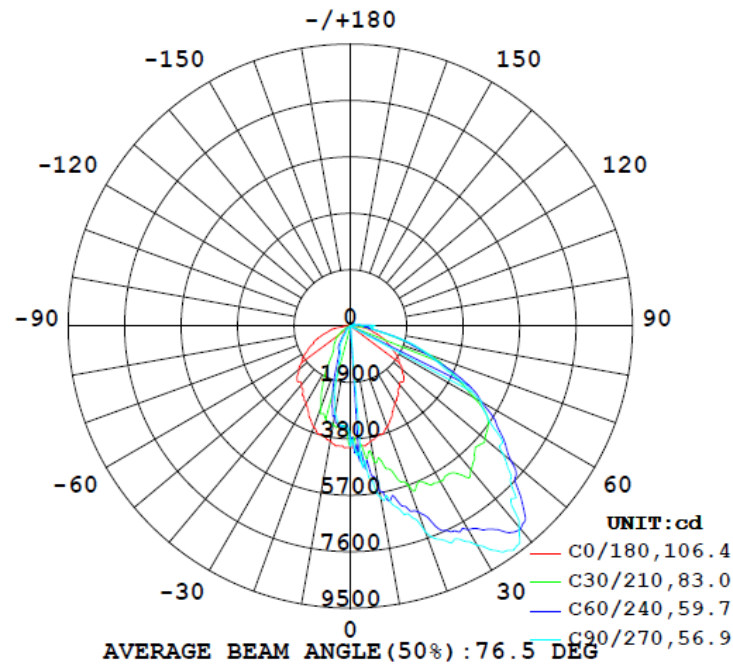
Test Result

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	14761	105.7	147.7	55.6	100.6	152.2	2.2%	B2-U3-G3
0°-90° zones	14365	105.7	147.7	55.6	100.6	148.1	2.2%	B2-U3-G3

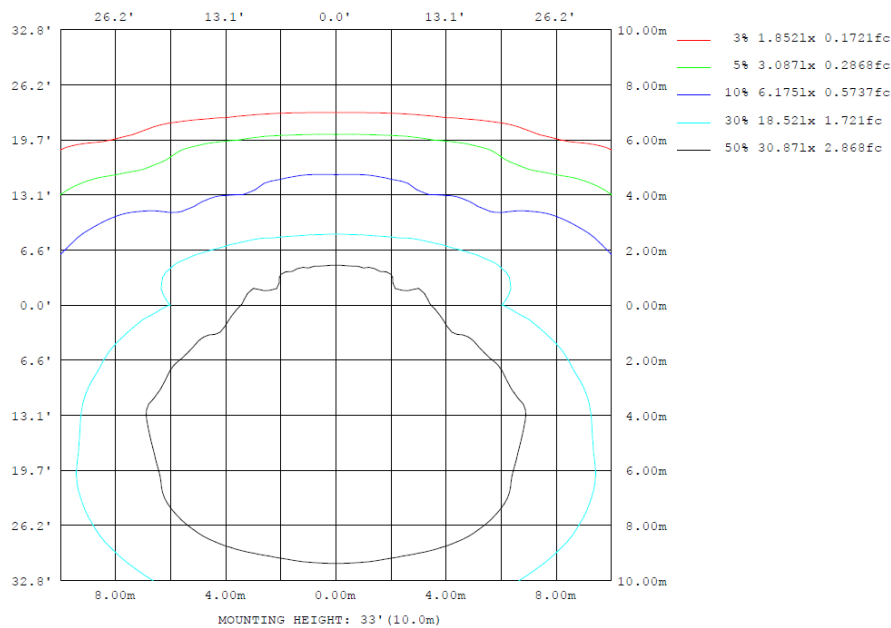
4.2 Goniophotometer Test

Lighting Distribution Curve

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

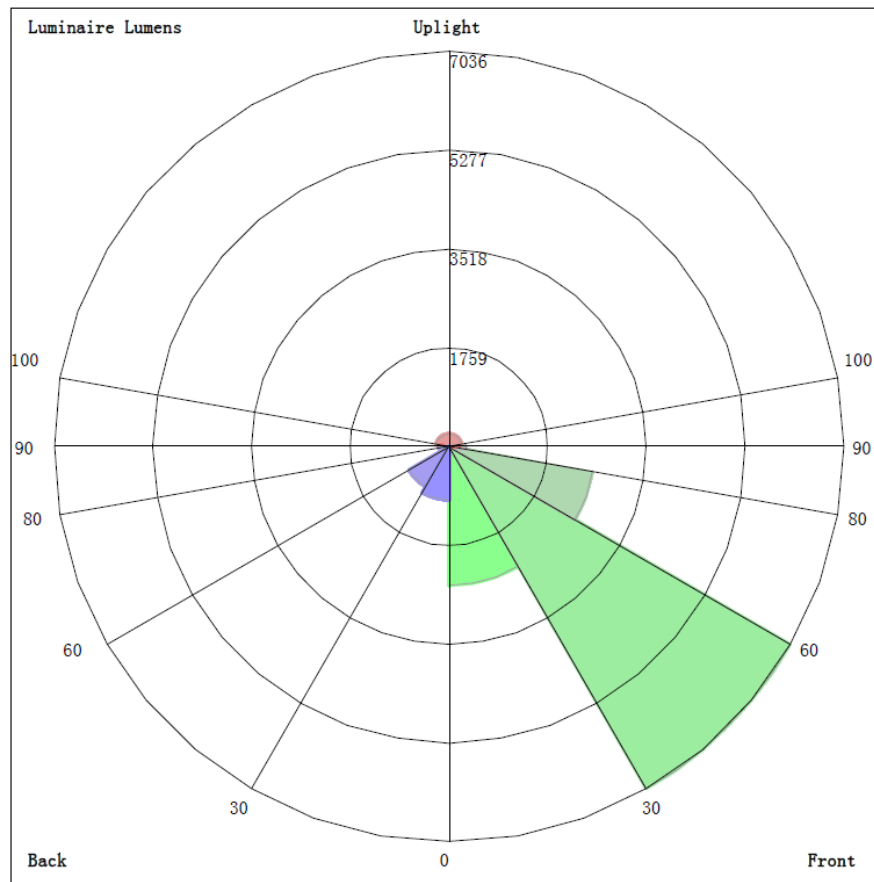
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	lum, lamp
10	3931	5138	5839	5138	3931	3306	3020	3306	0- 10	377.4	377.4	2.56,2.56
20	3621	6308	7354	6308	3621	2026	1026	2026	10- 20	1157	1534	10.4,10.4
30	2987	7370	8528	7370	2987	912.6	620.2	912.6	20- 30	1877	3411	23.1,23.1
40	2564	7415	8827	7415	2564	574.9	205.5	574.9	30- 40	2540	5951	40.3,40.3
50	2277	7116	6722	7116	2277	256.4	97.70	256.4	40- 50	2804	8755	59.3,59.3
60	1681	5230	5075	5230	1681	129.9	45.77	129.9	50- 60	2518	11273	76.4,76.4
70	1142	2851	2797	2851	1142	22.12	1.780	22.12	60- 70	1842	13114	88.8,88.8
80	642.6	961.3	932.1	961.3	642.6	8.193	2.810	8.193	70- 80	930.2	14045	95.1,95.1
90	65.07	302.0	768.1	302.0	65.07	5.581	3.806	5.581	80- 90	320.1	14365	97.3,97.3
100	51.94	242.0	332.8	242.0	51.94	5.798	5.325	5.798	90-100	172.6	14537	98.5,98.5
110	32.28	87.09	113.1	87.09	32.28	4.590	6.115	4.590	100-110	68.44	14606	98.9,98.9
120	23.83	147.7	89.24	147.7	23.83	4.269	5.054	4.269	110-120	46.20	14652	99.3,99.3
130	12.50	120.3	151.0	120.3	12.50	4.319	5.774	4.319	120-130	48.71	14701	99.6,99.6
140	2.252	70.38	142.6	70.38	2.252	4.675	6.124	4.675	130-140	36.17	14737	99.8,99.8
150	2.360	29.43	64.75	29.43	2.360	5.094	5.870	5.094	140-150	17.43	14754	100,100
160	2.806	2.330	19.02	2.330	2.806	5.184	5.065	5.184	150-160	5.241	14759	100,100
170	3.295	3.155	3.221	3.155	3.295	4.162	3.643	4.162	160-170	1.342	14761	100,100
180	3.841	3.675	3.187	3.675	3.841	3.580	3.333	3.580	170-180	0.3471	14761	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	377.40	0-10	377.40	2.56%
10-20	1156.73	0-20	1534.13	10.39%
20-30	1876.58	0-30	3410.71	23.11%
30-40	2540.24	0-40	5950.95	40.32%
40-50	2803.68	0-50	8754.63	59.31%
50-60	2518.19	0-60	11272.82	76.37%
60-70	1841.61	0-70	13114.43	88.85%
70-80	930.16	0-80	14044.59	95.15%
80-90	320.05	0-90	14364.64	97.32%
90-100	172.60	0-100	14537.24	98.49%
100-110	68.44	0-110	14605.68	98.95%
110-120	46.20	0-120	14651.88	99.26%
120-130	48.71	0-130	14700.59	99.59%
130-140	36.17	0-140	14736.76	99.84%
140-150	17.43	0-150	14754.19	99.96%
150-160	5.24	0-160	14759.43	99.99%
160-170	1.34	0-170	14760.77	100.00%
170-180	0.35	0-180	14761.12	100.00%

4.2 Goniophotometer Test

LCS/BUG

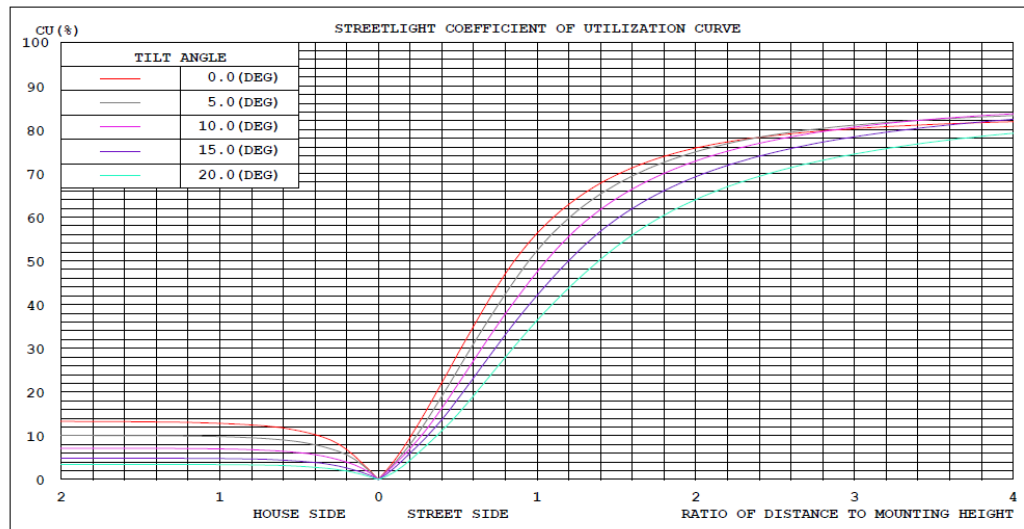


LUMINAIRE CLASSIFICATION SYSTEM (LCS)

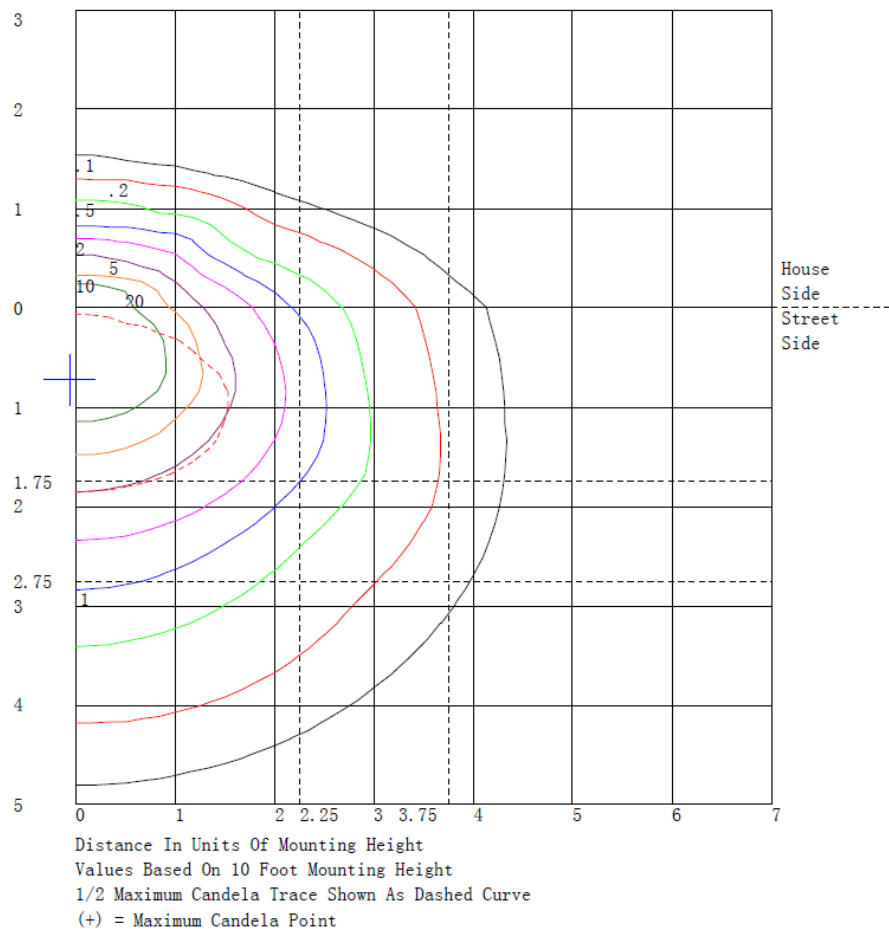
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	2462.8	N.A.	16.7
FM - Front-Medium (30-60)	7035.9	N.A.	47.7
FH - Front-High (60-80)	2595.6	N.A.	17.6
FVH - Front-Very High (80-90)	298.4	N.A.	2.0
BL - Back-Low (0-30)	947.9	N.A.	6.4
BM - Back-Medium (30-60)	826.2	N.A.	5.6
BH - Back-High (60-80)	176.1	N.A.	1.2
BVH - Back-Very High (80-90)	21.7	N.A.	0.1
UL - Uplight-Low (90-100)	172.6	N.A.	1.2
UH - Uplight-High (100-180)	223.9	N.A.	1.5
Total	14761.1	N.A.	100.0
BUG Rating	B2-U3-G3		

4.2 Goniophotometer Test

Coefficients of Utilization



Isolines



4.2 Goniophotometer Test

Luminous Distribution Intensity Data

Table--1

UNIT: cd

C (DEG) y (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	4065	4064	4063	4062	4062	4061	4058	4053	4048	4044	4048	4053	4057	4055	4051	4046	4041	4037	4034
5	4057	4032	4011	3995	3956	3941	3972	4165	4370	4533	4456	4339	4239	4325	4453	4594	4685	4753	4791
10	3931	3860	3864	3943	4139	4378	4629	4810	4978	5138	5324	5494	5633	5683	5705	5714	5763	5808	5839
15	3764	3840	3966	4142	4382	4662	4973	5345	5697	5987	6066	6082	6075	6155	6240	6318	6356	6377	6382
20	3621	3795	4039	4353	4806	5278	5716	5973	6163	6308	6437	6549	6654	6782	6911	7035	7177	7290	7354
25	3326	3582	3900	4281	4783	5303	5798	6133	6422	6688	7015	7320	7581	7723	7817	7880	7964	8028	8063
30	2987	3423	3888	4381	4930	5487	6031	6536	6988	7370	7608	7782	7913	8059	8187	8298	8401	8480	8528
35	2835	3486	4089	4645	5134	5590	6028	6500	6955	7382	7738	8060	8356	8673	8950	9166	9235	9245	9221
40	2564	3264	3933	4572	5200	5783	6310	6699	7054	7415	7692	8484	8910	9013	9002	8927	8883	8844	8827
45	2547	3270	3930	4527	5014	5471	5934	6563	7169	7689	7942	8073	8111	8091	8025	7934	7838	7757	7713
50	2277	2890	3501	4109	4744	5354	5919	6417	6825	7116	7179	7145	7056	7009	6955	6895	6820	6757	6722
55	2006	2386	2858	3422	4211	4992	5667	6300	6943	7603	8105	8519	8812	9099	9365	9605	9868	10000	10000
60	1681	2066	2505	2998	3639	4264	4805	5061	5192	5230	5209	5150	5080	5062	5055	5056	5059	5066	5075
65	1372	1791	2206	2615	3059	3467	3810	3997	4103	4143	4136	4091	4020	3937	3851	3772	3724	3694	3684
70	1142	1365	1613	1885	2241	2578	2851	2919	2909	2851	2794	2733	2686	2706	2741	2781	2791	2795	2797
75	817	914	1036	1183	1401	1608	1773	1765	1716	1662	1706	1769	1837	1883	1920	1947	1954	1956	1957
80	643	651	678	722	803	887	960	976	974	961	955	947	940	939	939	940	937	934	932
85	270	287	311	342	386	433	477	506	530	551	571	591	612	641	671	700	729	752	766
90	65.1	95.3	125	154	182	210	236	250	269	302	376	462	549	624	688	738	759	768	768
95	40.3	58.1	76.8	96.3	114	134	160	202	248	295	341	381	412	421	422	417	414	410	406
100	51.9	49.1	49.8	54.0	57.3	67.5	87.8	138	192	242	259	268	272	287	303	316	325	331	333
105	38.4	32.6	33.0	39.9	59.0	80.0	98.4	100	97.4	92.9	92.8	93.5	95.0	97.2	99.9	103	106	108	110
110	32.3	24.5	27.7	41.8	80.2	120	150	134	109	87.1	100	120	138	137	131	123	118	114	113
115	32.4	21.0	19.9	29.4	57.4	89.8	120	137	143	139	109	75.4	46.0	47.4	57.0	70.2	76.7	81.3	83.5
120	23.8	11.8	9.89	18.1	42.9	73.0	103	123	138	148	152	152	146	134	119	105	95.5	89.7	89.2
125	17.2	7.29	5.80	12.8	32.8	57.8	84.3	105	123	138	148	154	157	158	158	156	153	151	149
130	12.5	3.68	2.06	7.63	24.0	44.8	67.5	86.5	104	120	134	146	154	157	156	155	153	152	151
135	2.72	0.59	2.51	8.49	19.9	34.4	50.8	67.6	84.6	101	116	129	141	148	153	156	159	161	162
140	2.25	6.28	11.0	16.3	21.9	28.4	36.3	46.7	58.3	70.4	82.6	94.3	105	112	119	124	132	139	143
145	2.30	4.33	6.95	10.2	13.7	18.0	23.4	30.4	38.4	47.2	57.3	67.2	76.2	82.3	87.1	90.9	94.9	97.8	99.1
150	2.36	4.37	5.54	5.89	3.47	1.66	1.91	9.88	19.6	29.4	34.4	38.3	41.9	47.4	52.9	57.8	61.4	63.8	64.7
155	2.55	2.07	2.12	2.70	3.94	5.61	7.60	9.57	11.8	14.5	18.2	22.1	25.8	28.6	30.8	32.6	33.6	34.1	34.2
160	2.81	2.74	2.73	2.80	3.05	3.29	3.42	2.66	2.15	2.33	4.89	8.10	11.5	14.1	16.3	18.0	18.8	19.1	19.0
165	3.03	3.11	3.15	3.15	3.05	2.96	2.94	3.11	3.41	3.84	4.78	5.59	6.03	5.02	3.71	2.46	2.20	2.21	2.40
170	3.30	3.35	3.38	3.40	3.40	3.39	3.36	3.30	3.23	3.15	3.08	3.01	2.98	3.00	3.05	3.11	3.14	3.18	3.22
175	3.47	3.52	3.56	3.58	3.57	3.55	3.52	3.50	3.48	3.45	3.40	3.33	3.27	3.21	3.15	3.10	3.06	3.04	3.04
180	3.84	3.86	3.86	3.85	3.83	3.80	3.76	3.74	3.71	3.68	3.62	3.56	3.50	3.45	3.40	3.35	3.28	3.23	3.19

C (DEG)																	UNIT: cd			
γ (DEG)	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185	
0	4037	4041	4046	4051	4055	4057	4053	4048	4044	4048	4053	4058	4061	4062	4062	4063	4064	4065	4041	
5	4753	4685	4594	4453	4325	4239	4339	4456	4533	4370	4165	3972	3941	3956	3995	4011	4032	4057	3762	
10	5808	5763	5714	5705	5683	5633	5494	5324	5138	4978	4810	4629	4378	4139	3943	3864	3860	3931	3641	
15	6377	6356	6318	6240	6155	6075	6082	6066	5987	5697	5345	4973	4662	4382	4142	3966	3840	3764	3587	
20	7290	7177	7035	6911	6782	6654	6549	6437	6308	6163	5973	5716	5278	4806	4353	4039	3795	3621	3537	
25	8028	7964	7880	7817	7723	7581	7320	7015	6688	6422	6133	5798	5303	4783	4281	3900	3582	3326	3392	
30	8480	8401	8298	8187	8059	7913	7782	7608	7370	6988	6536	6031	5487	4930	4381	3888	3423	2987	3150	
35	9245	9235	9166	8950	8673	8356	8060	7738	7382	6955	6500	6028	5590	5134	4645	4089	3486	2835	2925	
40	8844	8883	8927	9002	9013	8910	8484	7962	7415	7054	6699	6310	5783	5200	4572	3933	3264	2564	2449	
45	7757	7838	7934	8025	8091	8111	8073	7942	7689	7169	6563	5934	5471	5014	4527	3930	3270	2547	2193	
50	6757	6820	6895	6955	7009	7056	7145	7179	7116	6825	6417	5919	5354	4744	4109	3501	2890	2277	1756	
55	5868	5965	6065	6099	6113	6112	6119	6105	6063	6043	5930	5667	4992	4211	3422	2858	2386	2006	1478	
60	5066	5059	5056	5055	5062	5080	5150	5209	5230	5192	5061	4805	4264	3639	2998	2505	2066	1681	1212	
65	3694	3724	3772	3851	3937	4020	4091	4136	4143	4103	3997	3810	3467	3059	2615	2206	1791	1372	994	
70	2795	2791	2781	2741	2706	2686	2733	2794	2851	2909	2919	2851	2578	2241	1885	1613	1365	1142	835	
75	1956	1954	1947	1920	1883	1837	1769	1706	1662	1716	1765	1773	1608	1401	1183	1036	914	817	596	
80	934	937	940	939	939	940	947	955	961	974	976	960	887	803	722	678	651	643	434	
85	752	729	700	671	641	612	591	571	551	530	506	477	433	386	342	311	287	270	188	
90	768	759	738	688	624	549	462	376	302	269	250	236	210	182	154	125	95.3	65.1	54.5	
95	410	414	417	422	421	412	381	341	295	248	202	160	134	114	96.3	76.8	58.1	40.3	35.3	
100	331	325	316	303	287	272	268	259	242	192	138	87.8	67.5	57.3	54.0	49.8	49.1	51.9	40.2	
105	108	106	103	99.9	97.2	95.0	93.5	92.8	92.9	97.4	100	98.4	80.0	59.0	39.9	33.0	32.6	38.4	29.6	
110	114	118	123	131	137	138	120	100	87.1	109	134	150	120	80.2	41.8	27.7	24.5	32.3	21.8	
115	81.3	76.7	70.2	57.0	47.4	46.0	75.4	109	139	143	137	120	89.8	57.4	29.4	19.9	21.0	32.4	22.1	
120	89.7	95.5	105	119	134	146	152	152	148	138	123	103	73.0	42.9	18.1	9.89	11.8	23.8	17.1	
125	151	153	156	158	158	157	154	148	138	123	105	84.3	57.8	32.8	12.8	5.80	7.29	17.2	13.4	
130	152	153	155	156	157	154	146	134	120	104	86.5	67.5	44.8	24.0	7.63	2.06	3.68	12.5	10.5	
135	161	159	156	153	148	141	129	116	101	84.6	67.6	50.8	34.4	19.9	8.49	2.51	0.59	2.72	3.78	
140	139	132	124	119	112	105	94.3	82.6	70.4	58.3	46.7	36.3	28.4	21.9	16.3	11.0	6.28	2.25	4.04	
145	97.8	94.9	90.9	87.1	82.3	76.2	67.2	57.3	47.2	38.4	30.4	23.4	18.0	13.7	10.2	6.95	4.33	2.30	3.64	
150	63.8	61.4	57.8	52.9	47.4	41.9	38.3	34.4	29.4	19.6	9.88	1.91	1.66	3.47	5.89	5.54	4.37	2.36	3.39	
155	34.1	33.6	32.6	30.8	28.6	25.8	22.1	18.2	14.5	11.8	9.57	7.60	5.61	3.94	2.70	2.12	2.07	2.55	3.62	
160	19.1	18.8	18.0	16.3	14.1	11.5	8.8	4.89	2.33	2.15	2.66	3.42	3.29	3.05	2.80	2.73	2.74	2.81	3.99	
165	2.21	2.20	2.46	3.71	5.02	6.03	5.59	4.78	3.84	3.41	3.11	2.94	2.96	3.05	3.15	3.13	3.11	3.03	4.18	
170	3.18	3.14	3.11	3.05	3.00	2.98	3.01	3.08	3.15	3.23	3.30	3.36	3.39	3.40	3.40	3.38	3.35	3.30	4.19	
175	3.04	3.06	3.10	3.15	3.21	3.27	3.33	3.40	3.45	3.48	3.50	3.52	3.55	3.57	3.58	3.56	3.52	3.47	4.11	
180	3.23	3.28	3.35	3.40	3.45	3.50	3.56	3.62	3.68	3.71	3.74	3.76	3.80	3.83	3.85	3.86	3.86	3.84	3.84	

Table--3

UNIT: cd

C (DEG) y (DEG)	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280
0	4023	4011	4005	4005	4008	4015	4022	4027	4021	4014	4009	4015	4023	4031	4033	4033	4034	4033	4033
5	3540	3390	3344	3346	3373	3362	3356	3357	3387	3418	3440	3420	3391	3361	3353	3351	3351	3351	3353
10	3431	3300	3291	3328	3380	3374	3350	3306	3217	3126	3051	3056	3079	3103	3074	3042	3020	3042	3074
15	3446	3340	3302	3277	3239	3120	2975	2813	2643	2475	2318	2193	2091	2011	1960	1931	1921	1931	1960
20	3441	3332	3229	3099	2928	2649	2341	2026	1747	1500	1296	1181	1110	1071	1041	1027	1026	1027	1041
25	3359	3227	2956	2615	2234	1834	1459	1145	1008	942	922	893	879	873	862	854	850	854	862
30	3147	2978	2524	1994	1479	1209	1026	913	852	825	812	765	718	676	647	628	620	628	647
35	2857	2631	2104	1524	999	850	806	809	719	626	539	475	423	383	355	339	334	339	355
40	2267	2019	1634	1235	876	722	632	575	474	382	306	264	239	225	213	207	205	207	213
45	1861	1548	1243	968	734	576	459	373	299	247	213	204	207	216	213	211	209	211	213
50	1332	1005	816	694	608	473	353	256	220	204	198	170	143	119	107	99.7	97.7	99.7	107
55	1056	740	573	480	429	342	267	204	159	127	104	89.7	81.1	76.8	73.2	71.7	71.9	71.7	73.2
60	838	560	413	334	294	229	174	130	98.5	76.3	61.7	53.0	48.7	47.4	45.9	45.5	45.8	45.5	45.9
65	689	455	318	235	187	134	95.3	66.9	43.7	26.9	15.4	7.73	3.39	1.46	0.57	0.71	1.36	0.71	0.57
70	583	385	257	172	118	71.9	41.1	22.1	9.46	3.16	1.24	0.14	0.61	1.83	1.86	1.84	1.78	1.84	1.86
75	413	267	168	99.9	56.6	29.6	16.1	11.4	5.40	2.43	1.55	1.13	1.46	2.15	2.27	2.33	2.32	2.33	2.27
80	268	145	78.8	44.7	31.4	17.3	10.5	8.19	4.69	2.69	1.84	1.62	1.91	2.44	2.63	2.77	2.81	2.77	2.63
85	121	71.3	42.6	26.2	18.2	11.3	7.76	6.31	4.26	2.96	2.29	2.19	2.43	2.84	3.06	3.24	3.33	3.24	3.06
90	44.7	35.8	27.3	19.9	13.7	9.89	7.28	5.58	4.21	3.36	2.94	2.86	3.01	3.29	3.50	3.69	3.81	3.69	3.50
95	30.3	25.5	20.5	15.8	11.7	8.95	6.94	5.54	4.59	4.03	3.77	3.66	3.72	3.88	4.12	4.37	4.54	4.37	4.12
100	30.4	22.4	16.9	13.0	10.3	8.14	6.71	5.80	5.07	4.63	4.41	4.33	4.38	4.54	4.83	5.12	5.32	5.12	4.83
105	22.0	15.7	10.6	6.78	4.28	3.78	4.19	5.03	5.30	5.53	5.70	5.66	5.60	5.57	5.83	6.10	6.32	6.10	5.83
110	13.9	8.53	7.09	7.27	8.09	6.93	5.68	4.59	4.39	4.48	4.75	4.93	5.16	5.40	5.71	5.96	6.11	5.96	5.71
115	14.1	8.64	6.68	6.33	6.77	5.94	5.18	4.59	4.52	4.62	4.82	4.88	4.94	4.99	5.03	5.06	5.07	5.06	5.03
120	11.9	8.07	6.37	5.69	5.58	4.98	4.54	4.27	4.34	4.53	4.77	4.87	4.94	4.99	5.04	5.06	5.05	5.06	5.04
125	10.3	7.89	6.41	5.48	4.95	4.48	4.23	4.17	4.34	4.61	4.90	5.05	5.16	5.24	5.31	5.34	5.34	5.34	5.31
130	8.82	7.36	6.15	5.20	4.53	4.26	4.21	4.32	4.46	4.66	4.90	5.15	5.40	5.61	5.72	5.77	5.77	5.77	5.72
135	4.52	4.96	4.91	4.68	4.40	4.37	4.42	4.54	4.75	5.00	5.25	5.45	5.61	5.74	5.83	5.87	5.88	5.87	5.83
140	5.26	5.90	5.62	5.04	4.39	4.36	4.48	4.68	4.83	5.01	5.22	5.50	5.78	6.01	6.10	6.13	6.12	6.13	6.10
145	4.59	5.16	5.11	4.85	4.53	4.58	4.71	4.89	5.04	5.22	5.42	5.68	5.94	6.14	6.19	6.19	6.14	6.19	6.19
150	4.15	4.66	4.78	4.73	4.64	4.76	4.92	5.09	5.21	5.33	5.46	5.66	5.86	6.01	6.00	5.94	5.87	5.94	6.00
155	4.43	4.98	5.18	5.19	5.10	5.07	5.04	5.03	5.11	5.22	5.35	5.51	5.65	5.74	5.67	5.56	5.45	5.56	5.67
160	4.88	5.47	5.64	5.61	5.45	5.36	5.26	5.18	5.23	5.29	5.34	5.30	5.24	5.17	5.13	5.10	5.06	5.10	5.13
165	5.02	5.57	5.68	5.59	5.40	5.33	5.25	5.16	5.07	4.97	4.86	4.69	4.53	4.40	4.40	4.42	4.45	4.42	4.40
170	4.83	5.22	5.27	5.13	4.88	4.64	4.39	4.16	4.07	4.01	3.97	3.88	3.79	3.71	3.67	3.64	3.64	3.64	3.67
175	4.56	4.82	4.83	4.71	4.48	4.20	3.91	3.67	3.62	3.62	3.63	3.52	3.41	3.31	3.33	3.37	3.43	3.37	3.33
180	3.83	3.83	3.83	3.83	3.81	3.75	3.67	3.58	3.48	3.39	3.31	3.26	3.24	3.24	3.26	3.29	3.33	3.29	3.26

C (DEG) y (DEG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355				
0	4031	4023	4015	4009	4014	4021	4027	4022	4015	4008	4005	4005	4011	4023	4041				
5	3361	3391	3420	3440	3418	3387	3357	3356	3362	3373	3346	3344	3390	3540	3762				
10	3103	3079	3056	3051	3126	3217	3306	3350	3374	3380	3328	3291	3300	3431	3641				
15	2011	2091	2193	2318	2475	2643	2813	2975	3120	3239	3277	3302	3340	3446	3587				
20	1071	1110	1181	1296	1500	1747	2026	2341	2649	2928	3099	3229	3332	3441	3537				
25	873	879	893	922	942	1008	1145	1459	1834	2234	2615	2956	3227	3359	3392				
30	676	718	765	812	825	852	913	1026	1209	1479	1994	2524	2978	3147	3150				
35	383	423	475	539	626	719	809	806	850	999	1524	2104	2631	2857	2925				
40	225	239	264	306	382	474	575	632	722	876	1235	1634	2019	2267	2449				
45	216	207	204	213	247	299	373	459	576	734	968	1243	1548	1861	2193				
50	119	143	170	198	204	220	256	353	473	608	694	816	1005	1332	1756				
55	76.8	81.1	89.7	104	127	159	204	267	342	429	480	573	740	1056	1478				
60	47.4	48.7	53.0	61.7	76.3	98.5	130	174	229	294	334	413	560	838	1212				
65	1.46	3.39	7.73	15.4	26.9	43.7	66.9	95.3	134	187	235	318	455	689	994				
70	1.83	0.61	0.14	1.24	3.16	9.46	22.1	41.1	71.9	118	172	257	385	583	835				
75	2.15	1.46	1.13	1.55	2.43	5.40	11.4	16.1	29.6	56.6	99.9	168	267	413	596				
80	2.44	1.91	1.62	1.84	2.69	4.69	8.19	10.5	17.3	31.4	44.7	78.8	145	268	434				
85	2.84	2.43	2.19	2.29	2.96	4.26	6.31	7.76	11.3	18.2	26.2	42.6	71.3	121	188				
90	3.29	3.01	2.86	2.94	3.36	4.21	5.58	7.28	9.89	13.7	19.9	27.3	35.8	44.7	54.5				
95	3.88	3.72	3.66	3.77	4.03	4.59	5.54	6.94	8.95	11.7	15.8	20.5	25.5	30.3	35.3				
100	4.54	4.38	4.33	4.41	4.63	5.07	5.80	6.71	8.14	10.3	13.0	16.9	22.4	30.4	40.2				
105	5.57	5.60	5.66	5.70	5.53	5.30	5.03	4.19	3.78	4.28	6.78	10.6	15.7	22.0	29.6				
110	5.40	5.16	4.93	4.75	4.48	4.39	4.59	5.68	6.93	8.09	7.27	7.09	8.53	13.9	21.8				
115	4.99	4.94	4.88	4.82	4.62	4.52	4.59	5.18	5.94	6.77	6.33	6.68	8.64	14.1	22.1				
120	4.99	4.94	4.87	4.77	4.53	4.34	4.27	4.54	4.98	5.58	5.69	6.37	8.07	11.9	17.1				
125	5.24	5.16	5.05	4.90	4.61	4.34	4.17	4.23	4.48	4.95	5.48	6.41	7.89	10.3	13.4				
130	5.61	5.40	5.15	4.90	4.66	4.46	4.32	4.21	4.26	4.53	5.20	6.15	7.36	8.82	10.5				
135	5.74	5.61	5.45	5.25	5.00	4.75	4.54	4.42	4.37	4.40	4.68	4.91	4.96	4.52	3.78				
140	6.01	5.78	5.50	5.22	5.01	4.83	4.68	4.48	4.36	4.39	5.04	5.62	5.90	5.26	4.04				
145	6.14	5.94	5.68	5.42	5.22	5.04	4.89	4.71	4.58	4.53	4.85	5.11	5.16	4.59	3.64				
150	6.01	5.86	5.66	5.46	5.33	5.21	5.09	4.92	4.76	4.64	4.73	4.78	4.66	4.15	3.39				
155	5.74	5.65	5.51	5.35	5.22	5.11	5.03	5.04	5.07	5.10	5.19	5.18	4.98	4.43	3.62				
160	5.17	5.24	5.30	5.34	5.29	5.23	5.18	5.26	5.36	5.45	5.61	5.64	5.47	4.88	3.99				
165	4.40	4.53	4.69	4.86	4.97	5.07	5.16	5.25	5.35	5.40	5.59	5.68	5.57	5.02	4.18				
170	3.71	3.79	3.88	3.97	4.01	4.07	4.16	4.39	4.64	4.88	5.13	5.27	5.22	4.83	4.19				
175	3.31	3.41	3.52	3.63	3.62	3.62	3.67	3.91	4.20	4.48	4.71	4.83	4.82	4.56	4.11				
180	3.24	3.24	3.26	3.31	3.39	3.48	3.58	3.67	3.75	3.81	3.83	3.83	3.83	3.83	3.84				

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	WPX3 @ 100W / 4000K	Sample ID	231020001-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±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	0.811	97.0	0.997	4.35
277.0	60	0.364	94.5	0.937	8.89

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	2023-08-25	2024-08-24
NTC-F01-019	Temperature & Humidity Meter	2022-11-12	2023-11-11

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