

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

Prepared By

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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		18809
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	IES LM-79-2008	N/A		149.8
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	300		18315
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard	Premium	145.8
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		125.6
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	480V	13.28
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	480V	0.900
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3985±275	4095
		4 steps	3985±154	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥70		85.5
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	N/A		19
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%		2.1%
Input Voltage (V)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Cast		480.0
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Input Current (A)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		0.291
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		125.6
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2023-10-23	WPX3 @ 130W / 4000K 480	231020002-S1
2	Goniophotometer Test	2023-10-23	WPX3 @ 130W / 4000K 480	231020002-S1
3	THD and PF Test	2023-10-23	WPX3 @ 130W / 4000K 480	231020002-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 @ 130W / 4000K 480, color tunable from 3000K, 4000K and 5000K.

Electrical Specification: 480Vac, 50/60Hz

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	WPX3 @ 130W / 4000K 480	Sample ID	231020002-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

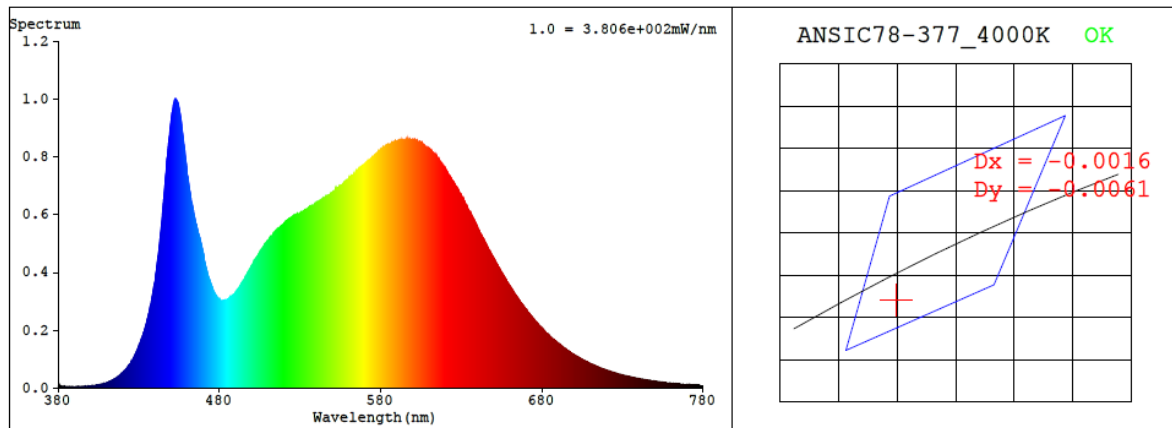
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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. 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
480.0	60	0.291	125.6	0.900

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
4095	85.5	19	-0.0024	85	96	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3747$ $y = 0.3681$ / $u' = 0.2248$ $v' = 0.4968$ ($duv = -2.42e-03$)

CCT= 4095K Prcp WL: Ld=580.2nm Purity=22.9%

Peak WL: Lp=453nm FWHM: =25.8nm Ratio:R=18.6% G=77.3% B=4.1%

Render Index: Ra = 85.5 AvgR = 80.0 TM30:Rf=85 Rg=96

EEL: 0.09224 A++ Highest

R1 =85	R2 =93	R3 =96	R4 =84	R5 =85	R6 =89	R7 =86
R8 =68	R9 =19	R10=81	R11=83	R12=66	R13=87	R14=98
R15=80						

4.1 Integrating Sphere Test

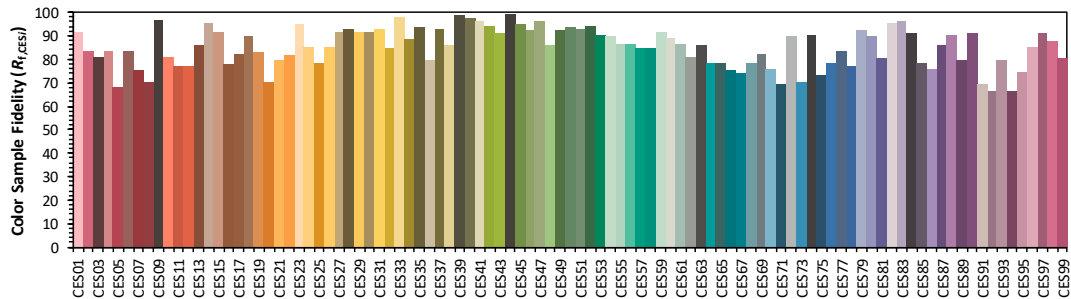
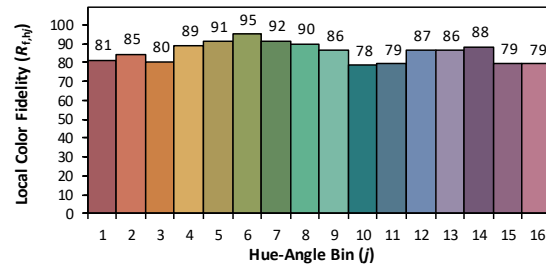
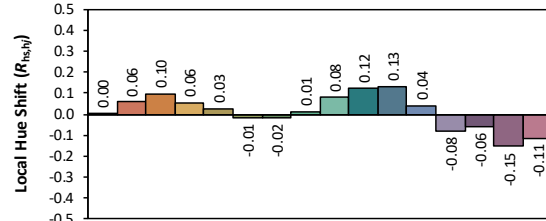
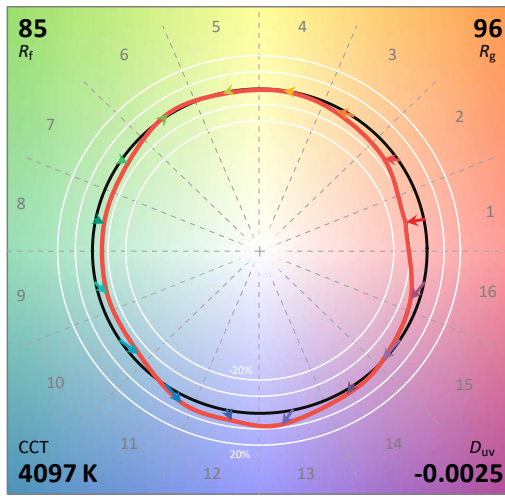
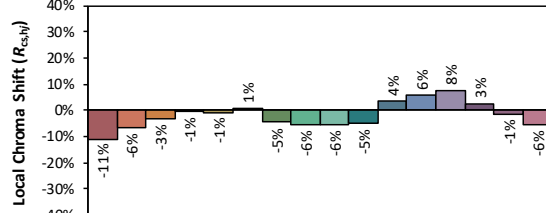
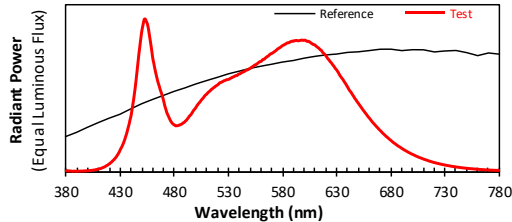
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2023/10/30

Model: WPX3 @ 130W / 4000K 480



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

x 0.3747

y 0.3679

u' 0.2249

v' 0.4968

CIE 13.3-1995
(CRI)

R_a 86

R_g 19

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	6.40E-06	447	7.61E-04	514	5.37E-04	581	8.28E-04	648	4.71E-04	715	7.29E-05
381	8.50E-06	448	8.19E-04	515	5.42E-04	582	8.33E-04	649	4.59E-04	716	7.02E-05
382	5.60E-06	449	8.76E-04	516	5.49E-04	583	8.36E-04	650	4.50E-04	717	6.83E-05
383	6.00E-06	450	9.27E-04	517	5.53E-04	584	8.41E-04	651	4.40E-04	718	6.61E-05
384	6.20E-06	451	9.61E-04	518	5.59E-04	585	8.44E-04	652	4.30E-04	719	6.39E-05
385	4.50E-06	452	9.95E-04	519	5.64E-04	586	8.44E-04	653	4.20E-04	720	6.21E-05
386	4.10E-06	453	9.99E-04	520	5.69E-04	587	8.49E-04	654	4.10E-04	721	6.01E-05
387	5.00E-06	454	9.83E-04	521	5.75E-04	588	8.51E-04	655	4.00E-04	722	5.86E-05
388	4.90E-06	455	9.67E-04	522	5.82E-04	589	8.55E-04	656	3.91E-04	723	5.62E-05
389	3.50E-06	456	9.33E-04	523	5.84E-04	590	8.53E-04	657	3.82E-04	724	5.49E-05
390	4.80E-06	457	8.87E-04	524	5.88E-04	591	8.57E-04	658	3.73E-04	725	5.32E-05
391	5.10E-06	458	8.42E-04	525	5.91E-04	592	8.58E-04	659	3.62E-04	726	5.13E-05
392	5.10E-06	459	7.94E-04	526	5.96E-04	593	8.59E-04	660	3.55E-04	727	4.98E-05
393	5.20E-06	460	7.42E-04	527	5.98E-04	594	8.57E-04	661	3.46E-04	728	4.81E-05
394	5.50E-06	461	7.08E-04	528	6.01E-04	595	8.57E-04	662	3.36E-04	729	4.68E-05
395	5.20E-06	462	6.70E-04	529	6.03E-04	596	8.58E-04	663	3.27E-04	730	4.53E-05
396	6.00E-06	463	6.39E-04	530	6.04E-04	597	8.60E-04	664	3.19E-04	731	4.38E-05
397	7.00E-06	464	6.09E-04	531	6.08E-04	598	8.61E-04	665	3.12E-04	732	4.26E-05
398	6.20E-06	465	5.82E-04	532	6.12E-04	599	8.59E-04	666	3.04E-04	733	4.13E-05
399	7.70E-06	466	5.60E-04	533	6.15E-04	600	8.60E-04	667	2.96E-04	734	4.02E-05
400	7.10E-06	467	5.34E-04	534	6.19E-04	601	8.60E-04	668	2.89E-04	735	3.87E-05
401	8.60E-06	468	5.15E-04	535	6.22E-04	602	8.56E-04	669	2.81E-04	736	3.73E-05
402	8.60E-06	469	4.91E-04	536	6.26E-04	603	8.52E-04	670	2.73E-04	737	3.59E-05
403	9.50E-06	470	4.66E-04	537	6.29E-04	604	8.53E-04	671	2.66E-04	738	3.52E-05
404	1.05E-05	471	4.35E-04	538	6.30E-04	605	8.50E-04	672	2.59E-04	739	3.44E-05
405	1.16E-05	472	4.12E-04	539	6.36E-04	606	8.44E-04	673	2.51E-04	740	3.30E-05
406	1.26E-05	473	3.87E-04	540	6.40E-04	607	8.39E-04	674	2.45E-04	741	3.15E-05
407	1.41E-05	474	3.71E-04	541	6.42E-04	608	8.34E-04	675	2.38E-04	742	3.11E-05
408	1.56E-05	475	3.56E-04	542	6.48E-04	609	8.32E-04	676	2.31E-04	743	2.98E-05
409	1.69E-05	476	3.40E-04	543	6.51E-04	610	8.28E-04	677	2.26E-04	744	2.92E-05
410	1.86E-05	477	3.28E-04	544	6.54E-04	611	8.22E-04	678	2.20E-04	745	2.81E-05
411	2.09E-05	478	3.18E-04	545	6.57E-04	612	8.17E-04	679	2.13E-04	746	2.71E-05
412	2.26E-05	479	3.11E-04	546	6.63E-04	613	8.11E-04	680	2.07E-04	747	2.63E-05
413	2.58E-05	480	3.07E-04	547	6.66E-04	614	8.06E-04	681	2.01E-04	748	2.54E-05
414	2.85E-05	481	3.01E-04	548	6.67E-04	615	7.98E-04	682	1.95E-04	749	2.48E-05
415	3.18E-05	482	3.02E-04	549	6.73E-04	616	7.93E-04	683	1.89E-04	750	2.38E-05
416	3.51E-05	483	3.02E-04	550	6.76E-04	617	7.82E-04	684	1.85E-04	751	2.31E-05
417	4.00E-05	484	3.05E-04	551	6.81E-04	618	7.75E-04	685	1.80E-04	752	2.24E-05
418	4.32E-05	485	3.07E-04	552	6.86E-04	619	7.69E-04	686	1.74E-04	753	2.17E-05
419	4.93E-05	486	3.10E-04	553	6.91E-04	620	7.60E-04	687	1.69E-04	754	2.10E-05
420	5.32E-05	487	3.13E-04	554	6.96E-04	621	7.50E-04	688	1.65E-04	755	2.06E-05
421	5.98E-05	488	3.20E-04	555	7.00E-04	622	7.39E-04	689	1.61E-04	756	1.98E-05
422	6.56E-05	489	3.23E-04	556	7.03E-04	623	7.32E-04	690	1.55E-04	757	1.93E-05
423	7.26E-05	490	3.31E-04	557	7.09E-04	624	7.21E-04	691	1.51E-04	758	1.85E-05
424	7.96E-05	491	3.37E-04	558	7.15E-04	625	7.14E-04	692	1.46E-04	759	1.84E-05
425	8.75E-05	492	3.46E-04	559	7.20E-04	626	7.04E-04	693	1.42E-04	760	1.73E-05
426	9.56E-05	493	3.55E-04	560	7.21E-04	627	6.95E-04	694	1.38E-04	761	1.71E-05
427	1.07E-04	494	3.65E-04	561	7.28E-04	628	6.86E-04	695	1.34E-04	762	1.65E-05
428	1.18E-04	495	3.72E-04	562	7.35E-04	629	6.75E-04	696	1.30E-04	763	1.58E-05
429	1.30E-04	496	3.82E-04	563	7.36E-04	630	6.67E-04	697	1.26E-04	764	1.55E-05
430	1.46E-04	497	3.93E-04	564	7.43E-04	631	6.56E-04	698	1.23E-04	765	1.50E-05
431	1.59E-04	498	4.05E-04	565	7.48E-04	632	6.45E-04	699	1.19E-04	766	1.43E-05
432	1.74E-04	499	4.12E-04	566	7.54E-04	633	6.31E-04	700	1.16E-04	767	1.41E-05
433	1.91E-04	500	4.22E-04	567	7.58E-04	634	6.22E-04	701	1.12E-04	768	1.32E-05
434	2.10E-04	501	4.34E-04	568	7.65E-04	635	6.12E-04	702	1.09E-04	769	1.30E-05
435	2.33E-04	502	4.43E-04	569	7.71E-04	636	6.03E-04	703	1.05E-04	770	1.29E-05
436	2.55E-04	503	4.51E-04	570	7.73E-04	637	5.91E-04	704	1.02E-04	771	1.23E-05
437	2.83E-04	504	4.60E-04	571	7.78E-04	638	5.81E-04	705	9.94E-05	772	1.20E-05
438	3.10E-04	505	4.70E-04	572	7.82E-04	639	5.69E-04	706	9.59E-05	773	1.15E-05
439	3.41E-04	506	4.78E-04	573	7.88E-04	640	5.57E-04	707	9.33E-05	774	1.13E-05
440	3.71E-04	507	4.86E-04	574	7.93E-04	641	5.45E-04	708	9.11E-05	775	1.08E-05
441	4.17E-04	508	4.96E-04	575	8.00E-04	642	5.32E-04	709	8.79E-05	776	1.06E-05
442	4.59E-04	509	5.03E-04	576	8.05E-04	643	5.24E-04	710	8.50E-05	777	1.04E-05
443	5.11E-04	510	5.09E-04	577	8.10E-04	644	5.14E-04	711	8.24E-05	778	1.00E-05
444	5.65E-04	511	5.18E-04	578	8.14E-04	645	5.02E-04	712	8.01E-05	779	9.90E-06
445	6.29E-04	512	5.24E-04	579	8.19E-04	646	4.92E-04	713	7.76E-05	780	9.90E-06
446	6.94E-04	513	5.29E-04	580	8.25E-04	647	4.79E-04	714	7.55E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	WPX3 @ 130W / 4000K 480	Sample ID	231020002-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	25.0	Humidity (%RH)	42.1

Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using a type C goniophotometer and software.</p> <p>The ambient temperature shall be maintained at $25 \pm 1^\circ\text{C}$, measured at a point not more than 1 m from the sample and at the same height as the sample.</p> <p>The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ± 0.2 percent under load.</p> <p>The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 1.0° vertical intervals and 15° horizontal intervals.</p>

Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	480.0	60	0.291	125.6	0.900
NON-WORST CASE	N/A	N/A	N/A	N/A	N/A

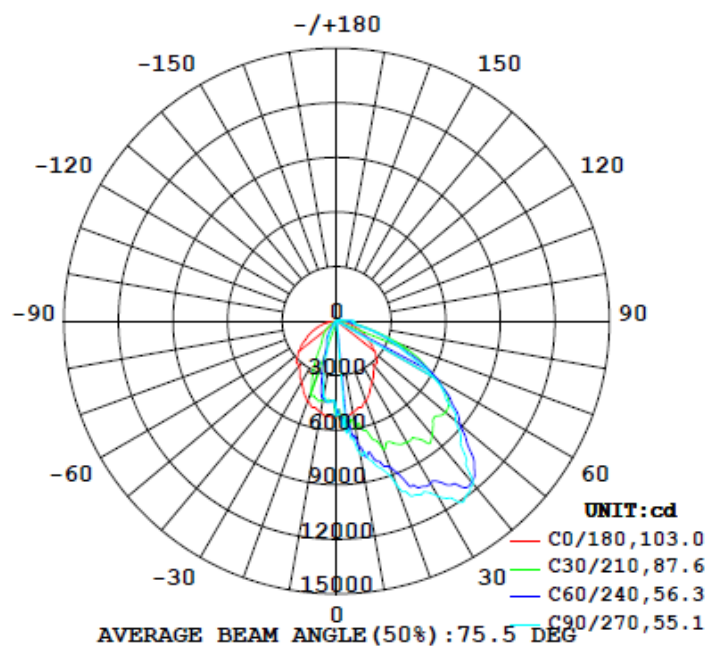
Test Result

Result Type	Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement	BUG
		C0-180	C90-270	C0-180	C90-270		(80°-90°)	
0°-180° zones	18809	107.2	145.4	54.7	101.2	149.8	2.0%	B3-U3-G3
0°-90° zones	18315	107.2	145.4	54.7	101.2	145.8	2.1%	B3-U3-G3

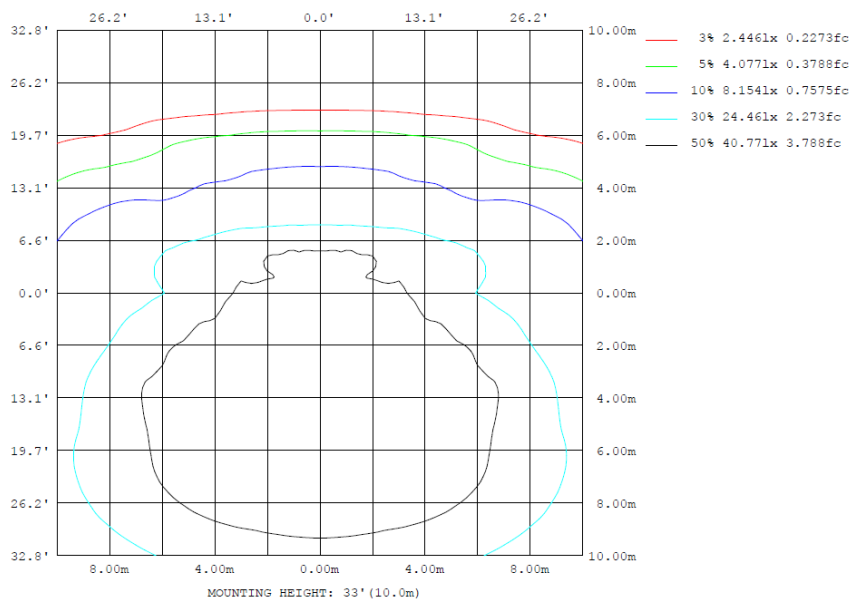
4.2 Goniophotometer Test

Lighting Distribution Curve

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

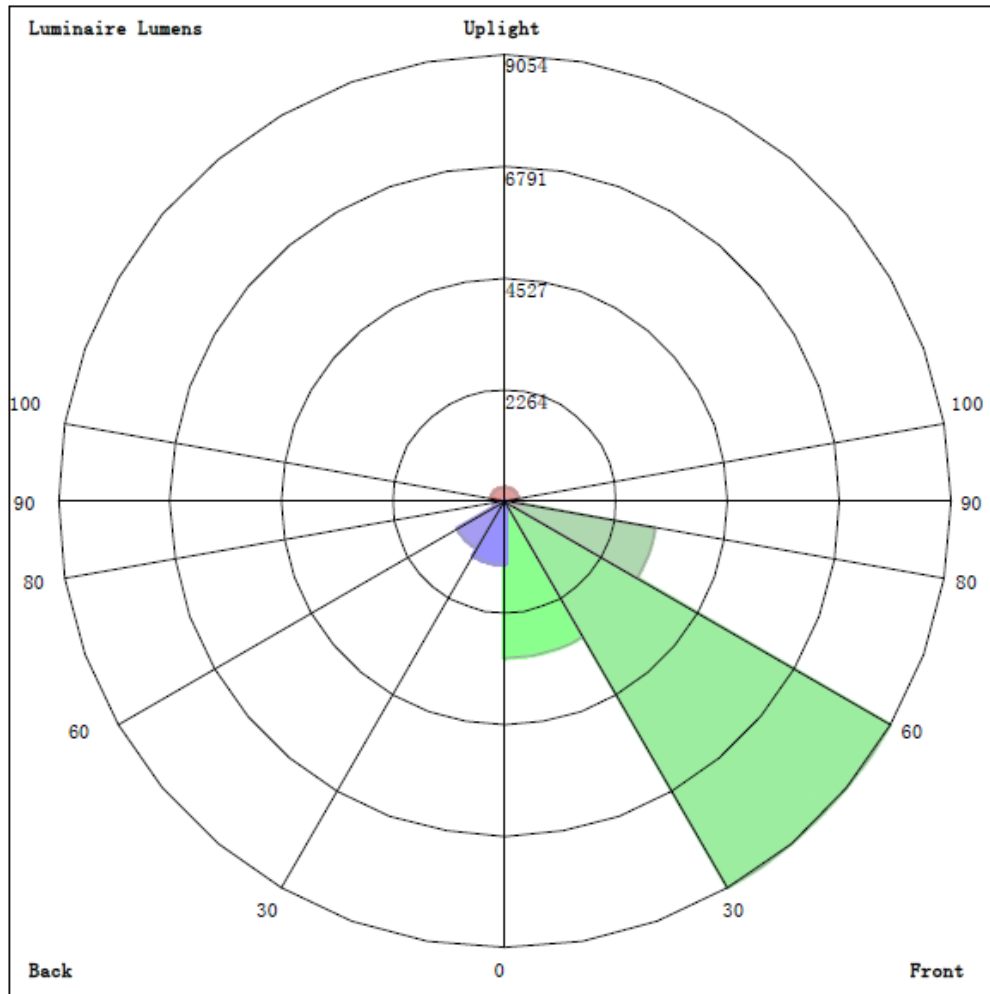
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	± zone	± total	±lum, lamp
10	507.4	648.0	738.6	648.0	507.4	444.4	423.0	444.4	0- 10	488.6	488.6	2.6,2.6
20	468.4	803.1	951.6	803.1	468.4	269.8	144.3	269.8	10- 20	1505	1993	10.6,10.6
30	389.8	974.6	1112	974.6	389.8	129.9	80.51	129.9	20- 30	2463	4456	23.7,23.7
40	319.3	970.5	1166	970.5	319.3	76.08	26.86	76.08	30- 40	3312	7768	41.3,41.3
50	279.2	936.6	852.7	936.6	279.2	33.51	12.62	33.51	40- 50	3619	11387	60.5,60.5
60	194.6	666.1	602.7	666.1	194.6	16.98	5.585	16.98	50- 60	3229	14615	77.7,77.7
70	125.0	332.0	321.3	332.0	125.0	2.361	0.3735	2.361	60- 70	2256	16872	89.7,89.7
80	51.65	101.9	100.3	101.9	51.65	1.137	0.4860	1.137	70- 80	1062	17934	95.3,95.3
90	4.628	40.57	94.42	40.57	4.628	0.8343	0.6450	0.8343	80- 90	381.7	18315	97.4,97.4
100	4.892	29.72	40.32	29.72	4.892	0.8787	0.7689	0.8787	90-100	215.6	18531	98.5,98.5
110	3.391	10.16	14.20	10.16	3.391	0.5804	0.9511	0.5804	100-110	83.75	18615	99,99
120	2.963	19.00	11.72	19.00	2.963	0.5413	0.6401	0.5413	110-120	57.98	18673	99.3,99.3
130	1.558	15.29	18.54	15.29	1.558	0.5416	0.7439	0.5416	120-130	60.51	18733	99.6,99.6
140	0.3443	8.972	17.60	8.972	0.3443	0.5834	0.7874	0.5834	130-140	44.99	18778	99.8,99.8
150	0.3062	3.952	8.082	3.952	0.3062	0.6420	0.7407	0.6420	140-150	22.12	18800	100,100
160	0.3592	0.2983	2.542	0.2983	0.3592	0.6620	0.6453	0.6620	150-160	6.779	18807	100,100
170	0.4212	0.3971	0.4081	0.3971	0.4212	0.5417	0.4707	0.5417	160-170	1.737	18809	100,100
180	0.4921	0.4715	0.4130	0.4715	0.4921	0.4615	0.4277	0.4615	170-180	0.4443	18809	100,100
DEG	LUMINOUS INTENSITY:×10cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	488.59	0-10	488.59	2.60%
10-20	1504.51	0-20	1993.10	10.60%
20-30	2462.87	0-30	4455.97	23.69%
30-40	3312.08	0-40	7768.05	41.30%
40-50	3618.58	0-50	11386.63	60.54%
50-60	3228.71	0-60	14615.34	77.70%
60-70	2256.40	0-70	16871.74	89.70%
70-80	1061.99	0-80	17933.73	95.35%
80-90	381.72	0-90	18315.45	97.38%
90-100	215.60	0-100	18531.05	98.52%
100-110	83.75	0-110	18614.80	98.97%
110-120	57.98	0-120	18672.78	99.28%
120-130	60.51	0-130	18733.29	99.60%
130-140	44.99	0-140	18778.28	99.84%
140-150	22.12	0-150	18800.40	99.95%
150-160	6.78	0-160	18807.18	99.99%
160-170	1.74	0-170	18808.92	100.00%
170-180	0.44	0-180	18809.36	100.00%

4.2 Goniophotometer Test

LCS/BUG

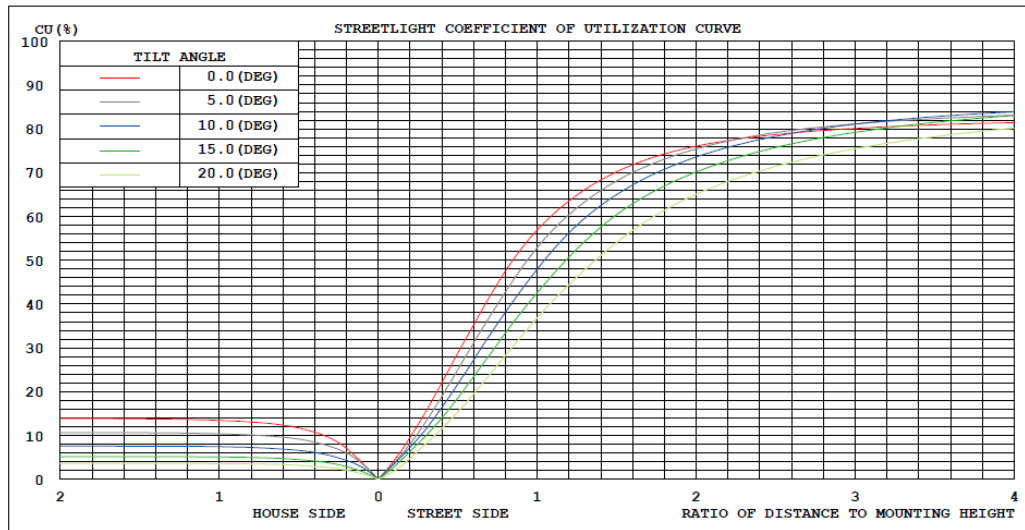


LUMINAIRE CLASSIFICATION SYSTEM (LCS)

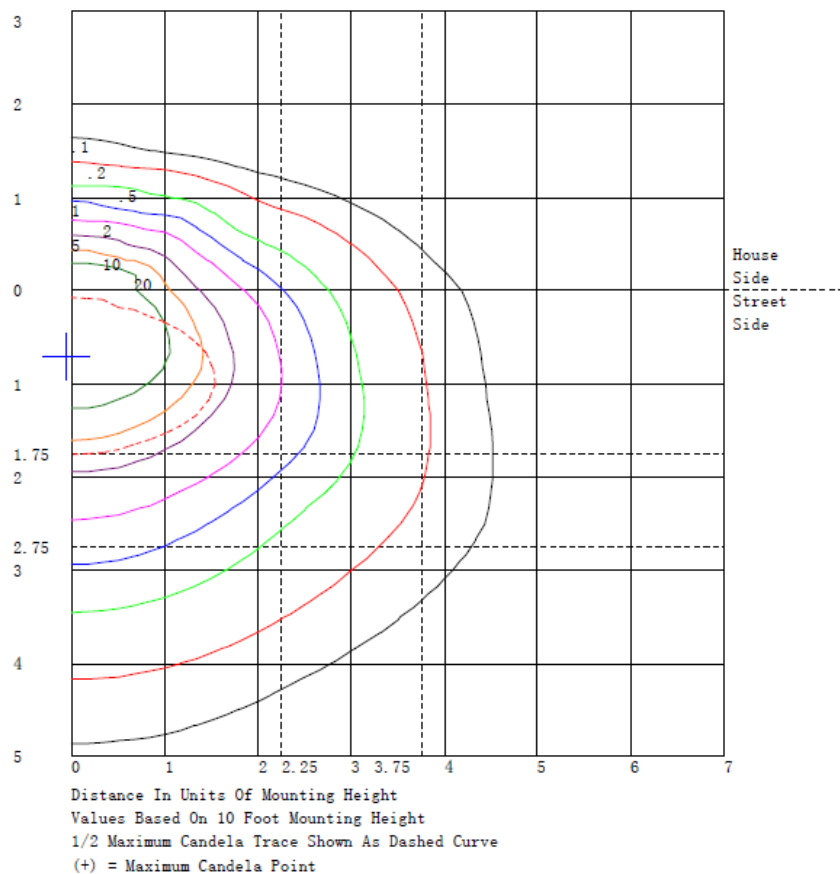
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	3175.0	N.A.	16.9
FM - Front-Medium (30-60)	9054.1	N.A.	48.1
FH - Front-High (60-80)	3105.3	N.A.	16.5
FVH - Front-Very High (80-90)	359.9	N.A.	1.9
BL - Back-Low (0-30)	1280.9	N.A.	6.8
BM - Back-Medium (30-60)	1105.3	N.A.	5.9
BH - Back-High (60-80)	213.1	N.A.	1.1
BVH - Back-Very High (80-90)	21.8	N.A.	0.1
UL - Uplight-Low (90-100)	215.6	N.A.	1.1
UH - Uplight-High (100-180)	278.3	N.A.	1.5
Total	18809.3	N.A.	100.0
BUG Rating	B3-U3-G3		

4.2 Goniophotometer Test

Coefficients of Utilization



Isolines



4.2 Goniophotometer Test

Luminous Distribution Intensity Data

Table--1

UNIT: *10cd

C (DEG) γ (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	530	530	530	529	528	527	526	526	525	524	523	522	521	519	518	517	516	515	515
5	526	522	520	517	512	510	512	532	554	573	566	556	550	566	586	606	615	619	619
10	507	498	498	508	535	567	599	618	633	648	670	691	709	711	711	710	721	731	739
15	493	497	508	526	552	584	621	668	714	754	769	777	780	788	796	802	809	814	816
20	468	487	516	557	621	698	748	775	792	803	820	837	855	877	900	920	936	947	952
25	431	466	508	556	617	680	740	785	825	863	910	954	994	1022	1043	1057	1060	1059	1055
30	390	445	504	566	632	701	770	846	916	975	1003	1020	1031	1049	1067	1082	1096	1107	1112
35	355	434	511	586	658	727	792	849	902	952	1004	1054	1099	1139	1172	1198	1209	1214	1213
40	319	394	472	554	645	734	817	873	923	970	1039	1102	1154	1167	1166	1159	1161	1163	1166
45	314	405	489	565	629	691	755	848	937	1014	1048	1063	1062	1049	1028	1004	986	971	965
50	279	357	437	520	611	699	781	849	903	937	931	910	886	880	876	874	865	857	853
55	241	305	377	457	563	665	750	781	791	787	785	778	768	758	749	740	734	730	729
60	195	255	320	389	475	556	624	653	666	666	661	651	640	633	627	622	613	606	603
65	159	215	272	330	396	457	506	521	522	513	502	489	474	462	452	444	438	434	434
70	125	157	192	230	281	328	364	363	351	332	322	314	308	309	312	316	318	319	321
75	89.6	107	126	147	175	200	220	216	207	195	195	196	197	197	196	195	195	196	197
80	51.7	59.2	68.6	79.9	97.2	113	125	121	112	102	99.5	98.7	99.1	99.6	100	101	101	100	100
85	17.8	23.6	30.1	37.3	46.7	55.8	63.4	65.6	66.4	66.9	70.3	74.3	78.8	83.6	88.2	92.5	96.4	99.3	101
90	4.63	9.12	13.5	17.7	21.6	25.5	29.3	32.0	35.5	40.6	51.0	62.5	73.6	81.0	86.8	91.0	93.2	94.2	94.4
95	3.95	6.35	8.90	11.6	14.1	17.0	20.6	26.2	32.3	38.5	44.2	49.1	52.9	53.9	54.0	53.6	54.2	54.8	55.4
100	4.89	5.02	5.58	6.55	7.54	9.26	12.0	17.9	24.1	29.7	31.6	32.4	32.9	34.7	36.5	38.2	39.2	40.0	40.3
105	3.54	3.52	4.13	5.37	7.89	10.5	12.8	13.1	12.7	12.2	12.0	11.9	11.9	12.2	12.6	13.0	13.4	13.8	14.0
110	3.39	2.90	3.60	5.50	10.2	14.9	18.4	16.3	13.1	10.2	11.5	13.7	15.9	16.2	16.0	15.4	14.9	14.4	14.2
115	3.90	2.52	2.43	3.63	7.11	11.2	15.0	17.3	18.4	18.0	14.2	9.80	5.88	5.71	6.56	7.90	8.53	9.02	9.31
120	2.96	1.43	1.19	2.25	5.44	9.31	13.2	15.8	17.8	19.0	19.1	18.6	17.7	16.5	15.2	13.9	12.8	12.0	11.7
125	2.16	0.86	0.68	1.60	4.22	7.50	11.0	13.7	16.1	18.0	18.9	19.3	19.4	19.1	18.6	18.1	17.9	17.8	17.8
130	1.56	0.33	0.06	0.76	2.93	5.68	8.67	11.1	13.3	15.3	17.0	18.4	19.3	19.3	19.0	18.5	18.5	18.5	18.5
135	0.65	0.27	0.43	1.12	2.51	4.30	6.34	8.45	10.6	12.6	14.5	16.1	17.4	18.3	18.8	19.2	19.6	19.8	19.9
140	0.34	0.85	1.45	2.13	2.87	3.73	4.74	6.06	7.49	8.97	10.4	11.8	13.0	14.0	14.7	15.4	16.4	17.2	17.6
145	0.32	0.57	0.90	1.32	1.81	2.40	3.10	3.95	4.91	5.98	7.24	8.50	9.67	10.5	11.2	11.7	12.1	12.4	12.5
150	0.31	0.54	0.68	0.72	0.41	0.18	0.24	1.33	2.64	3.95	4.57	5.03	5.44	6.10	6.74	7.31	7.72	7.99	8.08
155	0.32	0.26	0.27	0.35	0.52	0.75	1.02	1.27	1.56	1.90	2.42	2.95	3.45	3.80	4.08	4.28	4.40	4.46	4.47
160	0.36	0.34	0.34	0.35	0.39	0.44	0.47	0.37	0.29	0.30	0.61	1.01	1.44	1.82	2.15	2.42	2.52	2.56	2.54
165	0.39	0.39	0.39	0.39	0.38	0.37	0.37	0.40	0.45	0.52	0.65	0.76	0.81	0.67	0.49	0.31	0.28	0.28	0.31
170	0.42	0.42	0.43	0.43	0.43	0.42	0.41	0.41	0.41	0.40	0.39	0.38	0.38	0.38	0.39	0.40	0.40	0.40	0.41
175	0.45	0.45	0.46	0.46	0.46	0.45	0.45	0.44	0.44	0.43	0.43	0.42	0.41	0.41	0.40	0.39	0.38	0.38	0.38
180	0.49	0.49	0.49	0.49	0.49	0.49	0.48	0.48	0.48	0.47	0.47	0.46	0.45	0.44	0.44	0.43	0.42	0.42	0.41

C (DEG) γ (DEG)	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185
0	515	516	517	518	519	521	522	523	524	525	526	526	527	528	529	530	530	530	528
5	619	615	606	586	566	550	556	566	573	554	532	512	510	512	517	520	522	526	488
10	731	721	710	711	711	709	691	670	648	633	618	599	567	535	508	498	498	507	470
15	814	809	802	796	788	780	777	769	754	714	668	621	584	552	526	508	497	493	463
20	947	936	920	900	877	855	837	820	803	792	775	748	688	621	557	516	487	468	459
25	1059	1060	1057	1043	1022	994	954	910	863	825	785	740	680	617	556	508	466	431	447
30	1107	1096	1082	1067	1049	1031	1020	1003	975	916	846	770	701	632	566	504	445	390	419
35	1214	1209	1198	1172	1139	1099	1054	1004	952	902	849	792	727	658	586	511	434	355	381
40	1163	1161	1159	1166	1167	1154	1102	1039	970	923	873	817	734	645	554	472	394	319	319
45	971	986	1004	1028	1049	1062	1063	1048	1014	937	848	755	691	629	565	489	405	314	285
50	857	865	874	876	880	886	910	931	937	903	849	781	699	611	520	437	357	279	227
55	730	734	740	749	758	768	778	785	787	791	781	750	665	563	457	377	305	241	186
60	606	613	622	627	633	640	651	661	666	666	653	624	556	475	389	320	255	195	145
65	434	438	444	452	462	474	489	502	513	522	521	506	457	396	330	272	215	159	118
70	319	318	316	312	309	308	314	322	332	351	363	364	328	281	230	192	157	125	95.4
75	196	195	195	196	197	197	196	195	195	207	216	220	200	175	147	126	107	89.6	67.7
80	100	101	101	100	99.6	99.1	98.7	99.5	102	112	121	125	113	97.2	79.9	68.6	59.2	51.7	38.3
85	99.3	96.4	92.5	88.2	83.6	78.8	74.3	70.3	66.9	66.4	65.6	63.4	55.8	46.7	37.3	30.1	23.6	17.8	14.6
90	94.2	93.2	91.0	86.8	81.0	73.6	62.5	51.0	40.6	35.5	32.0	29.3	25.5	21.6	17.7	13.5	9.12	4.63	4.83
95	54.8	54.2	53.6	54.0	53.9	52.9	49.1	44.2	38.5	32.3	26.2	20.6	17.0	14.1	11.6	8.90	6.35	3.95	3.68
100	40.0	39.2	38.2	36.5	34.7	32.9	32.4	31.6	29.7	24.1	17.9	12.0	9.26	7.54	6.55	5.58	5.02	4.89	4.03
105	13.8	13.4	13.0	12.6	12.2	11.9	11.9	12.0	12.2	12.7	13.1	12.8	10.5	7.89	5.37	4.13	3.52	3.54	2.88
110	14.4	14.9	15.4	16.0	16.2	15.9	13.7	11.5	10.2	13.1	16.3	18.4	14.9	10.2	5.50	3.60	2.90	3.39	2.44
115	9.02	8.53	7.90	6.56	5.71	5.88	9.80	14.2	18.0	18.4	17.3	15.0	11.2	7.11	3.63	2.43	2.52	3.90	2.87
120	12.0	12.8	13.9	15.2	16.5	17.7	18.6	19.1	19.0	17.8	15.8	13.2	9.31	5.44	2.25	1.19	1.43	2.96	2.28
125	17.8	17.9	18.1	18.6	19.1	19.4	19.3	18.9	18.0	16.1	13.7	11.0	7.50	4.22	1.60	0.68	0.86	2.16	1.78
130	18.5	18.5	18.5	19.0	19.3	19.3	18.4	17.0	15.3	13.3	11.1	8.67	5.68	2.93	0.76	0.06	0.33	1.56	1.36
135	19.8	19.6	19.2	18.8	18.3	17.4	16.1	14.5	12.6	10.6	8.45	6.34	4.30	2.51	1.12	0.43	0.27	0.65	0.61
140	17.2	16.4	15.4	14.7	14.0	13.0	11.8	10.4	8.97	7.49	6.06	4.74	3.73	2.87	2.13	1.45	0.85	0.34	0.54
145	12.4	12.1	11.7	11.2	10.5	9.67	8.50	7.24	5.98	4.91	3.95	3.10	2.40	1.81	1.32	0.90	0.57	0.32	0.48
150	7.99	7.72	7.31	6.74	6.10	5.44	5.03	4.57	3.95	2.64	1.33	0.24	0.18	0.41	0.72	0.68	0.54	0.31	0.44
155	4.46	4.40	4.28	4.08	3.80	3.45	2.95	2.42	1.90	1.56	1.27	1.02	0.75	0.52	0.35	0.27	0.26	0.32	0.46
160	2.56	2.52	2.42	2.15	1.82	1.44	1.01	0.61	0.30	0.29	0.37	0.47	0.44	0.39	0.35	0.34	0.34	0.36	0.51
165	0.28	0.28	0.31	0.49	0.67	0.81	0.76	0.65	0.52	0.45	0.40	0.37	0.37	0.38	0.39	0.39	0.39	0.39	0.54
170	0.40	0.40	0.40	0.39	0.38	0.38	0.38	0.39	0.40	0.41	0.41	0.42	0.42	0.43	0.43	0.43	0.42	0.42	0.54
175	0.38	0.39	0.39	0.40	0.41	0.41	0.42	0.43	0.43	0.44	0.44	0.45	0.45	0.46	0.46	0.46	0.45	0.45	0.53
180	0.42	0.42	0.43	0.44	0.44	0.45	0.46	0.47	0.47	0.48	0.48	0.48	0.49	0.49	0.49	0.49	0.49	0.49	0.49

Table--3

UNIT: °10cd

C (DEG) y (DEG)	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280
0	526	524	523	522	521	520	520	519	519	518	517	516	515	514	514	514	515	514	514
5	459	440	434	434	438	436	435	435	439	445	449	447	444	440	440	441	441	441	440
10	443	427	428	436	445	447	447	444	437	429	423	424	427	430	428	425	423	425	428
15	442	429	431	436	440	430	415	395	369	343	316	296	279	266	260	258	258	258	260
20	450	441	437	429	412	369	319	270	235	206	183	168	158	152	148	145	144	145	148
25	448	435	402	358	308	256	207	165	145	135	131	126	123	121	118	116	115	116	118
30	425	407	350	281	213	176	148	130	119	113	109	102	94.8	88.8	84.6	81.8	80.5	81.8	84.6
35	383	360	294	217	146	123	113	109	95.8	82.7	70.9	61.9	54.8	49.4	45.8	43.8	43.1	43.8	45.8
40	306	280	229	174	122	99.4	85.3	76.1	62.2	50.0	40.0	34.0	30.3	28.2	27.0	26.6	26.9	26.6	27.0
45	253	219	177	136	99.6	77.1	60.7	49.1	39.2	32.3	27.9	26.6	26.7	27.6	27.2	26.9	26.7	26.9	27.2
50	182	145	119	97.7	80.6	61.9	45.9	33.5	28.5	26.4	25.5	21.8	18.2	15.1	13.6	12.8	12.6	12.8	13.6
55	141	105	82.5	67.2	56.6	44.6	34.6	26.6	20.8	16.6	13.7	11.7	10.6	9.96	9.45	9.22	9.22	9.22	9.45
60	105	74.8	56.9	45.6	38.6	29.9	22.7	17.0	12.8	9.90	7.96	6.84	6.31	6.14	5.82	5.63	5.58	5.63	5.82
65	83.9	57.6	41.5	31.2	24.6	17.8	12.6	8.65	5.58	3.39	1.90	0.93	0.40	0.19	0.12	0.19	0.30	0.19	0.12
70	70.4	49.8	34.8	23.5	15.3	9.14	4.95	2.36	0.87	0.25	0.20	0.07	0.10	0.22	0.28	0.34	0.37	0.34	0.28
75	49.1	33.8	22.2	13.6	7.51	4.06	2.29	1.60	0.79	0.36	0.21	0.12	0.14	0.23	0.30	0.37	0.42	0.37	0.30
80	27.1	18.1	11.7	7.19	4.18	2.38	1.48	1.14	0.66	0.38	0.25	0.19	0.21	0.28	0.36	0.44	0.49	0.44	0.36
85	11.7	8.99	6.43	4.22	2.46	1.59	1.12	0.91	0.62	0.43	0.32	0.28	0.30	0.35	0.44	0.53	0.59	0.53	0.44
90	4.77	4.44	3.65	2.74	1.86	1.39	1.06	0.83	0.64	0.51	0.43	0.39	0.39	0.42	0.51	0.59	0.64	0.59	0.51
95	3.37	3.01	2.55	2.08	1.63	1.28	0.98	0.75	0.61	0.52	0.48	0.45	0.44	0.47	0.55	0.63	0.68	0.63	0.55
100	3.28	2.64	2.13	1.72	1.40	1.17	1.00	0.88	0.77	0.68	0.62	0.57	0.55	0.56	0.64	0.72	0.77	0.72	0.64
105	2.28	1.76	1.26	0.86	0.58	0.54	0.60	0.71	0.76	0.81	0.84	0.83	0.82	0.81	0.87	0.92	0.96	0.92	0.87
110	1.71	1.21	1.05	1.03	1.06	0.90	0.73	0.58	0.55	0.56	0.61	0.68	0.75	0.83	0.89	0.93	0.95	0.93	0.89
115	2.06	1.45	1.13	0.96	0.88	0.75	0.65	0.59	0.58	0.59	0.61	0.61	0.61	0.61	0.62	0.62	0.62	0.62	0.62
120	1.73	1.29	1.01	0.83	0.71	0.62	0.56	0.54	0.55	0.58	0.61	0.61	0.62	0.62	0.63	0.64	0.64	0.64	0.63
125	1.45	1.17	0.94	0.76	0.63	0.56	0.52	0.53	0.55	0.58	0.62	0.64	0.65	0.65	0.67	0.68	0.68	0.68	0.67
130	1.18	1.01	0.84	0.69	0.57	0.53	0.53	0.54	0.56	0.59	0.63	0.65	0.68	0.70	0.72	0.74	0.74	0.74	0.72
135	0.59	0.57	0.56	0.56	0.56	0.55	0.55	0.56	0.59	0.63	0.66	0.68	0.70	0.71	0.73	0.74	0.75	0.74	0.73
140	0.68	0.74	0.71	0.63	0.55	0.55	0.56	0.58	0.60	0.63	0.65	0.68	0.71	0.74	0.76	0.78	0.79	0.78	0.76
145	0.59	0.65	0.65	0.61	0.57	0.58	0.59	0.61	0.63	0.66	0.68	0.71	0.73	0.76	0.78	0.79	0.79	0.79	0.78
150	0.53	0.59	0.61	0.60	0.59	0.60	0.62	0.64	0.66	0.67	0.68	0.71	0.74	0.76	0.76	0.75	0.74	0.75	0.76
155	0.57	0.64	0.66	0.66	0.65	0.65	0.64	0.64	0.65	0.66	0.68	0.70	0.72	0.73	0.72	0.70	0.68	0.70	0.72
160	0.63	0.70	0.72	0.72	0.70	0.69	0.67	0.66	0.67	0.68	0.68	0.68	0.67	0.67	0.66	0.65	0.65	0.65	0.66
165	0.65	0.72	0.73	0.72	0.69	0.68	0.67	0.66	0.65	0.64	0.63	0.60	0.58	0.56	0.56	0.57	0.57	0.57	0.56
170	0.62	0.67	0.68	0.66	0.63	0.60	0.57	0.54	0.53	0.52	0.51	0.50	0.49	0.48	0.47	0.47	0.47	0.47	0.47
175	0.59	0.62	0.63	0.61	0.59	0.55	0.51	0.48	0.47	0.47	0.47	0.45	0.44	0.43	0.43	0.43	0.44	0.43	0.43
180	0.49	0.49	0.49	0.49	0.49	0.48	0.47	0.46	0.45	0.44	0.43	0.42	0.42	0.42	0.42	0.42	0.43	0.42	0.42

C (DEG) y (DEG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355				
0	514	515	516	517	518	519	519	520	520	521	522	523	524	526	528				
5	440	444	447	449	445	439	435	435	436	438	434	434	440	459	488				
10	430	427	424	423	429	437	444	447	447	445	436	428	427	443	470				
15	266	279	296	316	343	369	395	415	430	440	436	431	429	442	463				
20	152	158	168	183	206	235	270	319	369	412	429	437	441	450	459				
25	121	123	126	131	135	145	165	207	256	308	358	402	435	448	447				
30	88.8	94.8	102	109	113	119	130	148	176	213	281	350	407	425	419				
35	49.4	54.8	61.9	70.9	82.7	95.8	109	113	123	146	217	294	360	383	381				
40	28.2	30.3	34.0	40.0	50.0	62.2	76.1	85.3	99.4	122	174	229	280	306	319				
45	27.6	26.7	26.6	27.9	32.3	39.2	49.1	60.7	77.1	99.6	136	177	219	253	285				
50	15.1	18.2	21.8	25.5	26.4	28.5	33.5	45.9	61.9	80.6	97.7	119	145	182	227				
55	9.96	10.6	11.7	13.7	16.6	20.8	26.6	34.6	44.6	56.6	67.2	82.5	105	141	186				
60	6.14	6.31	6.84	7.96	9.90	12.8	17.0	22.7	29.9	38.6	45.6	56.9	74.8	105	145				
65	0.19	0.40	0.93	1.90	3.39	5.58	8.65	12.6	17.8	24.6	31.2	41.5	57.6	83.9	118				
70	0.22	0.10	0.07	0.20	0.25	0.87	2.36	4.95	9.14	15.3	23.5	34.8	49.8	70.4	95.4				
75	0.23	0.14	0.12	0.21	0.36	0.79	1.60	2.29	4.06	7.51	13.6	22.2	33.8	49.1	67.7				
80	0.28	0.21	0.19	0.25	0.38	0.66	1.14	1.48	2.38	4.18	7.19	11.7	18.1	27.1	38.3				
85	0.35	0.30	0.28	0.32	0.43	0.62	0.91	1.12	1.59	2.46	4.22	6.43	8.99	11.7	14.6				
90	0.42	0.39	0.39	0.43	0.51	0.64	0.83	1.06	1.39	1.86	2.74	3.65	4.44	4.77	4.83				
95	0.47	0.44	0.45	0.48	0.52	0.61	0.75	0.98	1.28	1.63	2.08	2.55	3.01	3.37	3.68				
100	0.56	0.55	0.57	0.62	0.68	0.77	0.88	1.00	1.17	1.40	1.72	2.13	2.64	3.29	4.03				
105	0.81	0.82	0.83	0.84	0.81	0.76	0.71	0.60	0.54	0.58	0.86	1.26	1.76	2.28	2.88				
110	0.83	0.75	0.68	0.61	0.56	0.55	0.58	0.73	0.90	1.06	1.03	1.05	1.21	1.71	2.44				
115	0.61	0.61	0.61	0.61	0.59	0.58	0.59	0.65	0.75	0.88	0.96	1.13	1.45	2.06	2.87				
120	0.62	0.62	0.61	0.61	0.58	0.55	0.54	0.56	0.62	0.71	0.83	1.01	1.29	1.73	2.28				
125	0.65	0.65	0.64	0.62	0.58	0.55	0.53	0.52	0.56	0.63	0.76	0.94	1.17	1.45	1.78				
130	0.70	0.68	0.65	0.63	0.59	0.56	0.54	0.53	0.53	0.57	0.69	0.84	1.01	1.18	1.36				
135	0.71	0.70	0.68	0.66	0.63	0.59	0.56	0.55	0.55	0.56	0.56	0.56	0.57	0.59	0.61				
140	0.74	0.71	0.68	0.65	0.63	0.60	0.58	0.56	0.55	0.55	0.63	0.71	0.74	0.68	0.54				
145	0.76	0.73	0.71	0.68	0.66	0.63	0.61	0.59	0.58	0.57	0.61	0.65	0.65	0.59	0.48				
150	0.76	0.74	0.71	0.68	0.67	0.66	0.64	0.62	0.60	0.59	0.60	0.61	0.59	0.53	0.44				
155	0.73	0.72	0.70	0.68	0.66	0.65	0.64	0.64	0.65	0.65	0.66	0.66	0.64	0.57	0.46				
160	0.67	0.67	0.68	0.68	0.68	0.67	0.66	0.67	0.69	0.70	0.72	0.72	0.70	0.63	0.51				
165	0.56	0.58	0.60	0.63	0.64	0.65	0.66	0.67	0.68	0.69	0.72	0.73	0.72	0.65	0.54				
170	0.48	0.49	0.50	0.51	0.52	0.53	0.54	0.57	0.60	0.63	0.66	0.68	0.67	0.62	0.54				
175	0.43	0.44	0.45	0.47	0.47	0.47	0.48	0.51	0.55	0.59	0.61	0.63	0.62	0.59	0.53				
180	0.42	0.42	0.42	0.43	0.44	0.45	0.46	0.47	0.48	0.49	0.49	0.49	0.49	0.49	0.49				

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	WPX3 @ 130W / 4000K 480	Sample ID	231020002-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(%)
480.0	60	0.291	125.6	0.900	13.28

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*****