

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		17215
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	IES LM-79-2008	N/A		131.7
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	300		16762
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard	Premium	128.2
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		130.7
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	480V	12.46
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	480V	0.906
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3045±175	3129
		4 steps	3045±100	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥70		82.4
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	N/A		6
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		84
Minimum Rg (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥89		97
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		0.301
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		130.7
(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 / 3000K 480	231020002-S1
2	Goniophotometer Test	2023-10-23	WPX3 @ 130W / 3000K 480	231020002-S1
3	THD and PF Test	2023-10-23	WPX3 @ 130W / 3000K 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 / 3000K 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 / 3000K 480	Sample ID	231020002-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

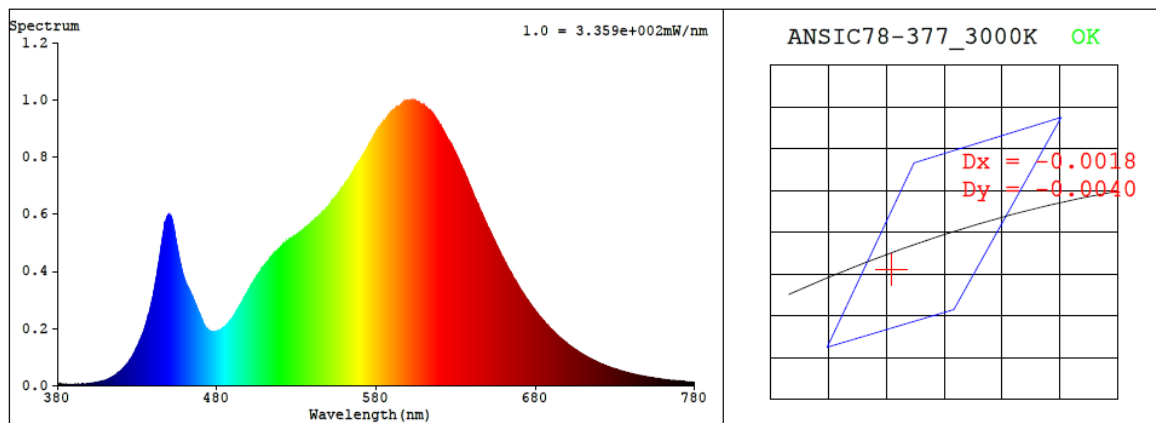
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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	0.301	130.7	0.906

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
3129	82.4	6	-0.0014	84	97	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4262$ $y = 0.3968$ / $u' = 0.2468$ $v' = 0.5169$ ($duv = -1.37e-03$)

CCT= 3129K Prop WL: Ld=582.8nm Purity=47.0%

Peak WL: Lp=603nm FWHM: =132.7nm Ratio: R=22.2% G=75.2% B=2.6%

Render Index: Ra = 82.4 AvgR = 76.7 TM30: Rf=83 Rg=97

EEI: 0.10579 A++ Highest

R1 =81 R2 =90 R3 =96 R4 =81 R5 =81 R6 =88 R7 =83

R8 =59 R9 =6 R10=78 R11=80 R12=72 R13=83 R14=98 R15=74

4.1 Integrating Sphere Test

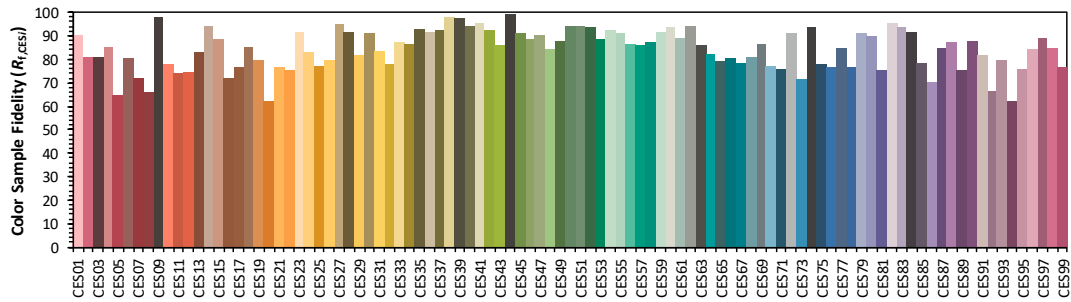
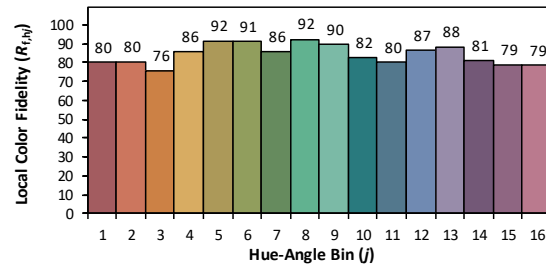
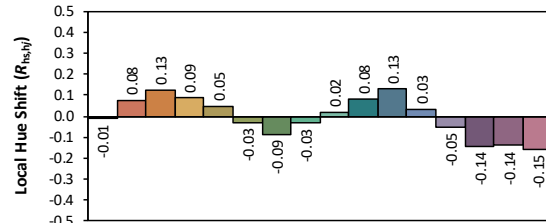
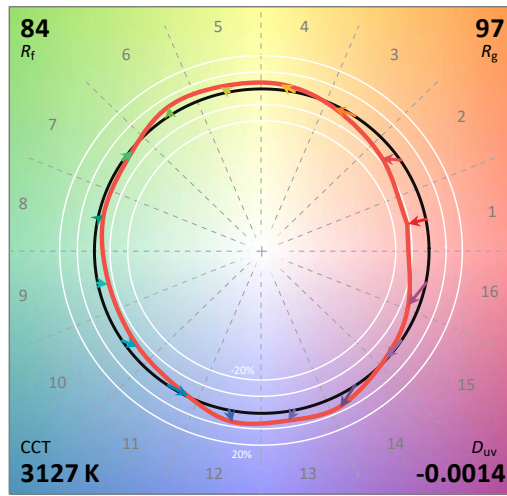
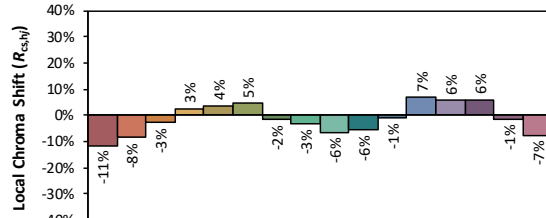
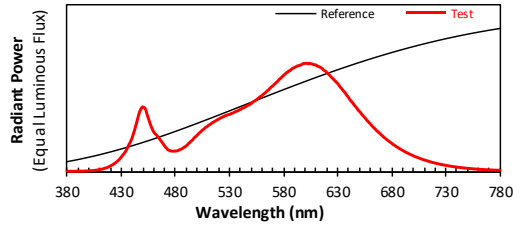
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2023/10/30

Model: WPX3 @ 130W / 3000K 480



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

x 0.4263
 y 0.3967
 u' 0.2468
 v' 0.5168

CIE 13.3-1995
(CRI)

R_a 82
 R_g 6

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	5.40E-06	447	5.53E-04	514	4.50E-04	581	8.94E-04	648	5.83E-04	715	9.31E-05
381	3.60E-06	448	5.74E-04	515	4.55E-04	582	9.03E-04	649	5.67E-04	716	9.00E-05
382	3.50E-06	449	5.91E-04	516	4.61E-04	583	9.12E-04	650	5.57E-04	717	8.74E-05
383	4.50E-06	450	5.96E-04	517	4.66E-04	584	9.18E-04	651	5.47E-04	718	8.44E-05
384	2.90E-06	451	5.89E-04	518	4.72E-04	585	9.27E-04	652	5.34E-04	719	8.23E-05
385	3.10E-06	452	5.81E-04	519	4.79E-04	586	9.29E-04	653	5.22E-04	720	7.96E-05
386	3.30E-06	453	5.55E-04	520	4.84E-04	587	9.39E-04	654	5.10E-04	721	7.71E-05
387	3.40E-06	454	5.20E-04	521	4.89E-04	588	9.47E-04	655	4.99E-04	722	7.49E-05
388	4.50E-06	455	4.90E-04	522	4.97E-04	589	9.54E-04	656	4.88E-04	723	7.28E-05
389	3.80E-06	456	4.60E-04	523	4.99E-04	590	9.57E-04	657	4.75E-04	724	7.01E-05
390	2.80E-06	457	4.31E-04	524	5.05E-04	591	9.64E-04	658	4.64E-04	725	6.77E-05
391	4.60E-06	458	4.08E-04	525	5.07E-04	592	9.68E-04	659	4.52E-04	726	6.60E-05
392	4.90E-06	459	3.84E-04	526	5.15E-04	593	9.73E-04	660	4.44E-04	727	6.39E-05
393	5.70E-06	460	3.64E-04	527	5.17E-04	594	9.76E-04	661	4.31E-04	728	6.18E-05
394	4.00E-06	461	3.52E-04	528	5.22E-04	595	9.78E-04	662	4.20E-04	729	6.03E-05
395	4.40E-06	462	3.41E-04	529	5.24E-04	596	9.83E-04	663	4.10E-04	730	5.84E-05
396	6.50E-06	463	3.32E-04	530	5.27E-04	597	9.86E-04	664	4.00E-04	731	5.63E-05
397	5.60E-06	464	3.18E-04	531	5.30E-04	598	9.93E-04	665	3.91E-04	732	5.53E-05
398	6.10E-06	465	3.06E-04	532	5.37E-04	599	9.95E-04	666	3.80E-04	733	5.30E-05
399	6.70E-06	466	2.92E-04	533	5.39E-04	600	9.97E-04	667	3.71E-04	734	5.14E-05
400	6.70E-06	467	2.79E-04	534	5.43E-04	601	9.98E-04	668	3.62E-04	735	4.93E-05
401	8.10E-06	468	2.65E-04	535	5.49E-04	602	9.96E-04	669	3.53E-04	736	4.85E-05
402	8.60E-06	469	2.51E-04	536	5.54E-04	603	9.92E-04	670	3.43E-04	737	4.63E-05
403	9.50E-06	470	2.37E-04	537	5.58E-04	604	9.97E-04	671	3.33E-04	738	4.52E-05
404	1.00E-05	471	2.24E-04	538	5.62E-04	605	9.95E-04	672	3.25E-04	739	4.40E-05
405	1.16E-05	472	2.14E-04	539	5.68E-04	606	9.91E-04	673	3.16E-04	740	4.25E-05
406	1.24E-05	473	2.02E-04	540	5.72E-04	607	9.90E-04	674	3.08E-04	741	4.12E-05
407	1.44E-05	474	1.98E-04	541	5.77E-04	608	9.84E-04	675	3.01E-04	742	3.97E-05
408	1.53E-05	475	1.93E-04	542	5.85E-04	609	9.83E-04	676	2.91E-04	743	3.86E-05
409	1.73E-05	476	1.90E-04	543	5.88E-04	610	9.82E-04	677	2.84E-04	744	3.73E-05
410	1.86E-05	477	1.89E-04	544	5.92E-04	611	9.72E-04	678	2.77E-04	745	3.63E-05
411	2.16E-05	478	1.88E-04	545	5.97E-04	612	9.70E-04	679	2.69E-04	746	3.50E-05
412	2.29E-05	479	1.90E-04	546	6.05E-04	613	9.66E-04	680	2.62E-04	747	3.41E-05
413	2.61E-05	480	1.90E-04	547	6.10E-04	614	9.61E-04	681	2.54E-04	748	3.27E-05
414	2.88E-05	481	1.90E-04	548	6.14E-04	615	9.55E-04	682	2.46E-04	749	3.20E-05
415	3.24E-05	482	1.94E-04	549	6.20E-04	616	9.48E-04	683	2.40E-04	750	3.12E-05
416	3.53E-05	483	1.97E-04	550	6.26E-04	617	9.36E-04	684	2.33E-04	751	2.99E-05
417	3.90E-05	484	2.02E-04	551	6.34E-04	618	9.29E-04	685	2.28E-04	752	2.92E-05
418	4.34E-05	485	2.05E-04	552	6.44E-04	619	9.24E-04	686	2.21E-04	753	2.81E-05
419	4.72E-05	486	2.11E-04	553	6.48E-04	620	9.12E-04	687	2.14E-04	754	2.73E-05
420	5.29E-05	487	2.16E-04	554	6.56E-04	621	9.05E-04	688	2.09E-04	755	2.63E-05
421	5.88E-05	488	2.25E-04	555	6.61E-04	622	8.94E-04	689	2.03E-04	756	2.56E-05
422	6.41E-05	489	2.29E-04	556	6.70E-04	623	8.84E-04	690	1.97E-04	757	2.49E-05
423	7.08E-05	490	2.38E-04	557	6.78E-04	624	8.73E-04	691	1.91E-04	758	2.40E-05
424	7.75E-05	491	2.45E-04	558	6.87E-04	625	8.62E-04	692	1.86E-04	759	2.34E-05
425	8.42E-05	492	2.56E-04	559	6.95E-04	626	8.54E-04	693	1.80E-04	760	2.25E-05
426	9.31E-05	493	2.66E-04	560	6.99E-04	627	8.42E-04	694	1.76E-04	761	2.17E-05
427	1.02E-04	494	2.76E-04	561	7.09E-04	628	8.33E-04	695	1.70E-04	762	2.12E-05
428	1.12E-04	495	2.84E-04	562	7.17E-04	629	8.22E-04	696	1.65E-04	763	2.04E-05
429	1.23E-04	496	2.94E-04	563	7.23E-04	630	8.12E-04	697	1.61E-04	764	2.05E-05
430	1.35E-04	497	3.06E-04	564	7.34E-04	631	7.99E-04	698	1.56E-04	765	1.90E-05
431	1.48E-04	498	3.17E-04	565	7.43E-04	632	7.86E-04	699	1.52E-04	766	1.86E-05
432	1.61E-04	499	3.23E-04	566	7.52E-04	633	7.72E-04	700	1.47E-04	767	1.82E-05
433	1.74E-04	500	3.35E-04	567	7.61E-04	634	7.63E-04	701	1.42E-04	768	1.75E-05
434	1.88E-04	501	3.46E-04	568	7.72E-04	635	7.47E-04	702	1.38E-04	769	1.71E-05
435	2.08E-04	502	3.55E-04	569	7.82E-04	636	7.38E-04	703	1.34E-04	770	1.67E-05
436	2.25E-04	503	3.63E-04	570	7.88E-04	637	7.26E-04	704	1.30E-04	771	1.59E-05
437	2.49E-04	504	3.72E-04	571	7.99E-04	638	7.11E-04	705	1.27E-04	772	1.52E-05
438	2.66E-04	505	3.83E-04	572	8.07E-04	639	6.98E-04	706	1.23E-04	773	1.56E-05
439	2.89E-04	506	3.89E-04	573	8.17E-04	640	6.85E-04	707	1.19E-04	774	1.46E-05
440	3.12E-04	507	3.97E-04	574	8.26E-04	641	6.70E-04	708	1.16E-04	775	1.42E-05
441	3.45E-04	508	4.08E-04	575	8.36E-04	642	6.56E-04	709	1.11E-04	776	1.36E-05
442	3.74E-04	509	4.14E-04	576	8.48E-04	643	6.45E-04	710	1.09E-04	777	1.34E-05
443	4.12E-04	510	4.21E-04	577	8.57E-04	644	6.34E-04	711	1.06E-04	778	1.29E-05
444	4.44E-04	511	4.28E-04	578	8.66E-04	645	6.19E-04	712	1.02E-04	779	1.30E-05
445	4.85E-04	512	4.35E-04	579	8.76E-04	646	6.07E-04	713	9.91E-05	780	1.30E-05
446	5.21E-04	513	4.41E-04	580	8.86E-04	647	5.95E-04	714	9.63E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	WPX3 @ 130W / 3000K 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	0.301	130.7	0.906
NON-WORST CASE	N/A	N/A	N/A	N/A	N/A

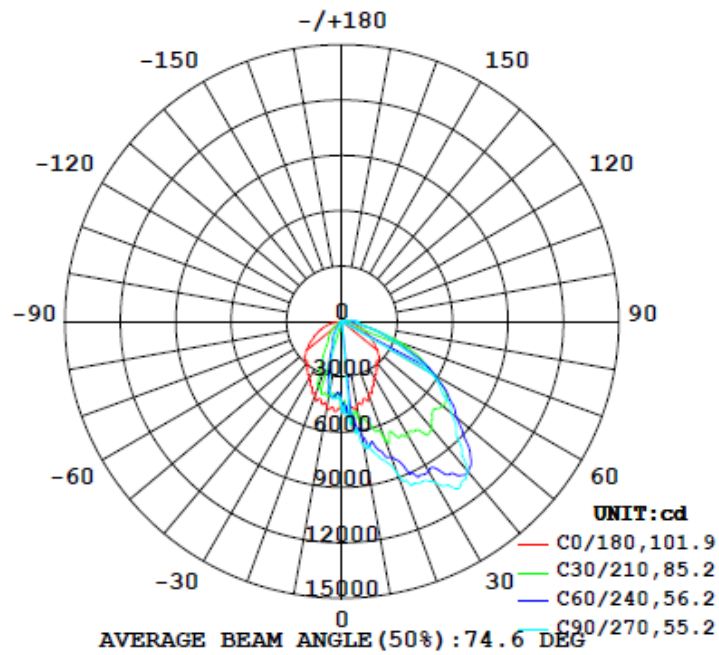
Test Result

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	17215	107.0	145.9	54.6	101.6	131.7	2.0%	B3-U3-G3
0°-90° zones	16762	107.0	145.9	54.6	101.6	128.2	2.1%	B3-U3-G3

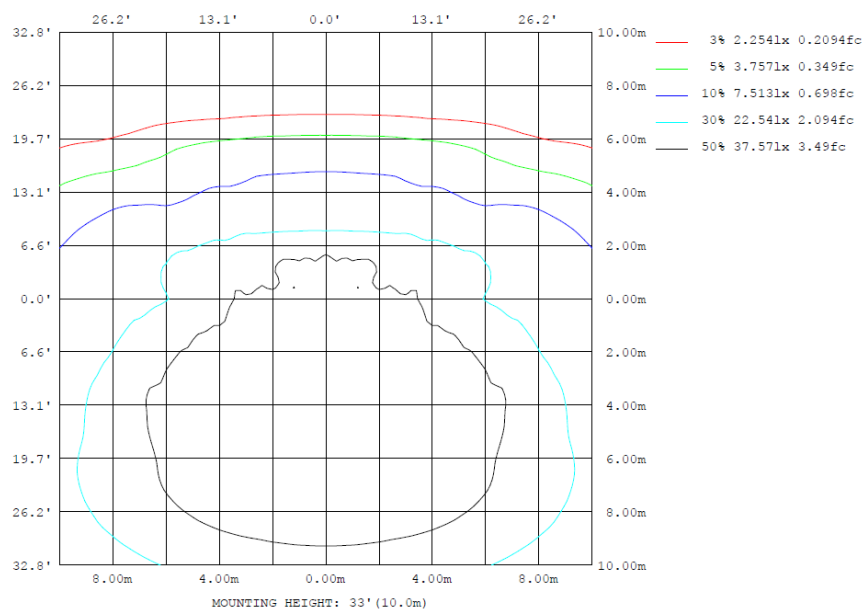
4.2 Goniophotometer Test

Lighting Distribution Curve

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

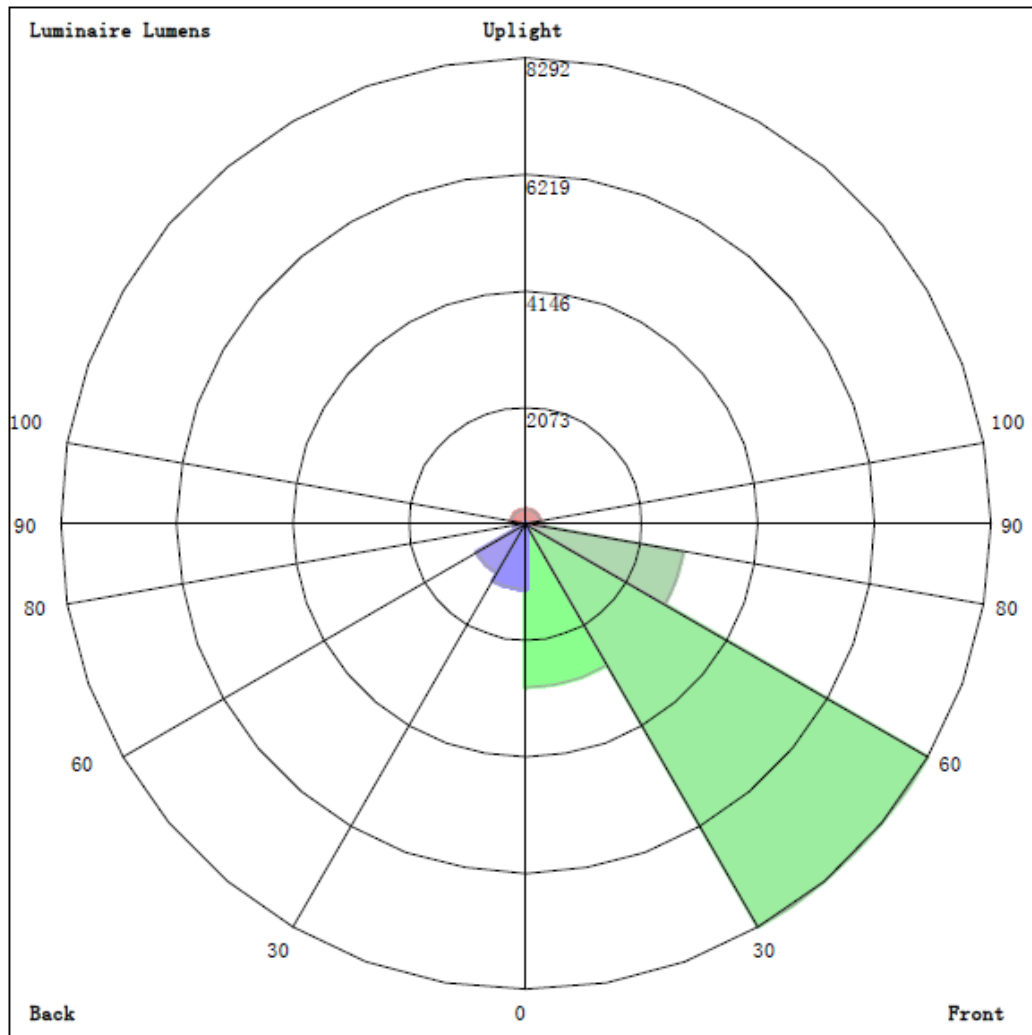
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	ℓlum, lamp
10	470.2	586.8	670.5	586.8	470.2	396.9	385.5	396.9	0- 10	444.2	444.2	2.58,2.58
20	421.5	741.3	873.7	741.3	421.5	246.1	130.9	246.1	10- 20	1372	1816	10.5,10.5
30	361.2	896.0	1008	896.0	361.2	119.9	72.30	119.9	20- 30	2248	4064	23.6,23.6
40	290.2	896.5	1055	896.5	290.2	69.24	24.35	69.24	30- 40	3032	7095	41.2,41.2
50	255.0	867.6	775.1	867.6	255.0	30.59	11.27	30.59	40- 50	3314	10409	60.5,60.5
60	177.4	613.8	547.2	613.8	177.4	15.30	4.553	15.30	50- 60	2953	13362	77.6,77.6
70	115.5	309.9	286.7	309.9	115.5	2.449	0.3292	2.449	60- 70	2070	15432	89.6,89.6
80	48.41	95.09	95.07	95.09	48.41	1.016	0.4361	1.016	70- 80	980.7	16413	95.3,95.3
90	4.273	36.00	85.43	36.00	4.273	0.7519	0.5795	0.7519	80- 90	349.0	16762	97.4,97.4
100	4.473	27.74	36.56	27.74	4.473	0.7960	0.6909	0.7960	90-100	197.8	16960	98.5,98.5
110	2.951	11.10	12.29	11.10	2.951	0.5210	0.8559	0.5210	100-110	76.85	17036	99,99
120	2.742	17.40	10.50	17.40	2.742	0.4866	0.5795	0.4866	110-120	53.34	17090	99.3,99.3
130	1.426	14.10	16.83	14.10	1.426	0.4898	0.6779	0.4898	120-130	55.26	17145	99.6,99.6
140	0.3104	8.179	16.23	8.179	0.3104	0.5288	0.7180	0.5288	130-140	41.28	17186	99.8,99.8
150	0.2771	3.664	7.470	3.664	0.2771	0.5847	0.6751	0.5847	140-150	20.42	17207	100,100
160	0.3257	0.2638	2.343	0.2638	0.3257	0.6038	0.5884	0.6038	150-160	6.253	17213	100,100
170	0.3831	0.3604	0.3820	0.3604	0.3831	0.4899	0.4264	0.4899	160-170	1.579	17215	100,100
180	0.4481	0.4304	0.3754	0.4304	0.4481	0.4228	0.3900	0.4228	170-180	0.4039	17215	100,100
DEG	LUMINOUS INTENSITY:×10cd									UNIT: lm		

Zonal (lm)	Total (lm)	Percent
0-10	444.17	2.58%
10-20	1371.73	10.55%
20-30	2247.82	23.61%
30-40	3031.55	41.22%
40-50	3314.16	60.47%
50-60	2952.73	77.62%
60-70	2069.84	89.65%
70-80	980.74	95.34%
80-90	349.01	97.37%
90-100	197.76	98.52%
100-110	76.85	98.97%
110-120	53.34	99.28%
120-130	55.26	99.60%
130-140	41.28	99.84%
140-150	20.42	99.95%
150-160	6.25	99.99%
160-170	1.58	100.00%
170-180	0.40	100.00%

4.2 Goniophotometer Test

LCS/BUG

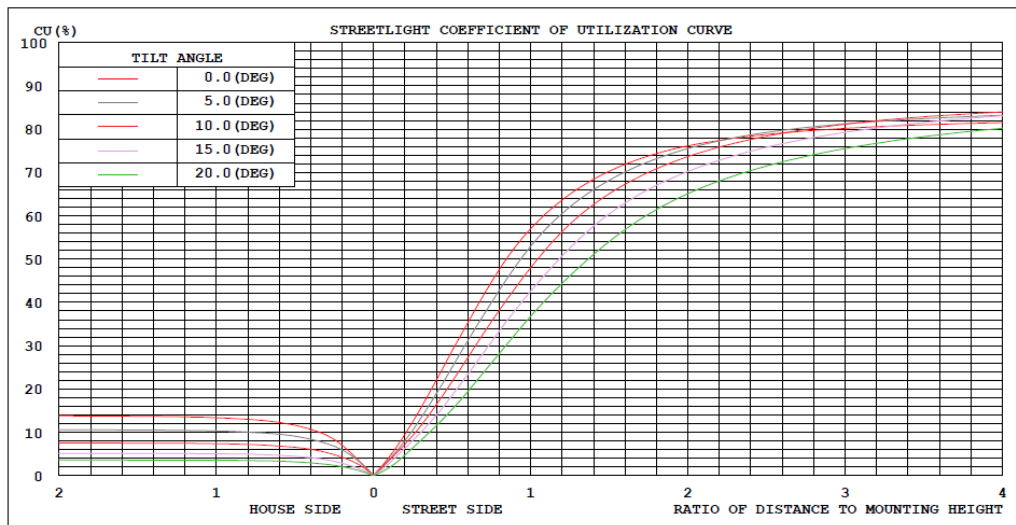


LUMINAIRE CLASSIFICATION SYSTEM (LCS)

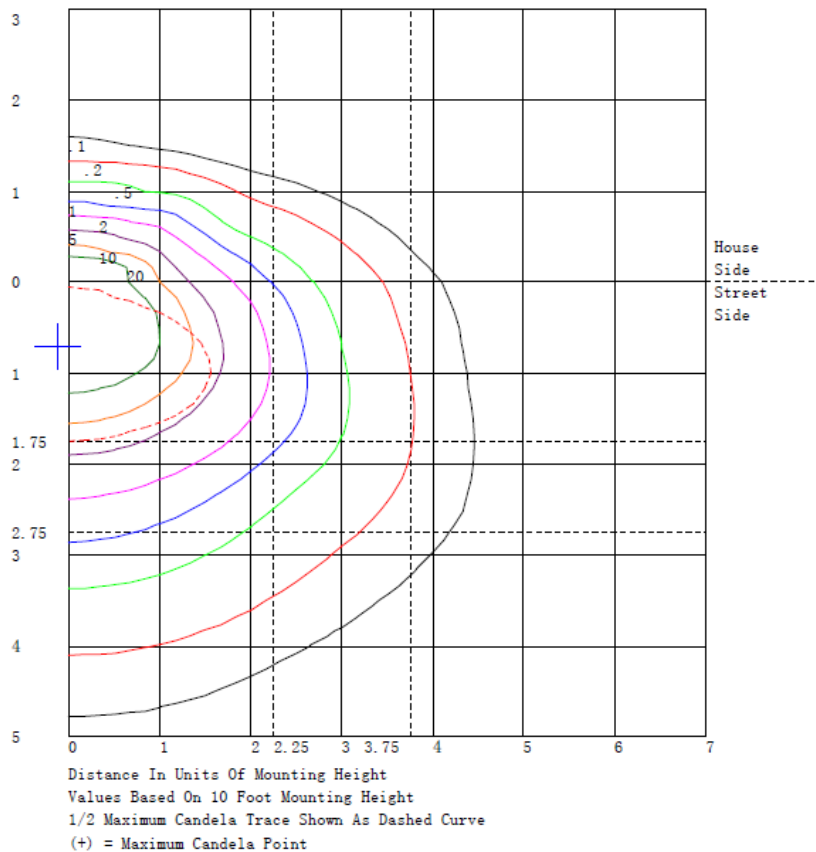
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	2900.8	N.A.	16.9
FM - Front-Medium (30-60)	8292.3	N.A.	48.2
FH - Front-High (60-80)	2856.1	N.A.	16.6
FVH - Front-Very High (80-90)	329.2	N.A.	1.9
BL - Back-Low (0-30)	1162.9	N.A.	6.8
BM - Back-Medium (30-60)	1006.1	N.A.	5.8
BH - Back-High (60-80)	194.5	N.A.	1.1
BVH - Back-Very High (80-90)	19.8	N.A.	0.1
UL - Uplight-Low (90-100)	197.8	N.A.	1.1
UH - Uplight-High (100-180)	255.4	N.A.	1.5
Total	17214.9	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: $\times 10\text{cd}$

γ (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	501	500	500	500	500	500	499	499	498	498	498	498	498	498	498	498	498	497	496
5	487	482	478	475	472	471	475	495	516	531	519	502	488	498	515	535	552	567	576
10	470	461	461	470	495	524	553	566	576	587	610	633	650	648	641	635	647	660	670
15	442	453	468	487	509	537	568	613	656	693	702	704	702	711	721	732	741	748	752
20	421	451	485	525	577	630	677	705	726	741	755	768	781	801	822	841	857	869	874
25	389	417	453	497	557	619	679	724	764	801	838	872	902	926	944	958	967	971	970
30	361	407	459	516	583	652	721	787	847	896	918	931	939	954	969	982	994	1003	1008
35	323	395	464	531	594	656	716	778	838	893	938	978	1013	1046	1073	1093	1103	1106	1106
40	290	357	428	505	594	682	762	813	856	896	958	1015	1062	1075	1076	1069	1064	1058	1055
45	284	368	446	518	577	635	696	781	865	935	966	979	977	964	945	922	902	885	876
50	255	329	404	480	560	638	711	778	832	868	860	838	812	803	798	793	785	778	775
55	221	276	341	414	512	607	688	717	728	725	721	713	703	692	681	672	664	660	659
60	177	234	295	359	439	514	577	604	615	614	607	595	582	575	570	564	556	550	547
65	147	199	252	306	367	423	468	481	480	471	462	450	436	424	412	403	397	394	393
70	115	146	179	215	262	305	337	337	326	310	299	290	282	281	283	284	285	287	287
75	82.7	99.0	117	137	163	188	206	202	192	181	180	181	183	182	180	179	178	179	180
80	48.4	55.0	63.4	73.7	89.8	105	116	112	104	95.1	92.9	92.4	92.9	93.9	95.1	96.2	95.9	95.4	95.1
85	16.8	22.0	28.0	34.6	43.4	51.9	58.9	60.5	60.8	60.9	63.7	67.2	71.2	75.7	80.3	84.6	88.5	91.4	92.8
90	4.27	8.35	12.3	16.2	20.1	23.7	27.2	29.3	31.9	36.0	45.0	55.0	65.0	72.2	78.0	82.3	84.5	85.4	85.4
95	3.58	5.81	8.16	10.6	12.9	15.5	18.8	24.0	29.6	35.3	40.5	45.0	48.7	50.3	51.0	51.3	52.0	52.5	52.8
100	4.47	4.82	5.33	5.98	6.06	6.84	8.85	15.0	21.7	27.7	29.5	30.1	30.2	31.8	33.4	34.9	35.8	36.3	36.6
105	3.40	3.37	3.90	4.97	7.21	9.55	11.5	11.7	11.4	10.8	10.8	10.9	11.0	11.3	11.6	12.0	12.3	12.6	12.7
110	2.95	2.53	3.22	5.01	9.29	13.6	17.0	15.7	13.4	11.1	12.0	13.4	14.8	14.7	14.3	13.7	13.0	12.5	12.3
115	3.62	2.35	2.27	3.38	6.60	10.3	13.9	15.9	16.8	16.4	12.9	8.80	5.23	5.22	6.18	7.56	8.18	8.63	8.85
120	2.74	1.32	1.10	2.08	5.03	8.60	12.2	14.6	16.3	17.4	17.5	17.0	16.1	14.8	13.4	12.1	11.2	10.6	10.5
125	1.99	0.80	0.63	1.48	3.91	6.93	10.1	12.7	14.8	16.5	17.4	17.7	17.3	16.8	16.3	16.2	16.2	16.3	16.3
130	1.43	0.31	0.08	0.73	2.72	5.27	8.01	10.2	12.3	14.1	15.6	16.8	17.6	17.6	17.2	16.8	16.8	16.8	16.8
135	0.59	0.18	0.28	0.90	2.23	3.92	5.85	7.77	9.71	11.6	13.3	14.9	16.2	16.9	17.4	17.6	17.9	18.1	18.1
140	0.31	0.77	1.32	1.96	2.64	3.44	4.37	5.55	6.84	8.18	9.53	10.8	12.0	12.9	13.7	14.4	15.2	15.9	16.2
145	0.29	0.52	0.84	1.23	1.68	2.22	2.86	3.64	4.52	5.50	6.70	7.90	9.00	9.75	10.3	10.8	11.2	11.4	11.5
150	0.28	0.50	0.63	0.67	0.37	0.16	0.21	1.23	2.45	3.66	4.23	4.65	5.03	5.66	6.28	6.83	7.20	7.42	7.47
155	0.29	0.23	0.23	0.30	0.46	0.68	0.94	1.23	1.56	1.92	2.36	2.80	3.21	3.52	3.77	3.95	4.06	4.11	4.10
160	0.33	0.31	0.30	0.32	0.36	0.41	0.43	0.36	0.29	0.26	0.34	0.50	0.76	1.26	1.78	2.23	2.36	2.39	2.34
165	0.35	0.36	0.36	0.35	0.34	0.33	0.34	0.37	0.42	0.48	0.61	0.71	0.76	0.62	0.45	0.28	0.25	0.25	0.28
170	0.38	0.39	0.39	0.39	0.39	0.39	0.38	0.38	0.37	0.36	0.35	0.35	0.34	0.35	0.36	0.37	0.37	0.38	0.38
175	0.40	0.41	0.41	0.42	0.41	0.41	0.41	0.40	0.40	0.39	0.39	0.38	0.38	0.37	0.36	0.36	0.35	0.34	0.34
180	0.45	0.45	0.45	0.45	0.45	0.44	0.44	0.44	0.43	0.43	0.42	0.42	0.41	0.41	0.40	0.39	0.39	0.38	0.38

γ (DEG)	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185
0	497	498	498	498	498	498	498	498	498	498	499	499	500	500	500	500	500	501	499
5	567	552	535	515	498	488	502	519	531	516	495	475	471	472	475	478	482	487	453
10	660	647	635	641	648	650	633	610	587	576	566	553	524	495	470	461	461	470	437
15	748	741	732	721	711	702	704	702	693	656	613	568	537	509	487	468	453	442	420
20	869	857	841	822	801	781	768	755	741	726	705	677	630	577	525	485	451	421	421
25	971	967	958	944	926	902	872	838	801	764	724	679	619	557	497	453	417	389	392
30	1003	994	982	969	954	939	931	918	896	847	787	721	652	583	516	459	407	361	392
35	1106	1103	1093	1073	1046	1013	978	938	893	838	778	716	656	594	531	464	395	323	343
40	1058	1064	1069	1076	1075	1062	1015	958	896	856	813	762	682	594	505	428	357	290	290
45	885	902	922	945	964	977	979	966	935	865	781	696	635	577	518	446	368	284	256
50	778	785	793	798	803	812	838	860	868	832	778	711	638	560	480	404	329	255	207
55	660	664	672	681	692	703	713	721	725	728	717	688	607	512	414	341	276	221	170
60	550	556	564	570	575	582	595	607	614	615	604	577	514	439	359	295	234	177	132
65	394	397	403	412	424	436	450	462	471	480	481	468	423	367	306	252	199	147	108
70	285	284	283	281	281	282	290	299	310	326	337	337	305	262	215	179	146	115	87.8
75	179	178	179	180	182	183	181	180	181	192	202	206	188	163	137	117	99.0	82.7	62.2
80	95.4	95.9	96.2	95.1	93.9	92.9	92.4	92.9	95.1	104	112	116	105	89.8	73.7	63.4	55.0	48.4	35.5
85	31.4	38.5	44.6	50.3	55.7	60.3	63.7	60.9	60.8	60.5	58.9	51.9	43.4	34.6	28.0	22.0	16.8	13.5	10.5
90	8.4	16.5	24.6	32.7	40.8	48.9	57.0	65.1	73.2	81.3	89.4	97.5	105.6	113.7	121.8	129.9	138.0	146.1	154.2
95	52.5	52.0	51.3	51.0	50.3	48.7	45.0	40.5	35.3	29.6	24.0	18.8	15.5	12.9	10.6	8.16	5.81	3.58	3.33
100	36.3	35.8	34.9	33.4	31.8	30.2	30.1	29.5	27.7	21.7	15.0	8.85	6.84	6.06	5.98	5.33	4.82	4.47	3.68
105	12.6	12.3	12.0	11.6	11.3	11.0	10.9	10.8	10.8	11.4	11.7	11.5	9.55	7.21	4.97	3.90	3.37	3.40	2.81
110	12.5	13.0	13.7	14.3	14.7	14.8	13.4	12.0	11.1	13.4	15.7	17.0	13.6	9.29	5.01	3.22	2.53	2.95	2.18
115	8.63	8.18	7.56	6.18	5.22	5.23	8.80	12.9	16.4	16.8	15.9	13.9	10.3	6.60	3.38	2.27	2.35	3.62	2.65
120	10.6	11.2	12.1	13.4	14.8	16.1	17.0	17.5	17.4	16.3	14.6	12.2	8.60	5.03	2.08	1.10	1.32	2.74	2.10
125	16.2	16.2	16.3	16.8	17.3	17.7	17.7	17.4	16.5	14.8	12.7	10.1	6.93	3.91	1.48	0.63	0.80	1.99	1.62
130	16.8	16.8	16.8	17.2	17.6	17.6	16.8	15.6	14.1	12.3	10.2	8.01	5.27	2.72	0.73	0.08	0.31	1.43	1.24
135	18.1	17.9	17.6	17.4	16.9	16.2	14.9	13.3	11.6	9.71	7.77	5.85	3.92	2.23	0.90	0.28	0.18	0.59	0.57
140	15.9	15.2	14.4	13.7	12.9	12.0	10.8	9.53	8.18	6.84	5.55	4.37	3.44	2.64	1.96	1.32	0.77	0.31	0.49
145	11.4	11.2	10.8	10.3	9.75	9.00	7.90	6.70	5.50	4.52	3.64	2.86	2.22	1.68	1.23	0.84	0.52	0.29	0.40
150	7.42	7.20	6.83	6.28	5.66	5.03	4.65	4.23	3.66	2.45	1.23	0.21	0.16	0.37	0.67	0.63	0.50	0.28	0.33
155	4.11	4.06	3.95	3.77	3.52	3.21	2.80	2.36	1.92	1.56	1.23	0.94	0.68	0.46	0.30	0.23	0.23	0.29	0.44
160	2.39	2.36	2.23	1.78	1.26	0.76	0.50	0.34	0.26	0.29	0.36	0.43	0.41	0.36	0.32	0.30	0.31	0.33	0.44
165	0.25	0.25	0.28	0.45	0.62	0.76	0.71	0.61	0.48	0.42	0.37	0.34	0.33	0.34	0.35	0.36	0.36	0.35	0.44
170	0.38	0.37	0.37	0.36	0.35	0.34	0.35	0.35	0.36	0.37	0.38	0.38	0.39	0.39	0.39	0.39	0.39	0.38	0.44
175	0.34	0.35	0.36	0.36	0.37	0.38	0.38	0.39	0.39	0.40	0.40	0.41	0.41	0.41	0.42	0.41	0.41	0.40	0.44
180	0.38	0.39	0.39	0.40	0.41	0.41	0.42	0.42	0.43	0.43	0.44	0.44	0.44	0.45	0.45	0.45	0.45	0.45	0.40

Table--3

UNIT: ×10cd

C (DBG)	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280
0	498	498	497	497	496	496	495	495	495	494	494	494	494	494	495	495	496	495	495
5	427	410	406	407	410	408	405	403	403	403	397	392	390	398	408	417	408	398	398
10	414	400	402	410	417	412	405	397	392	389	387	387	388	389	388	387	385	387	388
15	404	395	400	407	410	394	373	349	326	304	283	266	253	242	234	229	227	229	234
20	417	411	405	394	375	336	291	246	213	185	164	150	142	137	133	131	131	131	133
25	387	374	354	326	292	243	194	151	133	123	119	114	111	108	106	105	104	105	106
30	399	382	325	258	191	157	135	120	109	103	98.0	91.1	84.8	79.5	75.8	73.4	72.3	73.4	75.8
35	343	321	262	195	132	112	104	100	87.9	75.7	64.5	56.0	49.3	44.3	41.0	39.3	38.7	39.3	41.0
40	278	255	209	160	113	92.2	78.5	69.2	56.4	45.3	36.2	30.8	27.4	25.5	24.4	24.1	24.3	24.1	24.4
45	227	196	159	123	90.8	70.4	55.4	44.6	35.7	29.5	25.6	24.5	24.6	25.2	24.2	23.3	22.7	23.3	24.2
50	166	133	108	89.0	73.3	56.3	41.9	30.6	25.9	23.8	22.8	19.5	16.2	13.5	12.1	11.4	11.3	11.4	12.1
55	128	95.1	74.7	61.0	51.5	40.6	31.5	24.2	18.9	15.0	12.4	10.6	9.56	9.01	8.51	8.26	8.22	8.26	8.51
60	95.7	67.7	51.4	41.3	34.9	27.0	20.5	15.3	11.6	8.90	7.15	6.17	5.70	5.52	5.06	4.72	4.55	4.72	5.06
65	77.0	52.7	37.8	28.2	22.1	15.9	11.2	7.66	4.92	2.97	1.67	0.81	0.35	0.17	0.12	0.17	0.27	0.17	0.12
70	64.4	45.3	31.4	21.1	13.7	8.25	4.64	2.45	1.03	0.35	0.18	0.04	0.07	0.20	0.25	0.30	0.33	0.30	0.25
75	44.7	30.5	19.9	12.0	6.64	3.56	2.00	1.43	0.71	0.33	0.19	0.11	0.13	0.20	0.27	0.33	0.38	0.33	0.27
80	24.8	16.3	10.4	6.31	3.71	2.11	1.31	1.02	0.59	0.34	0.23	0.18	0.19	0.25	0.32	0.39	0.44	0.39	0.32
85	10.6	7.96	5.63	3.70	2.20	1.43	1.01	0.82	0.56	0.39	0.29	0.26	0.27	0.32	0.40	0.47	0.52	0.47	0.40
90	4.28	3.95	3.25	2.45	1.68	1.26	0.96	0.75	0.58	0.46	0.39	0.36	0.36	0.39	0.46	0.53	0.58	0.53	0.46
95	3.04	2.71	2.30	1.88	1.48	1.16	0.89	0.68	0.55	0.47	0.43	0.40	0.40	0.43	0.50	0.57	0.61	0.57	0.50
100	2.99	2.40	1.93	1.55	1.25	1.05	0.90	0.80	0.69	0.62	0.56	0.52	0.51	0.51	0.58	0.65	0.69	0.65	0.58
105	2.26	1.76	1.25	0.82	0.50	0.46	0.52	0.63	0.68	0.73	0.76	0.76	0.75	0.74	0.79	0.84	0.86	0.84	0.79
110	1.58	1.16	1.00	0.96	0.95	0.80	0.65	0.52	0.49	0.50	0.55	0.60	0.67	0.74	0.79	0.83	0.86	0.83	0.79
115	1.87	1.30	1.00	0.85	0.79	0.67	0.59	0.53	0.52	0.53	0.55	0.55	0.55	0.55	0.56	0.57	0.57	0.57	0.56
120	1.57	1.16	0.90	0.74	0.64	0.56	0.51	0.49	0.50	0.52	0.55	0.55	0.56	0.56	0.57	0.58	0.58	0.58	0.57
125	1.31	1.05	0.84	0.68	0.56	0.50	0.47	0.47	0.49	0.53	0.56	0.58	0.59	0.59	0.60	0.61	0.62	0.61	0.60
130	1.07	0.91	0.75	0.62	0.52	0.48	0.47	0.49	0.51	0.54	0.57	0.59	0.62	0.64	0.66	0.67	0.68	0.67	0.66
135	0.56	0.54	0.52	0.51	0.50	0.50	0.50	0.51	0.54	0.57	0.60	0.62	0.63	0.65	0.66	0.68	0.68	0.68	0.66
140	0.61	0.67	0.64	0.57	0.50	0.50	0.51	0.53	0.55	0.57	0.59	0.62	0.65	0.67	0.69	0.71	0.72	0.71	0.69
145	0.53	0.59	0.58	0.56	0.52	0.52	0.54	0.56	0.58	0.60	0.62	0.64	0.67	0.69	0.71	0.72	0.72	0.72	0.71
150	0.48	0.54	0.55	0.55	0.54	0.55	0.57	0.58	0.60	0.61	0.62	0.65	0.67	0.69	0.69	0.68	0.68	0.68	0.69
155	0.51	0.58	0.60	0.60	0.59	0.59	0.58	0.58	0.59	0.60	0.62	0.64	0.65	0.67	0.66	0.64	0.62	0.64	0.66
160	0.57	0.64	0.66	0.65	0.64	0.62	0.61	0.60	0.61	0.61	0.62	0.62	0.61	0.60	0.60	0.59	0.59	0.59	0.60
165	0.59	0.65	0.66	0.65	0.63	0.62	0.61	0.60	0.59	0.58	0.57	0.55	0.53	0.51	0.51	0.52	0.52	0.52	0.51
170	0.56	0.61	0.62	0.60	0.57	0.55	0.52	0.49	0.48	0.47	0.47	0.45	0.44	0.43	0.43	0.43	0.43	0.43	0.43
175	0.53	0.57	0.57	0.56	0.54	0.50	0.47	0.44	0.43	0.43	0.43	0.41	0.40	0.39	0.39	0.40	0.40	0.40	0.39
180	0.45	0.45	0.45	0.45	0.45	0.44	0.43	0.42	0.41	0.40	0.39	0.38	0.38	0.38	0.38	0.38	0.39	0.38	0.38

C (DBG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355				
0	494	494	494	494	494	495	495	495	496	496	497	497	498	498	499				
5	390	392	397	403	403	403	403	405	408	410	407	406	410	427	453				
10	389	388	387	387	389	392	397	405	412	417	410	402	400	414	437				
15	242	253	266	283	304	326	349	373	394	410	407	400	395	404	420				
20	137	142	150	164	185	213	246	291	336	375	394	405	411	417	421				
25	108	111	114	119	123	133	151	194	243	292	326	354	374	387	392				
30	79.5	84.8	91.1	98.0	103	109	120	135	157	191	258	325	382	399	392				
35	44.3	49.3	56.0	64.5	75.7	87.9	100	104	112	132	195	262	321	343	343				
40	25.5	27.4	30.8	36.2	45.3	56.4	69.2	78.5	92.2	113	160	209	255	278	290				
45	25.2	24.6	24.5	25.6	29.5	35.7	44.6	55.4	70.4	90.8	123	159	196	227	256				
50	13.5	16.2	19.5	22.8	23.8	25.9	30.6	41.9	56.3	73.3	89.0	108	133	166	207				
55	9.01	9.56	10.6	12.4	15.0	18.9	24.2	31.5	40.6	51.5	61.0	74.7	95.1	128	170				
60	5.52	5.70	6.17	7.15	8.90	11.6	15.3	20.5	27.0	34.9	41.3	51.4	67.7	95.7	132				
65	0.17	0.35	0.81	1.67	2.97	4.92	7.66	11.2	15.9	22.1	28.2	37.8	52.7	77.0	108				
70	0.20	0.07	0.04	0.18	0.35	1.03	2.45	4.64	8.25	13.7	21.1	31.4	45.3	64.4	87.8				
75	0.20	0.13	0.11	0.19	0.33	0.71	1.43	2.00	3.56	6.64	12.0	19.9	30.5	44.7	62.2				
80	0.25	0.19	0.18	0.23	0.34	0.59	1.02	1.31	2.11	3.71	6.31	10.4	16.3	24.8	35.5				
85	0.32	0.27	0.26	0.29	0.39	0.56	0.82	1.01	1.43	2.20	3.70	5.63	7.96	10.6	13.5				
90	0.39	0.36	0.36	0.39	0.46	0.58	0.75	0.96	1.26	1.68	2.45	3.25	3.95	4.28	4.38				
95	0.43	0.40	0.40	0.43	0.47	0.55	0.68	0.89	1.16	1.48	1.88	2.30	2.71	3.04	3.33				
100	0.51	0.51	0.52	0.56	0.62	0.69	0.80	0.90	1.05	1.25	1.55	1.93	2.40	2.99	3.68				
105	0.74	0.75	0.76	0.76	0.73	0.68	0.63	0.52	0.46	0.50	0.82	1.25	1.76	2.26	2.81				
110	0.74	0.67	0.60	0.55	0.50	0.49	0.52	0.65	0.80	0.95	0.96	1.00	1.16	1.58	2.18				
115	0.55	0.55	0.55	0.55	0.53	0.52	0.53	0.59	0.67	0.79	0.85	1.00	1.30	1.87	2.65				
120	0.56	0.56	0.55	0.55	0.52	0.50	0.49	0.51	0.56	0.64	0.74	0.90	1.16	1.57	2.10				
125	0.59	0.59	0.58	0.56	0.53	0.49	0.47	0.47	0.50	0.56	0.68	0.84	1.05	1.31	1.62				
130	0.64	0.62	0.59	0.57	0.54	0.51	0.49	0.47	0.48	0.52	0.62	0.75	0.91	1.07	1.24				
135	0.65	0.63	0.62	0.60	0.57	0.54	0.51	0.50	0.50	0.50	0.51	0.52	0.54	0.56	0.57				
140	0.67	0.65	0.62	0.59	0.57	0.55	0.53	0.51	0.50	0.50	0.57	0.64	0.67	0.61	0.49				
145	0.69	0.67	0.64	0.62	0.60	0.58	0.56	0.54	0.52	0.52	0.56	0.58	0.59	0.53	0.43				
150	0.69	0.67	0.65	0.62	0.61	0.60	0.58	0.57	0.55	0.54	0.55	0.55	0.54	0.48	0.39				
155	0.67	0.65	0.64	0.62	0.60	0.59	0.58	0.58	0.59	0.59	0.60	0.60	0.58	0.51	0.42				
160	0.60	0.61	0.62	0.62	0.61	0.61	0.60	0.61	0.62	0.64	0.65	0.66	0.64	0.57	0.46				
165	0.51	0.53	0.55	0.57	0.58	0.59	0.60	0.61	0.62	0.63	0.65	0.66	0.65	0.59	0.49				
170	0.43	0.44	0.45	0.47	0.47	0.48	0.49	0.52	0.55	0.57	0.60	0.62	0.61	0.56	0.49				
175	0.39	0.40	0.41	0.43	0.43	0.43	0.44	0.47	0.50	0.54	0.56	0.57	0.57	0.53	0.48				
180	0.38	0.38	0.38	0.39	0.40	0.41	0.42	0.43	0.44	0.45	0.45	0.45	0.45	0.45	0.45				

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	WPX3 @ 130W / 3000K 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	0.301	130.7	0.906	12.46

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*****