

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

Prepared By

Dongguan New Testing Centre Co., Ltd.

Prepare by:

Alan Wang

Engineer: Alan Wang

Date: 2023-10-26

Review by:

Vincent Yuan

Technical Lead: Vincent Yuan

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Revised Date: N/A

1.0 Test Summary

DLC Technical Requirements V5.1

Outdoor Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires				
Requirement Category	Test Method	Requirements		Test Value
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-180° zones)	IES LM-79-2008	N/A		13753
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)	IES LM-79-2008	N/A		137.3
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	300		13386
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard	Premium	133.6
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		100.2
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2014	20.00%	120V	4.37
			277V	8.77
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2014	0.9	120V	0.997
			277V	0.940
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	IES LM-79-2008	7 steps	3045±175	3116
		4 steps	3045±100	
Minimum CRI (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	≥70		82.7
Minimum R9 (Integrating Sphere – Section 4.1)	IES LM-79-2008 CIE13.3-1995	N/A		7
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%		2.2%
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		0.838
(Goniophotometer – Section 4.2)		Non-Worst Case		0.374
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	IES LM-79-2008	Worst Case		100.2
(Goniophotometer – Section 4.2)		Non-Worst Case		97.5

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2023-10-20	WPX3 @ 100W / 3000K	231020001-S1
2	Goniophotometer Test	2023-10-20	WPX3 @ 100W / 3000K	231020001-S1
3	THD and PF Test	2023-10-20	WPX3 @ 100W / 3000K	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 / 3000K, color tunable from 3000K, 4000K and 5000K.

Electrical Specification: 120-277Vac, 50/60Hz

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	WPX3 @ 100W / 3000K	Sample ID	231020001-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

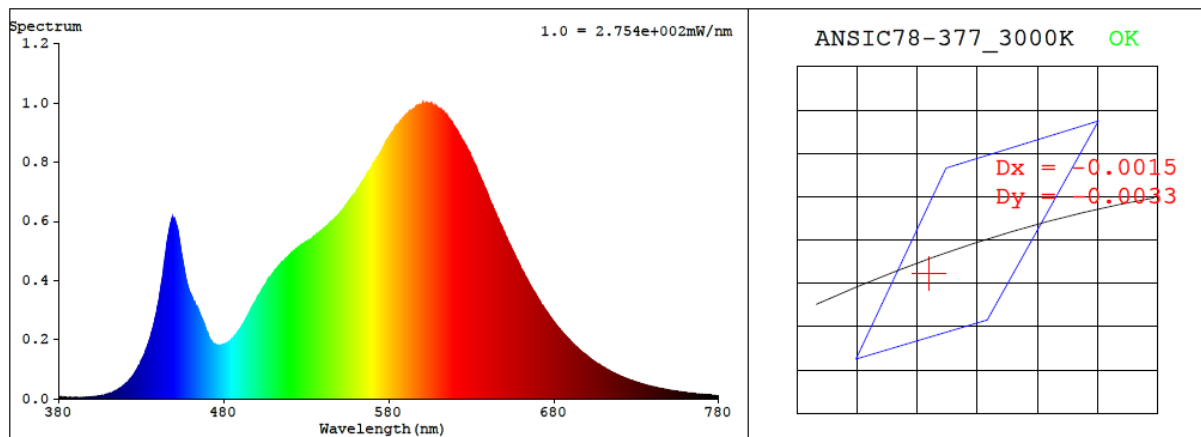
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using 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. 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	0.838	100.2	0.997
277.0	60	0.374	97.5	0.940

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
3116	82.7	7	-0.0011	84	97	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4274$ $y = 0.3979$ / $u' = 0.2471$ $v' = 0.5175$ ($duv = -1.11e-03$)

CCT= 3116K Prcp WL: Ld=582.8nm Purity=47.7%

Peak WL: Lp=601nm FWHM: =132.9nm Ratio:R=22.3% G=75.1% B=2.6%

Render Index: Ra = 82.7 AvgR = 77.0 TM30:Rf=84 Rg=97

EEL: 0.09774 A++ Highest

R1 =81	R2 =90	R3 =96	R4 =81	R5 =81	R6 =88	R7 =83
R8 =60	R9 =7	R10=78	R11=81	R12=72	R13=83	R14=99 R15=74

4.1 Integrating Sphere Test

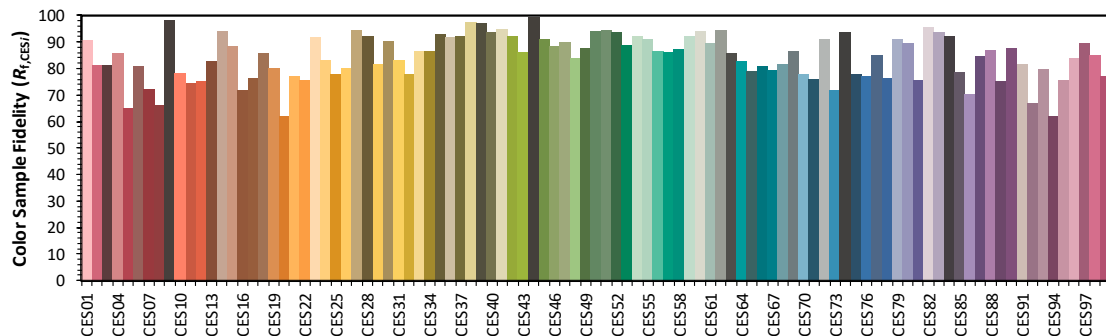
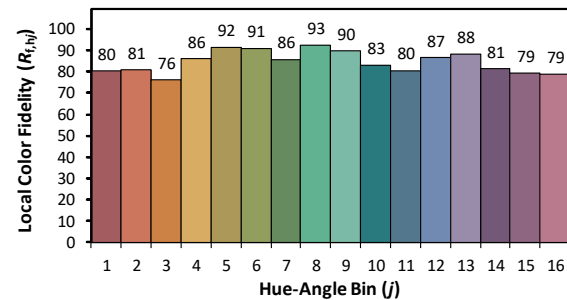
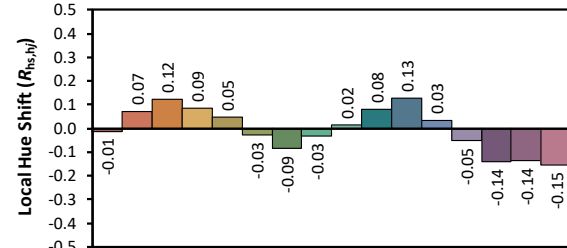
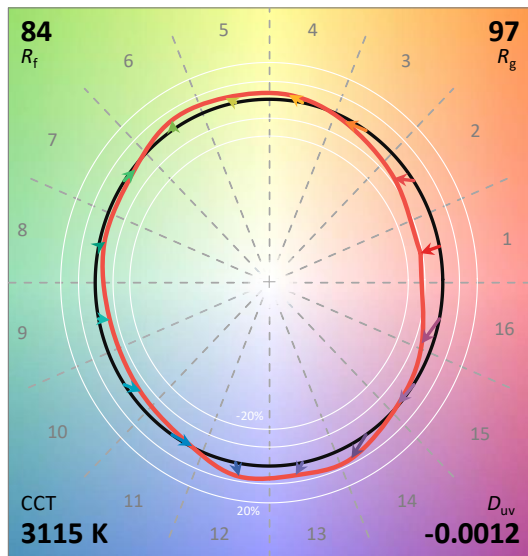
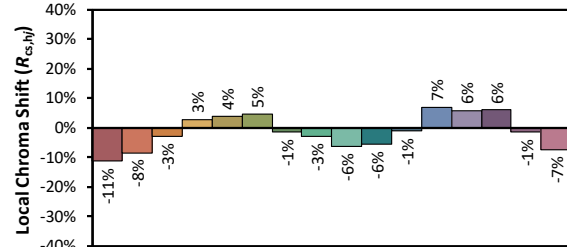
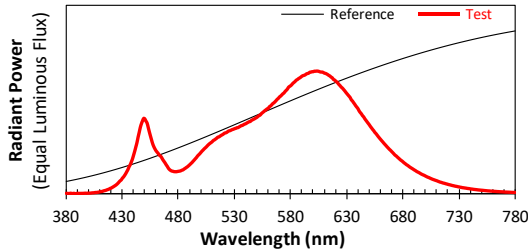
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2023/10/26

Model: WPX3 @ 100W / 3000K



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

x 0.4274
 y 0.3978
 u' 0.2471
 v' 0.5174

CIE 13.3-1995
(CRI)

R_a 83
 R_9 7

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	4.70E-06	447	5.71E-04	514	4.53E-04	581	8.89E-04	648	5.86E-04	715	9.10E-05
381	4.40E-06	448	5.95E-04	515	4.61E-04	582	8.99E-04	649	5.74E-04	716	8.80E-05
382	3.30E-06	449	6.14E-04	516	4.63E-04	583	9.07E-04	650	5.62E-04	717	8.61E-05
383	3.90E-06	450	6.09E-04	517	4.69E-04	584	9.15E-04	651	5.48E-04	718	8.30E-05
384	5.60E-06	451	5.92E-04	518	4.76E-04	585	9.25E-04	652	5.37E-04	719	8.07E-05
385	3.20E-06	452	5.76E-04	519	4.81E-04	586	9.30E-04	653	5.24E-04	720	7.79E-05
386	3.60E-06	453	5.42E-04	520	4.86E-04	587	9.37E-04	654	5.13E-04	721	7.54E-05
387	4.70E-06	454	5.05E-04	521	4.94E-04	588	9.43E-04	655	5.00E-04	722	7.33E-05
388	2.00E-06	455	4.71E-04	522	4.96E-04	589	9.49E-04	656	4.90E-04	723	7.09E-05
389	2.70E-06	456	4.39E-04	523	5.00E-04	590	9.57E-04	657	4.78E-04	724	6.83E-05
390	5.00E-06	457	4.08E-04	524	5.07E-04	591	9.61E-04	658	4.66E-04	725	6.65E-05
391	4.30E-06	458	3.85E-04	525	5.12E-04	592	9.64E-04	659	4.55E-04	726	6.41E-05
392	4.10E-06	459	3.66E-04	526	5.14E-04	593	9.68E-04	660	4.44E-04	727	6.22E-05
393	4.10E-06	460	3.51E-04	527	5.19E-04	594	9.75E-04	661	4.33E-04	728	6.06E-05
394	4.40E-06	461	3.39E-04	528	5.23E-04	595	9.79E-04	662	4.23E-04	729	5.83E-05
395	4.50E-06	462	3.28E-04	529	5.26E-04	596	9.81E-04	663	4.12E-04	730	5.67E-05
396	5.20E-06	463	3.14E-04	530	5.31E-04	597	9.89E-04	664	4.02E-04	731	5.45E-05
397	5.90E-06	464	3.08E-04	531	5.33E-04	598	9.90E-04	665	3.92E-04	732	5.31E-05
398	5.00E-06	465	2.95E-04	532	5.38E-04	599	9.93E-04	666	3.81E-04	733	5.09E-05
399	6.00E-06	466	2.79E-04	533	5.39E-04	600	9.93E-04	667	3.72E-04	734	4.98E-05
400	6.00E-06	467	2.66E-04	534	5.44E-04	601	9.97E-04	668	3.62E-04	735	4.82E-05
401	6.50E-06	468	2.52E-04	535	5.50E-04	602	9.97E-04	669	3.54E-04	736	4.70E-05
402	6.60E-06	469	2.37E-04	536	5.55E-04	603	9.98E-04	670	3.44E-04	737	4.52E-05
403	8.40E-06	470	2.24E-04	537	5.57E-04	604	9.98E-04	671	3.35E-04	738	4.38E-05
404	8.70E-06	471	2.09E-04	538	5.63E-04	605	9.96E-04	672	3.25E-04	739	4.29E-05
405	9.90E-06	472	1.98E-04	539	5.68E-04	606	9.93E-04	673	3.15E-04	740	4.09E-05
406	1.15E-05	473	1.91E-04	540	5.71E-04	607	9.90E-04	674	3.09E-04	741	3.97E-05
407	1.17E-05	474	1.86E-04	541	5.77E-04	608	9.90E-04	675	3.00E-04	742	3.86E-05
408	1.32E-05	475	1.84E-04	542	5.82E-04	609	9.87E-04	676	2.92E-04	743	3.70E-05
409	1.45E-05	476	1.81E-04	543	5.87E-04	610	9.82E-04	677	2.83E-04	744	3.60E-05
410	1.71E-05	477	1.81E-04	544	5.89E-04	611	9.80E-04	678	2.75E-04	745	3.49E-05
411	1.88E-05	478	1.80E-04	545	5.97E-04	612	9.75E-04	679	2.69E-04	746	3.39E-05
412	2.03E-05	479	1.82E-04	546	6.02E-04	613	9.70E-04	680	2.61E-04	747	3.25E-05
413	2.36E-05	480	1.84E-04	547	6.07E-04	614	9.63E-04	681	2.53E-04	748	3.17E-05
414	2.64E-05	481	1.85E-04	548	6.12E-04	615	9.58E-04	682	2.46E-04	749	3.07E-05
415	2.84E-05	482	1.88E-04	549	6.18E-04	616	9.49E-04	683	2.38E-04	750	2.99E-05
416	3.20E-05	483	1.93E-04	550	6.23E-04	617	9.44E-04	684	2.33E-04	751	2.92E-05
417	3.55E-05	484	1.95E-04	551	6.32E-04	618	9.31E-04	685	2.26E-04	752	2.80E-05
418	3.86E-05	485	2.02E-04	552	6.37E-04	619	9.26E-04	686	2.19E-04	753	2.71E-05
419	4.42E-05	486	2.08E-04	553	6.43E-04	620	9.18E-04	687	2.13E-04	754	2.63E-05
420	4.75E-05	487	2.15E-04	554	6.54E-04	621	9.10E-04	688	2.07E-04	755	2.53E-05
421	5.29E-05	488	2.21E-04	555	6.62E-04	622	9.00E-04	689	2.02E-04	756	2.44E-05
422	5.83E-05	489	2.29E-04	556	6.69E-04	623	8.89E-04	690	1.95E-04	757	2.40E-05
423	6.43E-05	490	2.37E-04	557	6.77E-04	624	8.79E-04	691	1.90E-04	758	2.29E-05
424	7.02E-05	491	2.46E-04	558	6.84E-04	625	8.68E-04	692	1.84E-04	759	2.25E-05
425	7.76E-05	492	2.55E-04	559	6.91E-04	626	8.61E-04	693	1.79E-04	760	2.19E-05
426	8.62E-05	493	2.65E-04	560	6.96E-04	627	8.50E-04	694	1.74E-04	761	2.10E-05
427	9.64E-05	494	2.75E-04	561	7.08E-04	628	8.39E-04	695	1.69E-04	762	2.04E-05
428	1.06E-04	495	2.86E-04	562	7.15E-04	629	8.27E-04	696	1.63E-04	763	1.99E-05
429	1.14E-04	496	2.96E-04	563	7.23E-04	630	8.16E-04	697	1.59E-04	764	1.89E-05
430	1.28E-04	497	3.08E-04	564	7.34E-04	631	8.05E-04	698	1.54E-04	765	1.87E-05
431	1.37E-04	498	3.18E-04	565	7.40E-04	632	7.94E-04	699	1.51E-04	766	1.79E-05
432	1.51E-04	499	3.27E-04	566	7.49E-04	633	7.83E-04	700	1.45E-04	767	1.73E-05
433	1.65E-04	500	3.38E-04	567	7.59E-04	634	7.65E-04	701	1.41E-04	768	1.69E-05
434	1.82E-04	501	3.48E-04	568	7.69E-04	635	7.55E-04	702	1.36E-04	769	1.65E-05
435	1.99E-04	502	3.57E-04	569	7.77E-04	636	7.42E-04	703	1.33E-04	770	1.57E-05
436	2.21E-04	503	3.67E-04	570	7.88E-04	637	7.29E-04	704	1.29E-04	771	1.50E-05
437	2.37E-04	504	3.75E-04	571	7.95E-04	638	7.15E-04	705	1.24E-04	772	1.48E-05
438	2.60E-04	505	3.84E-04	572	8.04E-04	639	7.04E-04	706	1.21E-04	773	1.45E-05
439	2.84E-04	506	3.94E-04	573	8.14E-04	640	6.92E-04	707	1.17E-04	774	1.40E-05
440	3.15E-04	507	4.03E-04	574	8.21E-04	641	6.74E-04	708	1.14E-04	775	1.36E-05
441	3.47E-04	508	4.10E-04	575	8.32E-04	642	6.61E-04	709	1.10E-04	776	1.31E-05
442	3.82E-04	509	4.17E-04	576	8.42E-04	643	6.50E-04	710	1.07E-04	777	1.24E-05
443	4.17E-04	510	4.24E-04	577	8.52E-04	644	6.36E-04	711	1.04E-04	778	1.22E-05
444	4.61E-04	511	4.34E-04	578	8.66E-04	645	6.26E-04	712	1.00E-04	779	1.20E-05
445	5.00E-04	512	4.39E-04	579	8.74E-04	646	6.11E-04	713	9.64E-05	780	1.20E-05
446	5.41E-04	513	4.46E-04	580	8.80E-04	647	5.99E-04	714	9.40E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	WPX3 @ 100W / 3000K	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 $25 \pm 1^\circ\text{C}$, 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	120.0	60	0.838	100.2	0.997
NON-WORST CASE	277.0	60	0.374	97.5	0.940

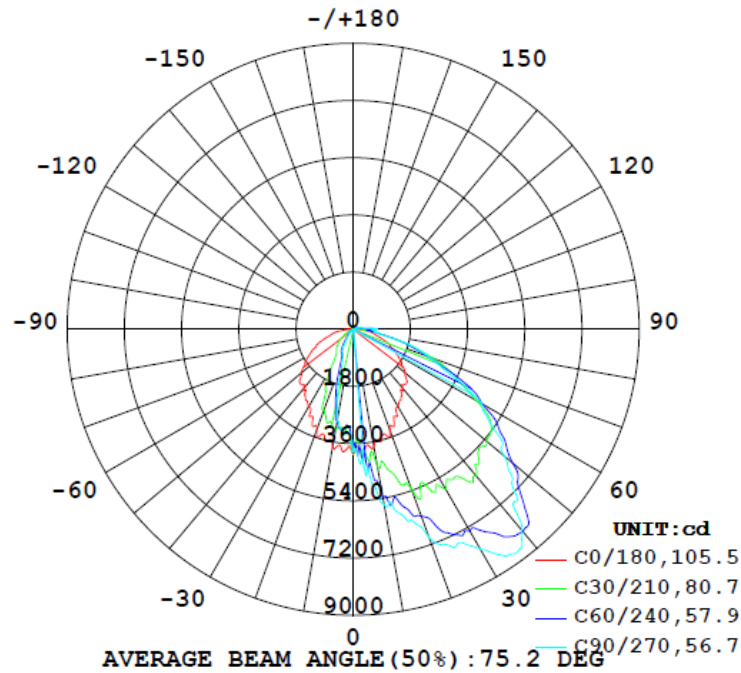
Test Result

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	13753	105.8	147.7	56.6	100.5	137.3	2.1%	B2-U3-G3
0°-90° zones	13386	105.8	147.7	56.6	100.5	133.6	2.2%	B2-U3-G3

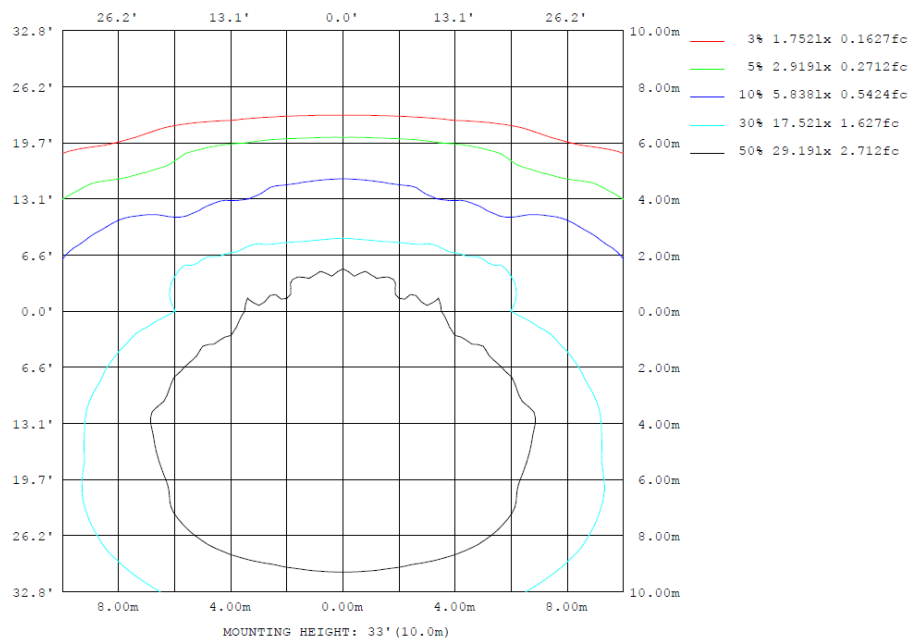
4.2 Goniophotometer Test

Lighting Distribution Curve

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

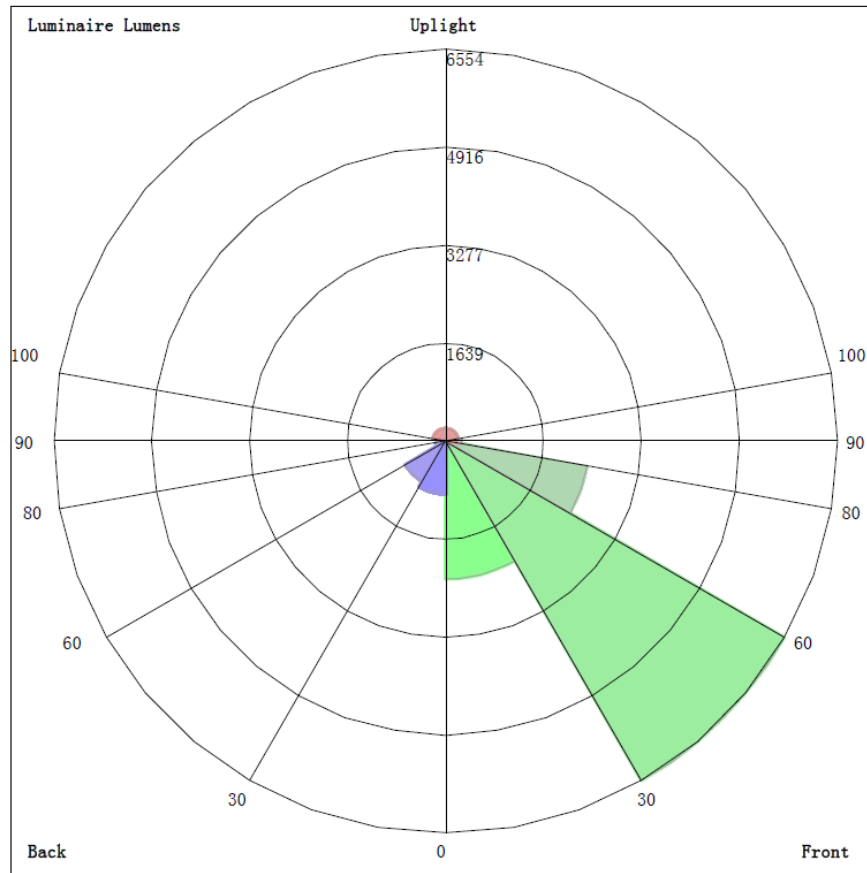
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	3749	4734	5600	4734	3749	3007	2915	3007	0- 10	352.0	352.0	2.56,2.56
20	3356	5955	6954	5955	3356	1865	967.3	1865	10- 20	1084	1436	10.4,10.4
30	2828	6886	7980	6886	2828	851.8	583.4	851.8	20- 30	1756	3192	23.2,23.2
40	2426	6906	8251	6906	2426	544.5	191.5	544.5	30- 40	2379	5571	40.5,40.5
50	2141	6685	6222	6685	2141	241.6	90.80	241.6	40- 50	2614	8185	59.5,59.5
60	1580	4824	4651	4824	1580	122.9	35.96	122.9	50- 60	2339	10524	76.5,76.5
70	1062	2662	2529	2662	1062	20.64	1.606	20.64	60- 70	1708	12232	88.9,88.9
80	595.2	902.9	857.9	902.9	595.2	7.613	2.584	7.613	70- 80	859.4	13091	95.2,95.2
90	52.26	277.1	714.2	277.1	52.26	5.158	3.486	5.158	80- 90	294.6	13386	97.3,97.3
100	48.82	225.7	306.7	225.7	48.82	5.351	4.910	5.351	90-100	159.5	13545	98.5,98.5
110	30.44	80.60	105.1	80.60	30.44	4.212	5.688	4.212	100-110	63.45	13609	98.9,98.9
120	22.27	138.0	85.25	138.0	22.27	3.926	4.680	3.926	110-120	42.82	13652	99.3,99.3
130	11.59	112.9	140.9	112.9	11.59	3.980	5.358	3.980	120-130	45.41	13697	99.6,99.6
140	2.072	65.19	132.3	65.19	2.072	4.325	5.698	4.325	130-140	33.71	13731	99.8,99.8
150	2.189	27.30	59.39	27.30	2.189	4.721	5.474	4.721	140-150	16.17	13747	100,100
160	2.612	2.199	17.39	2.199	2.612	4.811	4.732	4.811	150-160	4.838	13752	100,100
170	3.067	2.940	2.969	2.940	3.067	3.876	3.401	3.876	160-170	1.243	13753	100,100
180	3.591	3.424	2.984	3.424	3.591	3.327	3.108	3.327	170-180	0.3232	13753	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	352.02	0-10	352.02	2.56%
10-20	1083.58	0-20	1435.60	10.44%
20-30	1756.03	0-30	3191.63	23.21%
30-40	2379.40	0-40	5571.03	40.51%
40-50	2613.55	0-50	8184.58	59.51%
50-60	2339.32	0-60	10523.90	76.52%
60-70	1708.02	0-70	12231.92	88.94%
70-80	859.36	0-80	13091.28	95.19%
80-90	294.62	0-90	13385.90	97.33%
90-100	159.54	0-100	13545.44	98.49%
100-110	63.45	0-110	13608.89	98.95%
110-120	42.82	0-120	13651.71	99.26%
120-130	45.41	0-130	13697.12	99.59%
130-140	33.71	0-140	13730.83	99.84%
140-150	16.17	0-150	13747.00	99.96%
150-160	4.84	0-160	13751.84	99.99%
160-170	1.24	0-170	13753.08	100.00%
170-180	0.32	0-180	13753.40	100.00%

4.2 Goniophotometer Test

LCS/BUG

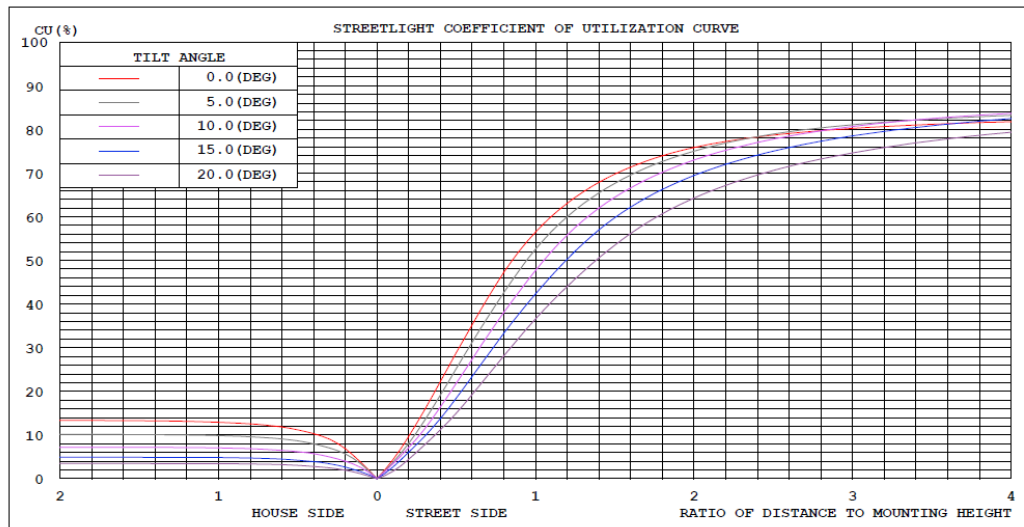


LUMINAIRE CLASSIFICATION SYSTEM (LCS)

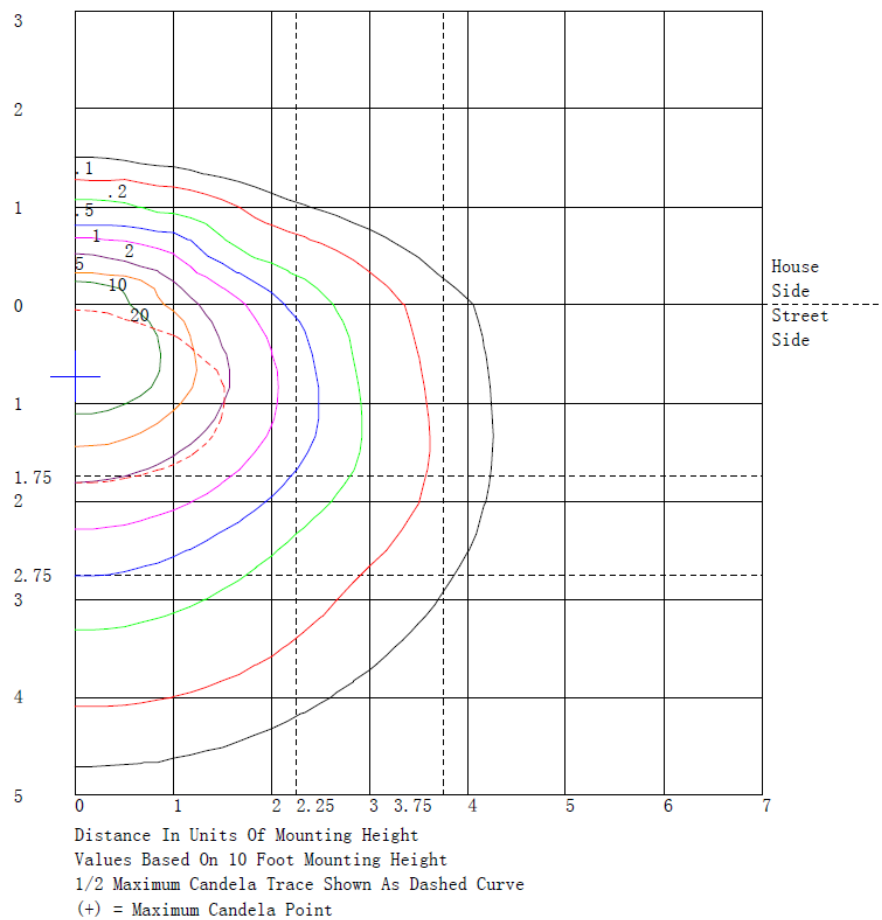
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	2306.2	N.A.	16.8
FM - Front-Medium (30-60)	6554.5	N.A.	47.7
FH - Front-High (60-80)	2402.0	N.A.	17.5
FVH - Front-Very High (80-90)	274.5	N.A.	2.0
BL - Back-Low (0-30)	885.4	N.A.	6.4
BM - Back-Medium (30-60)	777.8	N.A.	5.7
BH - Back-High (60-80)	165.4	N.A.	1.2
BVH - Back-Very High (80-90)	20.1	N.A.	0.1
UL - Uplight-Low (90-100)	159.5	N.A.	1.2
UH - Uplight-High (100-180)	208.0	N.A.	1.5
Total	13753.4	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	3943	3940	3938	3935	3934	3931	3928	3921	3914	3907	3905	3904	3902	3894	3884	3875	3870	3866	3865
5	3867	3853	3839	3824	3784	3762	3774	3922	4078	4199	4108	3992	3903	4009	4164	4337	4474	4581	4643
10	3749	3680	3681	3752	3938	4161	4385	4506	4615	4734	4958	5176	5355	5359	5326	5296	5405	5518	5600
15	3507	3619	3762	3936	4142	4378	4644	5001	5342	5623	5682	5678	5653	5721	5801	5885	5962	6025	6064
20	3356	3616	3902	4216	4593	4970	5321	5578	5787	5955	6070	6165	6257	6399	6545	6683	6810	6905	6954
25	3019	3280	3598	3971	4454	4952	5425	5754	6036	6289	6579	6843	7068	7196	7286	7353	7457	7539	7583
30	2828	3209	3636	4110	4681	5261	5810	6238	6597	6886	7074	7215	7329	7478	7619	7745	7854	7935	7980
35	2618	3227	3793	4318	4782	5217	5638	6096	6539	6949	7280	7573	7839	8127	8378	8572	8634	8645	8626
40	2426	3054	3668	4270	4892	5476	5995	6325	6613	6906	7406	7890	8291	8385	8376	8310	8285	8262	8251
45	2382	3065	3695	4244	4696	5119	5548	6143	6715	7200	7413	7509	7519	7493	7429	7346	7261	7189	7147
50	2141	2724	3296	3858	4426	4971	5482	5975	6387	6685	6727	6668	6554	6487	6417	6350	6289	6244	6222
55	1874	2221	2657	3182	3923	4658	5293	5541	5645	5657	5682	5677	5653	5642	5620	5583	5490	5401	5341
60	1580	1949	2363	2823	3413	3984	4475	4696	4802	4824	4802	4747	4682	4666	4659	4658	4652	4649	4651
65	1286	1676	2062	2445	2865	3250	3571	3736	3822	3845	3826	3773	3698	3623	3546	3473	3414	3370	3347
70	1062	1271	1504	1761	2099	2418	2676	2738	2724	2662	2594	2522	2464	2475	2503	2535	2535	2531	2529
75	767	857	970	1106	1306	1497	1648	1641	1596	1545	1582	1635	1693	1731	1761	1780	1778	1771	1766
80	595	604	629	669	743	820	887	908	911	903	892	878	865	863	862	863	862	860	858
85	246	264	287	317	357	400	440	466	487	506	524	543	564	593	624	654	683	705	717
90	52.3	83.3	113	141	168	194	218	230	247	277	348	430	514	583	641	687	706	714	714
95	37.8	54.8	72.4	90.7	106	125	149	187	229	272	312	347	375	383	385	381	379	376	374
100	48.8	46.3	46.9	50.8	53.6	62.8	81.5	128	179	226	241	247	251	265	280	292	301	305	307
105	35.5	30.2	30.6	37.0	54.5	73.9	91.0	93.5	91.8	88.3	87.5	87.4	88.2	92.2	96.6	100	101	101	99.9
110	30.4	23.2	26.3	39.5	75.3	112	140	125	102	80.6	92.5	110	127	127	122	116	111	107	105
115	30.5	19.7	18.7	27.5	53.9	84.3	113	128	135	130	103	71.1	42.4	38.8	42.6	50.4	56.2	61.4	64.8
120	22.3	11.0	9.21	16.9	40.3	68.5	97.0	115	129	138	142	142	137	125	112	99.3	90.6	85.6	85.3
125	16.0	6.72	5.39	11.9	30.8	54.2	79.0	98.4	115	129	138	143	146	147	146	144	142	140	140
130	11.6	2.74	0.87	5.97	21.5	41.4	63.1	81.1	97.8	113	126	136	144	145	145	143	142	142	141
135	2.46	0.71	2.65	8.27	18.8	32.1	47.2	62.9	78.8	94.3	109	121	132	138	143	146	149	150	150
140	2.07	5.77	10.1	15.1	20.3	26.4	33.7	43.3	54.0	65.2	76.7	87.8	97.9	105	111	116	123	129	130
145	2.12	3.98	6.40	9.37	12.7	16.7	21.6	28.2	35.6	43.7	53.1	62.3	70.7	76.5	81.1	84.7	88.3	90.7	91.5
150	2.19	4.03	5.11	5.43	3.19	1.53	1.77	9.17	18.2	27.3	31.8	35.4	38.8	43.9	48.9	53.4	56.6	58.7	59.4
155	2.36	1.95	2.02	2.55	3.68	5.20	6.99	8.69	10.7	13.1	16.6	20.3	23.8	26.4	28.4	30.0	30.9	31.4	31.4
160	2.61	2.55	2.55	2.61	2.82	3.03	3.14	2.47	2.02	2.20	4.47	7.34	10.4	12.8	14.9	16.5	17.2	17.4	17.4
165	2.82	2.89	2.93	2.93	2.84	2.76	2.74	2.89	3.15	3.55	4.41	5.17	5.58	4.65	3.45	2.29	2.05	2.07	2.24
170	3.07	3.12	3.15	3.17	3.17	3.16	3.13	3.07	3.01	2.94	2.87	2.81	2.77	2.78	2.82	2.86	2.89	2.92	2.97
175	3.24	3.29	3.32	3.34	3.33	3.31	3.28	3.26	3.24	3.21	3.16	3.11	3.05	2.99	2.94	2.89	2.86	2.84	2.84
180	3.59	3.61	3.61	3.60	3.58	3.54	3.51	3.48	3.46	3.42	3.37	3.32	3.26	3.22	3.17	3.13	3.07	3.02	2.98

UNIT: cd																			
C (DEG) y	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185
0	3866	3870	3875	3884	3894	3902	3904	3905	3907	3914	3921	3928	3931	3934	3935	3938	3940	3943	3911
5	4581	4474	4337	4164	4009	3903	3992	4108	4199	4078	3922	3774	3762	3784	3824	3839	3853	3867	3602
10	5518	5405	5296	5326	5359	5355	5176	4958	4734	4615	4506	4385	4161	3938	3752	3681	3680	3749	3488
15	6025	5962	5885	5801	5721	5653	5678	5682	5623	5342	5001	4644	4378	4142	3936	3762	3619	3507	3376
20	6905	6810	6683	6545	6399	6257	6165	6070	5955	5787	5578	5321	4970	4593	4216	3902	3616	3356	3386
25	7539	7457	7353	7286	7196	7068	6843	6579	6289	6036	5754	5425	4952	4454	3971	3598	3280	3019	3040
30	7935	7854	7745	7619	7478	7329	7215	7074	6886	6597	6238	5810	5261	4681	4110	3636	3209	2828	3005
35	8645	8634	8572	8378	8127	7839	7573	7280	6949	6539	6096	5638	5217	4782	4318	3793	3227	2618	2679
40	8262	8285	8310	8376	8385	8291	7890	7406	6906	6613	6325	5995	5476	4892	4270	3668	3054	2426	2328
45	7189	7261	7346	7429	7493	7519	7509	7413	7200	6715	6143	5548	5119	4696	4244	3685	3065	2382	2082
50	6244	6289	6350	6417	6487	6554	6668	6727	6685	6387	5975	5482	4971	4426	3858	3296	2724	2141	1656
55	5401	5490	5583	5620	5642	5653	5677	5682	5657	5645	5541	5293	4658	3923	3182	2657	2221	1874	1382
60	4649	4652	4658	4659	4666	4682	4747	4802	4824	4802	4696	4475	3984	3413	2823	2363	1949	1580	1142
65	3370	3414	3473	3546	3623	3698	3773	3826	3845	3822	3736	3571	3250	2865	2445	2062	1676	1286	933
70	2531	2535	2535	2503	2475	2464	2522	2594	2662	2724	2738	2676	2418	2099	1761	1504	1271	1062	780
75	1771	1778	1780	1761	1731	1693	1635	1582	1545	1596	1641	1648	1497	1306	1106	970	857	767	561
80	860	862	863	862	863	865	878	892	903	911	908	887	820	743	669	629	604	595	404
85	705	683	654	624	593	564	543	524	506	487	466	440	400	357	317	287	264	246	172
90	714	706	687	641	583	514	430	348	277	247	230	218	194	168	141	113	83.3	52.3	46.3
95	376	379	381	385	383	375	347	312	272	229	187	149	125	106	90.7	72.4	54.8	37.8	33.1
100	305	301	292	280	265	251	247	241	226	179	128	81.5	62.8	53.6	50.8	46.9	46.3	48.8	37.8
105	101	101	100	96.6	92.2	88.2	87.4	87.5	88.3	91.8	93.5	91.0	73.9	54.5	37.0	30.6	30.2	35.5	27.6
110	107	111	116	122	127	127	110	92.5	80.6	102	125	140	112	75.3	39.5	26.3	23.2	30.4	20.4
115	61.4	56.2	50.4	42.6	38.8	42.4	71.1	103	130	135	128	113	84.3	53.9	27.5	18.7	17.9	30.5	20.7
120	85.6	90.6	99.3	112	125	137	142	142	138	129	115	97.0	68.5	40.3	16.9	9.21	11.0	22.3	16.0
125	140	142	144	146	147	146	143	138	129	115	98.4	79.0	54.2	30.8	11.9	5.39	6.72	16.0	12.4
130	142	142	143	145	145	144	136	126	113	97.8	81.1	63.1	41.4	21.5	5.97	0.87	2.74	11.6	9.77
135	150	149	146	143	138	132	121	109	94.3	78.8	62.9	47.2	32.1	18.8	8.27	2.65	0.71	2.46	3.74
140	129	123	116	111	105	97.9	87.8	76.7	65.2	54.0	43.3	33.7	26.4	20.3	15.1	10.1	5.77	0.77	0.46
145	90.7	88.3	84.7	81.1	76.5	70.7	62.3	53.1	43.7	35.6	28.2	21.6	16.7	12.7	9.37	6.40	3.98	2.12	3.37
150	58.7	56.6	53.4	48.9	43.9	39.8	35.4	31.8	27.3	18.2	9.17	1.77	1.53	3.19	5.43	5.11	4.03	2.19	3.14
155	31.4	30.9	30.0	28.4	26.4	23.8	20.3	16.6	13.1	10.7	8.69	6.99	5.20	3.68	2.55	2.02	1.95	2.36	3.35
160	17.4	17.2	16.5	14.9	12.8	10.4	7.34	4.47	2.20	2.02	2.47	3.14	3.03	2.82	2.61	2.55	2.55	3.61	3.71
165	2.07	2.05	2.29	3.45	4.65	5.58	5.17	4.41	3.55	3.15	2.89	2.74	2.76	2.84	2.93	2.93	2.89	2.82	3.86
170	2.92	2.89	2.86	2.82	2.78	2.77	2.81	2.87	2.94	3.01	3.07	3.13	3.16	3.17	3.17	3.15	3.12	3.07	3.96
175	2.84	2.86	2.89	2.94	2.99	3.05	3.11	3.16	3.21	3.24	3.26	3.28	3.31	3.33	3.34	3.32	3.29	3.24	3.85
180	3.02	3.07	3.13	3.17	3.22	3.26	3.32	3.37	3.42	3.46	3.48	3.51	3.54	3.58	3.60	3.61	3.61	3.59	3.56

Table--3

UNIT: cd

C (DEG)	190	195	200	205	210	215	220	225	230	235	240	245	250	255	260	265	270	275	280
y (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	3886	3869	3863	3863	3864	3859	3855	3851	3854	3857	3862	3868	3872	3875	3872	3868	3865	3868	3872
5	3401	3264	3221	3219	3233	3204	3172	3143	3133	3127	3124	3105	3093	3096	3156	3221	3273	3221	3156
10	3296	3172	3161	3186	3215	3157	3083	3007	2961	2923	2894	2866	2848	2841	2865	2893	2915	2893	2865
15	3267	3180	3141	3106	3054	2928	2778	2613	2443	2279	2133	2031	1954	1899	1866	1848	1840	1848	1866
20	3359	3275	3121	2920	2694	2416	2138	1865	1620	1405	1226	1117	1045	1002	975	965	967	965	975
25	2993	2876	2673	2414	2112	1746	1390	1085	952	885	860	829	812	806	800	799	800	799	800
30	3017	2864	2430	1919	1418	1152	968	852	794	769	759	714	669	629	604	589	583	589	604
35	2603	2391	1919	1403	937	806	767	769	683	594	510	448	397	359	333	319	315	319	333
40	2164	1932	1564	1180	834	686	599	544	449	362	289	247	220	205	195	191	192	191	195
45	1789	1504	1207	933	695	543	432	352	282	232	200	191	194	202	199	197	195	197	199
50	1260	953	774	657	573	446	333	242	207	193	187	160	134	112	99.6	92.8	90.8	92.8	99.6
55	989	695	540	453	405	323	252	192	150	120	98.4	84.5	76.3	72.1	68.5	66.8	66.7	66.8	68.5
60	792	530	392	316	278	215	164	123	93.2	72.1	58.1	50.1	46.1	44.4	40.5	37.5	36.0	37.5	40.5
65	647	429	300	222	176	127	90.0	63.3	41.4	25.5	14.7	7.40	3.22	1.32	0.47	0.60	1.23	0.60	0.47
70	548	364	244	163	111	67.2	38.3	20.6	8.78	2.91	1.14	0.11	0.53	1.66	1.69	1.66	1.61	1.66	1.69
75	390	253	159	94.4	52.8	27.3	14.8	10.5	4.96	2.22	1.42	1.03	1.33	1.97	2.08	2.13	2.12	2.13	2.08
80	251	138	75.7	42.8	29.3	16.0	9.60	7.61	4.34	2.48	1.68	1.47	1.74	2.24	2.41	2.54	2.58	2.54	2.41
85	113	67.7	41.0	25.2	17.0	10.5	7.16	5.84	3.92	2.71	2.09	2.00	2.22	2.59	2.80	2.97	3.06	2.97	2.80
90	40.0	33.6	26.1	19.0	12.8	9.20	6.74	5.16	3.88	3.08	2.69	2.62	2.76	3.02	3.21	3.38	3.49	3.38	3.21
95	28.4	23.9	19.1	14.7	10.9	8.29	6.42	5.11	4.22	3.70	3.45	3.35	3.40	3.55	3.77	3.99	4.15	3.99	3.77
100	28.6	21.2	16.0	12.2	9.53	7.53	6.20	5.35	4.67	4.25	4.04	3.97	4.03	4.18	4.45	4.72	4.91	4.72	4.45
105	20.7	14.9	10.1	6.39	3.94	3.46	3.84	4.64	4.89	5.10	5.26	5.23	5.16	5.13	5.37	5.63	5.83	5.63	5.37
110	12.9	7.82	6.48	6.67	7.47	6.40	5.23	4.21	4.03	4.11	4.36	4.55	4.78	5.02	5.31	5.55	5.69	5.55	5.31
115	13.3	8.11	6.24	5.88	6.26	5.48	4.77	4.21	4.15	4.25	4.43	4.50	4.56	4.61	4.65	4.68	4.69	4.68	4.65
120	11.1	7.55	5.93	5.27	5.16	4.59	4.17	3.93	3.99	4.17	4.40	4.49	4.57	4.62	4.66	4.68	4.68	4.68	4.66
125	9.57	7.35	5.96	5.08	4.57	4.13	3.90	3.85	4.00	4.25	4.52	4.66	4.77	4.85	4.91	4.94	4.94	4.94	4.91
130	8.18	6.83	5.70	4.81	4.18	3.92	3.88	3.98	4.11	4.30	4.53	4.77	5.00	5.19	5.30	5.35	5.36	5.35	5.30
135	4.10	4.50	4.48	4.29	4.06	4.04	4.09	4.19	4.39	4.62	4.86	5.04	5.20	5.33	5.41	5.46	5.46	5.46	5.41
140	4.87	5.47	5.21	4.66	4.05	4.03	4.14	4.32	4.47	4.64	4.84	5.11	5.37	5.59	5.67	5.70	5.70	5.70	5.67
145	4.26	4.79	4.74	4.49	4.19	4.24	4.36	4.53	4.68	4.84	5.02	5.27	5.51	5.71	5.76	5.76	5.73	5.76	5.76
150	3.85	4.32	4.43	4.39	4.30	4.42	4.56	4.72	4.84	4.95	5.07	5.27	5.45	5.59	5.58	5.54	5.47	5.54	5.58
155	4.10	4.62	4.79	4.80	4.72	4.70	4.68	4.67	4.75	4.85	4.98	5.12	5.25	5.33	5.27	5.18	5.09	5.18	5.27
160	4.53	5.07	5.23	5.20	5.05	4.97	4.88	4.81	4.86	4.92	4.97	4.94	4.88	4.82	4.79	4.76	4.73	4.76	4.79
165	4.67	5.17	5.28	5.19	5.01	4.95	4.88	4.80	4.72	4.62	4.52	4.37	4.22	4.11	4.10	4.13	4.16	4.13	4.10
170	4.50	4.86	4.90	4.78	4.55	4.32	4.09	3.88	3.79	3.74	3.70	3.61	3.53	3.47	3.42	3.40	3.40	3.40	3.42
175	4.24	4.48	4.49	4.38	4.17	3.91	3.64	3.41	3.37	3.37	3.38	3.28	3.17	3.09	3.10	3.14	3.20	3.14	3.10
180	3.57	3.56	3.56	3.56	3.54	3.48	3.41	3.33	3.24	3.15	3.08	3.04	3.02	3.02	3.04	3.07	3.11	3.07	3.04

C (DEG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355				
y (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	3875	3872	3868	3862	3857	3854	3851	3855	3859	3864	3863	3863	3869	3886	3911				
5	3096	3093	3105	3124	3127	3133	3143	3172	3204	3233	3219	3221	3264	3401	3602				
10	2841	2848	2866	2894	2923	2961	3007	3083	3157	3215	3186	3161	3172	3296	3488				
15	1899	1954	2031	2133	2279	2443	2613	2778	2928	3054	3106	3141	3180	3267	3376				
20	1002	1045	1117	1226	1405	1620	1865	2138	2416	2684	2920	3121	3275	3359	3386				
25	806	812	829	860	885	952	1085	1390	1746	2112	2414	2673	2876	2993	3040				
30	629	669	714	759	769	794	852	968	1152	1418	1919	2430	2864	3017	3005				
35	359	397	448	510	594	683	769	767	806	937	1403	1919	2391	2603	2679				
40	205	220	247	289	362	449	544	599	686	834	1180	1564	1932	2164	2328				
45	202	194	191	200	232	282	352	432	543	695	933	1207	1504	1789	2082				
50	112	134	160	187	193	207	242	333	446	573	657	774	953	1260	1656				
55	72.1	76.3	84.5	98.4	120	150	192	252	323	405	453	540	695	989	1382				
60	44.4	46.1	50.1	58.1	72.1	93.2	123	164	215	278	316	392	530	792	1142				
65	1.32	3.22	7.40	14.7	25.5	41.4	63.3	90.0	127	176	222	300	429	647	933				
70	1.66	0.53	0.11	1.14	2.91	8.78	20.6	38.3	67.2	111	163	244	364	548	780				
75	1.97	1.33	1.03	1.42	2.22	4.96	10.5	14.8	27.3	52.8	94.4	159	253	390	561				
80	2.24	1.74	1.47	1.68	2.48	4.34	7.61	9.60	16.0	29.3	42.8	75.7	138	251	404				
85	2.59	2.22	2.00	2.09	2.71	3.92	5.84	7.16	10.5	17.0	25.2	41.0	67.7	113	172				
90	3.02	2.76	2.62	2.69	3.08	3.88	5.16	6.74	9.20	12.8	19.0	26.1	33.6	40.0	46.3				
95	3.55	3.40	3.35	3.45	3.70	4.22	5.11	6.42	8.29	10.9	14.7	19.1	23.9	28.4	33.1				
100	4.18	4.03	3.97	4.04	4.25	4.67	5.35	6.20	7.53	9.53	12.2	16.0	21.2	28.6	37.8				
105	5.13	5.16	5.23	5.26	5.10	4.89	4.64	3.84	3.46	3.94	6.39	10.1	14.9	20.7	27.6				
110	5.02	4.78	4.55	4.36	4.11	4.03	4.21	5.23	6.40	7.47	6.67	6.48	7.82	12.9	20.4				
115	4.61	4.56	4.50	4.43	4.25	4.15	4.21	4.77	5.48	6.26	5.88	6.24	8.11	13.3	20.7				
120	4.62	4.57	4.49	4.40	4.17	3.99	3.93	4.17	4.59	5.16	5.27	5.93	7.55	11.1	16.0				
125	4.85	4.77	4.66	4.52	4.25	4.00	3.85	3.90	4.13	4.57	5.08	5.96	7.35	9.57	12.4				
130	5.19	5.00	4.77	4.53	4.30	4.11	3.98	3.88	3.92	4.18	4.81	5.70	6.83	8.18	9.77				
135	5.33	5.20	5.04	4.86	4.62	4.39	4.19	4.09	4.04	4.06	4.29	4.48	4.50	4.10	3.42				
140	5.59	5.37	5.11	4.84	4.64	4.47	4.32	4.14	4.03	4.05	4.66	5.21	5.47	4.87	3.74				
145	5.71	5.51	5.27	5.02	4.84	4.68	4.53	4.36	4.24	4.19	4.49	4.74	4.79	4.26	3.37				
150	5.59	5.45	5.27	5.07	4.95	4.84	4.72	4.56	4.42	4.30	4.39	4.43	4.32	3.85	3.14				
155	5.33	5.25	5.12	4.98	4.85	4.75	4.67	4.68	4.70	4.72	4.80	4.79	4.62	4.10	3.35				
160	4.82	4.88	4.94	4.97	4.92	4.86	4.81	4.88	4.97	5.05	5.20	5.23	5.07	4.53	3.71				
165	4.11	4.22	4.37	4.52	4.62	4.72	4.80	4.88	4.95	5.01	5.19	5.28	5.17	4.67	3.80				
170	3.47	3.53	3.61	3.70	3.74	3.79	3.88	4.00	4.32	4.55	4.78	4.90	4.86	4.50	3.90				
175	3.09	3.17	3.28	3.38	3.37	3.37	3.41	3.64	3.91	4.17	4.38	4.49	4.48	4.24	3.82				
180	3.02	3.02	3.04	3.08	3.15	3.24	3.33	3.41	3.48	3.54	3.56	3.56	3.56	3.57	3.58				

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	WPX3 @ 100W / 3000K	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	0.838	100.2	0.997	4.37
277.0	60	0.374	97.5	0.940	8.77

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*****