

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

Prepared By

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Issue Date: 2023-10-26

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		18047
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-180° zones)		IES LM-79-2008	N/A		139.3
Luminaire Output (lm) (Goniophotometer – Section 4.2) (0°-90° zones)		IES LM-79-2008	300		17562
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2) (0°-90° zones)		IES LM-79-2008	Standard	Premium	135.5
			105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)		IES LM-79-2008	Worst Case		129.6
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)		ANSI C82.77:2014	20.00%	120V	4.25
				277V	6.51
Power Factor (THD & PF – Section 4.3)		ANSI C82.77:2014	0.9	120V	0.998
				277V	0.960
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)		IES LM-79-2008	7 steps	5029±283	5250
			4 steps	5029±220	
Minimum CRI (Integrating Sphere – Section 4.1)		IES LM-79-2008 CIE13.3-1995	≥70		84.8
Minimum R9 (Integrating Sphere – Section 4.1)		IES LM-79-2008 CIE13.3-1995	N/A		14
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		95
IES Rcs,h1 (Integrating Sphere – Section 4.1)		ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-12%
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		1.082
(Goniophotometer – Section 4.2)			Non-Worst Case		0.474
Power (Input Wattage – W)					
(Goniophotometer – Section 4.2)		IES LM-79-2008	Worst Case		129.6
(Goniophotometer – Section 4.2)			Non-Worst Case		126.0

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2023-10-20	WPX3 @ 130W / 5000K	231020001-S1
2	Goniophotometer Test	2023-10-20	WPX3 @ 130W / 5000K	231020001-S1
3	THD and PF Test	2023-10-20	WPX3 @ 130W / 5000K	231020001-S1

Remark (If any)

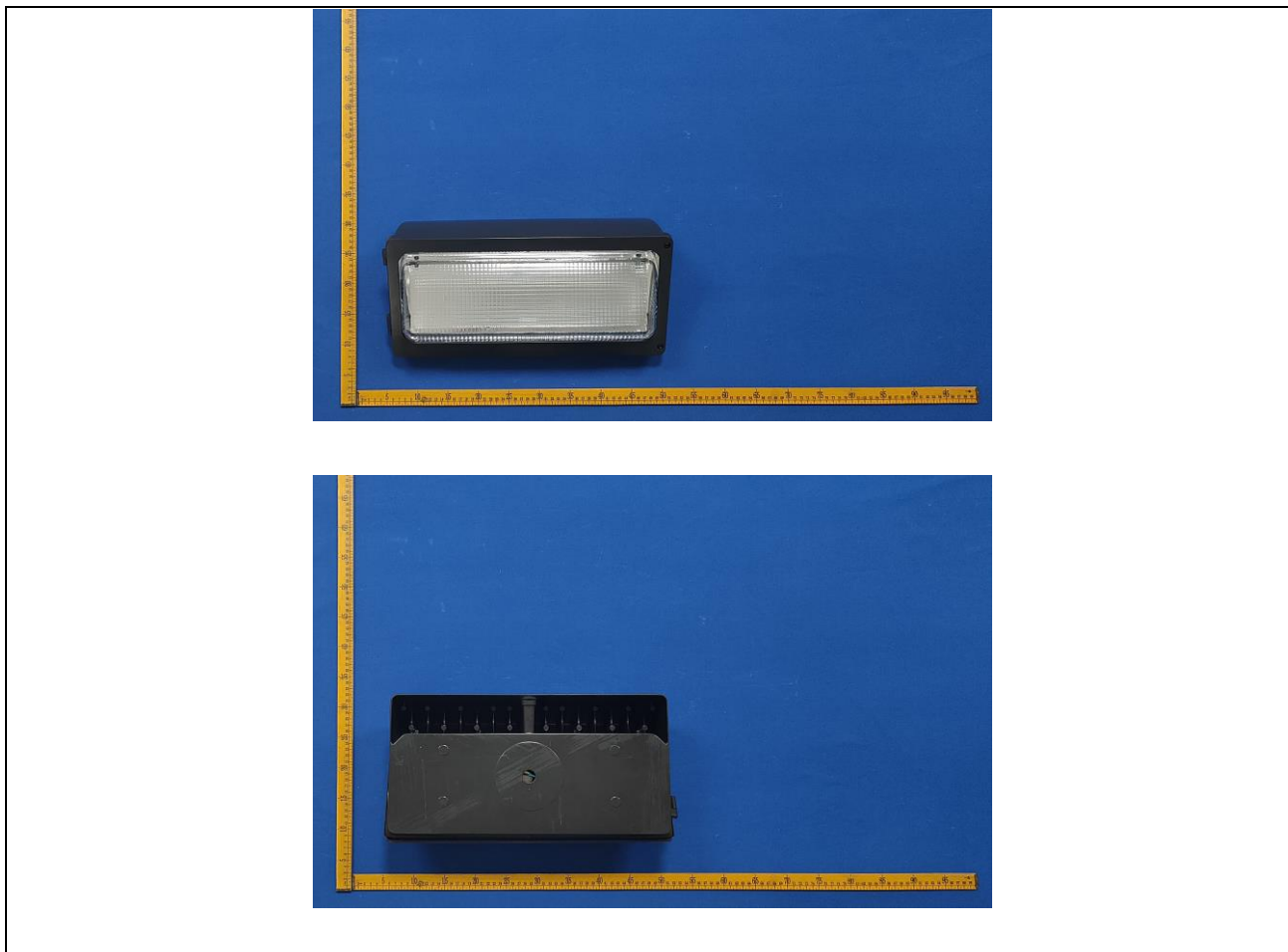
1. The results contained in this report pertain only to the tested samples.
2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.
3. This report does not imply product certification, approval, or endorsement by NVLAP, or any agency of the Federal Government.

3.0 Product Description

Luminaire Description: Model No. WPX3 @ 130W / 5000K, 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 @ 130W / 5000K	Sample ID	231020001-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

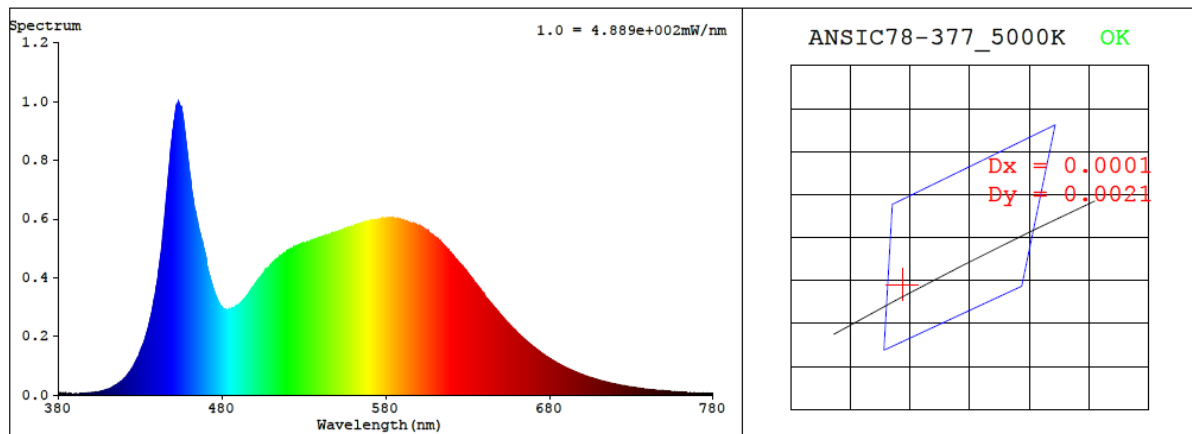
Test Method
<p>The Samples were tested according to the IES LM-79-2008.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere.</p> <p>The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ±0.2 percent under load.</p> <p>The sample was measured using 4π geometry and operated at rated voltage and was stabilized before measurement.</p> <p>Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780nm.</p>

Test Result

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.0	60	1.082	129.6	0.998
277.0	60	0.474	126.0	0.960

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
5250	84.8	14	0.0010	85	95	-12%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3386$ $y = 0.3483$ / $u' = 0.2083$ $v' = 0.4821$ ($duv=1.04e-03$)

CCT= 5250K Prcp WL: $L_d=566.5nm$ Purity=6.1%

Peak WL: $L_p=453nm$ FWHM: $\approx 26.0nm$ Ratio: R=15.5% G=79.3% B=5.1%

Render Index: $R_a = 84.8$ AvgR = 78.6 TM30: $R_f=84$ $R_g=95$

EEL: 0.09612 A++ Highest

R1 =83 R2 =91 R3 =94 R4 =84 R5 =84 R6 =86 R7 =87
R8 =69 R9 =14 R10=78 R11=83 R12=65 R13=86 R14=97 R15=79

4.1 Integrating Sphere Test

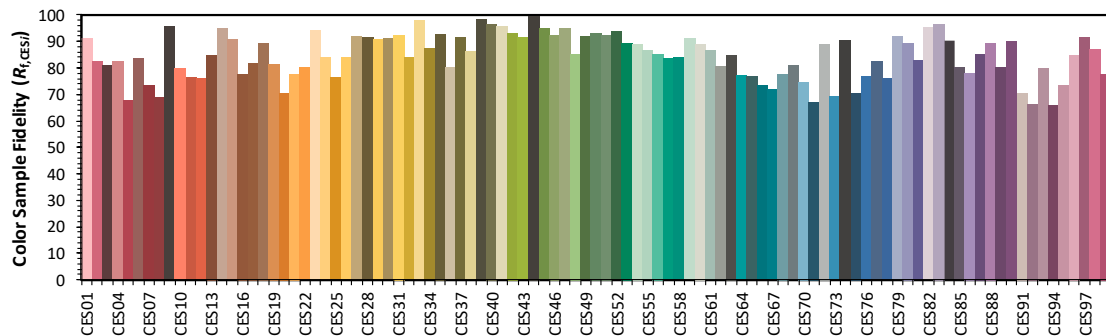
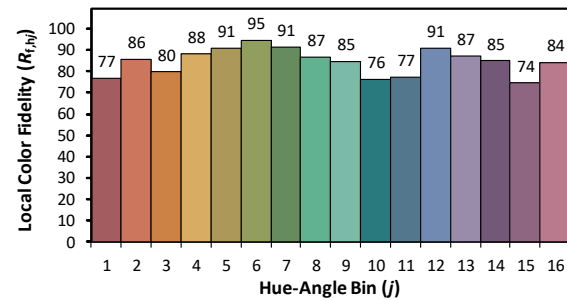
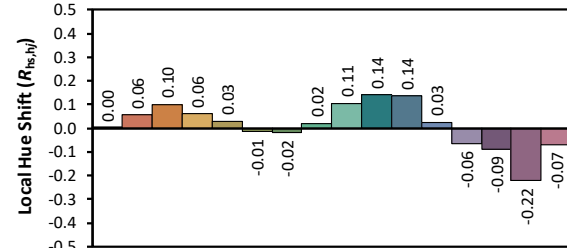
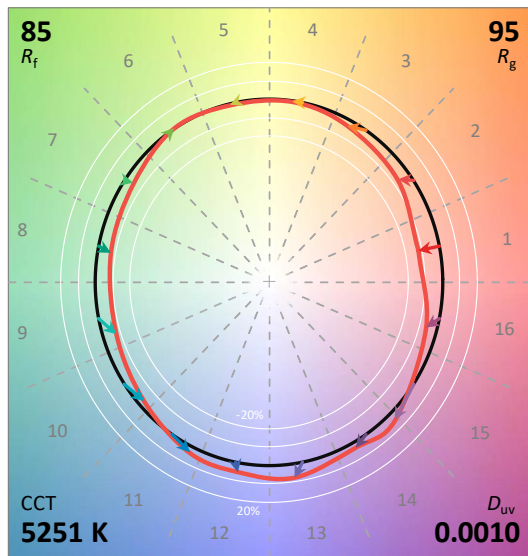
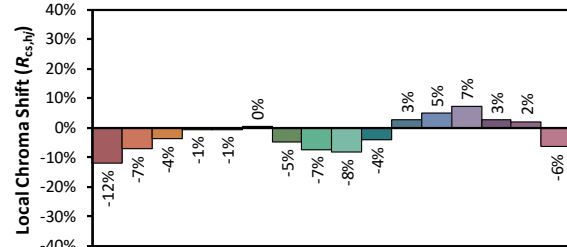
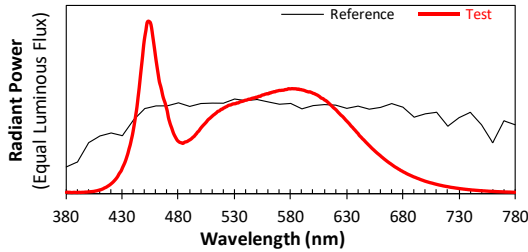
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2023/10/26

Model: WPX3 @ 130W / 5000K



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

x 0.3385
 y 0.3482
 u' 0.2083
 v' 0.4820

CIE 13.3-1995
(CRI)

R_a 85
 R_9 14

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

4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength											
WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)
380	5.60E-06	447	7.31E-04	514	4.65E-04	581	6.03E-04	648	2.88E-04	715	4.41E-05
381	6.70E-06	448	7.90E-04	515	4.72E-04	582	6.03E-04	649	2.82E-04	716	4.25E-05
382	5.50E-06	449	8.56E-04	516	4.74E-04	583	6.03E-04	650	2.75E-04	717	4.14E-05
383	5.80E-06	450	9.03E-04	517	4.78E-04	584	6.03E-04	651	2.69E-04	718	4.01E-05
384	4.90E-06	451	9.40E-04	518	4.84E-04	585	6.02E-04	652	2.62E-04	719	3.91E-05
385	4.20E-06	452	9.83E-04	519	4.85E-04	586	6.00E-04	653	2.56E-04	720	3.79E-05
386	5.00E-06	453	9.92E-04	520	4.91E-04	587	6.01E-04	654	2.50E-04	721	3.67E-05
387	5.50E-06	454	9.90E-04	521	4.93E-04	588	5.98E-04	655	2.44E-04	722	3.53E-05
388	5.20E-06	455	9.83E-04	522	4.98E-04	589	5.98E-04	656	2.38E-04	723	3.42E-05
389	4.90E-06	456	9.54E-04	523	5.00E-04	590	5.96E-04	657	2.32E-04	724	3.33E-05
390	4.60E-06	457	9.09E-04	524	5.05E-04	591	5.95E-04	658	2.27E-04	725	3.24E-05
391	5.50E-06	458	8.63E-04	525	5.08E-04	592	5.93E-04	659	2.21E-04	726	3.14E-05
392	5.40E-06	459	8.16E-04	526	5.09E-04	593	5.91E-04	660	2.16E-04	727	3.03E-05
393	4.90E-06	460	7.68E-04	527	5.11E-04	594	5.88E-04	661	2.10E-04	728	2.94E-05
394	5.70E-06	461	7.25E-04	528	5.14E-04	595	5.86E-04	662	2.05E-04	729	2.86E-05
395	5.70E-06	462	6.83E-04	529	5.16E-04	596	5.84E-04	663	1.99E-04	730	2.75E-05
396	6.00E-06	463	6.42E-04	530	5.16E-04	597	5.85E-04	664	1.94E-04	731	2.67E-05
397	7.00E-06	464	6.20E-04	531	5.17E-04	598	5.82E-04	665	1.89E-04	732	2.58E-05
398	6.80E-06	465	5.93E-04	532	5.21E-04	599	5.80E-04	666	1.84E-04	733	2.52E-05
399	7.70E-06	466	5.63E-04	533	5.21E-04	600	5.76E-04	667	1.79E-04	734	2.42E-05
400	8.10E-06	467	5.40E-04	534	5.24E-04	601	5.75E-04	668	1.74E-04	735	2.36E-05
401	8.90E-06	468	5.23E-04	535	5.27E-04	602	5.71E-04	669	1.70E-04	736	2.26E-05
402	9.20E-06	469	4.98E-04	536	5.29E-04	603	5.68E-04	670	1.65E-04	737	2.23E-05
403	9.90E-06	470	4.74E-04	537	5.30E-04	604	5.65E-04	671	1.61E-04	738	2.12E-05
404	1.06E-05	471	4.38E-04	538	5.32E-04	605	5.61E-04	672	1.56E-04	739	2.08E-05
405	1.16E-05	472	4.14E-04	539	5.36E-04	606	5.56E-04	673	1.52E-04	740	2.00E-05
406	1.31E-05	473	3.93E-04	540	5.37E-04	607	5.50E-04	674	1.48E-04	741	1.94E-05
407	1.41E-05	474	3.76E-04	541	5.38E-04	608	5.48E-04	675	1.44E-04	742	1.87E-05
408	1.59E-05	475	3.56E-04	542	5.41E-04	609	5.45E-04	676	1.40E-04	743	1.84E-05
409	1.76E-05	476	3.40E-04	543	5.43E-04	610	5.39E-04	677	1.37E-04	744	1.78E-05
410	1.97E-05	477	3.27E-04	544	5.42E-04	611	5.35E-04	678	1.32E-04	745	1.72E-05
411	2.11E-05	478	3.15E-04	545	5.47E-04	612	5.31E-04	679	1.29E-04	746	1.67E-05
412	2.38E-05	479	3.05E-04	546	5.48E-04	613	5.25E-04	680	1.25E-04	747	1.62E-05
413	2.66E-05	480	2.99E-04	547	5.50E-04	614	5.19E-04	681	1.21E-04	748	1.56E-05
414	3.06E-05	481	2.94E-04	548	5.50E-04	615	5.13E-04	682	1.18E-04	749	1.52E-05
415	3.31E-05	482	2.92E-04	549	5.54E-04	616	5.07E-04	683	1.14E-04	750	1.48E-05
416	3.66E-05	483	2.90E-04	550	5.53E-04	617	5.01E-04	684	1.11E-04	751	1.42E-05
417	4.10E-05	484	2.88E-04	551	5.57E-04	618	4.94E-04	685	1.08E-04	752	1.38E-05
418	4.51E-05	485	2.92E-04	552	5.59E-04	619	4.89E-04	686	1.05E-04	753	1.36E-05
419	4.96E-05	486	2.96E-04	553	5.59E-04	620	4.83E-04	687	1.02E-04	754	1.29E-05
420	5.50E-05	487	2.97E-04	554	5.64E-04	621	4.77E-04	688	9.95E-05	755	1.27E-05
421	6.04E-05	488	3.00E-04	555	5.67E-04	622	4.69E-04	689	9.63E-05	756	1.21E-05
422	6.66E-05	489	3.04E-04	556	5.68E-04	623	4.63E-04	690	9.37E-05	757	1.17E-05
423	7.36E-05	490	3.08E-04	557	5.71E-04	624	4.56E-04	691	9.15E-05	758	1.14E-05
424	8.09E-05	491	3.12E-04	558	5.73E-04	625	4.49E-04	692	8.86E-05	759	1.12E-05
425	8.91E-05	492	3.17E-04	559	5.74E-04	626	4.44E-04	693	8.61E-05	760	1.08E-05
426	9.89E-05	493	3.24E-04	560	5.73E-04	627	4.38E-04	694	8.39E-05	761	1.04E-05
427	1.11E-04	494	3.28E-04	561	5.79E-04	628	4.30E-04	695	8.11E-05	762	1.03E-05
428	1.21E-04	495	3.37E-04	562	5.78E-04	629	4.23E-04	696	7.85E-05	763	9.80E-06
429	1.30E-04	496	3.44E-04	563	5.82E-04	630	4.16E-04	697	7.62E-05	764	9.40E-06
430	1.46E-04	497	3.53E-04	564	5.83E-04	631	4.09E-04	698	7.40E-05	765	9.20E-06
431	1.60E-04	498	3.58E-04	565	5.86E-04	632	4.02E-04	699	7.14E-05	766	9.00E-06
432	1.74E-04	499	3.68E-04	566	5.85E-04	633	3.95E-04	700	6.93E-05	767	8.70E-06
433	1.91E-04	500	3.77E-04	567	5.89E-04	634	3.87E-04	701	6.73E-05	768	8.50E-06
434	2.11E-04	501	3.84E-04	568	5.90E-04	635	3.81E-04	702	6.54E-05	769	8.10E-06
435	2.32E-04	502	3.92E-04	569	5.92E-04	636	3.73E-04	703	6.35E-05	770	7.80E-06
436	2.57E-04	503	3.98E-04	570	5.93E-04	637	3.66E-04	704	6.16E-05	771	7.50E-06
437	2.80E-04	504	4.05E-04	571	5.93E-04	638	3.59E-04	705	6.00E-05	772	7.40E-06
438	3.09E-04	505	4.13E-04	572	5.94E-04	639	3.51E-04	706	5.84E-05	773	7.30E-06
439	3.38E-04	506	4.21E-04	573	5.94E-04	640	3.45E-04	707	5.67E-05	774	7.00E-06
440	3.74E-04	507	4.28E-04	574	5.95E-04	641	3.35E-04	708	5.47E-05	775	6.90E-06
441	4.13E-04	508	4.33E-04	575	5.98E-04	642	3.28E-04	709	5.31E-05	776	6.70E-06
442	4.54E-04	509	4.39E-04	576	5.98E-04	643	3.22E-04	710	5.14E-05	777	6.30E-06
443	4.97E-04	510	4.44E-04	577	6.00E-04	644	3.14E-04	711	4.99E-05	778	6.10E-06
444	5.54E-04	511	4.50E-04	578	6.03E-04	645	3.09E-04	712	4.82E-05	779	6.10E-06
445	6.08E-04	512	4.55E-04	579	6.02E-04	646	3.02E-04	713	4.68E-05	780	6.10E-06
446	6.71E-04	513	4.60E-04	580	6.02E-04	647	2.95E-04	714	4.55E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	WPX3 @ 130W / 5000K	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	1.082	129.6	0.998
NON-WORST CASE	277.0	60	0.474	126.0	0.960

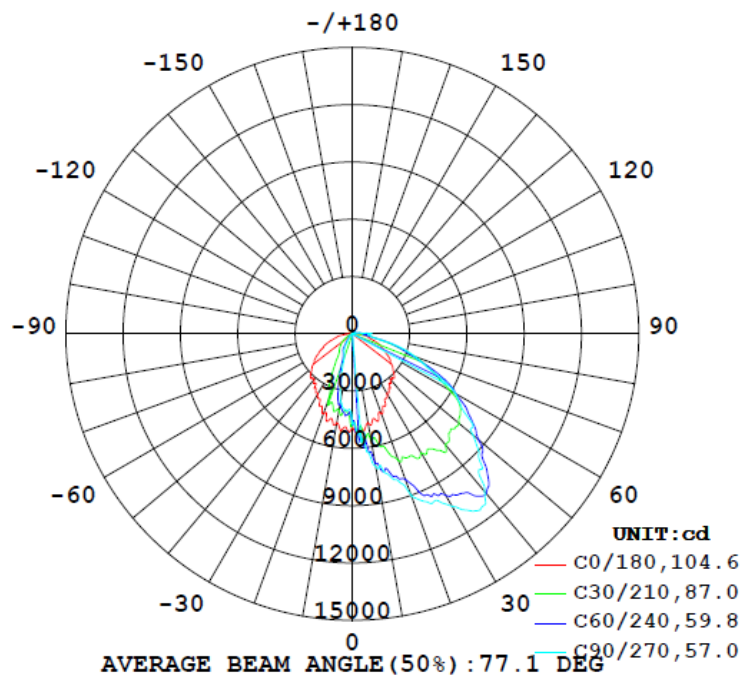
Test Result

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	18047	105.9	147.4	56.4	100.5	139.3	2.2%	B3-U3-G3
0°-90° zones	17562	105.9	147.4	56.4	100.5	135.5	2.2%	B3-U3-G3

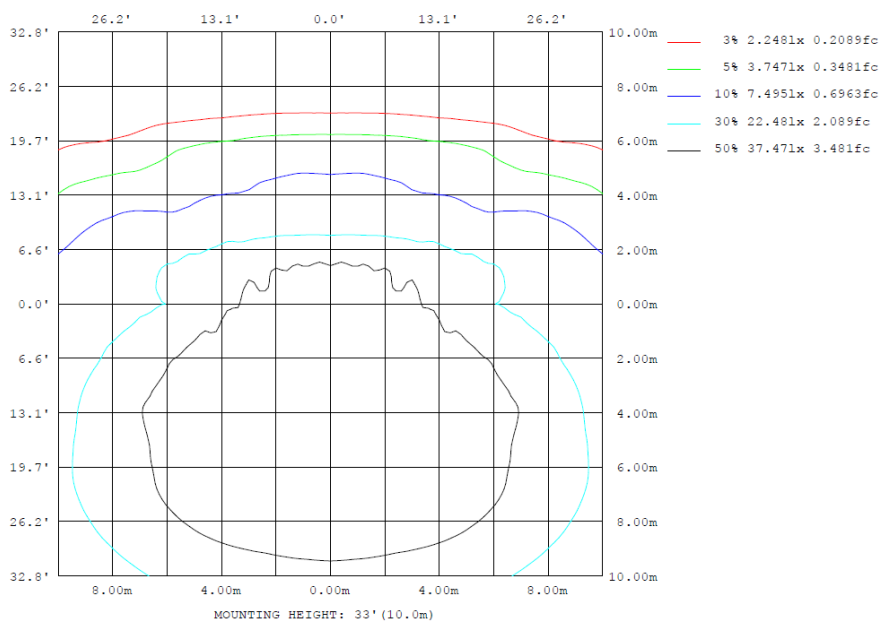
4.2 Goniophotometer Test

Lighting Distribution Curve

LUMINOUS INTENSITY DISTRIBUTION DIAGRAM



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

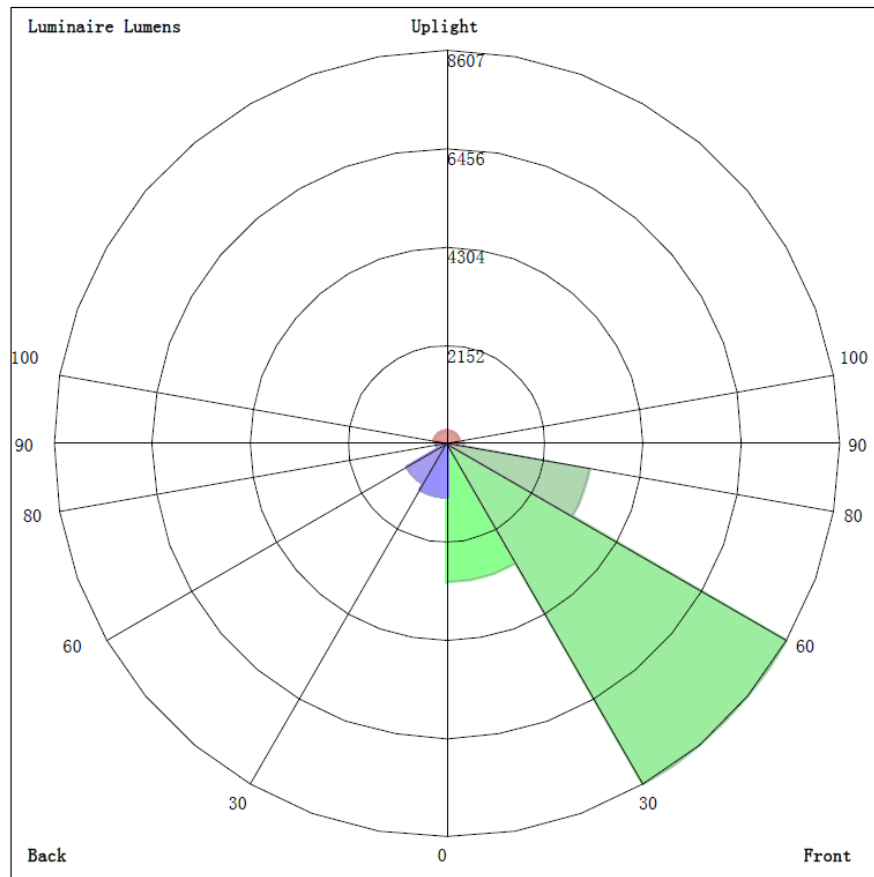
ZONAL FLUX DIAGRAM:

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	Φ zone	Φ total	%lum, lamp
10	472.6	636.9	705.7	636.9	472.6	414.2	365.7	414.2	0- 10	463.6	463.6	2.57,2.57
20	446.3	767.2	900.4	767.2	446.3	237.1	125.8	237.1	10- 20	1415	1879	10.4,10.4
30	363.2	899.8	1043	899.8	363.2	111.9	76.22	111.9	20- 30	2294	4173	23.1,23.1
40	310.8	905.9	1078	905.9	310.8	70.18	25.31	70.18	30- 40	3105	7278	40.3,40.3
50	276.9	863.1	823.2	863.1	276.9	31.32	12.12	31.32	40- 50	3429	10706	59.3,59.3
60	203.7	642.1	624.0	642.1	203.7	15.97	5.743	15.97	50- 60	3083	13789	76.4,76.4
70	139.3	344.3	348.3	344.3	139.3	2.783	0.2172	2.783	60- 70	2250	16040	88.9,88.9
80	77.44	116.9	110.9	116.9	77.44	1.011	0.3436	1.011	70- 80	1133	17172	95.2,95.2
90	7.807	37.62	94.89	37.62	7.807	0.6875	0.4647	0.6875	80- 90	389.9	17562	97.3,97.3
100	6.320	29.32	41.36	29.32	6.320	0.7131	0.6513	0.7131	90-100	211.1	17773	98.5,98.5
110	3.441	10.55	13.96	10.55	3.441	0.5688	0.7553	0.5688	100-110	83.64	17857	98.9,98.9
120	2.895	18.02	11.03	18.02	2.895	0.5286	0.6209	0.5286	110-120	56.70	17914	99.3,99.3
130	1.532	14.62	18.56	14.62	1.532	0.5329	0.7071	0.5329	120-130	59.58	17973	99.6,99.6
140	0.2784	8.560	17.42	8.560	0.2784	0.5755	0.7494	0.5755	130-140	44.11	18018	99.8,99.8
150	0.2907	3.566	7.910	3.566	0.2907	0.6251	0.7190	0.6251	140-150	21.19	18039	100,100
160	0.3449	0.2915	2.326	0.2915	0.3449	0.6359	0.6205	0.6359	150-160	6.386	18045	100,100
170	0.4042	0.3875	0.3905	0.3875	0.4042	0.5130	0.4469	0.5130	160-170	1.651	18047	100,100
180	0.4708	0.4503	0.3925	0.4503	0.4708	0.4381	0.4083	0.4381	170-180	0.4257	18047	100,100
DEG	LUMINOUS INTENSITY:×10cd									UNIT:lm		

Zonal (lm)		Total (lm)		Percent
0-10	463.62	0-10	463.62	2.57%
10-20	1414.91	0-20	1878.53	10.41%
20-30	2294.02	0-30	4172.55	23.12%
30-40	3105.09	0-40	7277.64	40.33%
40-50	3428.74	0-50	10706.38	59.33%
50-60	3082.95	0-60	13789.33	76.41%
60-70	2250.31	0-70	16039.64	88.88%
70-80	1132.82	0-80	17172.46	95.16%
80-90	389.91	0-90	17562.37	97.32%
90-100	211.08	0-100	17773.45	98.49%
100-110	83.64	0-110	17857.09	98.95%
110-120	56.70	0-120	17913.79	99.26%
120-130	59.58	0-130	17973.37	99.59%
130-140	44.11	0-140	18017.48	99.84%
140-150	21.19	0-150	18038.67	99.96%
150-160	6.39	0-160	18045.06	99.99%
160-170	1.65	0-170	18046.71	100.00%
170-180	0.43	0-180	18047.14	100.00%

4.2 Goniophotometer Test

LCS/BUG

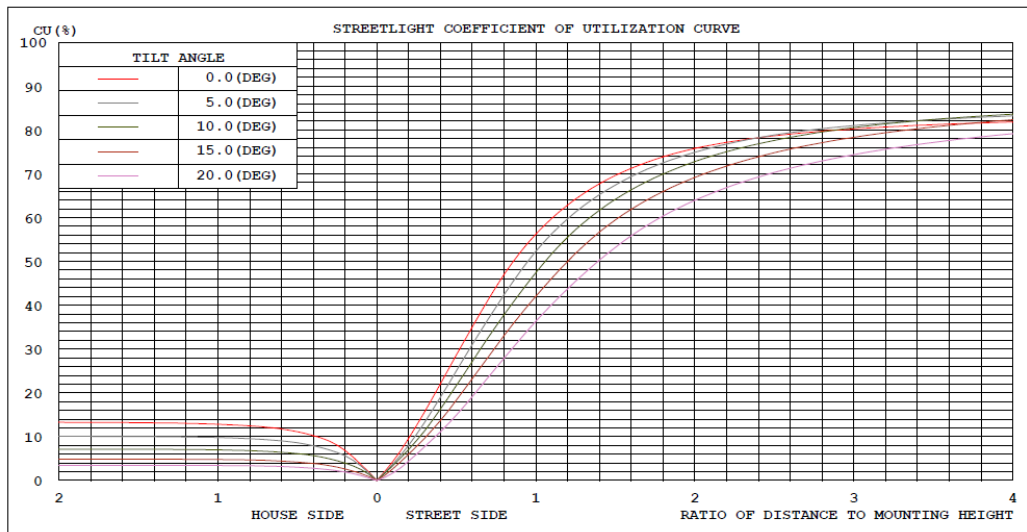


LUMINAIRE CLASSIFICATION SYSTEM (LCS)

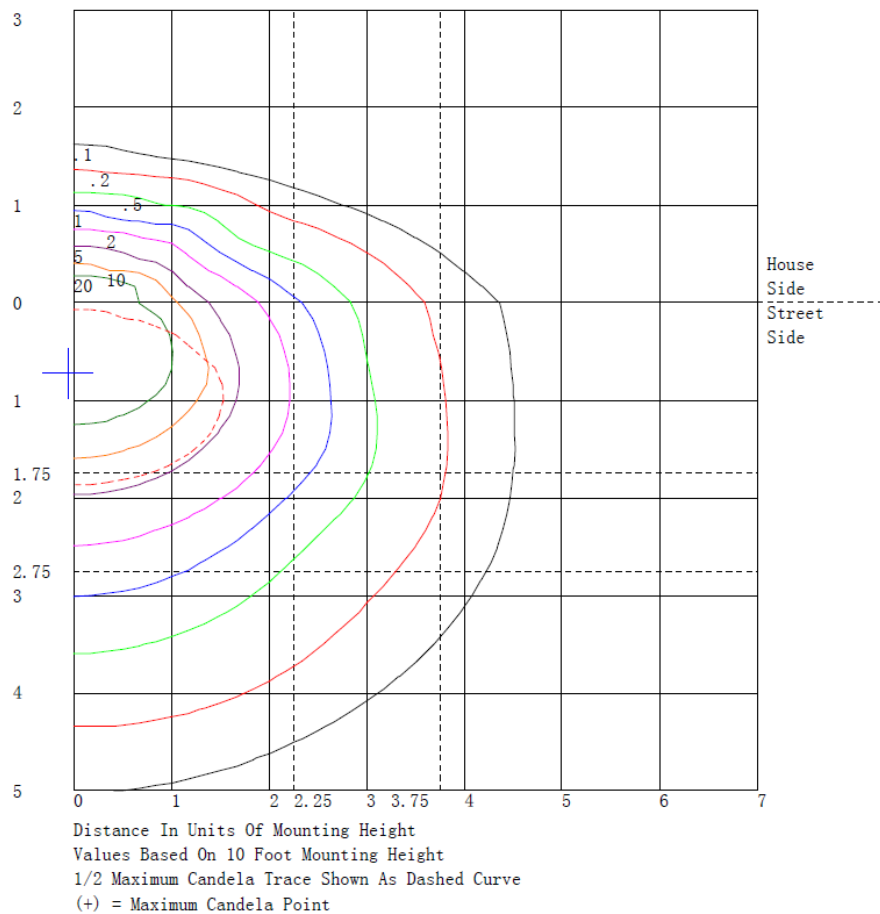
	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	3012.7	N.A.	16.7
FM - Front-Medium (30-60)	8607.4	N.A.	47.7
FH - Front-High (60-80)	3168.2	N.A.	17.6
FVH - Front-Very High (80-90)	363.6	N.A.	2.0
BL - Back-Low (0-30)	1159.8	N.A.	6.4
BM - Back-Medium (30-60)	1009.4	N.A.	5.6
BH - Back-High (60-80)	215.0	N.A.	1.2
BVH - Back-Very High (80-90)	26.3	N.A.	0.1
UL - Uplight-Low (90-100)	211.1	N.A.	1.2
UH - Uplight-High (100-180)	273.7	N.A.	1.5
Total	18047.2	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) y (DEG)	0	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
0	484	484	484	483	483	482	482	481	481	481	480	480	479	478	477	475	475	475	475
5	491	488	486	483	478	476	480	504	530	553	547	538	529	542	559	575	578	579	578
10	473	464	465	476	501	532	565	591	615	637	657	674	688	696	701	703	704	705	706
15	463	467	480	500	530	567	608	653	696	731	743	747	748	758	767	775	777	776	775
20	446	458	483	520	581	646	706	735	754	767	783	798	812	825	839	853	873	890	900
25	414	445	484	529	589	650	708	747	780	812	854	894	928	946	958	966	973	978	981
30	363	420	478	536	597	658	719	784	846	900	933	957	975	993	1008	1021	1031	1039	1043
35	349	427	500	567	627	683	736	791	844	895	939	981	1019	1058	1092	1119	1129	1132	1130
40	311	400	483	560	632	698	758	808	857	906	974	1038	1090	1103	1101	1092	1086	1080	1078
45	312	399	479	552	612	668	725	802	876	940	971	987	992	992	986	976	963	951	944
50	277	350	424	499	580	658	729	787	832	863	871	869	861	859	855	850	839	829	823
55	244	291	349	418	515	610	693	724	738	740	746	749	750	751	750	746	734	722	714
60	204	249	302	362	441	518	586	618	636	642	640	633	625	623	623	624	624	624	624
65	167	218	268	317	371	420	462	486	500	506	506	502	494	483	472	462	458	455	455
70	139	165	194	226	269	310	343	352	351	344	339	334	330	333	338	344	346	348	348
75	99.7	111	125	142	169	194	214	213	208	202	208	216	225	231	236	239	241	242	243
80	77.4	78.2	81.2	86.6	96.8	107	117	119	119	117	114	111	109	109	109	110	110	111	111
85	32.3	34.2	37.1	40.9	46.4	52.3	57.9	61.9	65.2	68.0	70.5	72.9	75.3	78.5	81.8	85.1	88.8	91.8	93.6
90	7.81	11.5	15.1	18.6	22.0	25.3	28.4	30.5	33.3	37.6	46.9	57.5	68.3	77.4	85.2	91.3	93.8	94.8	94.9
95	4.95	7.06	9.30	11.7	13.8	16.3	19.5	24.6	30.3	36.0	41.7	46.6	50.4	51.4	51.3	50.5	50.0	49.5	49.1
100	6.32	5.87	5.95	6.57	7.33	8.92	11.6	17.4	23.6	29.3	31.5	32.7	33.5	35.4	37.3	39.0	40.2	41.0	41.4
105	4.57	3.85	3.92	4.79	7.21	9.86	12.2	12.4	12.1	11.5	11.4	11.3	11.4	11.7	12.1	12.5	12.9	13.2	13.4
110	3.44	2.73	3.28	5.10	9.78	14.5	18.2	16.2	13.3	10.6	12.2	14.6	16.9	16.9	16.2	15.3	14.6	14.1	14.0
115	3.91	2.52	2.40	3.54	6.93	10.8	14.6	16.6	17.5	17.0	13.5	9.43	5.87	5.82	6.75	8.15	9.03	9.72	10.1
120	2.89	1.43	1.20	2.19	5.19	8.84	12.5	14.9	16.8	18.0	18.6	18.6	18.1	16.6	14.9	13.2	11.9	11.1	11.0
125	2.09	0.89	0.70	1.54	3.97	7.00	10.2	12.7	14.9	16.8	18.0	18.8	19.3	19.5	19.4	19.2	18.8	18.5	18.3
130	1.53	0.43	0.22	0.89	2.87	5.41	8.19	10.5	12.7	14.6	16.4	17.8	18.9	19.2	19.2	19.0	18.9	18.7	18.6
135	0.59	0.26	0.43	1.11	2.46	4.19	6.17	8.21	10.3	12.3	14.1	15.7	17.0	17.9	18.6	19.1	19.5	19.8	19.8
140	0.28	0.77	1.34	1.98	2.66	3.46	4.41	5.68	7.09	8.56	10.0	11.5	12.7	13.6	14.4	15.1	16.1	16.9	17.4
145	0.28	0.53	0.84	1.23	1.66	2.19	2.84	3.70	4.68	5.75	6.95	8.13	9.21	9.96	10.6	11.0	11.5	11.9	12.1
150	0.29	0.53	0.67	0.71	0.42	0.21	0.24	1.20	2.38	3.57	4.18	4.66	5.11	5.76	6.40	6.98	7.44	7.76	7.91
155	0.31	0.26	0.27	0.34	0.49	0.68	0.92	1.13	1.39	1.70	2.17	2.66	3.14	3.48	3.75	3.96	4.10	4.17	4.19
160	0.34	0.34	0.34	0.34	0.37	0.40	0.42	0.33	0.27	0.29	0.59	0.96	1.37	1.69	1.97	2.20	2.29	2.33	2.33
165	0.37	0.38	0.39	0.39	0.37	0.36	0.36	0.38	0.42	0.47	0.58	0.68	0.74	0.61	0.45	0.30	0.27	0.28	0.30
170	0.40	0.41	0.41	0.42	0.42	0.42	0.41	0.40	0.40	0.39	0.38	0.37	0.36	0.37	0.37	0.38	0.38	0.38	0.39
175	0.43	0.43	0.44	0.44	0.44	0.43	0.43	0.43	0.43	0.42	0.42	0.41	0.40	0.39	0.39	0.38	0.38	0.37	0.37
180	0.47	0.47	0.47	0.47	0.47	0.46	0.46	0.46	0.45	0.45	0.44	0.44	0.43	0.42	0.42	0.41	0.40	0.40	0.39

Table--2

UNIT: ×10cd

C (DEG) y (DEG)	95	100	105	110	115	120	125	130	135	140	145	150	155	160	165	170	175	180	185
0	475	475	475	477	478	479	480	480	481	481	481	482	482	483	483	484	484	484	481
5	579	578	575	559	542	529	538	547	553	530	504	480	476	478	483	486	488	491	453
10	705	704	703	701	696	688	674	657	637	615	591	565	532	501	476	465	464	473	437
15	776	777	775	767	758	748	747	743	731	696	653	608	567	530	500	480	467	463	437
20	890	873	853	839	825	812	798	783	767	754	735	706	646	581	520	483	458	446	424
25	978	973	966	958	946	928	894	854	812	780	747	708	650	589	529	484	445	414	427
30	1039	1031	1021	1008	993	975	957	933	900	846	784	719	658	597	536	478	420	363	380
35	1132	1129	1119	1092	1058	1019	981	939	895	844	791	736	683	627	567	500	427	349	364
40	1080	1086	1092	1101	1103	1090	1038	974	906	857	808	758	698	632	560	483	400	311	299
45	951	963	976	986	992	992	987	971	940	876	802	725	668	612	552	479	399	312	266
50	829	839	850	855	859	861	869	871	863	832	787	729	658	580	499	424	350	277	213
55	722	734	746	750	751	750	749	746	740	738	724	693	610	515	418	349	291	244	180
60	624	624	624	623	623	625	633	640	642	636	618	586	518	441	362	302	249	204	147
65	455	458	462	472	483	494	502	506	506	500	486	462	420	371	317	268	218	167	121
70	348	346	344	338	333	330	334	339	344	351	352	343	310	269	226	194	165	139	102
75	242	241	239	236	231	225	216	208	202	208	213	214	194	169	142	125	111	99.7	72.8
80	111	110	110	109	109	109	111	114	117	119	119	117	107	96.8	86.6	81.2	78.2	77.4	52.4
85	91.8	88.8	85.1	81.8	78.5	75.3	72.9	70.5	68.0	65.2	61.9	57.9	52.3	46.4	40.9	37.1	34.2	32.3	22.5
90	94.8	93.8	91.3	85.2	77.4	68.3	57.5	46.9	37.6	33.3	30.5	28.4	25.3	22.0	18.6	15.1	11.5	7.81	6.59
95	49.5	50.0	50.5	51.3	51.4	50.4	46.6	41.7	36.0	30.3	24.6	19.5	16.3	13.8	11.7	9.30	7.06	4.95	4.32
100	41.0	40.2	39.0	37.3	35.4	33.5	32.7	31.5	29.3	23.6	17.4	11.6	8.92	7.33	6.57	5.95	5.87	6.32	4.89
105	13.2	12.9	12.5	12.1	11.7	11.4	11.3	11.4	11.5	12.1	12.4	12.2	9.86	7.21	4.79	3.92	3.85	4.57	3.39
110	14.1	14.6	15.3	16.2	16.9	16.9	14.6	12.2	10.6	13.3	16.2	18.2	14.5	9.78	5.10	3.28	2.73	3.44	2.36
115	9.72	9.03	8.15	6.75	5.82	5.87	9.43	13.5	17.0	17.5	16.6	14.6	10.8	6.93	3.54	2.40	2.52	3.91	2.66
120	11.1	11.9	13.2	14.9	16.6	18.1	18.6	18.6	18.0	16.8	14.9	12.5	8.84	5.19	2.19	1.20	1.43	2.89	2.08
125	18.5	18.8	19.2	19.4	19.5	19.3	18.8	18.0	16.8	14.9	12.7	10.2	7.00	3.97	1.54	0.70	0.89	2.09	1.63
130	18.7	18.9	19.0	19.2	19.2	18.9	17.8	16.4	14.6	12.7	10.5	8.19	5.41	2.87	0.89	0.22	0.43	1.53	1.29
135	19.8	19.5	19.1	18.6	17.9	17.0	15.7	14.1	12.3	10.3	8.21	6.17	4.19	2.46	1.11	0.43	0.26	0.59	0.60
140	16.9	16.1	15.1	14.4	13.6	12.7	11.5	10.0	8.56	7.09	5.68	4.41	3.46	2.66	1.98	1.34	0.77	0.28	0.50
145	11.9	11.5	11.0	10.6	9.96	9.21	8.13	6.95	5.75	4.68	3.70	2.84	2.19	1.66	1.23	0.84	0.53	0.28	0.45

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	478	476	475	475	475	474	474	474	474	474	475	474	474	474	474	475	475	475	474
5	425	406	401	401	405	405	406	409	417	425	431	429	425	418	410	402	397	402	410
10	411	396	395	400	408	413	416	414	400	384	370	373	380	386	379	371	366	371	379
15	416	402	398	396	394	381	366	348	328	308	287	268	251	237	228	224	223	224	228
20	406	391	386	379	366	327	282	237	206	180	159	146	137	132	128	126	126	126	128
25	425	408	371	324	273	223	178	140	124	116	113	110	109	108	106	105	104	105	106
30	378	357	303	240	180	148	126	112	105	101	99.8	94.3	88.7	83.7	80.0	77.4	76.2	77.4	80.0
35	358	330	264	190	123	104	97.9	98.5	87.5	76.5	66.2	58.4	52.2	47.3	43.9	41.9	41.2	41.9	43.9
40	278	248	201	151	106	87.4	76.7	70.2	58.0	46.9	37.5	32.3	29.1	27.3	25.9	25.3	25.3	25.3	25.9
45	223	184	148	116	89.3	70.4	56.2	45.7	36.7	30.2	26.1	25.0	25.4	26.4	26.3	26.1	26.0	26.1	26.3
50	162	122	99.4	84.7	74.3	57.9	43.2	31.3	26.7	24.6	23.8	20.6	17.5	14.8	13.3	12.4	12.1	12.4	13.3
55	129	90.5	70.1	58.7	52.3	41.8	32.7	25.0	19.6	15.6	12.8	11.0	9.94	9.42	9.01	8.86	8.92	8.86	9.01
60	102	68.1	50.4	40.8	36.0	28.0	21.3	16.0	12.1	9.42	7.62	6.56	6.04	5.89	5.73	5.69	5.74	5.69	5.73
65	83.9	55.4	38.9	29.0	23.2	16.7	11.9	8.30	5.42	3.34	1.93	0.98	0.43	0.18	0.07	0.09	0.17	0.09	0.07
70	71.0	46.9	31.4	21.1	14.5	8.88	5.11	2.78	1.21	0.41	0.15	0.01	0.07	0.23	0.23	0.23	0.22	0.23	0.23
75	50.4	32.6	20.5	12.3	7.03	3.71	2.03	1.41	0.67	0.30	0.19	0.14	0.18	0.27	0.28	0.28	0.28	0.28	0.28
80	32.5	17.7	9.69	5.53	3.88	2.14	1.30	1.01	0.58	0.33	0.23	0.20	0.24	0.30	0.32	0.34	0.34	0.34	0.32
85	14.7	8.74	5.28	3.26	2.25	1.40	0.96	0.78	0.53	0.37	0.28	0.27	0.30	0.35	0.38	0.40	0.41	0.40	0.38
90	5.45	4.39	3.36	2.45	1.68	1.21	0.89	0.69	0.52	0.42	0.36	0.35	0.37	0.41	0.43	0.45	0.46	0.45	0.43
95	3.71	3.12	2.50	1.93	1.43	1.10	0.85	0.68	0.56	0.50	0.46	0.45	0.46	0.48	0.51	0.54	0.56	0.54	0.51
100	3.69	2.73	2.06	1.59	1.27	1.01	0.83	0.71	0.62	0.57	0.54	0.53	0.54	0.56	0.59	0.63	0.65	0.63	0.59
105	2.41	1.63	1.09	0.74	0.54	0.49	0.54	0.63	0.66	0.68	0.70	0.70	0.69	0.68	0.71	0.75	0.77	0.75	0.71
110	1.55	1.01	0.88	0.91	1.00	0.86	0.71	0.57	0.54	0.55	0.59	0.61	0.64	0.67	0.71	0.74	0.76	0.74	0.71
115	1.71	1.05	0.82	0.78	0.84	0.73	0.64	0.57	0.56	0.57	0.60	0.60	0.61	0.62	0.62	0.62	0.62	0.62	0.62
120	1.44	0.98	0.78	0.70	0.69	0.62	0.56	0.53	0.54	0.56	0.59	0.60	0.61	0.62	0.62	0.62	0.62	0.62	0.62
125	1.25	0.96	0.78	0.67	0.61	0.55	0.52	0.52	0.54	0.57	0.60	0.62	0.64	0.64	0.65	0.66	0.65	0.66	0.65
130	1.08	0.91	0.76	0.64	0.56	0.53	0.52	0.53	0.55	0.57	0.60	0.63	0.66	0.69	0.70	0.71	0.71	0.71	0.70
135	0.60	0.59	0.58	0.56	0.54	0.54	0.55	0.56	0.59	0.62	0.65	0.67	0.69	0.71	0.72	0.72	0.72	0.72	0.72
140	0.65	0.73	0.69	0.62	0.54	0.54	0.55	0.58	0.59	0.62	0.64	0.68	0.71	0.74	0.75	0.75	0.75	0.75	0.75
145	0.57	0.64	0.63	0.60	0.56	0.56	0.58	0.60	0.62	0.64	0.67	0.70	0.73	0.75	0.76	0.76	0.75	0.76	0.76
150	0.51	0.57	0.59	0.58	0.57	0.59	0.60	0.63	0.64	0.65	0.67	0.70	0.72	0.74	0.74	0.73	0.72	0.73	0.74
155	0.54	0.61	0.63	0.64	0.63	0.62	0.62	0.62	0.63	0.64	0.66	0.68	0.69	0.70	0.70	0.68	0.67	0.68	0.70
160	0.60	0.67	0.69	0.69	0.67	0.66	0.65	0.64	0.64	0.65	0.66	0.65	0.64	0.64	0.63	0.63	0.62	0.63	0.63
165	0.62	0.68	0.70	0.69	0.66	0.65	0.65	0.63	0.62	0.61	0.60	0.58	0.56	0.54	0.54	0.54	0.55	0.54	0.54
170	0.59	0.64	0.65	0.63	0.60	0.57	0.54	0.51	0.50	0.49	0.49	0.48	0.47	0.46	0.45	0.45	0.45	0.45	0.45
175	0.56	0.59	0.59	0.58	0.55	0.51	0.48	0.45	0.44	0.44	0.44	0.43	0.42	0.41	0.41	0.41	0.42	0.41	0.41
180	0.47	0.47	0.47	0.47	0.47	0.46	0.45	0.44	0.43	0.41	0.40	0.40	0.40	0.40	0.40	0.40	0.41	0.40	0.40

C (DEG) y (DEG)	285	290	295	300	305	310	315	320	325	330	335	340	345	350	355				
0	474	474	474	475	474	474	474	474	474	475	475	475	476	478	481				
5	418	425	429	431	425	417	409	406	405	405	401	401	406	425	453				
10	386	380	373	370	384	400	414	416	413	408	400	395	396	411	437				
15	237	251	268	287	308	328	348	366	381	394	396	398	402	416	437				
20	132	137	146	159	180	206	237	282	327	366	379	386	391	406	424				
25	108	109	110	113	116	124	140	178	223	273	324	371	408	425	427				
30	83.7	88.7	94.3	99.8	101	105	112	126	148	180	240	303	357	378	380				
35	47.3	52.2	58.4	66.2	76.5	87.5	98.5	97.9	104	123	190	264	330	358	364				
40	27.3	29.1	32.3	37.5	46.9	58.0	70.2	76.7	87.4	106	151	201	248	278	299				
45	26.4	25.4	25.0	26.1	30.2	36.7	45.7	56.2	70.4	89.3	116	148	184	223	266				
50	14.8	17.5	20.6	23.8	24.6	26.7	31.3	43.2	57.9	74.3	84.7	99.4	122	162	213				
55	9.42	9.94	11.0	12.8	15.6	19.6	25.0	32.7	41.8	52.3	58.7	70.1	90.5	129	180				
60	5.89	6.04	6.56	7.62	9.42	12.1	16.0	21.3	28.0	36.0	40.8	50.4	68.1	102	147				
65	0.18	0.43	0.98	1.93	3.34	5.42	8.30	11.9	16.7	23.2	29.0	38.9	55.4	83.9	121				
70	0.23	0.07	0.01	0.15	0.41	1.21	2.78	5.11	8.88	14.5	21.1	31.4	46.9	71.0	102				
75	0.27	0.18	0.14	0.19	0.30	0.67	1.41	2.03	3.71	7.03	12.3	20.5	32.6	50.4	72.8				
80	0.30	0.24	0.20	0.23	0.33	0.58	1.01	1.30	2.14	3.88	5.53	9.69	17.7	32.5	52.4				
85	0.35	0.30	0.27	0.28	0.37	0.53	0.78	0.96	1.40	2.25	3.26	5.28	8.74	14.7	22.5				
90	0.41	0.37	0.35	0.36	0.42	0.52	0.69	0.89	1.21	1.68	2.45	3.36	4.39	5.45	6.59				
95	0.48	0.46	0.45	0.46	0.50	0.56	0.68	0.85	1.10	1.43	1.93	2.50	3.12	3.71	4.32				
100	0.56	0.54	0.53	0.54	0.57	0.62	0.71	0.83	1.01	1.27	1.59	2.06	2.73	3.69	4.89				
105	0.68	0.69	0.70	0.70	0.68	0.66	0.63	0.54	0.49	0.54	0.74	1.09	1.63	2.41	3.39				
110	0.67	0.64	0.61	0.59	0.55	0.54	0.57	0.71	0.86	1.00	0.91	0.88	1.01	1.55	2.36				
115	0.62	0.61	0.60	0.60	0.57	0.56	0.57	0.64	0.73	0.84	0.78	0.82	1.05	1.71	2.66				
120	0.62	0.61	0.60	0.59	0.56	0.54	0.53	0.56	0.62	0.69	0.70	0.78	0.98	1.44	2.08				
125	0.64	0.64	0.62	0.60	0.57	0.54	0.52	0.52	0.55	0.61	0.67	0.78	0.96	1.25	1.63				
130	0.69	0.66	0.63	0.60	0.57	0.55	0.53	0.52	0.53	0.56	0.64	0.76	0.91	1.08	1.29				
135	0.71	0.69	0.67	0.65	0.62	0.59	0.56	0.55	0.54	0.54	0.56	0.58	0.59	0.60	0.60				
140	0.74	0.71	0.68	0.64	0.62	0.59	0.58	0.55	0.54	0.54	0.62	0.69	0.73	0.65	0.50				
145	0.75	0.73	0.70	0.67	0.64	0.62	0.60	0.58	0.56	0.56	0.60	0.63	0.64	0.57	0.45				
150	0.74	0.72	0.70	0.67	0.65	0.64	0.63	0.60	0.59	0.57	0.58	0.59	0.57	0.51	0.42				
155	0.70	0.69	0.68	0.66	0.64	0.63	0.62	0.62	0.62	0.63	0.64	0.63	0.61	0.54	0.44				
160	0.64	0.64	0.65	0.66	0.65	0.64	0.64	0.65	0.66	0.67	0.69	0.69	0.67	0.60	0.49				
165	0.54	0.56	0.58	0.60	0.61	0.62	0.63	0.65	0.65	0.66	0.69	0.70	0.68	0.62	0.51				
170	0.46	0.47	0.48	0.49	0.49	0.50	0.51	0.54	0.57	0.60	0.63	0.65	0.64	0.59	0.51				
175	0.41	0.42	0.43	0.44	0.44	0.44	0.45	0.48	0.51	0.55	0.58	0.59	0.59	0.56	0.50				
180	0.40	0.40	0.40	0.40	0.41	0.43	0.44	0.45	0.46	0.47	0.47	0.47	0.47	0.47	0.47				

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	WPX3 @ 130W / 5000K	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	1.082	129.6	0.998	4.25
277.0	60	0.474	126.0	0.960	6.51

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*****