

Photometric Test Report

Relevant Standards

- ☒ ANSI/IES LM-79-2019
- ☒ ANSI C82.77-2017

Prepared For

RAB Lighting Inc.

Address: 408 W 14th St New York, NY 10014

Prepared By

Dongguan New Testing Centre Co., Ltd.

Address: 3F No. 1 the 1st North Industry Road, Songshan Lake Science & Technology Park, Dongguan, Guangdong, China

Prepare by:

Alan Wang

Engineer: Alan Wang

Date: 2025-02-21

Review by:

Vincent Yuan

Technical Lead: Vincent Yuan

Issue Date: 2025-02-21

Revised Date: N/A

1.0 Test Summary

DLC Technical Requirements V5.1

Architectural Flood and Spot Luminaires				
Requirement Category	Test Method	Requirements		Test Value
Luminaire Output (lm) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	1000		3901
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Standard	Premium	101.1
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		38.6
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	120V	15.40
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	120V	0.987
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	5029±283	5191
		4 steps	5029±220	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		82.9
Minimum R9 (Integrating Sphere – Section 4.1)	ANSI/IES LM-79-2019 CIE13.3-1995	N/A		12
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		83
Minimum Rg (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥89		98
IES Rcs,h1 (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-12%
Zonal Lumen Requirement (0°-90°) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	≥85%		100.0%
Input Voltage (V)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Cast		120.0
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Input Current (A)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		0.326
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		38.6
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A

2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2025-02-20	BULLET2X20 @40W5000K	ES 1st ES #3-4	241216023-S1
2	Goniophotometer Test	2025-02-20	BULLET2X20 @40W5000K	ES 1st ES #3-4	241216023-S1
3	THD and PF Test	2025-02-20	BULLET2X20 @40W5000K	ES 1st ES #3-4	241216023-S1

Remark (If any):

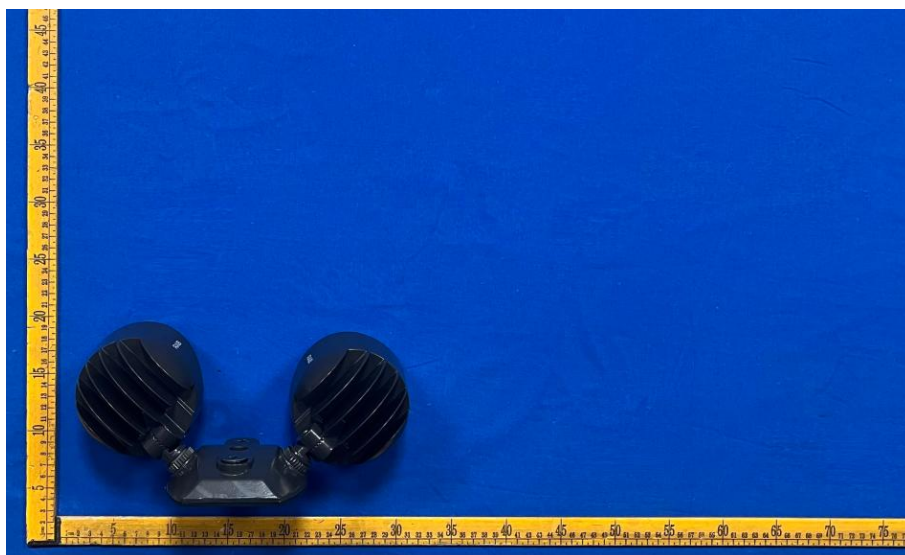
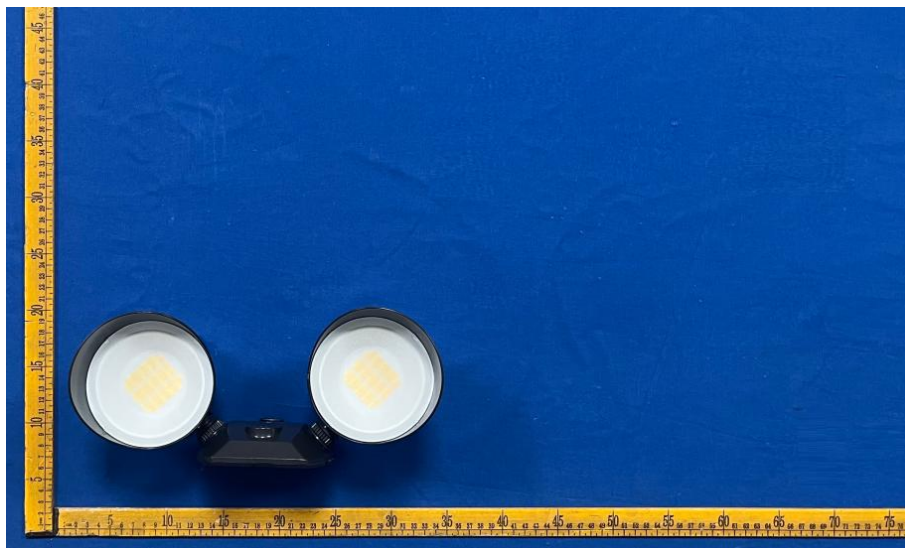
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3. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. Government.

3.0 Product Description

Luminaire Description: Model No. BULLET2X20 @40W5000K, color tunable from 3000K, 4000K and 5000K.

Electrical Specification: 120Vac, 60Hz

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	BULLET2X20 @40W5000K	Sample ID	241216023-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

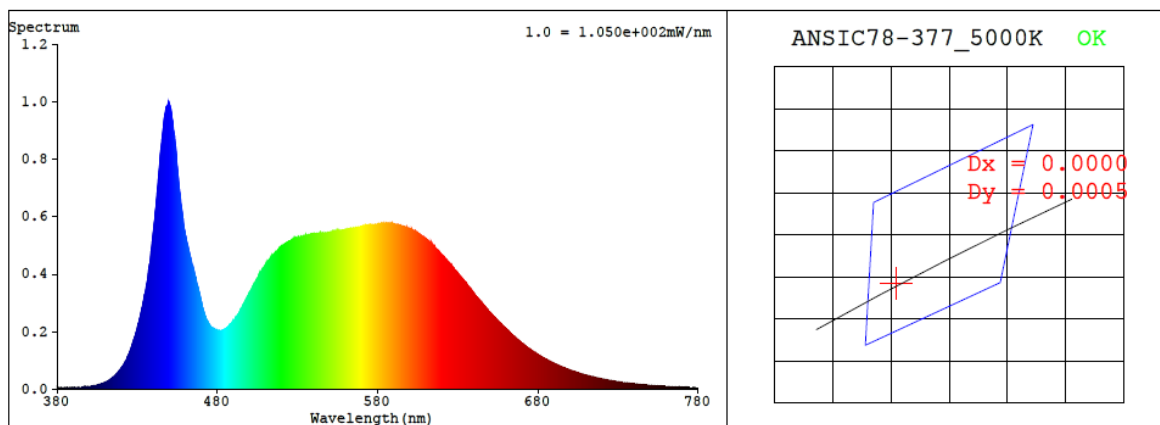
Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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	0.326	38.6	0.987

CCT (K)	CRI	R9	Duv	SDCM	Rf	Rg	IES Rcs,h1
5191	82.9	12	0.0003	3.1	83	98	-12%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3400$ $y = 0.3480$ / $u' = 0.2094$ $v' = 0.4821$ ($duv=2.52e-04$)

CCT= 5191K Prcp WL: $L_d=569.0nm$ Purity=6.4%

Peak WL: $L_p=449nm$ FWHM: $=22.6nm$ Ratio: $R=15.6\%$ $G=80.1\%$ $B=4.3\%$

Render Index: $R_a = 82.9$ $AvgR = 76.3$ $TM30:R_f=83$ $R_g=97$

EEL: 0.13560 A+

R1 =82	R2 =87	R3 =89	R4 =84	R5 =83	R6 =82	R7 =87
R8 =70	R9 =12	R10=67	R11=84	R12=63	R13=83	R14=94
R15=78						

4.1 Integrating Sphere Test

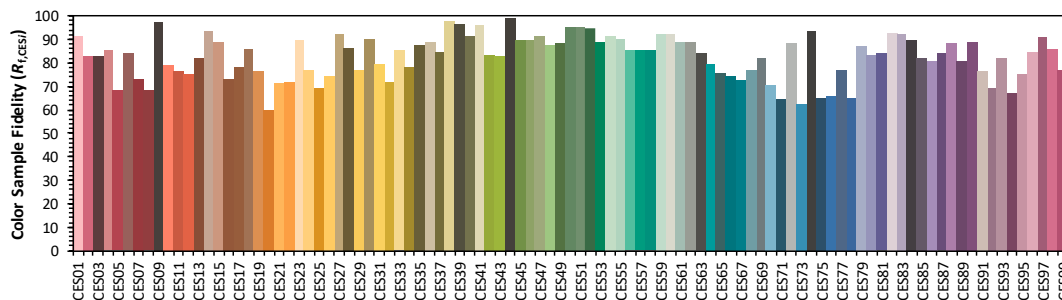
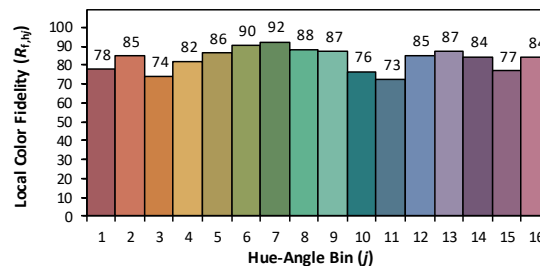
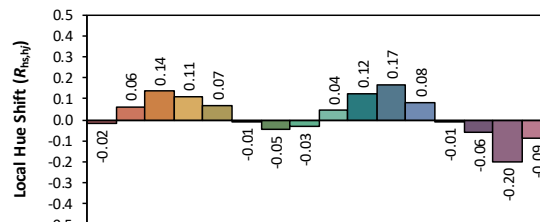
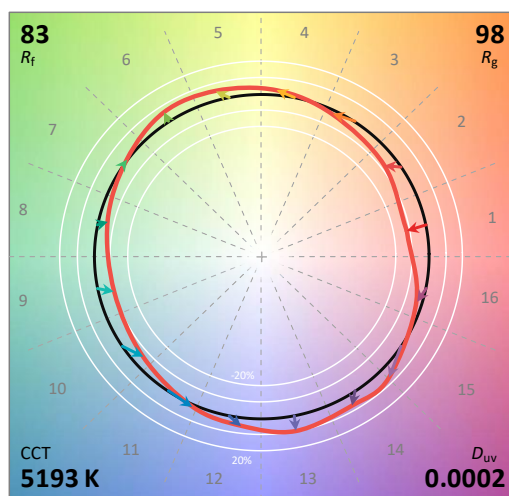
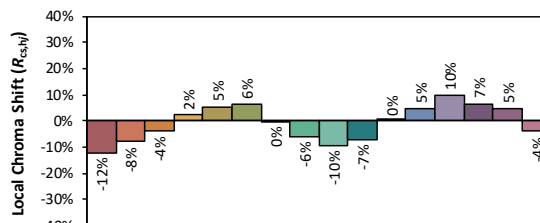
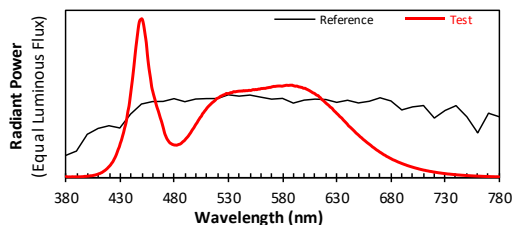
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2025/2/21

Model: BULLET2X20 @40W5000K



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

x 0.3399
 y 0.3478
 u' 0.2094
 v' 0.4820

CIE 13.3-1995
(CRI)
 R_a 83
 R_g 12

4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength											
WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)
380	7.50E-06	447	9.53E-04	514	4.62E-04	581	5.74E-04	648	2.80E-04	715	4.17E-05
381	5.50E-06	448	9.81E-04	515	4.68E-04	582	5.75E-04	649	2.74E-04	716	4.02E-05
382	5.00E-06	449	9.88E-04	516	4.73E-04	583	5.76E-04	650	2.68E-04	717	3.91E-05
383	5.40E-06	450	9.91E-04	517	4.79E-04	584	5.77E-04	651	2.62E-04	718	3.83E-05
384	4.90E-06	451	9.72E-04	518	4.85E-04	585	5.76E-04	652	2.55E-04	719	3.67E-05
385	5.60E-06	452	9.35E-04	519	4.93E-04	586	5.76E-04	653	2.50E-04	720	3.57E-05
386	6.10E-06	453	8.89E-04	520	4.96E-04	587	5.78E-04	654	2.44E-04	721	3.47E-05
387	5.10E-06	454	8.42E-04	521	4.99E-04	588	5.77E-04	655	2.38E-04	722	3.35E-05
388	5.90E-06	455	7.70E-04	522	5.05E-04	589	5.78E-04	656	2.32E-04	723	3.24E-05
389	5.60E-06	456	7.09E-04	523	5.09E-04	590	5.75E-04	657	2.27E-04	724	3.13E-05
390	4.80E-06	457	6.60E-04	524	5.12E-04	591	5.73E-04	658	2.21E-04	725	3.03E-05
391	5.80E-06	458	6.17E-04	525	5.16E-04	592	5.71E-04	659	2.16E-04	726	2.96E-05
392	5.90E-06	459	5.67E-04	526	5.18E-04	593	5.72E-04	660	2.11E-04	727	2.85E-05
393	5.80E-06	460	5.39E-04	527	5.21E-04	594	5.71E-04	661	2.06E-04	728	2.76E-05
394	6.30E-06	461	5.12E-04	528	5.26E-04	595	5.67E-04	662	2.00E-04	729	2.68E-05
395	6.50E-06	462	4.88E-04	529	5.25E-04	596	5.67E-04	663	1.94E-04	730	2.61E-05
396	7.10E-06	463	4.61E-04	530	5.26E-04	597	5.64E-04	664	1.89E-04	731	2.51E-05
397	8.60E-06	464	4.38E-04	531	5.27E-04	598	5.64E-04	665	1.85E-04	732	2.43E-05
398	8.30E-06	465	4.19E-04	532	5.31E-04	599	5.59E-04	666	1.79E-04	733	2.33E-05
399	9.20E-06	466	3.96E-04	533	5.30E-04	600	5.58E-04	667	1.74E-04	734	2.30E-05
400	9.80E-06	467	3.73E-04	534	5.34E-04	601	5.58E-04	668	1.70E-04	735	2.23E-05
401	1.03E-05	468	3.53E-04	535	5.37E-04	602	5.53E-04	669	1.65E-04	736	2.15E-05
402	1.18E-05	469	3.29E-04	536	5.36E-04	603	5.51E-04	670	1.60E-04	737	2.10E-05
403	1.23E-05	470	3.04E-04	537	5.37E-04	604	5.47E-04	671	1.56E-04	738	2.02E-05
404	1.28E-05	471	2.77E-04	538	5.39E-04	605	5.44E-04	672	1.52E-04	739	1.97E-05
405	1.45E-05	472	2.60E-04	539	5.40E-04	606	5.39E-04	673	1.47E-04	740	1.91E-05
406	1.59E-05	473	2.44E-04	540	5.40E-04	607	5.35E-04	674	1.43E-04	741	1.84E-05
407	1.73E-05	474	2.34E-04	541	5.40E-04	608	5.31E-04	675	1.40E-04	742	1.76E-05
408	1.96E-05	475	2.24E-04	542	5.41E-04	609	5.28E-04	676	1.35E-04	743	1.72E-05
409	2.14E-05	476	2.17E-04	543	5.41E-04	610	5.24E-04	677	1.31E-04	744	1.67E-05
410	2.46E-05	477	2.13E-04	544	5.44E-04	611	5.18E-04	678	1.28E-04	745	1.62E-05
411	2.63E-05	478	2.08E-04	545	5.42E-04	612	5.14E-04	679	1.24E-04	746	1.56E-05
412	2.99E-05	479	2.06E-04	546	5.44E-04	613	5.12E-04	680	1.21E-04	747	1.52E-05
413	3.28E-05	480	2.04E-04	547	5.43E-04	614	5.05E-04	681	1.17E-04	748	1.48E-05
414	3.75E-05	481	2.04E-04	548	5.44E-04	615	5.00E-04	682	1.13E-04	749	1.42E-05
415	4.21E-05	482	2.03E-04	549	5.46E-04	616	4.91E-04	683	1.10E-04	750	1.38E-05
416	4.67E-05	483	2.05E-04	550	5.45E-04	617	4.85E-04	684	1.08E-04	751	1.34E-05
417	5.25E-05	484	2.08E-04	551	5.45E-04	618	4.80E-04	685	1.04E-04	752	1.30E-05
418	5.85E-05	485	2.09E-04	552	5.48E-04	619	4.74E-04	686	1.01E-04	753	1.26E-05
419	6.59E-05	486	2.13E-04	553	5.50E-04	620	4.67E-04	687	9.80E-05	754	1.23E-05
420	7.27E-05	487	2.19E-04	554	5.49E-04	621	4.61E-04	688	9.53E-05	755	1.18E-05
421	8.05E-05	488	2.26E-04	555	5.51E-04	622	4.56E-04	689	9.28E-05	756	1.15E-05
422	9.06E-05	489	2.30E-04	556	5.50E-04	623	4.50E-04	690	8.99E-05	757	1.11E-05
423	9.91E-05	490	2.38E-04	557	5.51E-04	624	4.42E-04	691	8.73E-05	758	1.08E-05
424	1.12E-04	491	2.46E-04	558	5.53E-04	625	4.38E-04	692	8.48E-05	759	1.05E-05
425	1.25E-04	492	2.53E-04	559	5.53E-04	626	4.33E-04	693	8.22E-05	760	1.02E-05
426	1.40E-04	493	2.61E-04	560	5.56E-04	627	4.24E-04	694	8.01E-05	761	1.00E-05
427	1.57E-04	494	2.72E-04	561	5.57E-04	628	4.16E-04	695	7.72E-05	762	9.60E-06
428	1.77E-04	495	2.81E-04	562	5.57E-04	629	4.10E-04	696	7.50E-05	763	9.40E-06
429	1.92E-04	496	2.92E-04	563	5.58E-04	630	4.03E-04	697	7.28E-05	764	9.10E-06
430	2.15E-04	497	3.03E-04	564	5.57E-04	631	3.97E-04	698	7.07E-05	765	8.70E-06
431	2.34E-04	498	3.12E-04	565	5.60E-04	632	3.90E-04	699	6.86E-05	766	8.50E-06
432	2.59E-04	499	3.24E-04	566	5.61E-04	633	3.82E-04	700	6.66E-05	767	8.20E-06
433	2.82E-04	500	3.35E-04	567	5.62E-04	634	3.77E-04	701	6.45E-05	768	8.00E-06
434	3.12E-04	501	3.44E-04	568	5.64E-04	635	3.71E-04	702	6.25E-05	769	7.80E-06
435	3.36E-04	502	3.56E-04	569	5.64E-04	636	3.63E-04	703	6.07E-05	770	7.50E-06
436	3.71E-04	503	3.66E-04	570	5.67E-04	637	3.55E-04	704	5.88E-05	771	7.20E-06
437	4.15E-04	504	3.77E-04	571	5.68E-04	638	3.49E-04	705	5.73E-05	772	7.10E-06
438	4.46E-04	505	3.85E-04	572	5.70E-04	639	3.41E-04	706	5.52E-05	773	6.70E-06
439	4.97E-04	506	3.99E-04	573	5.70E-04	640	3.34E-04	707	5.34E-05	774	6.60E-06
440	5.51E-04	507	4.06E-04	574	5.71E-04	641	3.25E-04	708	5.17E-05	775	6.50E-06
441	6.04E-04	508	4.16E-04	575	5.72E-04	642	3.19E-04	709	5.01E-05	776	6.30E-06
442	6.61E-04	509	4.24E-04	576	5.72E-04	643	3.13E-04	710	4.85E-05	777	5.90E-06
443	7.25E-04	510	4.34E-04	577	5.72E-04	644	3.07E-04	711	4.70E-05	778	6.10E-06
444	7.90E-04	511	4.42E-04	578	5.72E-04	645	3.01E-04	712	4.60E-05	779	6.00E-06
445	8.47E-04	512	4.49E-04	579	5.72E-04	646	2.94E-04	713	4.42E-05	780	6.00E-06
446	9.01E-04	513	4.55E-04	580	5.72E-04	647	2.87E-04	714	4.30E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	BULLET2X20 @40W5000K	Sample ID	241216023-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	24.8	Humidity (%RH)	40.1

Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</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

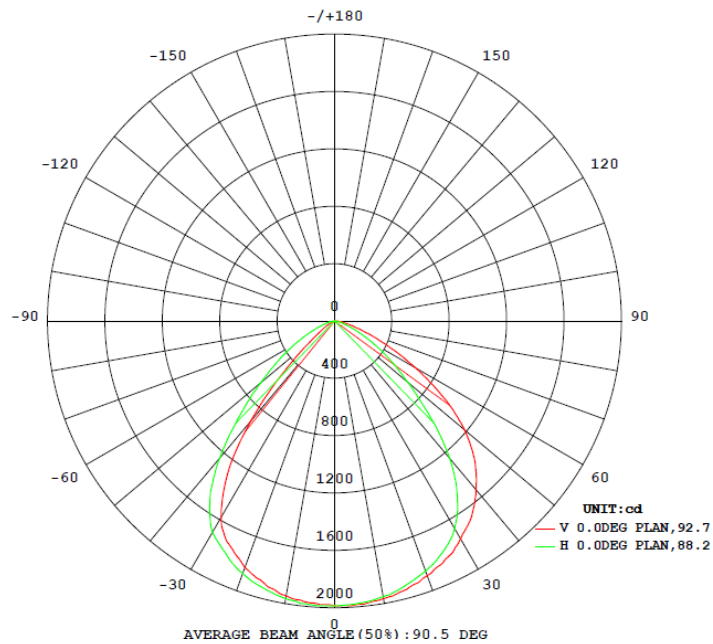
Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	120.0	60	0.326	38.6	0.987
NON-WORST CASE	N/A	N/A	N/A	N/A	N/A

Test Result

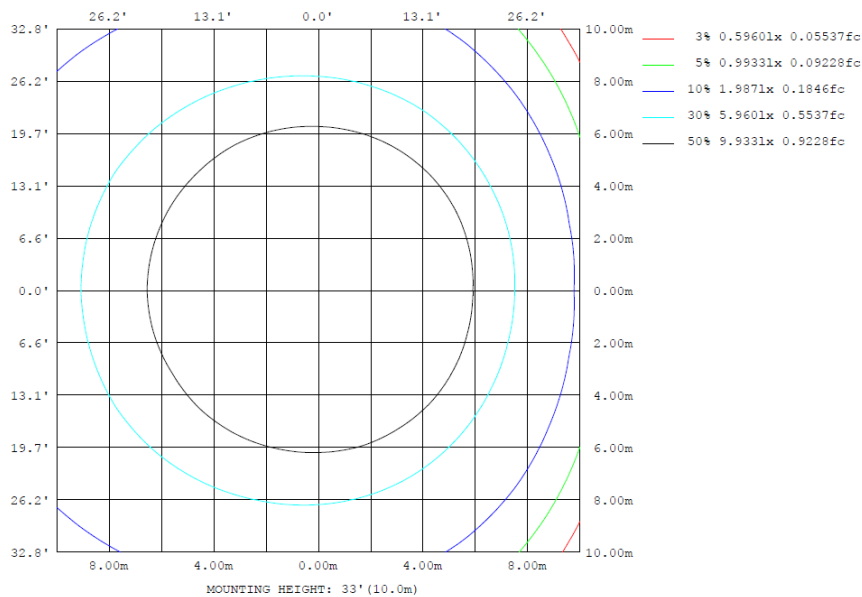
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement	NEMA Type
	C0-180	C90-270	C0-180	C90-270		(0°-90°)	
3901	124.1	129.1	92.5	88.5	101.1	100.0%	6H x 6V

4.2 Goniophotometer Test

Lighting Distribution Curve



Isolux Plot



4.2 Goniophotometer Test

Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315	γ	zone	total	lum, lamp
10	1945	1948	1951	1964	1966	1965	1966	1952	0- 10	188.3	188.3	4.83,4.83
20	1830	1830	1855	1869	1889	1879	1874	1850	10- 20	541.2	729.5	18.7,18.7
30	1582	1631	1673	1717	1757	1725	1702	1649	20- 30	819.8	1549	39.7,39.7
40	902.6	1062	1250	1449	1533	1464	1243	1089	30- 40	929.5	2479	63.5,63.5
50	215.9	433.4	669.1	975.2	1185	985.5	675.9	427.7	40- 50	743.6	3222	82.6,82.6
60	53.06	113.8	310.6	428.8	646.9	448.1	312.6	116.9	50- 60	431.4	3654	93.7,93.7
70	1.991	21.50	97.77	141.7	229.7	156.4	99.72	24.46	60- 70	183.8	3837	98.4,98.4
80	0.0781	3.709	8.765	24.31	54.65	31.05	18.34	4.825	70- 80	54.55	3892	99.8,99.8
90	0	0	0	0	0	0	0	0	80- 90	8.664	3901	100,100
100	0	0	0	0	0	0	0	0	90-100	0	3901	100,100
110	0	0	0	0	0	0	0	0	100-110	0	3901	100,100
120	0	0	0	0	0	0	0	0	110-120	0	3901	100,100
130	0	0	0	0	0	0	0	0	120-130	0	3901	100,100
140	0	0	0	0	0	0	0	0	130-140	0	3901	100,100
150	0	0	0	0	0	0	0	0	140-150	0	3901	100,100
160	0	0	0	0	0	0	0	0	150-160	0	3901	100,100
170	0	0	0	0	0	0	0	0	160-170	0	3901	100,100
180	0	0	0	0	0	0	0	0	170-180	0	3901	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

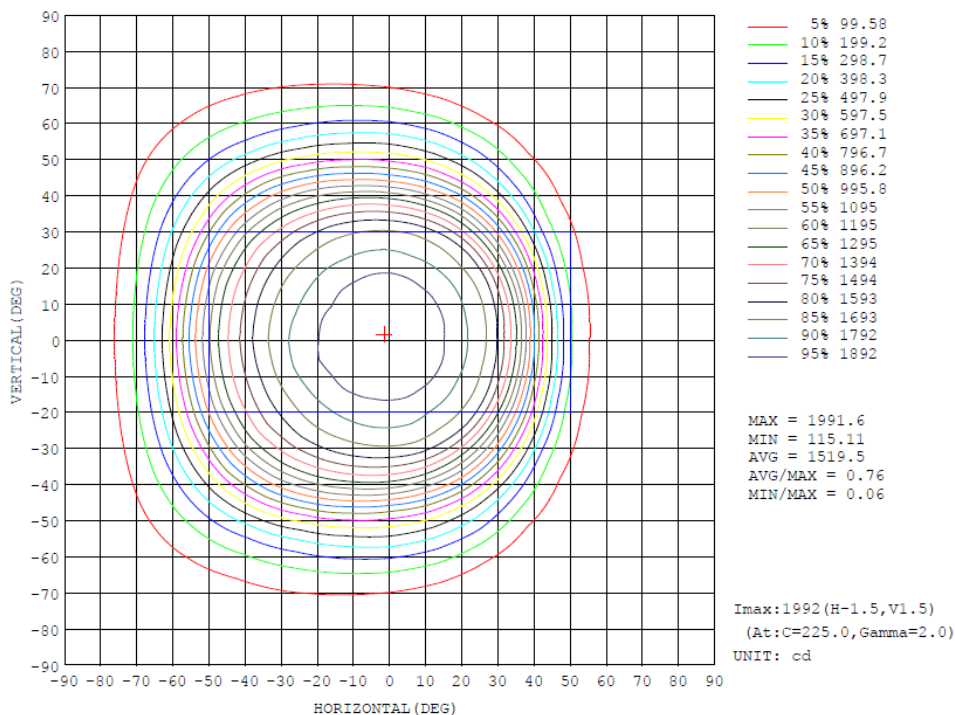
	Zonal (lm)		Total (lm)	Percent
0-10	188.30	0-10	188.30	4.83%
10-20	541.15	0-20	729.45	18.70%
20-30	819.75	0-30	1549.20	39.72%
30-40	929.50	0-40	2478.70	63.55%
40-50	743.58	0-50	3222.28	82.61%
50-60	431.39	0-60	3653.67	93.67%
60-70	183.78	0-70	3837.45	98.38%
70-80	54.55	0-80	3892.00	99.78%
80-90	8.66	0-90	3900.66	100.00%
90-100	0.00	0-100	3900.66	100.00%
100-110	0.00	0-110	3900.66	100.00%
110-120	0.00	0-120	3900.66	100.00%
120-130	0.00	0-130	3900.66	100.00%
130-140	0.00	0-140	3900.66	100.00%
140-150	0.00	0-150	3900.66	100.00%
150-160	0.00	0-160	3900.66	100.00%
160-170	0.00	0-170	3900.66	100.00%
170-180	0.00	0-180	3900.66	100.00%

4.2 Goniophotometer Test

Area Flux Diagram

		AREA FLUX DIAGRAM																	UNIT:lm			Φ t	Φ a
VERTICAL (DEG)	90	0.01	0.06	0.11	0.14	0.16	0.23	0.32	0.37	0.22	0.10	0.06	0.07	0.06	0.03	0.01	0.00	0.00	0.00	1.97	0.00		
	80	0.03	0.13	0.29	0.52	0.84	1.31	1.70	1.85	1.77	1.45	0.98	0.57	0.29	0.12	0.04	0.01	0.00	0.00	11.9	0.00		
	70	0.04	0.22	0.63	1.41	2.58	3.91	5.11	5.93	6.07	5.32	3.85	2.13	0.94	0.35	0.10	0.02	0.00	0.00	38.6	14.7		
	60	0.05	0.34	1.21	3.02	5.76	9.00	12.0	14.2	14.8	13.6	10.6	6.41	2.76	0.89	0.23	0.04	0.00	0.00	94.9	85.4		
	50	0.06	0.49	2.03	5.49	11.2	18.0	24.1	28.0	29.3	27.4	22.2	14.3	6.46	2.06	0.48	0.07	0.00	0.00	192	186		
	40	0.07	0.66	3.03	8.73	18.1	28.3	36.9	42.9	45.6	44.3	38.1	26.7	13.0	3.82	0.91	0.11	0.01	0.00	311	307		
	30	0.08	0.83	4.06	12.1	24.1	35.7	44.8	50.9	54.1	53.6	49.2	38.7	21.5	6.52	1.38	0.18	0.01	0.00	398	394		
	20	0.08	0.96	4.90	14.6	27.9	39.4	48.3	54.7	58.1	57.8	53.5	45.3	28.5	9.43	1.80	0.25	0.01	0.00	446	443		
	10	0.09	1.05	5.42	16.0	29.4	41.0	50.0	56.4	59.8	59.5	55.4	47.3	31.8	11.2	2.03	0.28	0.01	0.00	467	464		
	0	0.09	1.04	5.40	15.9	29.3	40.9	50.2	56.5	59.7	59.4	55.3	47.1	31.4	11.1	2.01	0.28	0.00	0.00	466	463		
	-10	0.08	0.95	4.84	14.5	27.6	39.0	48.1	54.4	57.7	57.4	53.1	44.7	27.7	9.30	1.75	0.23	0.01	0.00	441	438		
	-20	0.07	0.81	3.96	11.9	23.8	35.3	44.3	50.5	53.6	53.3	48.6	37.8	20.9	6.50	1.32	0.15	0.00	0.00	393	389		
-30	0.07	0.65	2.92	8.51	17.8	28.0	36.6	42.4	45.1	43.9	37.6	26.3	13.0	3.82	0.84	0.09	0.00	0.00	308	303			
-40	0.06	0.48	1.92	5.25	10.8	17.6	23.8	27.9	29.3	27.5	22.2	14.3	6.56	1.99	0.41	0.05	0.00	0.00	190	185			
-50	0.05	0.33	1.14	2.80	5.40	8.55	11.6	13.8	14.7	13.6	10.7	6.53	2.72	0.80	0.19	0.03	0.00	0.00	93.0	83.4			
-60	0.04	0.21	0.59	1.28	2.28	3.58	4.82	5.69	5.92	5.28	3.87	2.12	0.89	0.30	0.08	0.01	0.00	0.00	37.0	12.9			
-70	0.03	0.13	0.28	0.46	0.67	1.06	1.48	1.72	1.65	1.34	0.88	0.49	0.23	0.09	0.03	0.00	0.00	0.00	10.5	0.00			
-80	0.01	0.06	0.11	0.14	0.14	0.16	0.22	0.27	0.15	0.05	0.04	0.05	0.04	0.02	0.00	0.00	0.00	0.00	1.47	0.00			
-90																							
		-90	-80	-70	-60	-50	-40	-30	-20	HORIZONTAL (DEG)	20	30	40	50	60	70	80	90					
Φ t	0	0.98	9.41	42.8	123	238	351	444	509	538	525	466	361	209	68.4	13.6	1.82	0.06	0.00	3900	---		
Φ a	0	0.00	0.53	33.4	115	230	343	435	500	529	517	458	352	199	55.8	0.47	0.00	0.00	0.00	---	3767		

Isocandela



4.2 Goniophotometer Test

Luminous Distribution Intensity Data

Table--1

UNIT: cd

H (DEG) V (DEG)	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0
-180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-80	0.00	7.28	9.98	11.9	13.3	14.2	14.7	14.3	13.6	12.7	13.8	15.1	16.6	19.9	23.1	25.8	20.8	14.9	8.77
-70	0.00	10.3	15.2	20.5	25.4	30.8	36.8	43.1	50.2	57.2	69.6	81.7	91.6	99.0	104	106	106	103	97.8
-60	0.00	12.7	21.3	31.5	44.8	62.9	83.4	107	135	164	191	221	248	270	292	307	316	317	311
-50	0.00	15.3	27.7	46.1	75.7	111	159	216	284	355	425	497	561	608	652	679	689	689	669
-40	0.00	17.8	34.7	64.2	111	178	267	381	516	658	799	929	1037	1120	1188	1232	1254	1265	1250
-30	0.00	20.0	41.7	83.1	150	253	398	576	778	979	1162	1300	1412	1501	1571	1621	1653	1671	1673
-20	0.00	21.7	48.0	99.4	188	325	519	754	1001	1214	1382	1513	1608	1689	1752	1797	1830	1852	1855
-10	0.00	22.8	52.5	112	217	381	607	872	1132	1337	1489	1614	1716	1794	1854	1900	1929	1955	1951
0	0.00	23.3	54.7	117	230	407	647	926	1185	1383	1533	1664	1757	1832	1889	1938	1966	1980	1985
10	0.00	22.9	52.9	113	219	384	610	878	1142	1350	1501	1632	1721	1791	1853	1899	1941	1960	1966
20	0.00	21.8	48.5	101	192	332	527	764	1018	1230	1395	1528	1632	1706	1760	1810	1845	1868	1874
30	0.00	20.2	42.4	84.6	154	262	410	587	790	995	1172	1310	1425	1521	1594	1651	1683	1699	1702
40	0.00	18.0	35.4	66.1	115	188	279	394	530	674	815	942	1047	1128	1190	1232	1258	1265	1243
50	0.00	15.4	28.2	48.0	78.5	118	170	232	300	372	444	515	579	625	665	688	696	695	676
60	0.00	12.9	22.0	32.7	47.5	66.2	89.7	118	148	179	209	237	263	284	304	317	323	322	313
70	0.00	10.4	15.7	21.6	26.6	32.5	39.4	48.1	58.7	69.9	82.0	92.5	101	107	110	112	110	106	99.7
80	0.00	7.28	10.3	12.5	13.8	14.5	14.6	15.4	15.7	15.7	19.4	23.1	26.3	28.2	29.5	30.0	26.4	22.5	18.3
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

H (DEG) V (DEG)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
-180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
-80	7.23	5.51	3.70	3.90	4.22	4.71	3.66	2.71	1.86	1.18	0.65	0.28	0.18	0.13	0.11	0.11	0.09	0.00
-70	88.9	78.4	66.2	51.1	36.9	25.7	18.1	11.8	7.51	4.55	2.37	1.01	0.47	0.19	0.09	0.10	0.11	0.00
-60	290	262	225	180	134	91.7	58.0	33.5	20.9	12.5	6.51	3.07	1.23	0.37	0.11	0.09	0.10	0.00
-50	639	593	523	442	355	259	167	98.0	55.6	28.4	14.2	6.58	2.40	0.60	0.18	0.09	0.10	0.00
-40	1204	1128	1025	893	725	540	362	220	121	63.5	30.5	12.4	3.85	0.97	0.27	0.10	0.09	0.00
-30	1659	1612	1523	1376	1179	944	675	410	214	112	57.5	23.0	6.93	1.49	0.34	0.10	0.09	0.00
-20	1843	1802	1750	1682	1554	1299	988	651	344	155	81.5	38.0	10.9	2.02	0.37	0.10	0.09	0.00
-10	1942	1906	1864	1781	1692	1521	1218	831	459	203	100	49.5	14.8	2.30	0.33	0.09	0.09	0.00
0	1972	1945	1893	1830	1728	1582	1299	903	493	216	104	53.1	16.0	1.99	0.21	0.08	0.08	0.00
10	1953	1921	1871	1796	1706	1546	1246	856	462	208	101	50.9	16.2	2.72	0.43	0.12	0.09	0.00
20	1853	1821	1763	1696	1586	1343	1024	666	343	159	84.2	40.8	13.0	2.74	0.54	0.14	0.09	0.00
30	1683	1636	1555	1411	1208	967	686	405	213	115	61.3	27.2	8.46	2.25	0.53	0.15	0.10	0.00
40	1200	1124	1024	896	724	536	356	217	124	67.4	35.0	15.5	5.49	1.54	0.44	0.14	0.10	0.00
50	643	594	522	438	348	253	166	102	59.8	32.7	17.5	8.55	3.43	0.99	0.31	0.13	0.11	0.00
60	290	261	224	178	132	92.6	60.7	37.3	23.9	15.1	8.40	4.26	1.87	0.63	0.20	0.12	0.12	0.00
70	89.7	78.3	65.6	51.8	38.7	27.9	20.3	14.0	9.17	5.90	3.35	1.61	0.76	0.31	0.14	0.13	0.13	0.00
80	14.4	10.2	6.23	6.09	6.15	6.47	5.08	3.80	2.65	1.74	0.98	0.43	0.28	0.19	0.16	0.15	0.12	0.00
90	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
100	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
110	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
120	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
130	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
140	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
150	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
160	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
170	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	BULLET2X20 @40W5000K	Sample ID	241216023-S1
Temperature (°C)	25.4	Humidity (%RH)	41.0

Test Method
<p>The samples were tested according to the and Ansi C82.77: 2002 and ANSI C82.77-10:2020</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	0.326	38.6	0.987	15.40

5.0 Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2024-11-07	2025-11-06
NTC-F01-006	2.0 meter Integrating Sphere	2024-11-07	2025-11-06
NTC-F01-012	Standard Lamp	2024-10-28	2025-10-27
NTC-F01-013	Standard Lamp	2024-10-28	2025-10-27
NTC-F01-031	Digital Power Meter	2024-08-06	2025-08-05
NTC-F01-019	Temperature & Humidity Meter	2024-10-29	2025-10-28

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