

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

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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		2487
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Standard	Premium	105.4
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		23.6
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	120V	13.80
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	120V	0.990
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	5029±283	5182
		4 steps	5029±220	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		82.8
Minimum R9 (Integrating Sphere – Section 4.1)	ANSI/IES LM-79-2019 CIE13.3-1995	N/A		11
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		0.199
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		23.6
(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	SMSBULLET2X12 @24W5000K	ES 1st ES#3-5	241216024-S1
2	Goniophotometer Test	2025-02-20	SMSBULLET2X12 @24W5000K	ES 1st ES#3-5	241216024-S1
3	THD and PF Test	2025-02-20	SMSBULLET2X12 @24W5000K	ES 1st ES#3-5	241216024-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 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. SMSBULLET2X12 @24W5000K, 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.	SMSBULLET2X12 @24W5000K	Sample ID	241216024-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

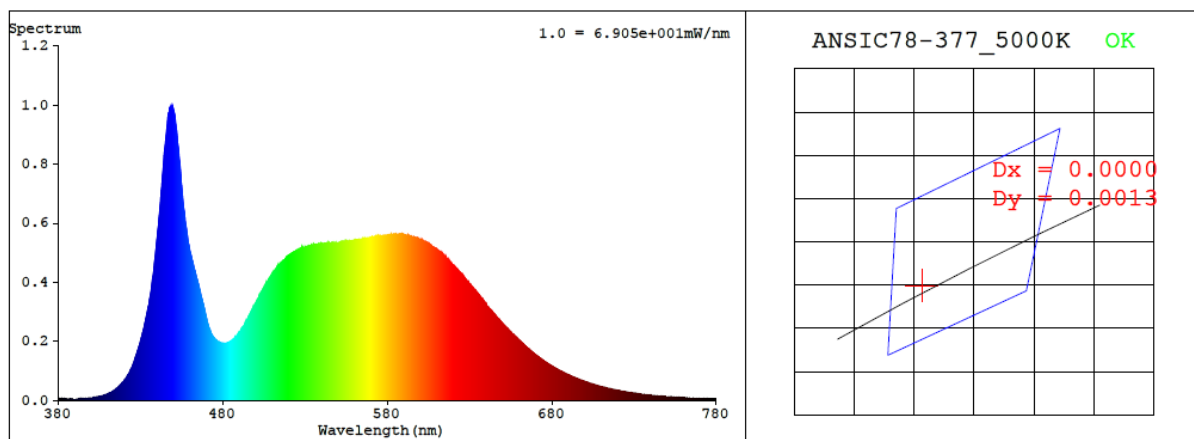
Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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	0.199	23.6	0.990

CCT (K)	CRI	R9	Duv	SDCM	Rf	Rg	IES Rcs,h1
5182	82.8	11	0.0006	2.8	83	98	-12%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3402$ $y = 0.3489$ / $u' = 0.2092$ $v' = 0.4826$ ($duv=6.43e-04$)

CCT= 5182K Prcp WL: $L_d=568.8nm$ Purity=6.8%

Peak WL: $L_p=449nm$ FWHM: $=21.3nm$ Ratio: R=15.6% G=80.2% B=4.2%

Render Index: $R_a = 82.8$ AvgR = 76.1 TM30: $R_f=83$ $R_g=97$

EEL: 0.12933 A+

R1 =82 R2 =86 R3 =89 R4 =84 R5 =83 R6 =82 R7 =87

R8 =70 R9 =11 R10=67 R11=84 R12=62 R13=83 R14=94 R15=77

4.1 Integrating Sphere Test

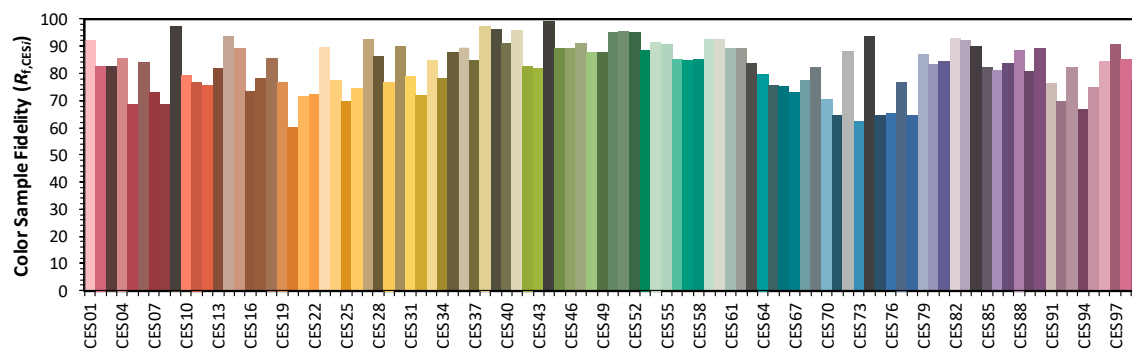
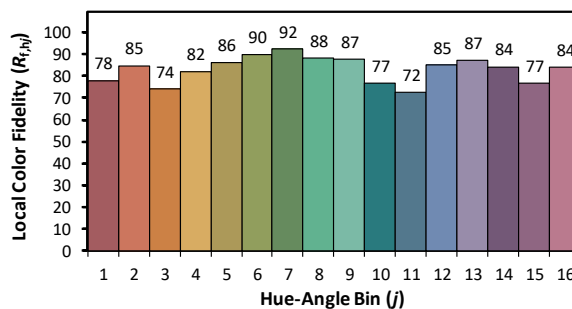
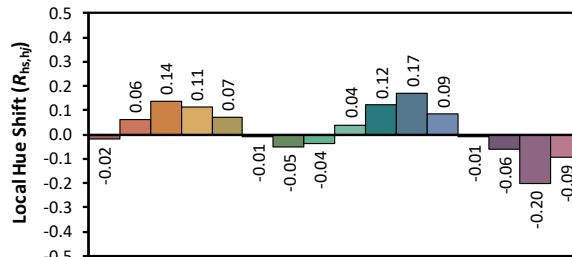
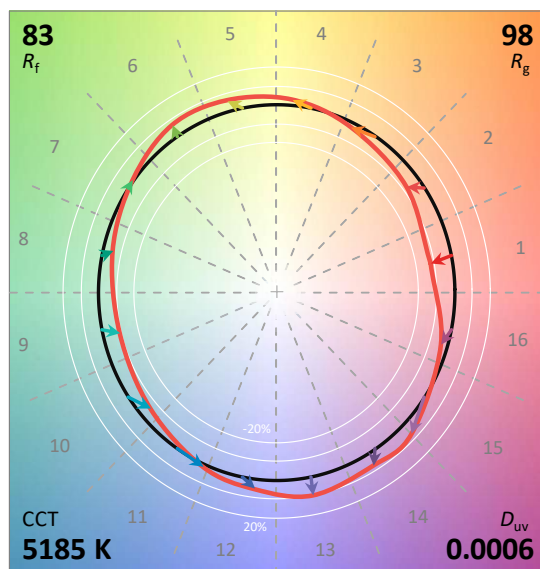
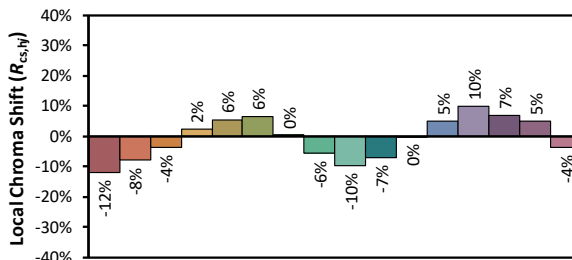
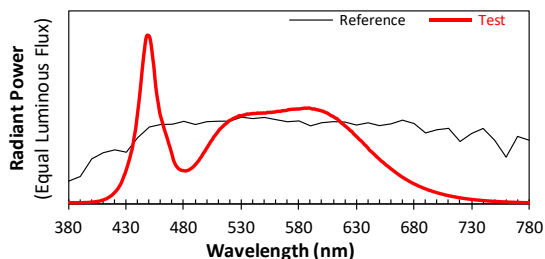
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2025/2/21

Model: SMSBULLET2X12 @24W5000K



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

x 0.3402
 y 0.3488
 u' 0.2092
 v' 0.4825

CIE 13.3-1995
(CRI)
 R_a 83
 R_g 11

4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength											
WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)
380	6.90E-06	447	9.71E-04	514	4.56E-04	581	5.59E-04	648	2.74E-04	715	4.04E-05
381	5.80E-06	448	9.92E-04	515	4.64E-04	582	5.60E-04	649	2.68E-04	716	3.89E-05
382	5.90E-06	449	9.91E-04	516	4.68E-04	583	5.61E-04	650	2.61E-04	717	3.75E-05
383	5.10E-06	450	9.86E-04	517	4.74E-04	584	5.63E-04	651	2.55E-04	718	3.63E-05
384	6.10E-06	451	9.61E-04	518	4.79E-04	585	5.63E-04	652	2.49E-04	719	3.52E-05
385	5.30E-06	452	9.14E-04	519	4.87E-04	586	5.62E-04	653	2.45E-04	720	3.42E-05
386	4.90E-06	453	8.57E-04	520	4.91E-04	587	5.63E-04	654	2.38E-04	721	3.32E-05
387	5.60E-06	454	8.04E-04	521	4.94E-04	588	5.63E-04	655	2.32E-04	722	3.19E-05
388	5.30E-06	455	7.28E-04	522	4.98E-04	589	5.64E-04	656	2.26E-04	723	3.10E-05
389	5.30E-06	456	6.67E-04	523	5.02E-04	590	5.62E-04	657	2.22E-04	724	3.01E-05
390	5.20E-06	457	6.20E-04	524	5.05E-04	591	5.59E-04	658	2.16E-04	725	2.90E-05
391	5.40E-06	458	5.80E-04	525	5.09E-04	592	5.57E-04	659	2.11E-04	726	2.82E-05
392	5.30E-06	459	5.35E-04	526	5.11E-04	593	5.59E-04	660	2.04E-04	727	2.73E-05
393	6.30E-06	460	5.10E-04	527	5.14E-04	594	5.57E-04	661	2.00E-04	728	2.66E-05
394	6.60E-06	461	4.87E-04	528	5.19E-04	595	5.54E-04	662	1.95E-04	729	2.54E-05
395	6.60E-06	462	4.63E-04	529	5.18E-04	596	5.54E-04	663	1.89E-04	730	2.48E-05
396	6.50E-06	463	4.39E-04	530	5.18E-04	597	5.52E-04	664	1.85E-04	731	2.41E-05
397	7.20E-06	464	4.18E-04	531	5.20E-04	598	5.50E-04	665	1.79E-04	732	2.33E-05
398	7.50E-06	465	3.97E-04	532	5.23E-04	599	5.48E-04	666	1.74E-04	733	2.24E-05
399	8.40E-06	466	3.75E-04	533	5.22E-04	600	5.46E-04	667	1.69E-04	734	2.19E-05
400	8.70E-06	467	3.51E-04	534	5.25E-04	601	5.45E-04	668	1.65E-04	735	2.11E-05
401	9.30E-06	468	3.31E-04	535	5.29E-04	602	5.41E-04	669	1.60E-04	736	2.08E-05
402	1.00E-05	469	3.07E-04	536	5.27E-04	603	5.38E-04	670	1.55E-04	737	1.99E-05
403	1.13E-05	470	2.83E-04	537	5.28E-04	604	5.35E-04	671	1.52E-04	738	1.93E-05
404	1.19E-05	471	2.56E-04	538	5.30E-04	605	5.32E-04	672	1.47E-04	739	1.85E-05
405	1.36E-05	472	2.40E-04	539	5.29E-04	606	5.28E-04	673	1.43E-04	740	1.82E-05
406	1.40E-05	473	2.26E-04	540	5.32E-04	607	5.23E-04	674	1.39E-04	741	1.75E-05
407	1.53E-05	474	2.17E-04	541	5.31E-04	608	5.19E-04	675	1.35E-04	742	1.69E-05
408	1.80E-05	475	2.09E-04	542	5.32E-04	609	5.16E-04	676	1.31E-04	743	1.63E-05
409	1.96E-05	476	2.03E-04	543	5.32E-04	610	5.13E-04	677	1.27E-04	744	1.59E-05
410	2.17E-05	477	1.99E-04	544	5.35E-04	611	5.07E-04	678	1.23E-04	745	1.51E-05
411	2.44E-05	478	1.97E-04	545	5.32E-04	612	5.03E-04	679	1.20E-04	746	1.51E-05
412	2.69E-05	479	1.95E-04	546	5.34E-04	613	5.01E-04	680	1.17E-04	747	1.45E-05
413	3.01E-05	480	1.94E-04	547	5.34E-04	614	4.94E-04	681	1.14E-04	748	1.38E-05
414	3.40E-05	481	1.93E-04	548	5.33E-04	615	4.89E-04	682	1.10E-04	749	1.35E-05
415	3.85E-05	482	1.93E-04	549	5.35E-04	616	4.81E-04	683	1.07E-04	750	1.33E-05
416	4.24E-05	483	1.95E-04	550	5.35E-04	617	4.75E-04	684	1.03E-04	751	1.29E-05
417	4.74E-05	484	1.98E-04	551	5.34E-04	618	4.70E-04	685	1.01E-04	752	1.24E-05
418	5.29E-05	485	2.01E-04	552	5.36E-04	619	4.65E-04	686	9.80E-05	753	1.21E-05
419	6.00E-05	486	2.06E-04	553	5.38E-04	620	4.58E-04	687	9.51E-05	754	1.15E-05
420	6.64E-05	487	2.10E-04	554	5.36E-04	621	4.54E-04	688	9.21E-05	755	1.13E-05
421	7.38E-05	488	2.17E-04	555	5.39E-04	622	4.47E-04	689	8.96E-05	756	1.09E-05
422	8.26E-05	489	2.22E-04	556	5.37E-04	623	4.42E-04	690	8.68E-05	757	1.04E-05
423	9.05E-05	490	2.31E-04	557	5.39E-04	624	4.35E-04	691	8.46E-05	758	1.02E-05
424	1.03E-04	491	2.38E-04	558	5.40E-04	625	4.29E-04	692	8.16E-05	759	1.01E-05
425	1.13E-04	492	2.46E-04	559	5.39E-04	626	4.25E-04	693	7.90E-05	760	9.50E-06
426	1.28E-04	493	2.54E-04	560	5.42E-04	627	4.16E-04	694	7.72E-05	761	9.50E-06
427	1.45E-04	494	2.66E-04	561	5.44E-04	628	4.08E-04	695	7.48E-05	762	9.00E-06
428	1.64E-04	495	2.75E-04	562	5.44E-04	629	4.02E-04	696	7.23E-05	763	8.70E-06
429	1.80E-04	496	2.85E-04	563	5.44E-04	630	3.95E-04	697	7.02E-05	764	8.40E-06
430	2.01E-04	497	2.97E-04	564	5.44E-04	631	3.90E-04	698	6.84E-05	765	8.30E-06
431	2.21E-04	498	3.06E-04	565	5.47E-04	632	3.82E-04	699	6.60E-05	766	8.10E-06
432	2.45E-04	499	3.18E-04	566	5.48E-04	633	3.76E-04	700	6.40E-05	767	7.80E-06
433	2.68E-04	500	3.29E-04	567	5.48E-04	634	3.70E-04	701	6.21E-05	768	7.60E-06
434	2.97E-04	501	3.39E-04	568	5.49E-04	635	3.63E-04	702	6.01E-05	769	7.30E-06
435	3.21E-04	502	3.51E-04	569	5.49E-04	636	3.56E-04	703	5.82E-05	770	7.00E-06
436	3.56E-04	503	3.62E-04	570	5.52E-04	637	3.48E-04	704	5.68E-05	771	6.90E-06
437	4.00E-04	504	3.71E-04	571	5.54E-04	638	3.43E-04	705	5.53E-05	772	6.60E-06
438	4.36E-04	505	3.81E-04	572	5.55E-04	639	3.35E-04	706	5.32E-05	773	6.30E-06
439	4.90E-04	506	3.93E-04	573	5.56E-04	640	3.28E-04	707	5.14E-05	774	6.10E-06
440	5.46E-04	507	4.01E-04	574	5.57E-04	641	3.18E-04	708	4.98E-05	775	6.00E-06
441	6.01E-04	508	4.10E-04	575	5.57E-04	642	3.12E-04	709	4.83E-05	776	5.80E-06
442	6.64E-04	509	4.18E-04	576	5.57E-04	643	3.06E-04	710	4.66E-05	777	5.60E-06
443	7.33E-04	510	4.28E-04	577	5.57E-04	644	3.00E-04	711	4.56E-05	778	5.70E-06
444	8.03E-04	511	4.37E-04	578	5.58E-04	645	2.94E-04	712	4.44E-05	779	5.70E-06
445	8.65E-04	512	4.44E-04	579	5.58E-04	646	2.87E-04	713	4.26E-05	780	5.70E-06
446	9.20E-04	513	4.50E-04	580	5.58E-04	647	2.80E-04	714	4.13E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	SMSBULLET2X12 @24W5000K	Sample ID	241216024-S1
Operate time (Min.)	30	Stabilization time (Min.)	60
Temperature (°C)	24.8	Humidity (%RH)	41.1

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

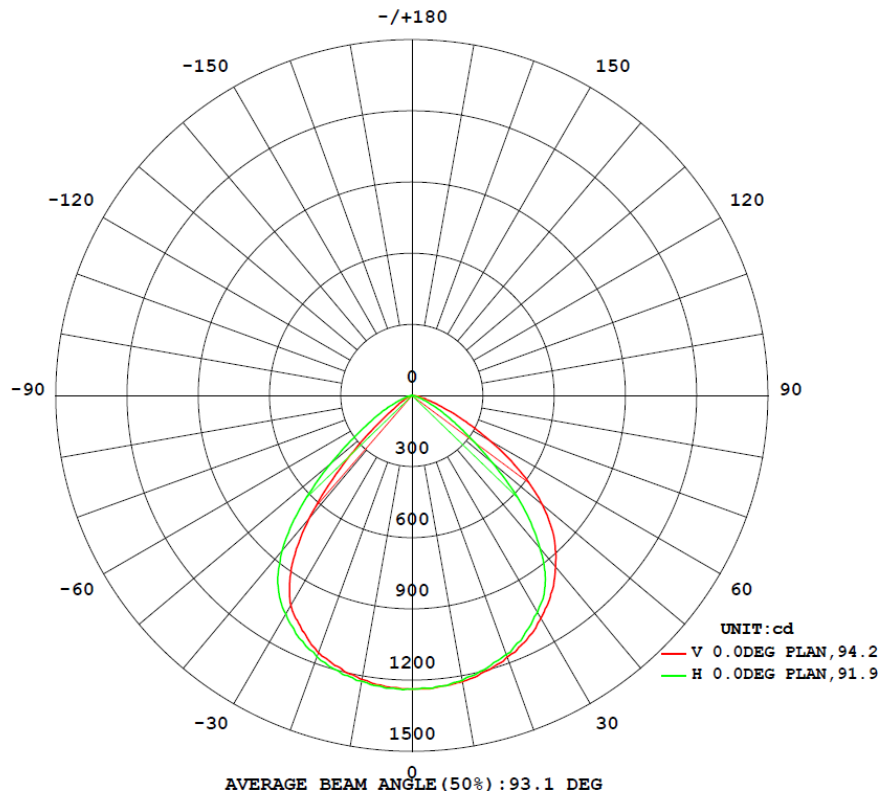
Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	120.0	60	0.199	23.6	0.990
NON-WORST CASE	N/A	N/A	N/A	N/A	N/A

Test Result

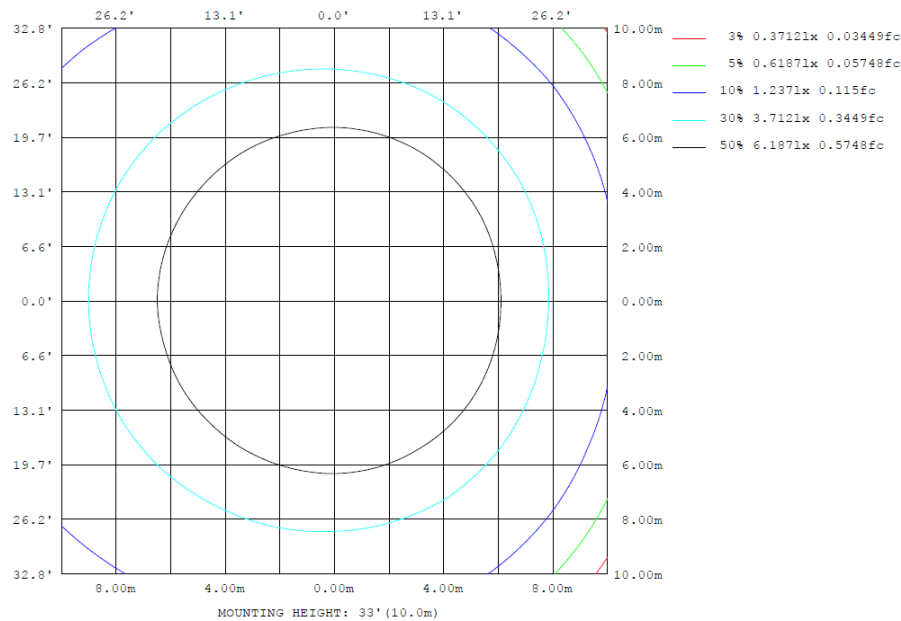
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement	NEMA Type
	C0-180	C90-270	C0-180	C90-270		(0°-90°)	
2487	124.8	126.9	93.9	92.0	105.4	100.0%	6H x 6V

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	1215	1219	1219	1221	1224	1226	1223	1225	0- 10	117.4	117.4	4.72,4.72
20	1153	1155	1161	1161	1173	1171	1171	1160	10- 20	337.9	455.3	18.3,18.3
30	1022	1034	1056	1071	1085	1073	1063	1044	20- 30	514.2	969.5	39,39
40	672.0	764.1	838.4	916.6	941.9	925.5	851.4	770.6	30- 40	601.6	1571	63.2,63.2
50	193.8	327.2	446.6	609.5	717.3	642.2	451.3	351.2	40- 50	505.5	2077	83.5,83.5
60	46.26	79.94	166.4	256.8	378.4	276.2	167.4	88.16	50- 60	274.3	2351	94.5,94.5
70	2.705	13.86	46.40	76.16	121.5	78.86	46.39	14.87	60- 70	104.7	2456	98.7,98.7
80	0.0538	2.151	9.457	12.68	27.36	12.32	9.483	2.567	70- 80	27.19	2483	99.8,99.8
90	0	0	0	0	0	0	0	0	80- 90	4.032	2487	100,100
100	0	0	0	0	0	0	0	0	90-100	0	2487	100,100
110	0	0	0	0	0	0	0	0	100-110	0	2487	100,100
120	0	0	0	0	0	0	0	0	110-120	0	2487	100,100
130	0	0	0	0	0	0	0	0	120-130	0	2487	100,100
140	0	0	0	0	0	0	0	0	130-140	0	2487	100,100
150	0	0	0	0	0	0	0	0	140-150	0	2487	100,100
160	0	0	0	0	0	0	0	0	150-160	0	2487	100,100
170	0	0	0	0	0	0	0	0	160-170	0	2487	100,100
180	0	0	0	0	0	0	0	0	170-180	0	2487	100,100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

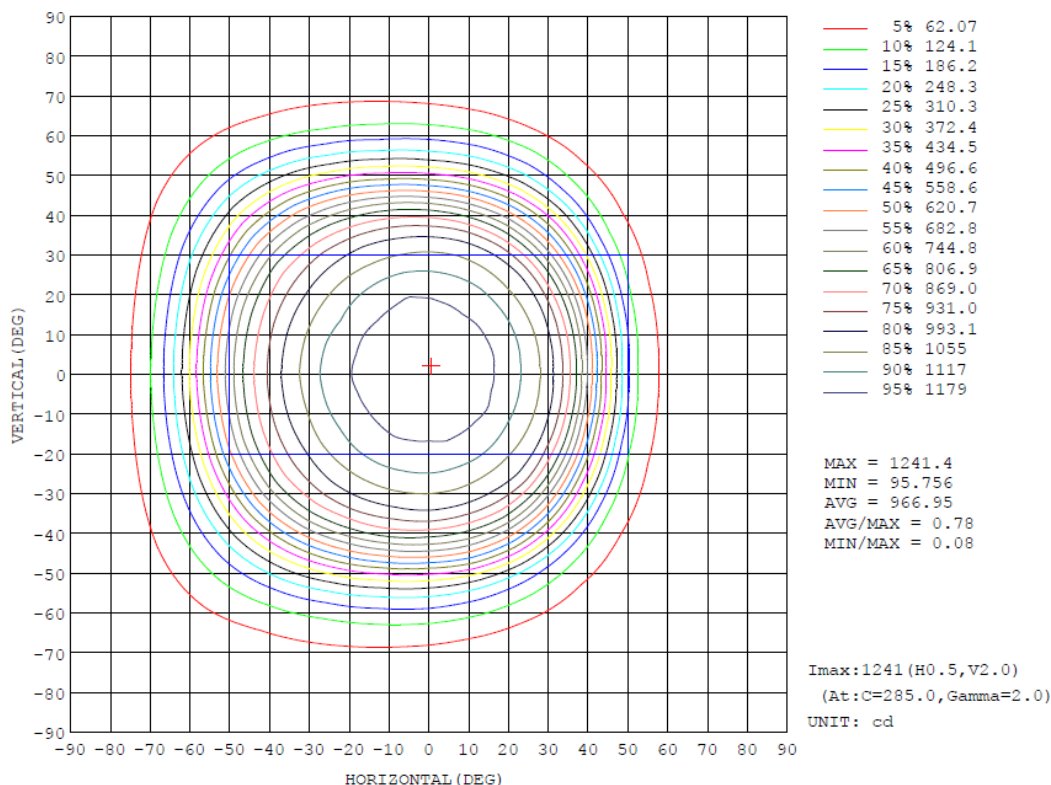
Zonal (lm)		Total (lm)		Percent
0-10	117.37	0-10	117.37	4.72%
10-20	337.91	0-20	455.28	18.31%
20-30	514.25	0-30	969.53	38.99%
30-40	601.60	0-40	1571.13	63.18%
40-50	505.48	0-50	2076.61	83.51%
50-60	274.27	0-60	2350.88	94.53%
60-70	104.69	0-70	2455.57	98.74%
70-80	27.19	0-80	2482.76	99.84%
80-90	4.03	0-90	2486.79	100.00%
90-100	0.00	0-100	2486.79	100.00%
100-110	0.00	0-110	2486.79	100.00%
110-120	0.00	0-120	2486.79	100.00%
120-130	0.00	0-130	2486.79	100.00%
130-140	0.00	0-140	2486.79	100.00%
140-150	0.00	0-150	2486.79	100.00%
150-160	0.00	0-160	2486.79	100.00%
160-170	0.00	0-170	2486.79	100.00%
170-180	0.00	0-180	2486.79	100.00%

4.2 Goniophotometer Test

Area Flux Diagram

VERTICAL (DEG)	90	AREA FLUX DIAGRAM																UNIT : lm			Φ t	Φ a
		0.01	0.03	0.05	0.07	0.07	0.08	0.09	0.12	0.09	0.05	0.03	0.03	0.03	0.01	0.00	0.00	0.00	0.75	0.00		
80	0.01	0.06	0.14	0.23	0.34	0.52	0.70	0.78	0.77	0.65	0.47	0.28	0.15	0.06	0.02	0.00	0.00	0.00	5.20	0.00		
70	0.02	0.10	0.31	0.68	1.24	1.95	2.56	2.96	3.07	2.79	2.12	1.25	0.57	0.21	0.07	0.01	0.00	0.00	19.9	4.59		
60	0.02	0.17	0.61	1.60	3.27	5.33	7.19	8.49	8.94	8.34	6.65	4.22	1.95	0.65	0.16	0.03	0.00	0.00	57.6	51.3		
50	0.03	0.25	1.07	3.18	6.96	11.6	15.9	18.9	20.1	19.2	15.9	10.6	5.01	1.62	0.38	0.05	0.00	0.00	131	127		
40	0.03	0.34	1.66	5.28	11.4	18.0	23.7	27.6	29.5	29.1	25.9	19.3	10.5	3.26	0.76	0.10	0.01	0.00	206	204		
30	0.04	0.43	2.27	7.36	14.9	22.2	27.8	31.8	33.9	33.7	31.2	25.8	16.1	5.71	1.16	0.17	0.01	0.00	255	252		
0	0.04	0.50	2.77	8.86	17.1	24.3	29.9	34.1	36.3	36.1	33.7	28.8	20.0	7.96	1.53	0.23	0.01	0.00	282	280		
	0.04	0.54	3.06	9.64	18.0	25.3	31.1	35.1	37.3	37.2	34.8	30.0	21.7	9.12	1.75	0.27	0.01	0.00	295	293		
	0.04	0.54	3.03	9.58	18.0	25.2	31.1	35.1	37.2	37.1	34.7	29.9	21.5	8.98	1.72	0.27	0.01	0.00	294	292		
	0.04	0.50	2.69	8.65	17.0	24.2	29.9	33.9	36.0	35.9	33.5	28.6	19.6	7.58	1.47	0.23	0.01	0.00	280	278		
	0.04	0.42	2.17	6.98	14.6	22.0	27.7	31.6	33.6	33.4	30.9	25.6	15.5	5.33	1.10	0.16	0.00	0.00	251	249		
-30	0.03	0.33	1.58	4.88	10.8	17.6	23.3	27.3	29.2	28.8	25.7	19.1	9.94	2.99	0.72	0.09	0.00	0.00	202	200		
-40	0.03	0.25	1.04	2.95	6.36	10.8	15.2	18.4	19.9	19.2	16.0	10.3	4.57	1.49	0.36	0.04	0.00	0.00	127	123		
-50	0.02	0.17	0.61	1.55	3.05	4.98	6.84	8.22	8.77	8.16	6.30	3.86	1.78	0.60	0.14	0.02	0.00	0.00	55.1	48.3		
-60	0.02	0.11	0.31	0.68	1.20	1.88	2.52	2.96	3.07	2.74	2.04	1.19	0.54	0.19	0.05	0.01	0.00	0.00	19.5	4.18		
-70	0.01	0.06	0.14	0.24	0.34	0.51	0.68	0.79	0.78	0.66	0.46	0.27	0.14	0.06	0.02	0.00	0.00	0.00	5.18	0.00		
-80	0.01	0.03	0.05	0.07	0.08	0.08	0.10	0.13	0.09	0.05	0.03	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.76	0.00		
-90																						
		-90	-80	-70	-60	-50	-40	-30	-20	HORIZONTAL (DEG)	20	30	40	50	60	70	80	90				
Φ t	0.47	4.82	23.5	72.5	145	217	276	318	338	333	300	239	150	55.8	11.4	1.67	0.06	0.00	2487	---		
Φ a	0.00	0.00	17.2	67.4	140	211	271	313	333	328	295	234	144	49.1	2.37	0.00	0.00	0.00	---	2406		

Isocandela



4.2 Goniophotometer Test

Luminous Distribution Intensity Data

Table--1

UNIT: cd

H (DEG)	-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0
V (DEG)	-180	-170	-160	-150	-140	-130	-120	-110	-100	-90	-80	-70	-60	-50	-40	-30	-20	-10	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	3.25	4.61	5.80	6.64	7.23	7.65	7.42	7.15	7.38	7.72	8.08	9.27	10.4	11.3	10.8	10.2	9.46	
-70	0.00	4.76	7.42	10.2	13.0	16.0	19.5	23.0	26.1	28.7	33.6	39.4	44.3	47.9	50.4	51.7	51.2	49.4	46.4
-60	0.00	6.03	10.3	16.0	23.2	32.7	44.7	59.2	73.8	89.4	105	122	136	147	159	166	170	170	166
-50	0.00	7.27	13.7	23.6	38.7	59.9	86.6	121	161	205	252	299	341	379	411	435	449	455	447
-40	0.00	8.41	17.5	32.8	58.3	94.8	146	215	299	391	485	578	657	720	768	809	834	844	838
-30	0.00	9.41	21.3	42.6	79.8	136	221	332	463	600	720	817	888	947	990	1021	1041	1053	1056
-20	0.00	10.2	24.4	51.5	99.1	178	295	446	610	748	856	938	1000	1054	1098	1128	1146	1154	1161
-10	0.00	10.7	26.5	58.1	114	211	351	523	689	822	919	999	1059	1113	1154	1178	1205	1213	1219
0	0.00	10.9	27.4	61.0	122	227	378	556	717	847	942	1021	1085	1140	1173	1202	1224	1234	1237
10	0.00	10.7	26.5	58.4	116	216	359	531	694	824	924	1003	1064	1115	1150	1189	1206	1222	1223
20	0.00	10.1	24.4	51.8	101	185	310	465	622	757	863	943	1005	1055	1094	1131	1155	1172	1171
30	0.00	9.30	21.4	42.9	80.9	143	238	357	492	622	735	826	900	957	998	1027	1048	1060	1063
40	0.00	8.27	17.5	32.9	59.4	98.8	155	234	328	427	520	608	680	738	787	821	844	855	851
50	0.00	7.11	13.4	23.7	39.2	60.4	89.1	127	174	224	273	323	366	401	432	451	460	463	451
60	0.00	5.89	9.99	15.8	23.1	32.5	44.6	59.1	75.5	93.4	111	128	141	152	162	167	170	171	167
70	0.00	4.68	7.02	9.65	12.4	15.5	19.1	22.7	26.4	29.5	34.8	40.8	45.7	48.8	50.7	51.4	51.0	49.3	46.4
80	0.00	3.22	4.43	5.31	6.03	6.58	6.93	7.01	6.80	6.34	6.72	7.14	7.60	8.77	9.83	10.6	10.3	9.96	9.48
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

																			UNIT: cd	
H (DEG)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90		
V (DEG)																				
-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	7.68	5.70	3.63	3.04	2.71	2.76	2.12	1.55	1.03	0.65	0.35	0.15	0.09	0.06	0.05	0.05	0.05	0.00		
-70	42.1	37.0	31.2	25.1	19.1	14.1	10.3	7.08	4.59	2.85	1.52	0.67	0.31	0.12	0.05	0.05	0.05	0.00		
-60	156	141	123	101	79.4	57.3	37.9	23.1	14.1	8.50	4.53	2.16	0.87	0.27	0.08	0.05	0.05	0.00		
-50	432	400	348	285	218	160	110	70.8	43.0	23.8	11.5	5.07	1.78	0.47	0.14	0.05	0.05	0.00		
-40	821	789	734	653	540	408	271	159	90.8	51.6	28.0	11.5	3.25	0.80	0.22	0.06	0.05	0.00		
-30	1047	1028	994	938	839	694	515	330	174	88.7	49.0	22.7	7.09	1.39	0.30	0.07	0.04	0.00		
-20	1157	1136	1106	1060	1008	896	722	505	290	130	67.6	35.0	11.6	2.10	0.36	0.07	0.04	0.00		
-10	1212	1196	1169	1128	1068	997	846	626	382	179	81.9	43.7	15.9	2.70	0.39	0.07	0.04	0.00		
0	1233	1215	1185	1153	1093	1022	886	672	412	194	84.8	46.3	17.0	2.71	0.33	0.05	0.04	0.00		
10	1215	1199	1176	1134	1076	999	857	645	395	189	84.2	44.0	16.3	3.02	0.49	0.09	0.05	0.00		
20	1161	1146	1115	1068	1014	907	741	532	308	140	69.7	35.7	12.3	2.68	0.53	0.11	0.05	0.00		
30	1058	1039	1006	945	841	705	541	354	189	95.8	51.0	24.1	7.73	2.08	0.47	0.11	0.05	0.00		
40	830	788	730	649	548	428	294	176	99.9	55.2	29.2	12.6	4.43	1.35	0.37	0.11	0.05	0.00		
50	434	403	358	302	241	178	121	77.3	46.2	25.5	12.4	6.01	2.56	0.80	0.26	0.09	0.06	0.00		
60	159	147	130	108	84.1	60.5	40.6	25.4	15.7	9.29	5.44	2.87	1.29	0.47	0.16	0.08	0.06	0.00		
70	42.4	37.5	32.0	26.0	20.2	14.8	10.9	7.64	5.17	3.42	2.03	1.05	0.51	0.22	0.10	0.07	0.07	0.00		
80	7.54	5.46	3.44	3.19	3.06	3.12	2.46	1.87	1.34	0.89	0.52	0.26	0.17	0.11	0.09	0.08	0.06	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.	SMSBULLET2X12 @24W5000K	Sample ID	241216024-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	0.199	23.6	0.990	13.80

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*****