

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		2392
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Standard	Premium	101.4
		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	13.79
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	3045±175	3084
		4 steps	3045±100	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		82.4
Minimum R9 (Integrating Sphere – Section 4.1)	ANSI/IES LM-79-2019 CIE13.3-1995	N/A		6
Minimum Rf (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥70		84
Minimum Rg (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	≥89		98
IES Rcs,h1 (Integrating Sphere – Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-11%
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	BULLET2X12 @24W3000K	ES 1st ES #3-3	241216022-S1
2	Goniophotometer Test	2025-02-20	BULLET2X12 @24W3000K	ES 1st ES #3-3	241216022-S1
3	THD and PF Test	2025-02-20	BULLET2X12 @24W3000K	ES 1st ES #3-3	241216022-S1

Remark (If any):

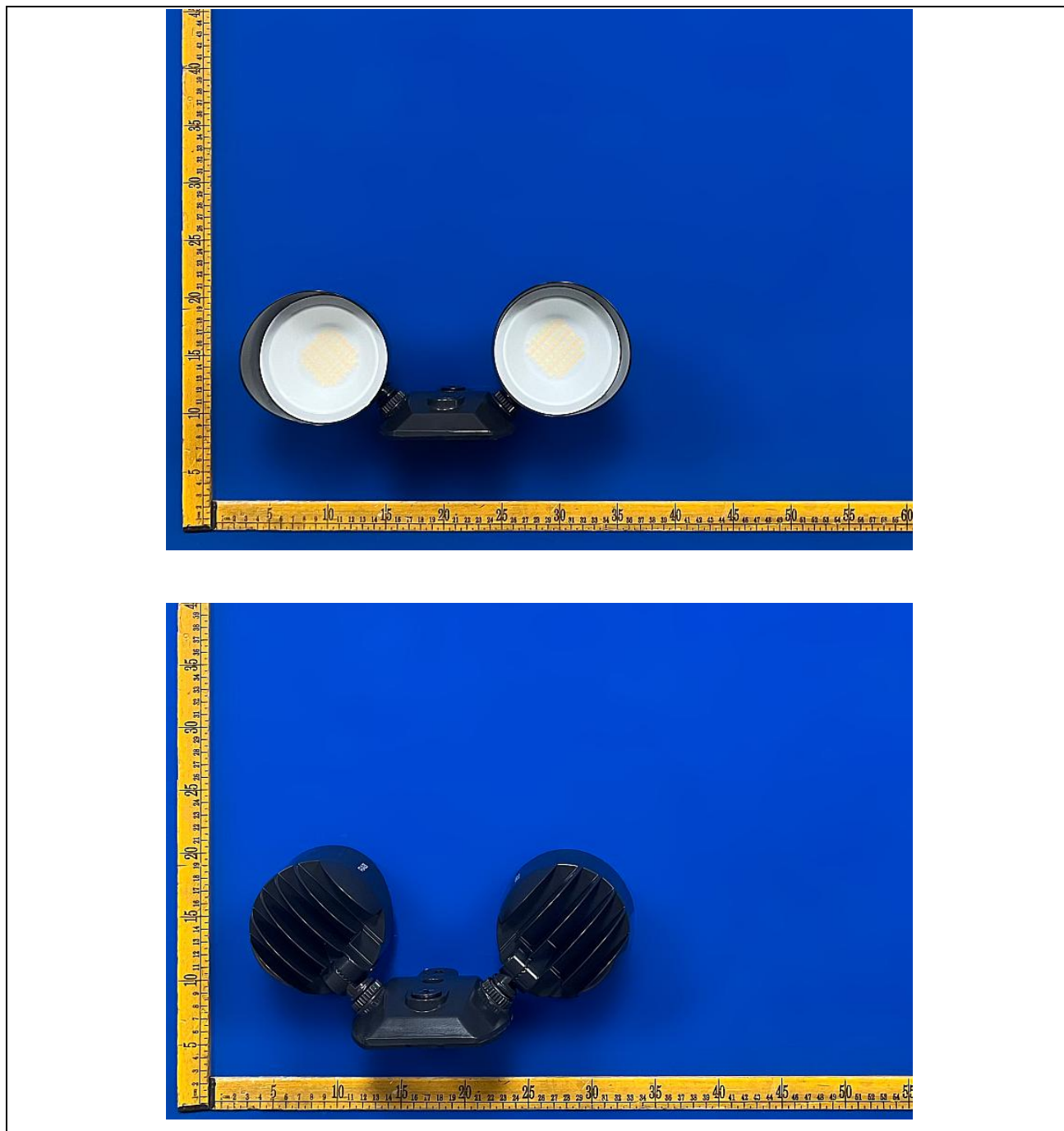
1. The results contained in this report pertain only to the tested samples.
2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.
3. This report must not be used by the client to claim product certification, approval, or endorsement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

3.0 Product Description

Luminaire Description: Model No. BULLET2X12 @24W3000K, 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.	BULLET2X12 @24W3000K	Sample ID	241216022-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

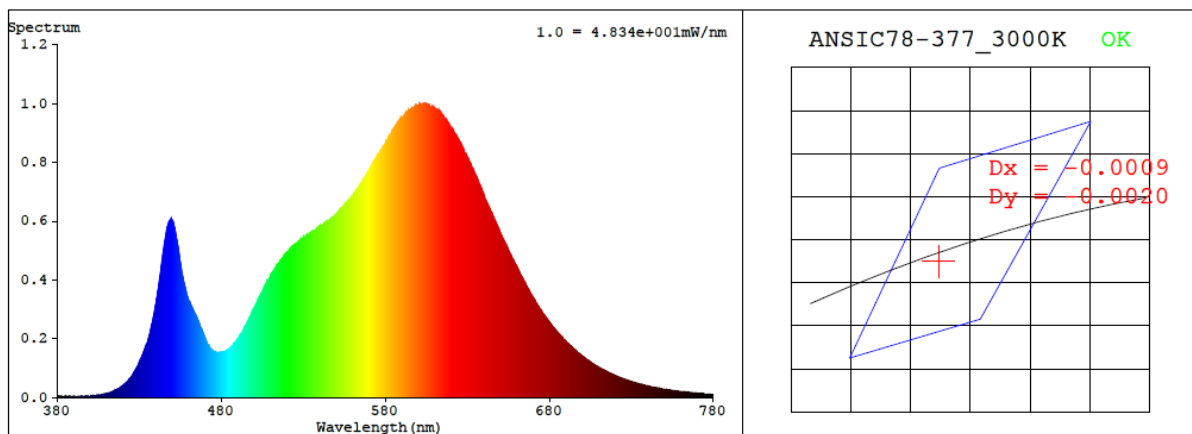
Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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
3084	82.4	6	-0.0007	1.9	84	98	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4302$ $y = 0.4000$ / $u' = 0.2479$ $v' = 0.5188$ ($duv = -6.65e-04$)

CCT= 3084K Prcp WL: $L_d = 582.7nm$ Purity=49.2%

Peak WL: $L_p = 605nm$ FWHM: $= 134.3nm$ Ratio: R=22.4% G=75.2% B=2.3%

Render Index: $R_a = 82.4$ AvgR = 76.4 TM30: $R_f = 83$ $R_g = 97$

EEL: 0.13395 A+

R1 =81 R2 =89 R3 =96 R4 =82 R5 =81 R6 =87 R7 =84

R8 =60 R9 =6 R10=76 R11=81 R12=69 R13=83 R14=98 R15=74

4.1 Integrating Sphere Test

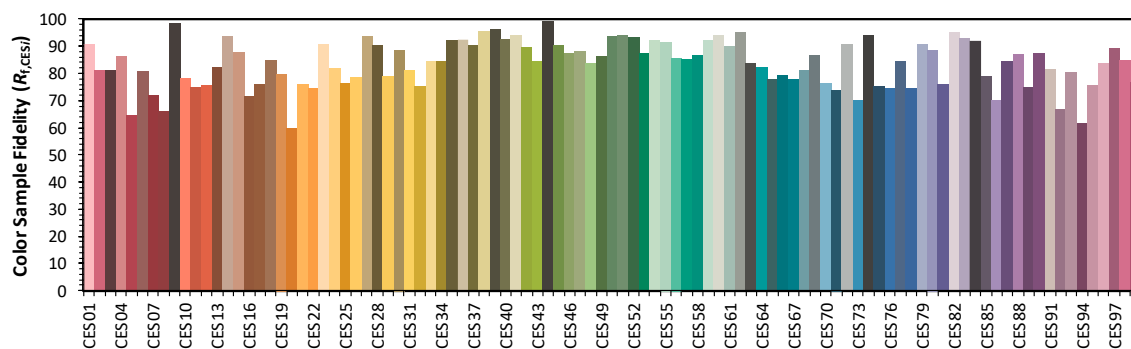
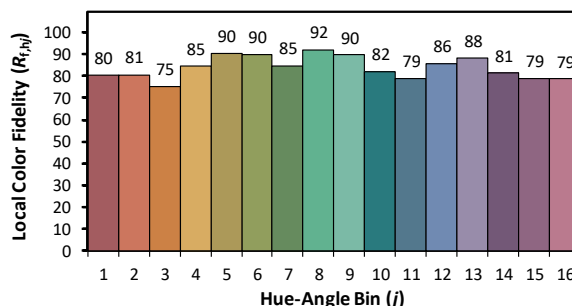
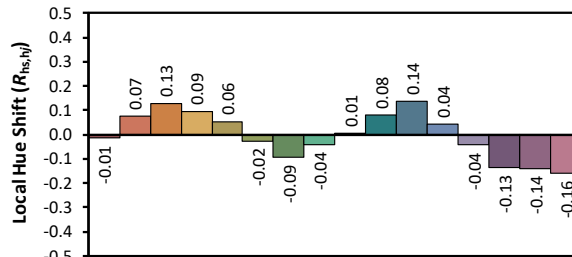
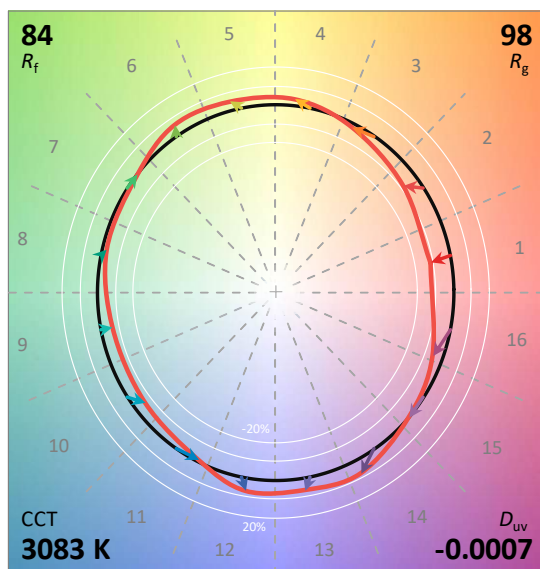
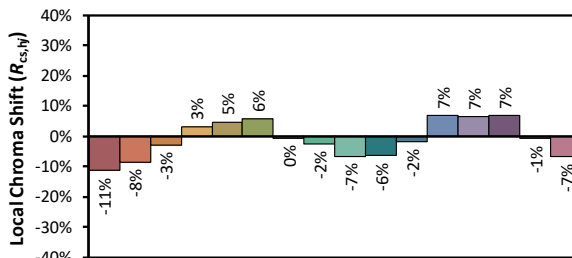
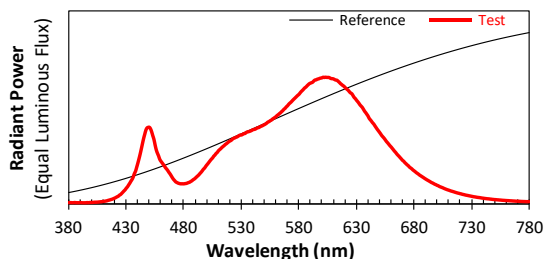
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2025/2/21

Model: BULLET2X12 @24W3000K



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

x 0.4302
 y 0.3999
 u' 0.2480
 v' 0.5187

CIE 13.3-1995
(CRI)
 R_a 82
 R_g 6

4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength											
WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)	WL (nm)	Radiant (W/nm)
380	3.70E-06	447	5.79E-04	514	4.49E-04	581	8.74E-04	648	5.86E-04	715	8.83E-05
381	4.00E-06	448	5.96E-04	515	4.56E-04	582	8.85E-04	649	5.74E-04	716	8.53E-05
382	4.10E-06	449	6.01E-04	516	4.65E-04	583	8.94E-04	650	5.62E-04	717	8.25E-05
383	3.10E-06	450	6.02E-04	517	4.72E-04	584	9.04E-04	651	5.49E-04	718	7.99E-05
384	3.40E-06	451	5.90E-04	518	4.80E-04	585	9.14E-04	652	5.35E-04	719	7.78E-05
385	4.80E-06	452	5.66E-04	519	4.87E-04	586	9.20E-04	653	5.25E-04	720	7.50E-05
386	4.00E-06	453	5.35E-04	520	4.93E-04	587	9.30E-04	654	5.14E-04	721	7.32E-05
387	3.10E-06	454	5.05E-04	521	4.97E-04	588	9.39E-04	655	5.02E-04	722	7.00E-05
388	3.30E-06	455	4.62E-04	522	5.06E-04	589	9.47E-04	656	4.89E-04	723	6.83E-05
389	3.00E-06	456	4.23E-04	523	5.13E-04	590	9.52E-04	657	4.79E-04	724	6.58E-05
390	4.30E-06	457	3.96E-04	524	5.16E-04	591	9.55E-04	658	4.68E-04	725	6.36E-05
391	3.40E-06	458	3.75E-04	525	5.21E-04	592	9.60E-04	659	4.56E-04	726	6.18E-05
392	2.80E-06	459	3.48E-04	526	5.24E-04	593	9.70E-04	660	4.46E-04	727	6.00E-05
393	2.60E-06	460	3.33E-04	527	5.30E-04	594	9.76E-04	661	4.35E-04	728	5.80E-05
394	2.90E-06	461	3.21E-04	528	5.36E-04	595	9.78E-04	662	4.24E-04	729	5.62E-05
395	3.10E-06	462	3.08E-04	529	5.40E-04	596	9.83E-04	663	4.12E-04	730	5.42E-05
396	4.40E-06	463	2.96E-04	530	5.41E-04	597	9.85E-04	664	4.02E-04	731	5.24E-05
397	3.40E-06	464	2.81E-04	531	5.45E-04	598	9.89E-04	665	3.90E-04	732	5.05E-05
398	4.60E-06	465	2.71E-04	532	5.51E-04	599	9.92E-04	666	3.80E-04	733	4.94E-05
399	5.20E-06	466	2.58E-04	533	5.52E-04	600	9.94E-04	667	3.71E-04	734	4.76E-05
400	5.10E-06	467	2.44E-04	534	5.59E-04	601	9.99E-04	668	3.60E-04	735	4.60E-05
401	5.50E-06	468	2.32E-04	535	5.64E-04	602	9.96E-04	669	3.50E-04	736	4.49E-05
402	7.10E-06	469	2.17E-04	536	5.66E-04	603	9.98E-04	670	3.39E-04	737	4.37E-05
403	7.30E-06	470	2.02E-04	537	5.69E-04	604	9.97E-04	671	3.32E-04	738	4.22E-05
404	7.80E-06	471	1.89E-04	538	5.72E-04	605	9.97E-04	672	3.21E-04	739	4.04E-05
405	8.00E-06	472	1.79E-04	539	5.77E-04	606	9.97E-04	673	3.13E-04	740	3.92E-05
406	9.10E-06	473	1.68E-04	540	5.82E-04	607	9.92E-04	674	3.04E-04	741	3.78E-05
407	1.00E-05	474	1.64E-04	541	5.84E-04	608	9.88E-04	675	2.97E-04	742	3.65E-05
408	1.12E-05	475	1.59E-04	542	5.87E-04	609	9.87E-04	676	2.86E-04	743	3.55E-05
409	1.18E-05	476	1.56E-04	543	5.92E-04	610	9.85E-04	677	2.79E-04	744	3.43E-05
410	1.36E-05	477	1.54E-04	544	5.98E-04	611	9.80E-04	678	2.72E-04	745	3.38E-05
411	1.49E-05	478	1.53E-04	545	5.99E-04	612	9.76E-04	679	2.63E-04	746	3.23E-05
412	1.65E-05	479	1.53E-04	546	6.04E-04	613	9.75E-04	680	2.56E-04	747	3.14E-05
413	1.83E-05	480	1.53E-04	547	6.09E-04	614	9.67E-04	681	2.49E-04	748	3.00E-05
414	2.13E-05	481	1.55E-04	548	6.13E-04	615	9.59E-04	682	2.42E-04	749	2.92E-05
415	2.38E-05	482	1.56E-04	549	6.18E-04	616	9.49E-04	683	2.35E-04	750	2.80E-05
416	2.64E-05	483	1.59E-04	550	6.23E-04	617	9.41E-04	684	2.29E-04	751	2.77E-05
417	2.95E-05	484	1.63E-04	551	6.28E-04	618	9.34E-04	685	2.21E-04	752	2.65E-05
418	3.21E-05	485	1.66E-04	552	6.35E-04	619	9.27E-04	686	2.16E-04	753	2.60E-05
419	3.66E-05	486	1.72E-04	553	6.43E-04	620	9.18E-04	687	2.10E-04	754	2.50E-05
420	4.04E-05	487	1.77E-04	554	6.46E-04	621	9.09E-04	688	2.04E-04	755	2.43E-05
421	4.53E-05	488	1.85E-04	555	6.54E-04	622	9.01E-04	689	1.97E-04	756	2.35E-05
422	5.05E-05	489	1.91E-04	556	6.58E-04	623	8.93E-04	690	1.92E-04	757	2.25E-05
423	5.49E-05	490	1.99E-04	557	6.66E-04	624	8.81E-04	691	1.86E-04	758	2.21E-05
424	6.32E-05	491	2.08E-04	558	6.73E-04	625	8.73E-04	692	1.81E-04	759	2.13E-05
425	6.84E-05	492	2.16E-04	559	6.79E-04	626	8.67E-04	693	1.75E-04	760	2.06E-05
426	7.75E-05	493	2.24E-04	560	6.86E-04	627	8.53E-04	694	1.70E-04	761	2.00E-05
427	8.71E-05	494	2.35E-04	561	6.95E-04	628	8.38E-04	695	1.64E-04	762	1.97E-05
428	9.71E-05	495	2.45E-04	562	7.01E-04	629	8.29E-04	696	1.60E-04	763	1.87E-05
429	1.06E-04	496	2.57E-04	563	7.10E-04	630	8.16E-04	697	1.55E-04	764	1.84E-05
430	1.19E-04	497	2.69E-04	564	7.17E-04	631	8.05E-04	698	1.50E-04	765	1.78E-05
431	1.30E-04	498	2.78E-04	565	7.26E-04	632	7.93E-04	699	1.46E-04	766	1.70E-05
432	1.44E-04	499	2.92E-04	566	7.34E-04	633	7.80E-04	700	1.41E-04	767	1.66E-05
433	1.58E-04	500	3.04E-04	567	7.45E-04	634	7.70E-04	701	1.38E-04	768	1.59E-05
434	1.74E-04	501	3.15E-04	568	7.52E-04	635	7.59E-04	702	1.32E-04	769	1.54E-05
435	1.88E-04	502	3.27E-04	569	7.63E-04	636	7.45E-04	703	1.29E-04	770	1.53E-05
436	2.08E-04	503	3.39E-04	570	7.71E-04	637	7.29E-04	704	1.25E-04	771	1.48E-05
437	2.34E-04	504	3.50E-04	571	7.83E-04	638	7.18E-04	705	1.22E-04	772	1.43E-05
438	2.53E-04	505	3.59E-04	572	7.92E-04	639	7.04E-04	706	1.17E-04	773	1.35E-05
439	2.85E-04	506	3.73E-04	573	8.00E-04	640	6.91E-04	707	1.13E-04	774	1.33E-05
440	3.17E-04	507	3.82E-04	574	8.10E-04	641	6.73E-04	708	1.10E-04	775	1.27E-05
441	3.52E-04	508	3.94E-04	575	8.20E-04	642	6.61E-04	709	1.06E-04	776	1.26E-05
442	3.88E-04	509	4.02E-04	576	8.28E-04	643	6.50E-04	710	1.03E-04	777	1.21E-05
443	4.29E-04	510	4.15E-04	577	8.37E-04	644	6.37E-04	711	1.00E-04	778	1.18E-05
444	4.71E-04	511	4.24E-04	578	8.46E-04	645	6.27E-04	712	9.64E-05	779	1.18E-05
445	5.12E-04	512	4.32E-04	579	8.55E-04	646	6.13E-04	713	9.40E-05	780	1.18E-05
446	5.46E-04	513	4.41E-04	580	8.63E-04	647	5.99E-04	714	9.12E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	BULLET2X12 @24W3000K	Sample ID	241216022-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

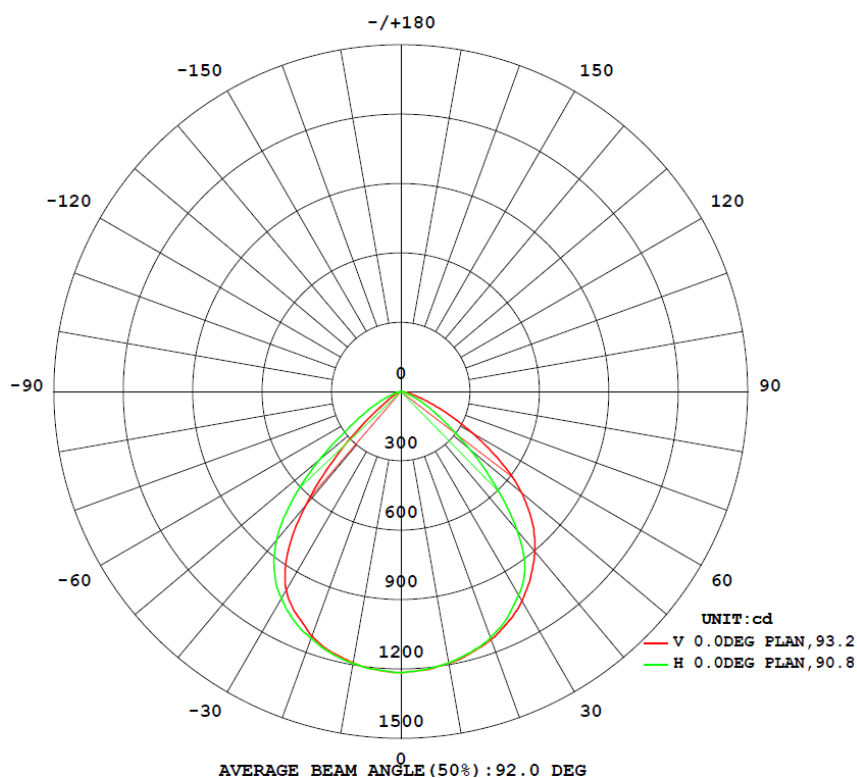
Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	120.0	60	0.199	23.6	0.990
NON-WORST CASE	N/A	N/A	N/A	N/A	N/A

Test Result

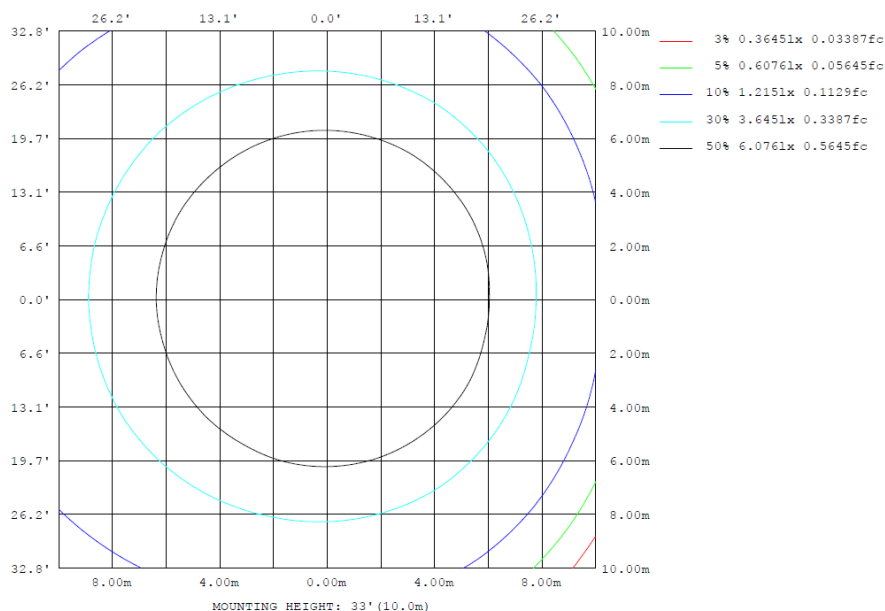
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement	NEMA Type
	C0-180	C90-270	C0-180	C90-270		(0°-90°)	
2392	124.5	126.1	92.9	90.8	101.4	100.0%	6H x 6V

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	1190	1188	1191	1192	1193	1194	1193	1189	0- 10	114.7	114.7	4.8, 4.8
20	1126	1122	1132	1129	1140	1136	1135	1133	10- 20	329.4	444.1	18.6, 18.6
30	993.3	1005	1017	1026	1048	1038	1033	1018	20- 30	499.1	943.2	39.4, 39.4
40	638.7	715.0	782.2	866.4	901.7	894.1	836.6	757.7	30- 40	580.3	1523	63.7, 63.7
50	188.8	289.1	391.0	545.9	682.1	631.8	463.1	352.7	40- 50	480.5	2004	83.8, 83.8
60	44.00	69.17	145.4	223.6	354.0	281.5	168.9	95.65	50- 60	259.0	2263	94.6, 94.6
70	2.691	12.37	40.16	68.81	114.4	77.97	48.05	15.83	60- 70	98.99	2362	98.8, 98.8
80	0.0533	1.980	7.719	11.44	25.83	12.15	9.992	2.625	70- 80	25.80	2388	99.8, 99.8
90	0	0	0	0	0	0	0	0	80- 90	3.825	2392	100, 100
100	0	0	0	0	0	0	0	0	90-100	0	2392	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	2392	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	2392	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	2392	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	2392	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	2392	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	2392	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	2392	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	2392	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

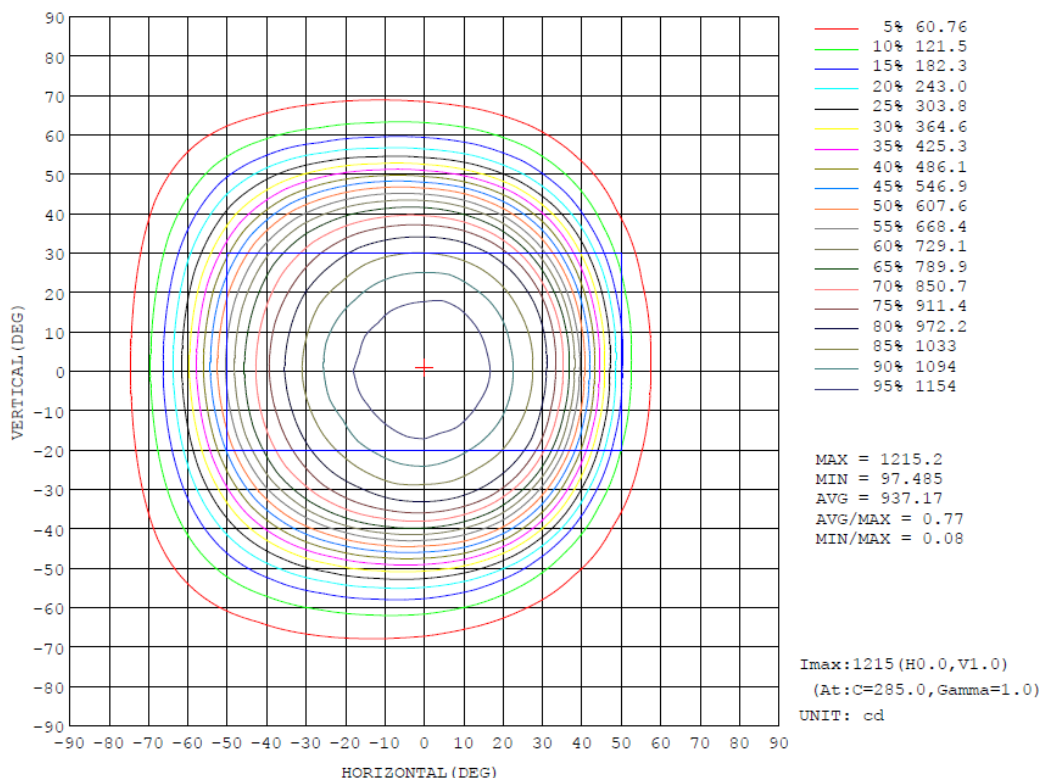
Zonal (lm)		Total (lm)		Percent
0-10	114.69	0-10	114.69	4.80%
10-20	329.41	0-20	444.10	18.57%
20-30	499.14	0-30	943.24	39.44%
30-40	580.25	0-40	1523.49	63.70%
40-50	480.47	0-50	2003.96	83.79%
50-60	259.01	0-60	2262.97	94.62%
60-70	98.99	0-70	2361.96	98.76%
70-80	25.80	0-80	2387.76	99.84%
80-90	3.83	0-90	2391.59	100.00%
90-100	0.00	0-100	2391.59	100.00%
100-110	0.00	0-110	2391.59	100.00%
110-120	0.00	0-120	2391.59	100.00%
120-130	0.00	0-130	2391.59	100.00%
130-140	0.00	0-140	2391.59	100.00%
140-150	0.00	0-150	2391.59	100.00%
150-160	0.00	0-160	2391.59	100.00%
160-170	0.00	0-170	2391.59	100.00%
170-180	0.00	0-180	2391.59	100.00%

4.2 Goniophotometer Test

Area Flux Diagram

		AREA FLUX DIAGRAM															UNIT:lm				Φ t	Φ a
VERTICAL (DEG)	90	0.01	0.02	0.05	0.06	0.07	0.08	0.09	0.12	0.09	0.05	0.03	0.04	0.03	0.01	0.00	0.00	0.00	0.00	0.76	0.00	
	80	0.01	0.06	0.13	0.23	0.34	0.50	0.68	0.79	0.79	0.69	0.51	0.32	0.16	0.07	0.02	0.00	0.00	0.00	5.31	0.00	
	70	0.02	0.10	0.30	0.68	1.23	1.92	2.53	2.97	3.11	2.86	2.23	1.37	0.63	0.22	0.07	0.01	0.00	0.00	20.3	4.99	
	60	0.02	0.16	0.60	1.60	3.28	5.38	7.31	8.66	9.12	8.47	6.75	4.37	2.09	0.69	0.16	0.03	0.00	0.00	58.7	52.6	
	50	0.03	0.24	1.04	3.14	6.86	11.5	15.8	18.9	20.2	19.3	16.1	10.8	5.19	1.70	0.38	0.05	0.00	0.00	131	128	
	40	0.03	0.32	1.60	5.10	11.1	17.6	23.1	26.8	28.7	28.4	25.5	19.0	10.4	3.39	0.75	0.10	0.01	0.00	202	199	
	30	0.04	0.41	2.18	7.05	14.4	21.4	26.9	30.9	32.9	32.9	30.4	25.3	15.6	5.72	1.15	0.16	0.01	0.00	247	245	
	20	0.04	0.47	2.63	8.45	16.3	23.4	29.1	33.1	35.2	35.3	32.9	28.2	19.4	7.76	1.51	0.23	0.01	0.00	274	272	
	10	0.04	0.51	2.88	9.13	17.2	24.2	30.1	34.2	36.3	36.3	34.0	29.2	21.0	8.79	1.70	0.26	0.01	0.00	286	284	
	0	0.04	0.51	2.83	8.98	17.1	24.1	30.0	34.1	36.3	36.3	33.9	29.1	20.7	8.59	1.63	0.25	0.01	0.00	284	283	
	-10	0.04	0.46	2.49	7.99	16.0	23.1	28.8	32.9	35.1	35.0	32.5	27.8	18.8	7.15	1.37	0.22	0.01	0.00	270	268	
	-20	0.03	0.39	1.98	6.36	13.5	20.8	26.5	30.4	32.6	32.4	29.9	24.6	14.6	4.87	1.02	0.15	0.00	0.00	240	238	
	-30	0.03	0.31	1.44	4.39	9.70	16.0	21.7	25.8	27.8	27.5	24.4	17.6	8.95	2.62	0.66	0.08	0.00	0.00	189	186	
	-40	0.03	0.23	0.94	2.63	5.63	9.54	13.4	16.4	17.8	17.2	14.1	8.99	3.90	1.31	0.33	0.04	0.00	0.00	112	108	
	-50	0.02	0.15	0.54	1.39	2.72	4.38	6.00	7.22	7.70	7.12	5.46	3.27	1.51	0.53	0.13	0.02	0.00	0.00	48.2	40.7	
	-60	0.02	0.10	0.28	0.61	1.08	1.70	2.26	2.63	2.69	2.37	1.72	0.99	0.46	0.17	0.05	0.01	0.00	0.00	17.1	2.20	
	-70	0.01	0.06	0.13	0.22	0.31	0.47	0.63	0.71	0.68	0.56	0.38	0.23	0.12	0.05	0.01	0.00	0.00	0.00	4.57	0.00	
	-80	0.00	0.02	0.05	0.06	0.07	0.07	0.09	0.11	0.08	0.04	0.02	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.69	0.00	
	-90																					
		-90	-80	-70	-60	-50	-40	-30	-20	HORIZONTAL (DEG)	20	30	40	50	60	70	80	90				
Φ t	0	0.45	4.54	22.1	68.1	137	206	265	307	327	323	291	231	143	53.7	11.0	1.62	0.06	0.00	2391	---	
Φ a	0	0.00	0.00	15.6	63.0	132	201	260	301	322	318	286	226	138	47.0	2.23	0.00	0.00	0.00	---	2311	

Isocandela



4.2 Goniophotometer Test

Luminous Distribution Intensity Data

H (DEG) V (DEG)	UNIT: °d																		
	-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	3.04	4.27	5.27	6.03	6.60	7.06	6.99	6.59	6.01	6.48	6.99	7.46	8.49	9.40	10.1	9.46	8.65	7.72
-70	0.00	4.46	6.84	9.39	11.9	14.5	17.4	20.5	23.4	26.2	30.9	36.2	40.8	43.7	45.4	46.6	45.3	43.2	40.2
-60	0.00	5.64	9.62	14.8	21.1	29.5	39.7	51.8	66.2	80.8	94.4	109	122	132	141	147	150	149	145
-50	0.00	6.80	12.8	21.8	35.2	53.6	78.4	108	143	181	221	260	298	330	358	380	392	398	391
-40	0.00	7.90	16.4	30.3	53.1	86.7	132	192	266	349	434	515	589	650	703	744	770	784	782
-30	0.00	8.85	20.0	39.4	73.7	125	200	302	420	545	663	759	838	901	945	975	1003	1017	1014
-20	0.00	9.61	22.9	47.9	92.1	164	270	409	558	699	808	892	958	1010	1054	1087	1111	1128	1133
-10	0.00	10.1	24.9	54.3	107	197	326	486	647	778	877	953	1019	1071	1112	1145	1168	1189	1191
0	0.00	10.3	25.8	57.3	114	214	354	525	682	805	902	979	1048	1098	1140	1171	1193	1209	1215
10	0.00	10.1	25.1	55.1	110	205	339	504	662	786	887	961	1027	1084	1119	1150	1175	1188	1193
20	0.00	9.60	23.3	49.3	96.2	177	295	444	597	726	827	906	974	1025	1063	1097	1121	1134	1135
30	0.00	8.83	20.3	41.0	77.7	138	229	343	473	602	714	802	869	923	966	996	1019	1031	1033
40	0.00	7.85	16.5	31.7	57.4	95.8	152	229	320	415	509	600	672	729	774	806	828	839	837
50	0.00	6.76	12.9	23.2	38.2	59.3	87.8	127	173	224	276	325	370	408	440	461	473	476	463
60	0.00	5.60	9.59	15.1	23.0	32.1	44.4	59.1	75.3	92.8	110	127	141	151	163	169	173	173	169
70	0.00	4.45	6.74	9.36	12.1	15.1	19.1	22.7	26.2	29.1	34.2	39.8	44.3	47.8	50.3	51.7	51.7	50.5	48.1
80	0.00	3.07	4.24	5.14	5.86	6.43	6.82	6.94	6.76	6.31	6.61	6.94	7.29	8.54	9.75	10.7	10.6	10.3	9.95
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)																				
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	6.21	4.57	2.91	2.58	2.40	2.43	1.90	1.41	0.96	0.61	0.33	0.15	0.09	0.06	0.05	0.05	0.05	0.00		
-70	36.0	31.1	25.8	20.7	15.9	11.9	8.88	6.29	4.18	2.62	1.42	0.64	0.30	0.12	0.05	0.04	0.05	0.00		
-60	135	122	105	85	1	65.6	47.1	32.2	20.4	12.7	7.77	4.21	2.03	0.83	0.26	0.08	0.04	0.05		
-50	375	345	302	247	189	135	92.3	61.3	38.2	21.7	10.6	4.74	1.69	0.45	0.14	0.05	0.04	0.00		
-40	764	726	669	591	483	362	237	134	80.3	47.2	26.0	10.8	3.10	0.77	0.22	0.06	0.04	0.00		
-30	1111	993	963	901	791	645	474	298	153	80.1	45.5	21.4	6.81	1.36	0.29	0.07	0.04	0.00		
-20	1118	1101	1072	1031	978	865	686	474	270	120	63.1	33.0	11.2	2.05	0.36	0.07	0.04	0.00		
-10	1181	1168	1139	1099	1042	962	813	596	363	170	77.1	41.3	15.3	2.66	0.38	0.07	0.04	0.00		
0	1207	1190	1165	1126	1066	993	857	639	397	189	81.0	44.0	16.5	2.69	0.34	0.05	0.04	0.00		
10	1190	1173	1147	1105	1049	979	835	614	383	187	81.7	42.3	15.9	2.99	0.49	0.09	0.04	0.00		
20	1137	1115	1088	1044	990	891	715	511	306	144	67.6	34.5	12.1	2.65	0.53	0.11	0.05	0.00		
30	1025	1007	981	927	828	689	527	351	199	97.5	50.3	23.7	7.66	2.06	0.47	0.11	0.05	0.00		
40	819	784	728	650	548	428	298	185	104	55.7	29.2	12.6	4.38	1.35	0.37	0.11	0.05	0.00		
50	444	410	363	306	245	184	130	93.3	48.5	26.1	12.5	5.99	2.55	0.80	0.26	0.09	0.05	0.00		
60	162	150	134	112	90.2	66.2	44.4	27.3	16.6	9.55	5.45	2.86	1.29	0.47	0.16	0.07	0.06	0.00		
70	44.5	40.1	34.9	28.7	22.6	16.7	11.9	8.1	5.33	3.49	2.05	1.05	0.51	0.22	0.10	0.07	0.06	0.00		
80	8.04	5.93	3.83	3.51	3.33	3.37	2.63	1.96	1.38	0.91	0.53	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.	BULLET2X12 @24W3000K	Sample ID	241216022-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	13.79

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*****