

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: 2024-12-25

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		663
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Standard	Premium	116.3
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		5.7
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	120V	13.68
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	120V	0.991
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	5029±283	5125
		4 steps	5029±220	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		82.6
Minimum R9 (Integrating Sphere – Section 4.1)	ANSI/IES LM-79-2019 CIE13.3-1995	N/A		10
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		0.048
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		5.7
(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	2024-12-24	BULLET12 @6W5000K	ES 1st ES #3-1	241216012-S1
2	Goniophotometer Test	2024-12-24	BULLET12 @6W5000K	ES 1st ES #3-1	241216012-S1
3	THD and PF Test	2024-12-24	BULLET12 @6W5000K	ES 1st ES #3-1	241216012-S1

Remark (If any):

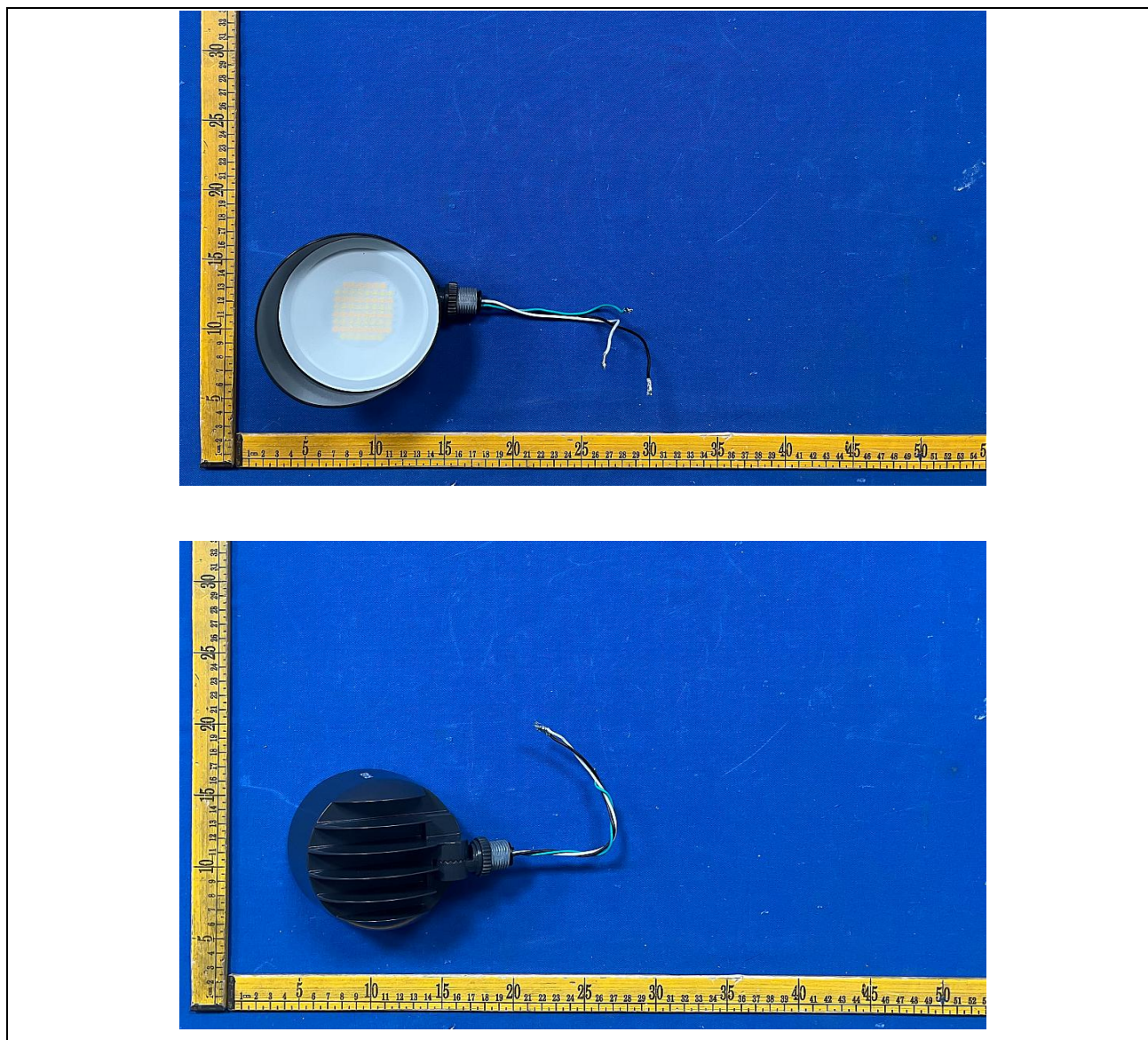
1. The results contained in this report pertain only to the tested samples.
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3. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST or any agency of the U.S. Government.

3.0 Product Description

Luminaire Description: Model No. BULLET12 @6W5000K, 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.	BULLET12 @6W5000K	Sample ID	241216012-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

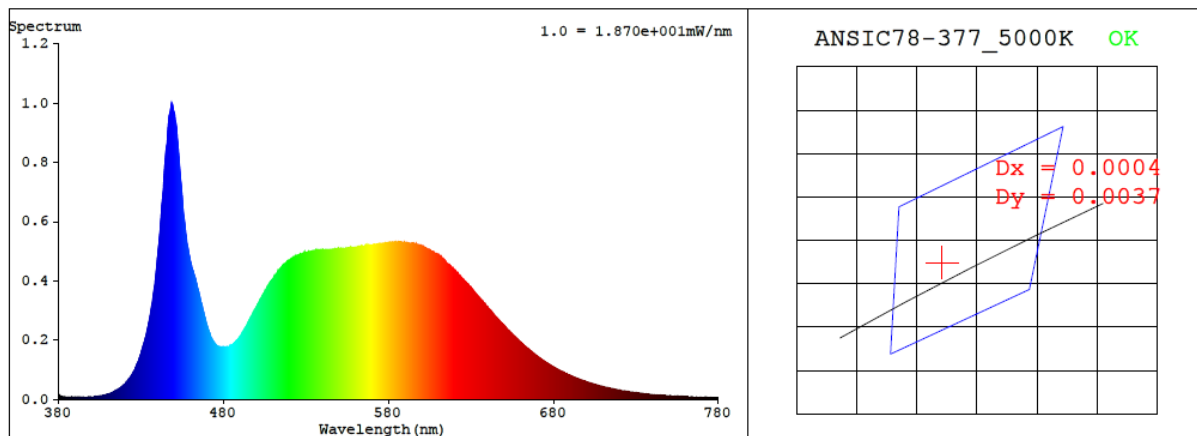
Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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	0.048	5.7	0.991

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
5125	82.6	10	0.0017	83	98	-12%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.3421$ $y = 0.3526$ / $u' = 0.2090$ $v' = 0.4847$ ($duv=1.69e-03$)

CCT= 5125K Prcp WL: $L_d=569.1nm$ Purity=8.4%

Peak WL: $L_p=449nm$ FWHM: $=18.5nm$ Ratio:R=15.6% G=80.3% B=4.1%

Render Index: $R_a = 82.6$ AvgR = 75.7 TM30:Rf=83 Rg=97

EEL: 0.10651 A++ Highest

R1 =82 R2 =86 R3 =89 R4 =84 R5 =83 R6 =81 R7 =87

R8 =69 R9 =10 R10=67 R11=84 R12=61 R13=83 R14=94 R15=77

4.1 Integrating Sphere Test

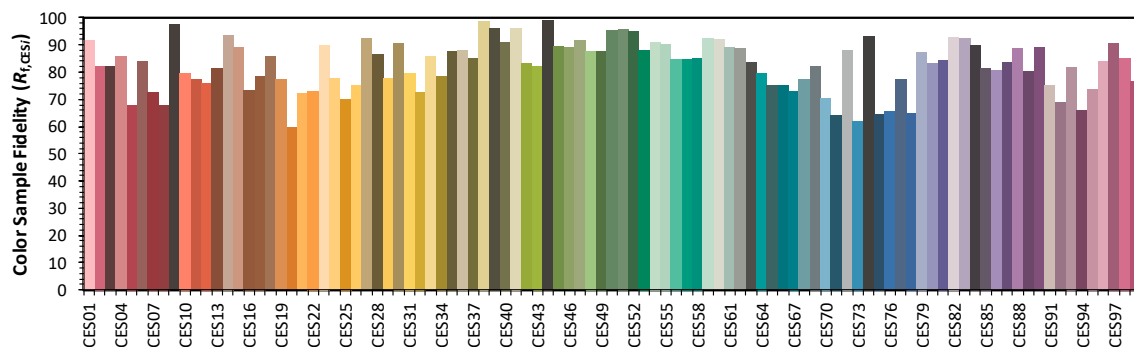
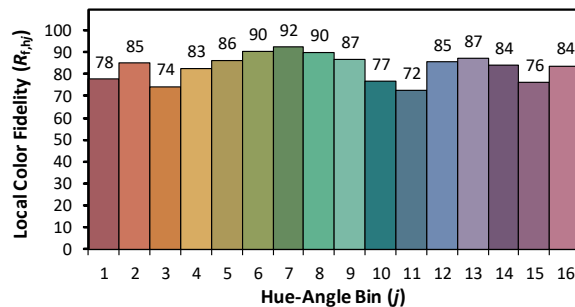
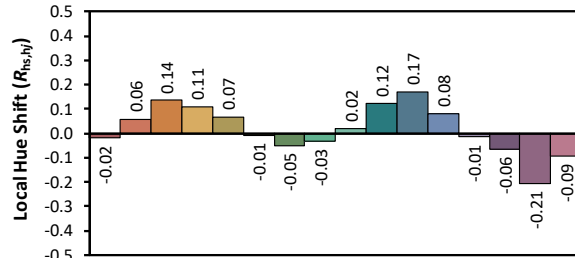
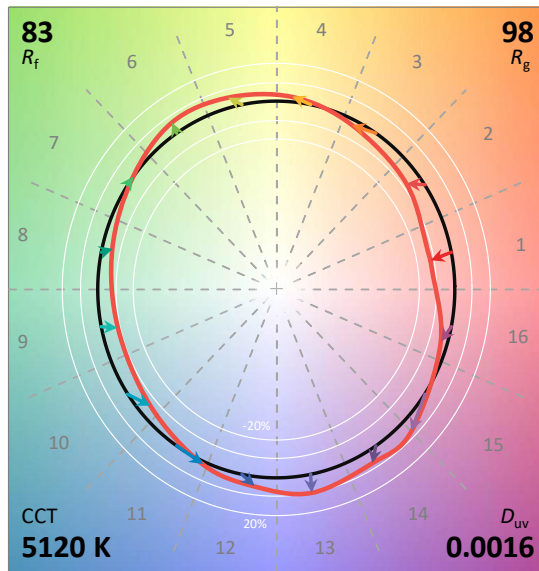
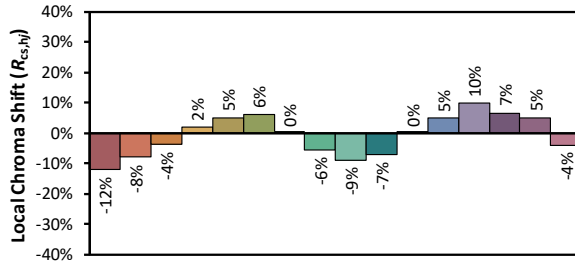
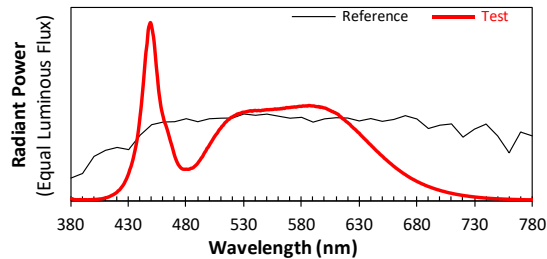
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/12/25

Model: BULLET12 @6W5000K



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

x 0.3421
 y 0.3524
 u' 0.2091
 v' 0.4846

CIE 13.3-1995
(CRI)

R_a 83
 R_g 10

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	1.18E-05	447	9.52E-04	514	4.39E-04	581	5.30E-04	648	2.61E-04	715	3.67E-05
381	1.28E-05	448	9.79E-04	515	4.44E-04	582	5.29E-04	649	2.56E-04	716	3.56E-05
382	1.00E-05	449	9.94E-04	516	4.51E-04	583	5.29E-04	650	2.50E-04	717	3.44E-05
383	7.90E-06	450	9.70E-04	517	4.55E-04	584	5.30E-04	651	2.44E-04	718	3.33E-05
384	7.90E-06	451	9.35E-04	518	4.60E-04	585	5.29E-04	652	2.37E-04	719	3.22E-05
385	7.10E-06	452	8.92E-04	519	4.66E-04	586	5.32E-04	653	2.32E-04	720	3.13E-05
386	7.70E-06	453	8.23E-04	520	4.68E-04	587	5.32E-04	654	2.26E-04	721	3.02E-05
387	7.40E-06	454	7.50E-04	521	4.73E-04	588	5.30E-04	655	2.21E-04	722	2.92E-05
388	8.10E-06	455	6.88E-04	522	4.76E-04	589	5.30E-04	656	2.15E-04	723	2.84E-05
389	7.20E-06	456	6.19E-04	523	4.79E-04	590	5.30E-04	657	2.10E-04	724	2.77E-05
390	7.10E-06	457	5.71E-04	524	4.84E-04	591	5.29E-04	658	2.05E-04	725	2.67E-05
391	7.10E-06	458	5.26E-04	525	4.86E-04	592	5.27E-04	659	1.99E-04	726	2.57E-05
392	7.50E-06	459	4.95E-04	526	4.88E-04	593	5.26E-04	660	1.94E-04	727	2.50E-05
393	7.50E-06	460	4.69E-04	527	4.89E-04	594	5.25E-04	661	1.89E-04	728	2.42E-05
394	6.90E-06	461	4.42E-04	528	4.92E-04	595	5.27E-04	662	1.83E-04	729	2.33E-05
395	7.30E-06	462	4.27E-04	529	4.95E-04	596	5.22E-04	663	1.79E-04	730	2.28E-05
396	7.40E-06	463	4.08E-04	530	4.95E-04	597	5.23E-04	664	1.74E-04	731	2.18E-05
397	7.30E-06	464	3.86E-04	531	4.96E-04	598	5.22E-04	665	1.69E-04	732	2.14E-05
398	7.90E-06	465	3.63E-04	532	4.97E-04	599	5.19E-04	666	1.64E-04	733	2.07E-05
399	8.00E-06	466	3.40E-04	533	4.99E-04	600	5.18E-04	667	1.60E-04	734	1.99E-05
400	8.80E-06	467	3.18E-04	534	5.00E-04	601	5.17E-04	668	1.55E-04	735	1.91E-05
401	9.10E-06	468	2.97E-04	535	5.02E-04	602	5.13E-04	669	1.51E-04	736	1.88E-05
402	9.60E-06	469	2.72E-04	536	5.03E-04	603	5.10E-04	670	1.47E-04	737	1.80E-05
403	9.90E-06	470	2.50E-04	537	5.00E-04	604	5.07E-04	671	1.43E-04	738	1.75E-05
404	1.05E-05	471	2.32E-04	538	5.03E-04	605	5.04E-04	672	1.38E-04	739	1.70E-05
405	1.17E-05	472	2.17E-04	539	5.04E-04	606	5.00E-04	673	1.35E-04	740	1.65E-05
406	1.17E-05	473	2.04E-04	540	5.05E-04	607	4.98E-04	674	1.31E-04	741	1.59E-05
407	1.32E-05	474	1.95E-04	541	5.03E-04	608	4.94E-04	675	1.27E-04	742	1.57E-05
408	1.46E-05	475	1.87E-04	542	5.04E-04	609	4.92E-04	676	1.23E-04	743	1.51E-05
409	1.60E-05	476	1.81E-04	543	5.05E-04	610	4.89E-04	677	1.20E-04	744	1.46E-05
410	1.78E-05	477	1.78E-04	544	5.03E-04	611	4.85E-04	678	1.16E-04	745	1.43E-05
411	1.93E-05	478	1.77E-04	545	5.04E-04	612	4.81E-04	679	1.13E-04	746	1.39E-05
412	2.15E-05	479	1.77E-04	546	5.06E-04	613	4.73E-04	680	1.09E-04	747	1.34E-05
413	2.39E-05	480	1.78E-04	547	5.06E-04	614	4.69E-04	681	1.06E-04	748	1.33E-05
414	2.69E-05	481	1.77E-04	548	5.08E-04	615	4.62E-04	682	1.03E-04	749	1.28E-05
415	3.04E-05	482	1.77E-04	549	5.08E-04	616	4.57E-04	683	1.00E-04	750	1.24E-05
416	3.34E-05	483	1.78E-04	550	5.09E-04	617	4.54E-04	684	9.71E-05	751	1.22E-05
417	3.65E-05	484	1.82E-04	551	5.08E-04	618	4.47E-04	685	9.42E-05	752	1.18E-05
418	4.07E-05	485	1.83E-04	552	5.09E-04	619	4.41E-04	686	9.18E-05	753	1.17E-05
419	4.50E-05	486	1.86E-04	553	5.10E-04	620	4.37E-04	687	8.83E-05	754	1.14E-05
420	4.99E-05	487	1.92E-04	554	5.10E-04	621	4.31E-04	688	8.60E-05	755	1.09E-05
421	5.73E-05	488	1.97E-04	555	5.10E-04	622	4.27E-04	689	8.31E-05	756	1.08E-05
422	6.15E-05	489	2.04E-04	556	5.11E-04	623	4.18E-04	690	8.09E-05	757	1.04E-05
423	6.94E-05	490	2.11E-04	557	5.13E-04	624	4.13E-04	691	7.86E-05	758	1.03E-05
424	7.77E-05	491	2.21E-04	558	5.12E-04	625	4.06E-04	692	7.63E-05	759	1.00E-05
425	8.62E-05	492	2.29E-04	559	5.13E-04	626	4.01E-04	693	7.38E-05	760	9.90E-06
426	9.61E-05	493	2.40E-04	560	5.13E-04	627	3.96E-04	694	7.17E-05	761	9.50E-06
427	1.09E-04	494	2.47E-04	561	5.13E-04	628	3.89E-04	695	6.93E-05	762	9.40E-06
428	1.22E-04	495	2.59E-04	562	5.16E-04	629	3.83E-04	696	6.72E-05	763	9.10E-06
429	1.37E-04	496	2.71E-04	563	5.14E-04	630	3.78E-04	697	6.52E-05	764	9.00E-06
430	1.53E-04	497	2.80E-04	564	5.18E-04	631	3.70E-04	698	6.32E-05	765	8.90E-06
431	1.74E-04	498	2.93E-04	565	5.16E-04	632	3.63E-04	699	6.15E-05	766	8.80E-06
432	1.91E-04	499	3.00E-04	566	5.18E-04	633	3.57E-04	700	5.93E-05	767	8.40E-06
433	2.14E-04	500	3.11E-04	567	5.21E-04	634	3.50E-04	701	5.74E-05	768	8.30E-06
434	2.38E-04	501	3.22E-04	568	5.20E-04	635	3.44E-04	702	5.54E-05	769	8.10E-06
435	2.67E-04	502	3.32E-04	569	5.21E-04	636	3.38E-04	703	5.42E-05	770	7.90E-06
436	2.97E-04	503	3.43E-04	570	5.21E-04	637	3.32E-04	704	5.24E-05	771	7.80E-06
437	3.30E-04	504	3.54E-04	571	5.22E-04	638	3.24E-04	705	5.06E-05	772	7.40E-06
438	3.70E-04	505	3.63E-04	572	5.23E-04	639	3.18E-04	706	4.87E-05	773	7.40E-06
439	4.20E-04	506	3.72E-04	573	5.23E-04	640	3.12E-04	707	4.74E-05	774	7.20E-06
440	4.77E-04	507	3.80E-04	574	5.25E-04	641	3.05E-04	708	4.56E-05	775	7.10E-06
441	5.33E-04	508	3.91E-04	575	5.23E-04	642	2.99E-04	709	4.45E-05	776	6.90E-06
442	6.03E-04	509	4.00E-04	576	5.25E-04	643	2.92E-04	710	4.33E-05	777	6.90E-06
443	6.74E-04	510	4.07E-04	577	5.26E-04	644	2.86E-04	711	4.17E-05	778	7.00E-06
444	7.54E-04	511	4.17E-04	578	5.28E-04	645	2.79E-04	712	4.03E-05	779	7.00E-06
445	8.28E-04	512	4.21E-04	579	5.28E-04	646	2.74E-04	713	3.89E-05	780	7.00E-06
446	8.77E-04	513	4.31E-04	580	5.27E-04	647	2.68E-04	714	3.78E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	BULLET12 @6W5000K	Sample ID	241216012-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

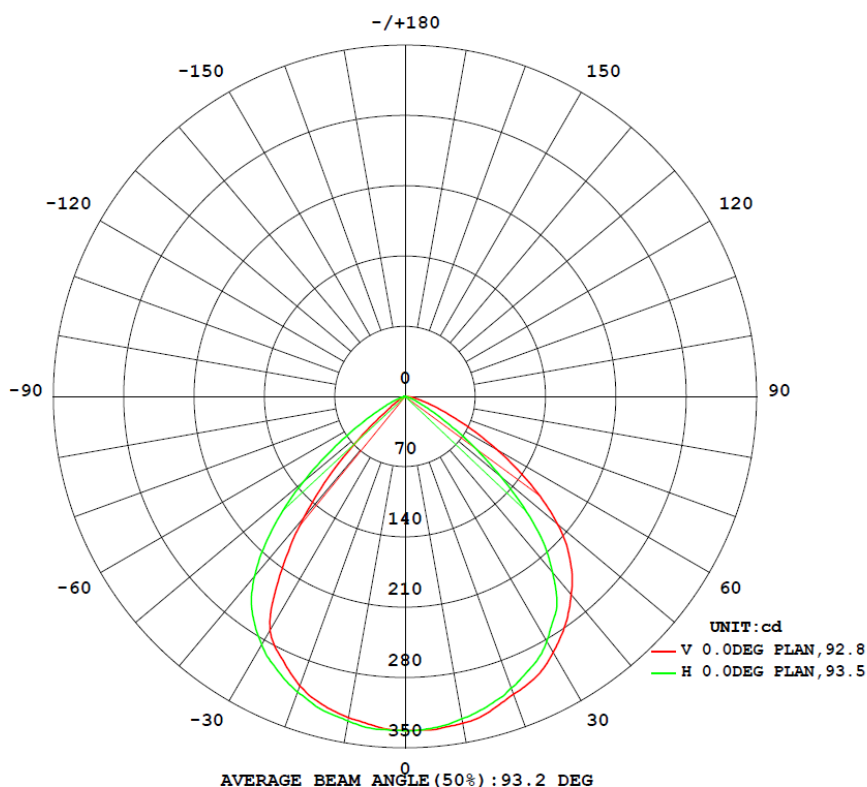
Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	120.0	60	0.048	5.7	0.991
NON-WORST CASE	N/A	N/A	N/A	N/A	N/A

Test Result

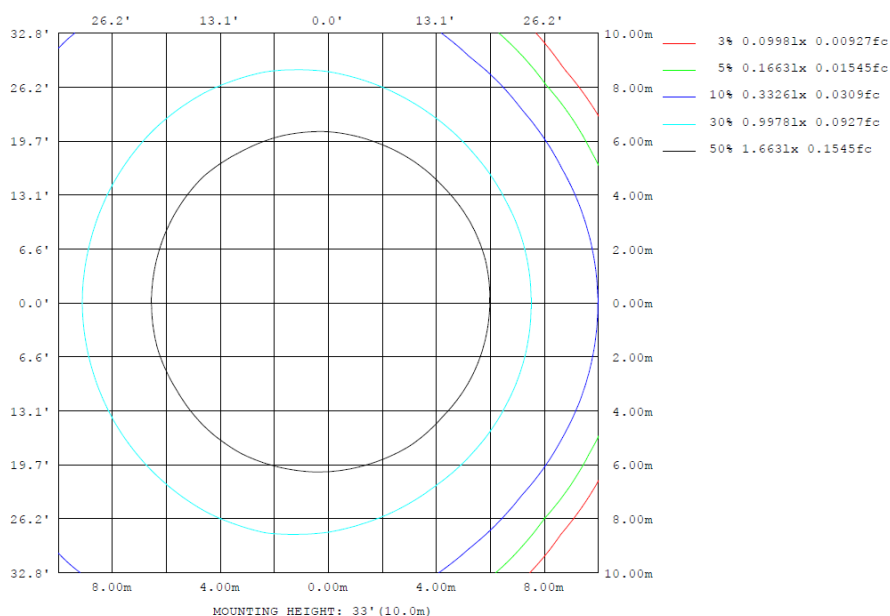
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement	NEMA Type
	C0-180	C90-270	C0-180	C90-270		(0°-90°)	
663	124.0	125.7	92.6	94.3	116.3	100.0%	6H x 6V

4.2 Goniophotometer Test

Lighting Distribution Curve



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	324.7	324.8	325.9	327.8	330.4	329.8	328.1	326.8	0~ 10	31.50	31.50	4.75, 4.75
20	306.7	307.4	308.9	313.3	315.5	318.1	313.2	310.5	10~ 20	90.63	122.1	18.4, 18.4
30	269.2	268.1	282.0	290.6	294.7	295.4	285.5	272.3	20~ 30	137.6	259.8	39.2, 39.2
40	156.6	169.4	228.5	253.8	257.2	258.0	233.2	168.4	30~ 40	157.9	417.7	63, 63
50	37.50	43.00	124.8	195.0	198.4	197.8	133.2	46.83	40~ 50	130.3	548.0	82.7, 82.7
60	7.266	10.41	36.27	97.92	105.0	104.9	41.34	10.67	50~ 60	74.89	622.9	94, 94
70	0.0067	0.3751	8.164	30.28	35.93	34.43	9.299	0.4677	60~ 70	29.97	652.9	98.5, 98.5
80	0.0065	0.0062	1.325	6.986	9.254	7.297	1.642	0.0111	70~ 80	8.279	661.1	99.8, 99.8
90	0	0	0	0	0	0	0	0	80~ 90	1.601	662.7	100, 100
100	0	0	0	0	0	0	0	0	90~100	0	662.7	100, 100
110	0	0	0	0	0	0	0	0	100~110	0	662.7	100, 100
120	0	0	0	0	0	0	0	0	110~120	0	662.7	100, 100
130	0	0	0	0	0	0	0	0	120~130	0	662.7	100, 100
140	0	0	0	0	0	0	0	0	130~140	0	662.7	100, 100
150	0	0	0	0	0	0	0	0	140~150	0	662.7	100, 100
160	0	0	0	0	0	0	0	0	150~160	0	662.7	100, 100
170	0	0	0	0	0	0	0	0	160~170	0	662.7	100, 100
180	0	0	0	0	0	0	0	0	170~180	0	662.7	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

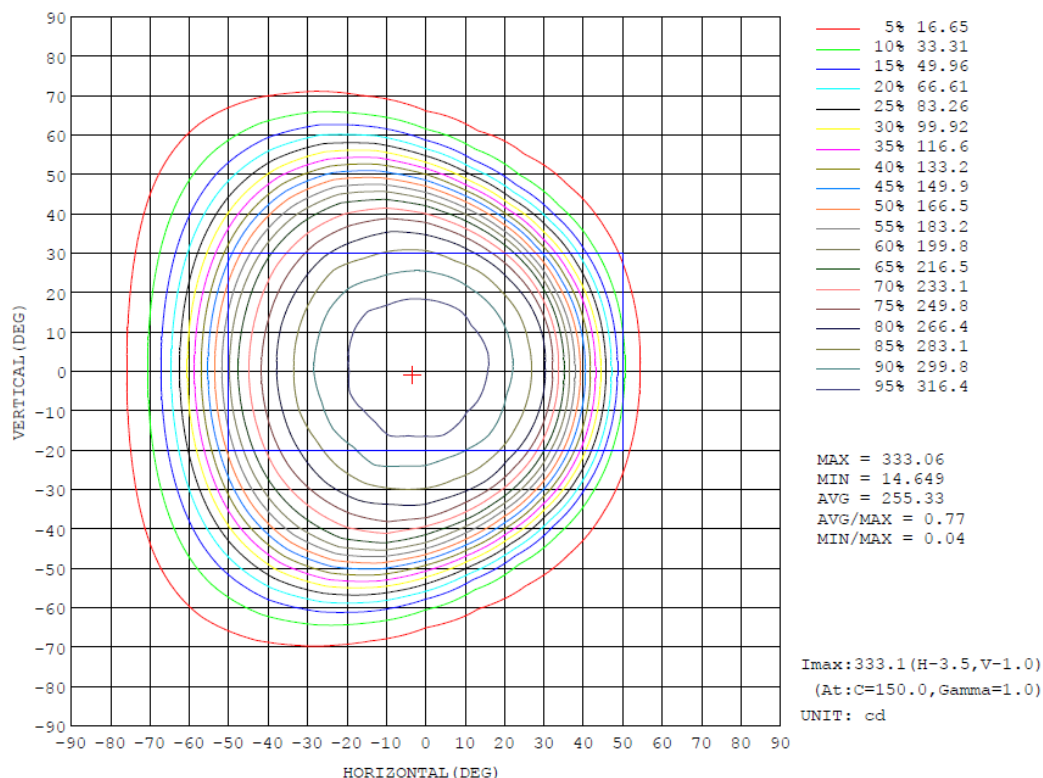
	Zonal (lm)		Total (lm)	Percent
0-10	31.50	0-10	31.50	4.75%
10-20	90.63	0-20	122.13	18.43%
20-30	137.64	0-30	259.77	39.20%
30-40	157.89	0-40	417.66	63.02%
40-50	130.33	0-50	547.99	82.69%
50-60	74.89	0-60	622.88	93.99%
60-70	29.97	0-70	652.85	98.51%
70-80	8.28	0-80	661.13	99.76%
80-90	1.60	0-90	662.73	100.00%
90-100	0.00	0-100	662.73	100.00%
100-110	0.00	0-110	662.73	100.00%
110-120	0.00	0-120	662.73	100.00%
120-130	0.00	0-130	662.73	100.00%
130-140	0.00	0-140	662.73	100.00%
140-150	0.00	0-150	662.73	100.00%
150-160	0.00	0-160	662.73	100.00%
160-170	0.00	0-170	662.73	100.00%
170-180	0.00	0-180	662.73	100.00%

4.2 Goniophotometer Test

Area Flux Diagram

		AREA FLUX DIAGRAM																UNIT:lm				Φ t	Φ a
VERTICAL (DEG)	90	0.00	0.01	0.02	0.04	0.05	0.05	0.04	0.04	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.30	0.00		
	80	0.01	0.03	0.06	0.12	0.18	0.24	0.26	0.23	0.18	0.11	0.06	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.51	0.00		
	70	0.01	0.04	0.12	0.29	0.54	0.84	1.07	1.07	0.84	0.53	0.29	0.14	0.04	0.00	0.00	0.00	0.00	0.00	5.85	2.61		
	60	0.01	0.06	0.22	0.59	1.25	2.13	2.92	3.24	2.89	2.05	1.12	0.52	0.22	0.05	0.00	0.00	0.00	0.00	17.3	15.6		
	50	0.01	0.09	0.35	1.04	2.30	3.88	5.22	5.94	5.92	5.06	3.43	1.68	0.62	0.21	0.03	0.00	0.00	0.00	35.8	34.6		
	40	0.01	0.11	0.51	1.58	3.40	5.31	6.77	7.69	8.05	7.69	6.39	4.06	1.69	0.46	0.10	0.00	0.00	0.00	53.8	53.1		
	30	0.01	0.14	0.67	2.10	4.24	6.18	7.69	8.63	9.09	8.98	8.18	6.34	3.31	0.96	0.18	0.01	0.00	0.00	66.7	66.1		
	20	0.01	0.16	0.80	2.48	4.73	6.67	8.23	9.26	9.74	9.67	8.97	7.56	4.68	1.58	0.26	0.02	0.00	0.00	74.8	74.3		
	10	0.02	0.17	0.87	2.67	4.96	6.89	8.45	9.52	10.0	9.95	9.29	7.94	5.35	1.99	0.31	0.03	0.00	0.00	78.4	78.0		
	0	0.02	0.17	0.86	2.65	4.95	6.87	8.41	9.46	10.0	9.92	9.24	7.89	5.32	1.99	0.30	0.03	0.00	0.00	78.1	77.6		
	-10	0.01	0.16	0.78	2.44	4.69	6.61	8.12	9.14	9.66	9.58	8.88	7.46	4.67	1.57	0.25	0.02	0.00	0.00	74.0	73.5		
	-20	0.01	0.14	0.65	2.04	4.17	6.10	7.58	8.59	9.01	8.85	8.09	6.26	3.36	0.90	0.17	0.01	0.00	0.00	65.9	65.3		
	-30	0.01	0.11	0.49	1.52	3.32	5.22	6.67	7.59	7.92	7.56	6.27	4.04	1.64	0.42	0.10	0.00	0.00	0.00	52.9	52.1		
	-40	0.01	0.08	0.34	0.98	2.19	3.75	5.11	5.86	5.82	4.92	3.34	1.60	0.57	0.20	0.03	0.00	0.00	0.00	34.8	33.6		
	-50	0.01	0.06	0.21	0.55	1.14	1.94	2.67	2.96	2.66	1.89	1.01	0.48	0.21	0.05	0.00	0.00	0.00	0.00	15.8	14.0		
	-60	0.01	0.04	0.12	0.27	0.48	0.73	0.90	0.90	0.72	0.47	0.27	0.13	0.04	0.00	0.00	0.00	0.00	0.00	5.08	1.65		
	-70	0.01	0.03	0.06	0.11	0.17	0.22	0.23	0.20	0.15	0.10	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	1.34	0.00		
	-80	0.00	0.01	0.02	0.04	0.05	0.05	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00		
	-90	0.00	0.01	0.02	0.04	0.05	0.05	0.04	0.03	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.28	0.00		
		-90	-80	-70	-60	-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90			
Φ t	t	0.18	1.60	7.18	21.5	42.8	63.7	80.4	90.3	92.7	87.4	74.9	56.1	31.7	10.4	1.73	0.14	0.00	0.00	663	---		
Φ a	a	0.00	0.04	5.45	20.1	41.5	62.4	79.1	89.1	91.4	86.0	73.5	54.7	30.2	8.58	0.05	0.00	0.00	0.00	---	642		

Isocandela



4.2 Goniophotometer Test

Luminous Distribution Intensity Data

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	1.34	1.98	2.51	2.94	3.32	3.66	3.88	4.05	4.16	4.12	3.96	3.72	3.41	3.03	2.54	2.17	1.77	1.33
-70	0.00	2.02	3.12	4.21	5.34	6.68	8.29	9.74	11.4	13.1	14.6	15.6	16.1	15.9	15.1	13.6	12.1	10.3	8.6
-60	0.00	2.55	4.19	6.16	8.79	11.9	16.4	21.7	27.5	34.2	41.4	47.5	53.2	57.1	58.4	57.1	52.7	45.5	36.1
-50	0.00	3.04	5.32	8.61	13.2	20.0	29.1	41.1	56.0	74.1	93.9	113	129	143	150	152	150	139	125
-40	0.00	3.45	6.45	11.2	18.9	30.1	46.4	69.3	97.0	129	159	186	206	221	231	237	239	235	228
-30	0.00	3.80	7.56	14.0	24.8	41.5	67.0	100	139	177	207	230	248	262	272	278	282	283	282
-20	0.00	4.07	8.46	16.5	30.3	52.6	85.9	128	172	209	237	258	273	286	296	304	308	309	309
-10	0.00	4.24	9.04	18.4	34.3	60.8	99.6	146	191	227	252	272	289	302	312	317	324	327	326
0	0.00	4.30	9.25	19.2	35.9	64.2	105	153	198	233	257	278	295	308	316	325	330	333	333
10	0.00	4.24	9.05	18.6	34.7	61.6	101	148	192	227	253	275	290	305	314	322	327	328	328
20	0.00	4.06	8.45	16.7	30.9	54.1	88.3	130	174	212	239	259	277	291	301	307	310	312	313
30	0.00	3.79	7.55	14.2	25.6	43.2	69.6	104	143	180	212	235	252	265	274	280	284	286	285
40	0.00	3.44	6.46	11.4	19.8	31.6	49.1	72.8	102	133	163	189	209	223	234	239	243	239	233
50	0.00	3.02	5.30	8.60	13.7	21.3	31.0	44.3	60.7	79.7	101	120	136	150	157	159	156	146	133
60	0.00	2.54	4.16	6.16	8.82	12.5	17.5	23.4	30.1	38.3	47.1	54.5	61.8	67.2	67.7	66.0	61.0	52.3	41.1
70	0.00	2.02	3.08	4.15	5.32	6.67	8.78	10.3	12.4	14.6	16.4	18.0	19.3	19.3	18.1	16.3	14.5	12.2	9.6
80	0.00	1.35	1.99	2.49	2.88	3.25	3.59	3.84	4.07	4.26	4.28	4.18	3.99	3.73	3.39	2.93	2.55	2.12	1.60
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
-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	1.02	0.70	0.40	0.26	0.14	0.05	0.03	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
-70	6.81	5.34	3.87	2.67	1.56	0.73	0.35	0.11	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
-60	29.3	22.0	16.3	12.9	9.49	6.47	3.64	1.38	0.42	0.08	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
-50	107	85.1	63.2	42.1	26.5	19.2	14.0	9.23	4.90	1.62	0.20	0.01	0.01	0.01	0.01	0.01	0.01	0.00
-40	214	194	168	134	97.4	61.8	34.0	20.1	13.3	7.43	2.69	0.36	0.01	0.01	0.01	0.01	0.01	0.00
-30	277	269	254	230	193	148	98.9	52.7	24.0	14.1	7.34	2.09	0.12	0.01	0.01	0.01	0.01	0.00
-20	306	300	292	279	257	218	165	108	53.1	20.7	11.5	4.59	0.59	0.01	0.01	0.01	0.01	0.00
-10	324	317	311	298	283	257	206	144	81.9	31.4	14.4	6.57	1.23	0.01	0.01	0.01	0.01	0.00
0	330	325	318	307	289	269	218	157	92.8	37.5	15.4	7.27	1.49	0.01	0.01	0.01	0.01	0.00
10	326	320	314	302	284	262	205	143	81.9	33.6	14.7	6.65	1.26	0.01	0.01	0.01	0.01	0.00
20	311	305	295	282	262	220	163	106	55.5	23.8	11.8	4.74	0.63	0.01	0.01	0.01	0.01	0.00
30	280	272	258	233	194	146	97.9	55.9	27.2	14.6	7.53	2.25	0.14	0.01	0.01	0.01	0.01	0.00
40	219	199	171	136	99.2	64.8	37.5	22.2	13.7	7.61	2.90	0.40	0.01	0.01	0.01	0.01	0.01	0.00
50	113	89.7	67.3	46.6	29.9	20.9	14.4	9.47	5.16	1.80	0.23	0.01	0.01	0.01	0.01	0.01	0.01	0.00
60	33.5	25.0	18.0	13.5	9.78	6.71	3.92	1.57	0.49	0.11	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
70	7.71	6.01	4.35	3.05	1.82	0.89	0.43	0.15	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.01	0.00
80	1.26	0.87	0.49	0.33	0.18	0.07	0.04	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	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.	BULLET12 @6W5000K	Sample ID	241216012-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 $25 \pm 1^\circ\text{C}$. 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	0.048	5.7	0.991	13.68

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*****