

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		636
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Standard	Premium	111.6
		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	13.62
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	3045±175	3070
		4 steps	3045±100	
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		8
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		0.048
(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 @6W3000K	ES 1st ES #3-1	241216012-S1
2	Goniophotometer Test	2024-12-24	BULLET12 @6W3000K	ES 1st ES #3-1	241216012-S1
3	THD and PF Test	2024-12-24	BULLET12 @6W3000K	ES 1st ES #3-1	241216012-S1

Remark (If any):

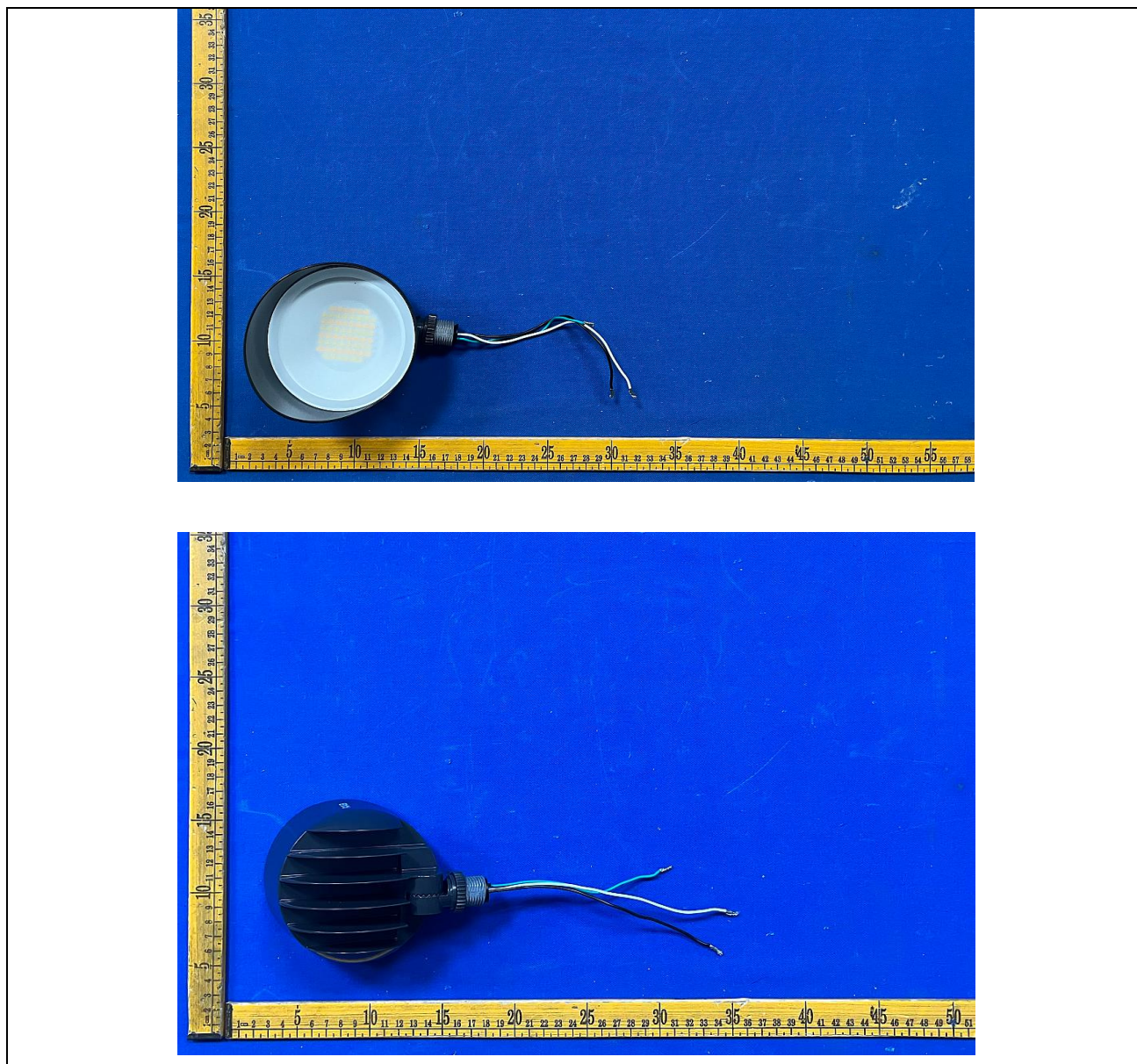
1. The results contained in this report pertain only to the tested samples.
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3.0 Product Description

Luminaire Description: Model No. BULLET12 @6W3000K, 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 @6W3000K	Sample ID	241216012-S1
Operate time (Min.)	10	Stabilization time (Min.)	60
Temperature (°C)	25.4	Humidity (%RH)	41.0

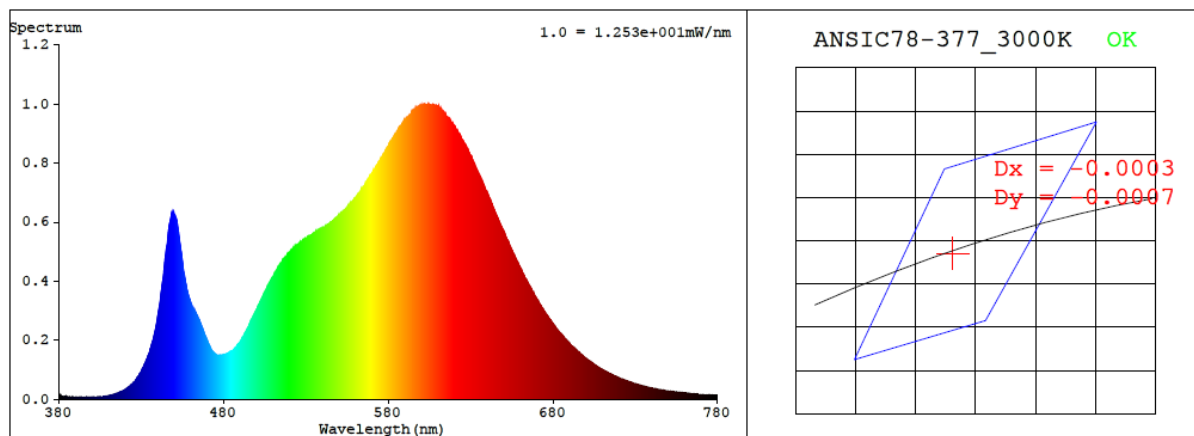
Test Method
<p>The Samples were tested according to the ANSI/IES LM-79:2019.</p> <p>Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at 25±1°C.</p> <p>The sample measurements were made 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
3070	82.9	8	-0.0002	84	98	-11%

4.1 Integrating Sphere Test



Colorimetric Parameters

Chromaticity Coordinate: $x = 0.4317$ $y = 0.4017$ / $u' = 0.2482$ $v' = 0.5197$ ($duv = -2.27e-04$)

CCT= 3070K Prcp WL: $L_d = 582.6\text{nm}$ Purity=50.1%

Peak WL: $L_p = 604\text{nm}$ FWHM: $= 135.6\text{nm}$ Ratio: R=22.6% G=75.1% B=2.3%

Render Index: $R_a = 82.9$ AvgR = 76.9 TM30: $R_f = 84$ $R_g = 97$

EEL: 0.11015 A+

R1 =82	R2 =90	R3 =96	R4 =82	R5 =82	R6 =87	R7 =84
R8 =61	R9 =8	R10=76	R11=82	R12=68	R13=83	R14=98
						R15=74

4.1 Integrating Sphere Test

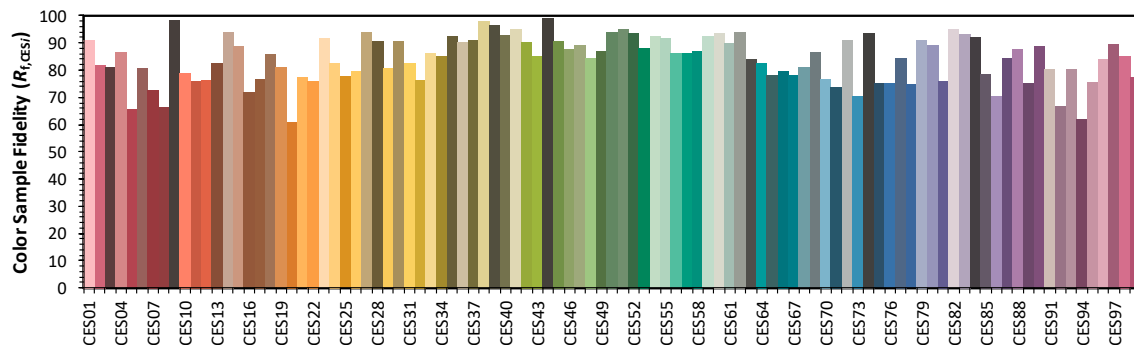
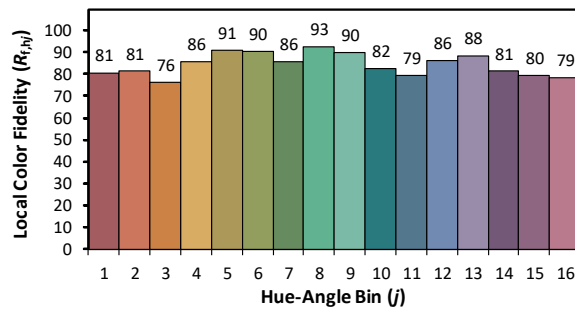
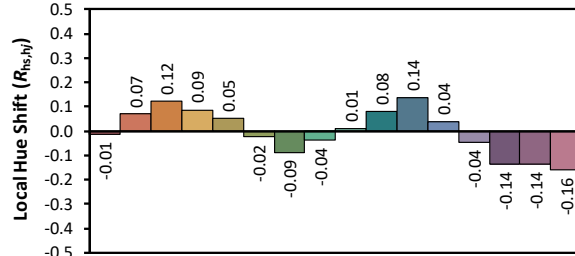
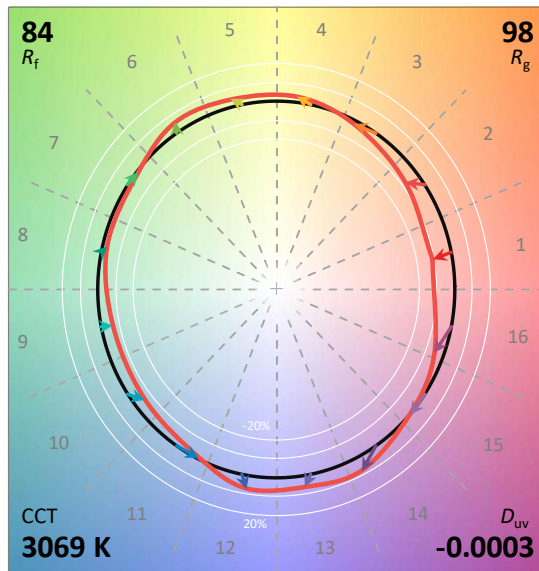
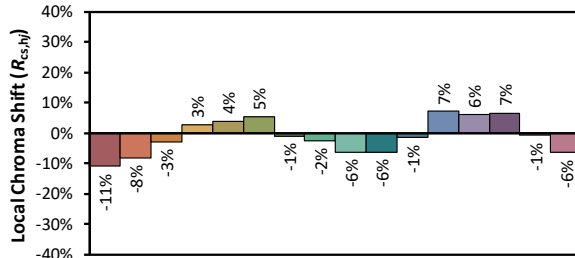
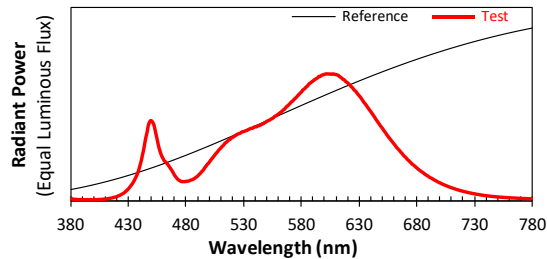
ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/12/25

Model: BULLET12 @6W3000K



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

x 0.4317
 y 0.4015
 u' 0.2483
 v' 0.5196

CIE 13.3-1995
(CRI)

R_a 83
 R_g 8

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	1.16E-05	447	5.89E-04	514	4.55E-04	581	8.70E-04	648	5.93E-04	715	8.54E-05
381	1.41E-05	448	6.15E-04	515	4.61E-04	582	8.77E-04	649	5.81E-04	716	8.33E-05
382	9.60E-06	449	6.29E-04	516	4.70E-04	583	8.85E-04	650	5.70E-04	717	8.02E-05
383	9.40E-06	450	6.26E-04	517	4.77E-04	584	8.95E-04	651	5.57E-04	718	7.80E-05
384	9.70E-06	451	6.13E-04	518	4.83E-04	585	9.01E-04	652	5.43E-04	719	7.52E-05
385	7.90E-06	452	5.93E-04	519	4.92E-04	586	9.13E-04	653	5.32E-04	720	7.29E-05
386	7.90E-06	453	5.53E-04	520	4.97E-04	587	9.23E-04	654	5.17E-04	721	7.04E-05
387	7.00E-06	454	5.11E-04	521	5.02E-04	588	9.29E-04	655	5.06E-04	722	6.87E-05
388	7.60E-06	455	4.71E-04	522	5.08E-04	589	9.36E-04	656	4.93E-04	723	6.63E-05
389	6.70E-06	456	4.27E-04	523	5.14E-04	590	9.42E-04	657	4.82E-04	724	6.41E-05
390	6.80E-06	457	3.95E-04	524	5.21E-04	591	9.52E-04	658	4.71E-04	725	6.22E-05
391	6.40E-06	458	3.67E-04	525	5.25E-04	592	9.56E-04	659	4.59E-04	726	6.01E-05
392	6.10E-06	459	3.45E-04	526	5.28E-04	593	9.61E-04	660	4.48E-04	727	5.82E-05
393	6.70E-06	460	3.28E-04	527	5.32E-04	594	9.68E-04	661	4.37E-04	728	5.65E-05
394	7.10E-06	461	3.12E-04	528	5.39E-04	595	9.78E-04	662	4.23E-04	729	5.43E-05
395	6.50E-06	462	3.05E-04	529	5.42E-04	596	9.77E-04	663	4.13E-04	730	5.31E-05
396	6.10E-06	463	2.94E-04	530	5.44E-04	597	9.84E-04	664	4.03E-04	731	5.11E-05
397	7.60E-06	464	2.83E-04	531	5.48E-04	598	9.89E-04	665	3.93E-04	732	4.93E-05
398	6.20E-06	465	2.70E-04	532	5.51E-04	599	9.91E-04	666	3.81E-04	733	4.80E-05
399	5.90E-06	466	2.57E-04	533	5.55E-04	600	9.95E-04	667	3.72E-04	734	4.62E-05
400	7.40E-06	467	2.44E-04	534	5.59E-04	601	9.97E-04	668	3.60E-04	735	4.47E-05
401	7.80E-06	468	2.29E-04	535	5.64E-04	602	9.98E-04	669	3.50E-04	736	4.33E-05
402	7.10E-06	469	2.13E-04	536	5.68E-04	603	9.97E-04	670	3.42E-04	737	4.18E-05
403	7.30E-06	470	1.97E-04	537	5.68E-04	604	9.97E-04	671	3.32E-04	738	4.05E-05
404	8.20E-06	471	1.85E-04	538	5.73E-04	605	9.96E-04	672	3.22E-04	739	3.92E-05
405	8.60E-06	472	1.74E-04	539	5.78E-04	606	9.95E-04	673	3.14E-04	740	3.81E-05
406	9.00E-06	473	1.64E-04	540	5.81E-04	607	9.98E-04	674	3.05E-04	741	3.68E-05
407	9.30E-06	474	1.59E-04	541	5.81E-04	608	9.95E-04	675	2.96E-04	742	3.61E-05
408	1.04E-05	475	1.53E-04	542	5.87E-04	609	9.94E-04	676	2.86E-04	743	3.47E-05
409	1.06E-05	476	1.50E-04	543	5.90E-04	610	9.92E-04	677	2.80E-04	744	3.32E-05
410	1.21E-05	477	1.49E-04	544	5.92E-04	611	9.89E-04	678	2.72E-04	745	3.27E-05
411	1.30E-05	478	1.49E-04	545	5.98E-04	612	9.85E-04	679	2.64E-04	746	3.20E-05
412	1.42E-05	479	1.49E-04	546	6.02E-04	613	9.76E-04	680	2.56E-04	747	3.12E-05
413	1.62E-05	480	1.52E-04	547	6.07E-04	614	9.70E-04	681	2.48E-04	748	2.99E-05
414	1.78E-05	481	1.52E-04	548	6.13E-04	615	9.63E-04	682	2.41E-04	749	2.92E-05
415	2.00E-05	482	1.54E-04	549	6.18E-04	616	9.55E-04	683	2.34E-04	750	2.82E-05
416	2.15E-05	483	1.57E-04	550	6.24E-04	617	9.51E-04	684	2.28E-04	751	2.76E-05
417	2.46E-05	484	1.61E-04	551	6.29E-04	618	9.40E-04	685	2.22E-04	752	2.67E-05
418	2.63E-05	485	1.63E-04	552	6.32E-04	619	9.33E-04	686	2.15E-04	753	2.61E-05
419	2.85E-05	486	1.68E-04	553	6.39E-04	620	9.27E-04	687	2.07E-04	754	2.53E-05
420	3.23E-05	487	1.74E-04	554	6.44E-04	621	9.17E-04	688	2.01E-04	755	2.52E-05
421	3.66E-05	488	1.80E-04	555	6.49E-04	622	9.09E-04	689	1.96E-04	756	2.42E-05
422	3.95E-05	489	1.87E-04	556	6.57E-04	623	8.97E-04	690	1.90E-04	757	2.38E-05
423	4.45E-05	490	1.93E-04	557	6.65E-04	624	8.90E-04	691	1.83E-04	758	2.31E-05
424	4.94E-05	491	2.05E-04	558	6.68E-04	625	8.78E-04	692	1.79E-04	759	2.21E-05
425	5.45E-05	492	2.12E-04	559	6.75E-04	626	8.68E-04	693	1.74E-04	760	2.18E-05
426	5.99E-05	493	2.24E-04	560	6.82E-04	627	8.60E-04	694	1.69E-04	761	2.13E-05
427	6.80E-05	494	2.33E-04	561	6.89E-04	628	8.47E-04	695	1.62E-04	762	2.05E-05
428	7.61E-05	495	2.43E-04	562	6.97E-04	629	8.36E-04	696	1.58E-04	763	2.02E-05
429	8.51E-05	496	2.59E-04	563	7.02E-04	630	8.25E-04	697	1.53E-04	764	1.99E-05
430	9.43E-05	497	2.70E-04	564	7.13E-04	631	8.14E-04	698	1.48E-04	765	1.93E-05
431	1.06E-04	498	2.82E-04	565	7.18E-04	632	8.02E-04	699	1.43E-04	766	1.90E-05
432	1.17E-04	499	2.92E-04	566	7.29E-04	633	7.87E-04	700	1.39E-04	767	1.84E-05
433	1.31E-04	500	3.03E-04	567	7.40E-04	634	7.74E-04	701	1.34E-04	768	1.77E-05
434	1.44E-04	501	3.16E-04	568	7.46E-04	635	7.64E-04	702	1.30E-04	769	1.75E-05
435	1.61E-04	502	3.28E-04	569	7.56E-04	636	7.52E-04	703	1.26E-04	770	1.70E-05
436	1.79E-04	503	3.39E-04	570	7.64E-04	637	7.38E-04	704	1.22E-04	771	1.66E-05
437	1.97E-04	504	3.50E-04	571	7.76E-04	638	7.25E-04	705	1.18E-04	772	1.60E-05
438	2.21E-04	505	3.62E-04	572	7.82E-04	639	7.12E-04	706	1.15E-04	773	1.60E-05
439	2.48E-04	506	3.73E-04	573	7.92E-04	640	7.01E-04	707	1.11E-04	774	1.56E-05
440	2.82E-04	507	3.83E-04	574	8.02E-04	641	6.88E-04	708	1.07E-04	775	1.49E-05
441	3.16E-04	508	3.96E-04	575	8.09E-04	642	6.74E-04	709	1.04E-04	776	1.51E-05
442	3.59E-04	509	4.05E-04	576	8.19E-04	643	6.61E-04	710	1.01E-04	777	1.44E-05
443	4.00E-04	510	4.14E-04	577	8.29E-04	644	6.46E-04	711	9.76E-05	778	1.42E-05
444	4.51E-04	511	4.26E-04	578	8.39E-04	645	6.33E-04	712	9.46E-05	779	1.42E-05
445	5.00E-04	512	4.33E-04	579	8.48E-04	646	6.20E-04	713	9.21E-05	780	1.43E-05
446	5.38E-04	513	4.45E-04	580	8.57E-04	647	6.07E-04	714	8.83E-05	N/A	N/A

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	BULLET12 @6W3000K	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

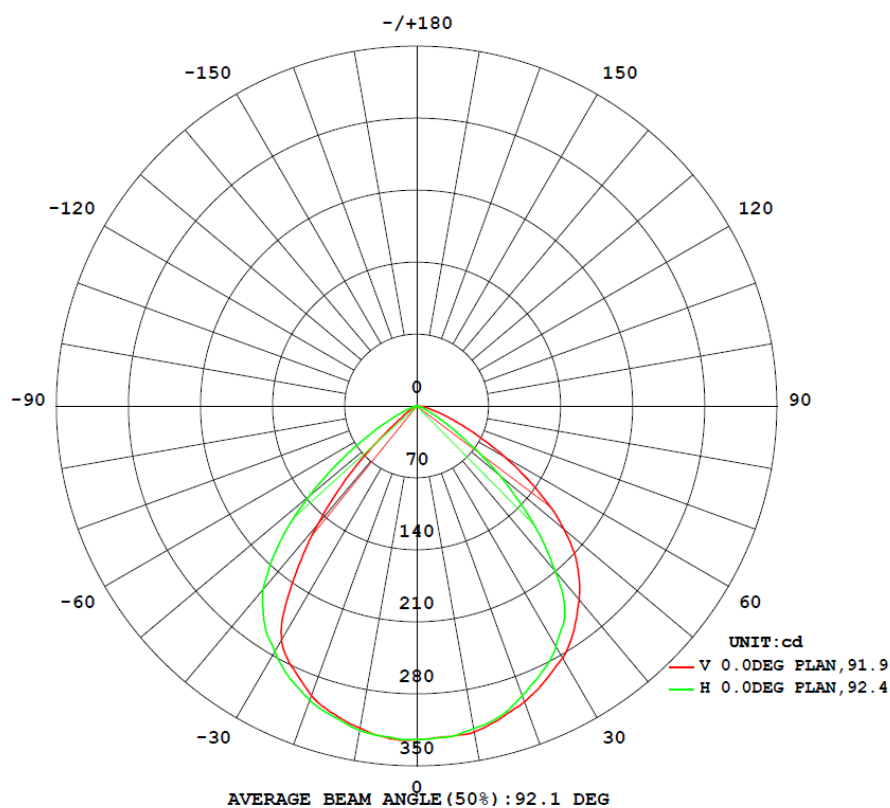
Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	120.0	60	0.048	5.7	0.991
NON-WORST CASE	N/A	N/A	N/A	N/A	N/A

Test Result

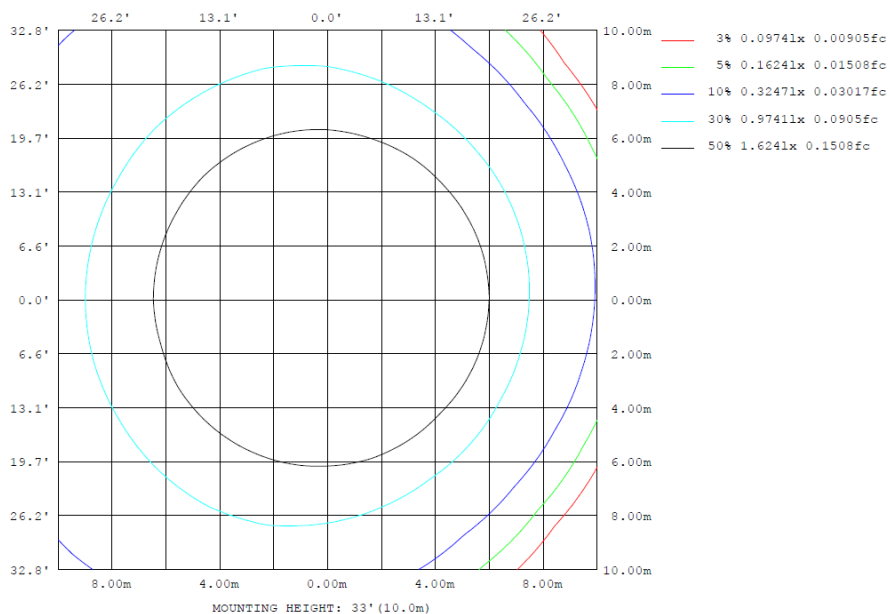
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement	NEMA Type
	C0-180	C90-270	C0-180	C90-270		(0°-90°)	
636	123.5	123.5	91.7	90.8	111.6	100.0%	6H x 6V

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	317.8	316.3	318.5	319.2	321.7	320.4	320.3	317.0	0- 10	30.73	30.73	4.83, 4.83
20	299.6	300.6	299.8	304.9	306.1	307.1	304.4	302.4	10- 20	88.15	118.9	18.7, 18.7
30	263.1	259.7	270.3	279.6	283.2	284.7	276.0	265.2	20- 30	133.3	252.2	39.7, 39.7
40	149.1	145.6	209.1	242.2	245.6	247.8	232.2	174.8	30- 40	151.7	404.0	63.6, 63.6
50	34.50	35.98	105.9	179.8	187.1	190.2	137.7	49.19	40- 50	123.3	527.3	83, 83
60	6.682	9.288	29.22	85.65	98.75	104.9	45.82	10.22	50- 60	70.52	597.8	94.1, 94.1
70	0.0055	0.3484	7.116	26.28	33.88	35.01	9.500	0.4398	60- 70	28.34	626.2	98.5, 98.5
80	0.0055	0.0069	1.206	5.930	8.800	7.516	1.603	0.0105	70- 80	7.892	634.1	99.8, 99.8
90	0	0	0	0	0	0	0	0	80- 90	1.526	635.6	100, 100
100	0	0	0	0	0	0	0	0	90-100	0	635.6	100, 100
110	0	0	0	0	0	0	0	0	100-110	0	635.6	100, 100
120	0	0	0	0	0	0	0	0	110-120	0	635.6	100, 100
130	0	0	0	0	0	0	0	0	120-130	0	635.6	100, 100
140	0	0	0	0	0	0	0	0	130-140	0	635.6	100, 100
150	0	0	0	0	0	0	0	0	140-150	0	635.6	100, 100
160	0	0	0	0	0	0	0	0	150-160	0	635.6	100, 100
170	0	0	0	0	0	0	0	0	160-170	0	635.6	100, 100
180	0	0	0	0	0	0	0	0	170-180	0	635.6	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

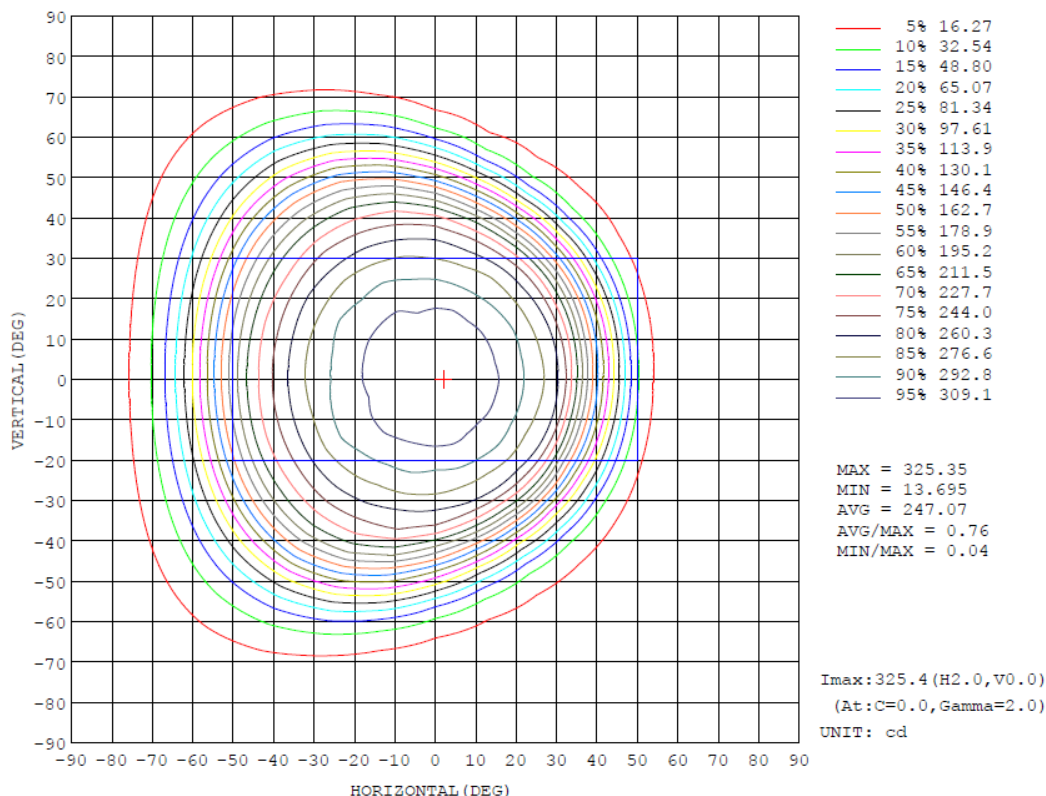
Zonal (lm)		Total (lm)		Percent
0-10	30.73	0-10	30.73	4.83%
10-20	88.15	0-20	118.88	18.70%
20-30	133.35	0-30	252.23	39.68%
30-40	151.75	0-40	403.98	63.56%
40-50	123.33	0-50	527.31	82.96%
50-60	70.52	0-60	597.83	94.06%
60-70	28.34	0-70	626.17	98.52%
70-80	7.89	0-80	634.06	99.76%
80-90	1.53	0-90	635.59	100.00%
90-100	0.00	0-100	635.59	100.00%
100-110	0.00	0-110	635.59	100.00%
110-120	0.00	0-120	635.59	100.00%
120-130	0.00	0-130	635.59	100.00%
130-140	0.00	0-140	635.59	100.00%
140-150	0.00	0-150	635.59	100.00%
150-160	0.00	0-160	635.59	100.00%
160-170	0.00	0-170	635.59	100.00%
170-180	0.00	0-180	635.59	100.00%

4.2 Goniophotometer Test

Area Flux Diagram

AREA FLUX DIAGRAM																	UNIT: lm	Φ_t	Φ_a
VERTICAL (DEG)	90	80	70	60	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60	-70	-80	-90
HORIZONTAL (DEG)	-90	-80	-70	-60	-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90
Φ_t	0.17	1.52	6.78	20.3	40.5	60.5	76.8	86.7	89.3	84.4	72.4	54.2	30.4	9.78	1.59	0.13	0.00	0.00	636
Φ_a	0.00	0.00	5.05	18.9	39.2	59.2	75.6	85.5	88.1	83.1	71.0	52.7	28.9	8.02	0.00	0.00	0.00	---	615

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)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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
-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	1.28	1.87	2.34	2.72	3.04	3.33	3.49	3.59	3.63	3.56	3.39	3.12	2.88	2.58	2.20	1.90	1.57	1.21
-70	0.00	1.92	2.93	3.92	4.94	6.06	7.50	8.84	10.1	11.5	12.5	13.1	13.3	13.2	12.4	11.1	10.0	8.70	7.12
-60	0.00	2.42	3.95	5.74	8.03	10.9	14.8	19.4	24.4	30.0	36.0	40.7	45.1	48.0	48.1	46.3	42.6	36.7	29.2
-50	0.00	2.88	5.00	7.93	12.2	18.2	26.4	37.1	50.2	65.6	82.7	99.0	113	126	131	132	129	119	106
-40	0.00	3.28	6.08	10.4	17.4	27.6	42.4	62.6	87.9	116	144	170	191	206	217	221	224	219	209
-30	0.00	3.62	7.09	13.1	23.0	38.4	61.4	92.1	128	164	195	218	236	249	258	265	269	271	270
-20	0.00	3.87	7.97	15.5	28.2	48.9	79.9	119	161	197	225	244	262	276	286	293	298	299	300
-10	0.00	4.04	8.56	17.4	32.2	56.9	93.0	137	180	215	240	260	277	293	302	310	314	318	319
0	0.00	4.10	8.80	18.2	33.9	60.3	98.8	144	187	221	246	266	283	295	306	314	322	323	324
10	0.00	4.04	8.63	17.7	33.0	58.5	95.7	140	183	217	241	262	280	293	303	311	316	319	320
20	0.00	3.89	8.08	16.0	29.6	51.8	84.6	125	167	201	227	248	265	280	289	298	303	303	304
30	0.00	3.63	7.24	13.7	24.7	42.0	67.5	101	139	173	201	222	241	254	264	272	277	278	276
40	0.00	3.30	6.21	11.0	19.2	30.8	48.1	71.6	100	130	159	182	200	215	226	232	237	235	232
50	0.00	2.90	5.11	8.33	13.4	20.9	30.6	43.9	60.7	79.9	101	119	135	149	157	160	158	150	138
60	0.00	2.44	4.02	5.99	8.62	12.3	17.4	23.5	30.4	38.7	47.9	56.0	63.3	68.4	69.7	69.0	64.3	56.1	45.8
70	0.00	1.94	2.98	4.05	5.22	6.62	8.36	10.4	12.5	14.9	17.3	19.0	20.6	20.7	19.6	18.1	16.0	13.0	9.50
80	0.00	1.31	1.93	2.42	2.84	3.22	3.58	3.87	4.13	4.37	4.45	4.43	4.33	4.03	3.62	3.07	2.64	2.14	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

H (DEG)	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90
V (DEG)	0.00	0.00	0.00	0.00	0.00	0.00	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
-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	0.93	0.64	0.37	0.24	0.13	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	5.97	4.73	3.49	2.43	1.43	0.68	0.32	0.10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
-60	24.2	18.7	14.3	11.4	8.55	5.85	3.31	1.27	0.39	0.07	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
-50	89.1	69.3	50.9	34.9	22.9	16.9	12.4	8.26	4.43	1.48	0.18	0.01	0.00	0.01	0.01	0.01	0.01	0.00
-40	194	171	143	109	79.3	50.5	29.2	17.9	11.9	6.63	2.47	0.33	0.00	0.00	0.01	0.01	0.01	0.00
-30	267	259	241	213	173	124	82.5	44.8	22.0	12.7	6.58	1.93	0.11	0.00	0.01	0.01	0.01	0.00
-20	298	293	283	271	248	202	146	92.1	46.4	19.1	10.4	4.19	0.55	0.00	0.00	0.01	0.01	0.00
-10	316	311	304	291	275	250	192	133	74.2	29.1	13.2	6.00	1.14	0.01	0.00	0.01	0.01	0.00
0	324	318	310	300	283	263	212	149	87.3	34.5	14.1	6.68	1.37	0.01	0.00	0.01	0.01	0.00
10	317	313	305	293	277	254	203	142	80.9	31.2	13.5	6.13	1.17	0.01	0.00	0.01	0.01	0.00
20	302	296	285	274	255	219	167	110	54.8	22.0	10.9	4.38	0.58	0.01	0.01	0.01	0.01	0.00
30	272	265	253	232	197	154	105	57.1	26.2	13.7	7.01	2.08	0.12	0.01	0.01	0.01	0.01	0.00
40	220	201	175	143	108	69.4	38.6	22.3	13.0	7.17	2.69	0.37	0.01	0.01	0.01	0.01	0.01	0.00
50	120	97.2	73.6	50.4	31.2	20.9	14.0	9.04	4.86	1.68	0.22	0.01	0.01	0.01	0.01	0.01	0.01	0.00
60	36.5	26.4	18.2	13.3	9.44	6.38	3.69	1.46	0.46	0.10	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00
70	7.77	5.93	4.17	2.90	1.72	0.83	0.41	0.14	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.01	0.00
80	1.23	0.84	0.46	0.31	0.17	0.06	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 @6W3000K	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	13.62

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*****