

## Photometric Test Report

### Relevant Standards

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

Prepared For

**RAB Lighting Inc.**

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Prepared By

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Issue Date: 2024-08-15

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		985
Minimum Luminaire Efficacy (lm/W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Standard	Premium	126.3
		105	120	
Power (Input Wattage) (W) (Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		7.8
Total Harmonic Distortion (A%) (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	20.00%	120V	13.35
Power Factor (THD & PF – Section 4.3)	ANSI C82.77:2002 ANSI C82-77-10:2020	0.9	120V	0.973
Allowable CCTs* (K) (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019	7 steps	3045±175	3060
		4 steps	3045±100	
Minimum CRI (Integrating Sphere – Section 4.1)	ANSI/IES LM-79:2019 CIE13.3-1995	≥70		82.5
Minimum R9 (Integrating Sphere – Section 4.1)	ANSI/IES LM-79-2019 CIE13.3-1995	N/A		13
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%		-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		0.067
(Goniophotometer – Section 4.2)		Non-Worst Case		N/A
Power (Input Wattage – W)				
(Goniophotometer – Section 4.2)	ANSI/IES LM-79:2019	Worst Case		7.8
(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	2024-08-14	LF34SW @3000K	ES#1	240812012-S1
2	Goniophotometer Test	2024-08-14	LF34SW @3000K	ES#1	240812012-S1
3	THD and PF Test	2024-08-14	LF34SW @3000K	ES#1	240812012-S1

### Remark (If any):

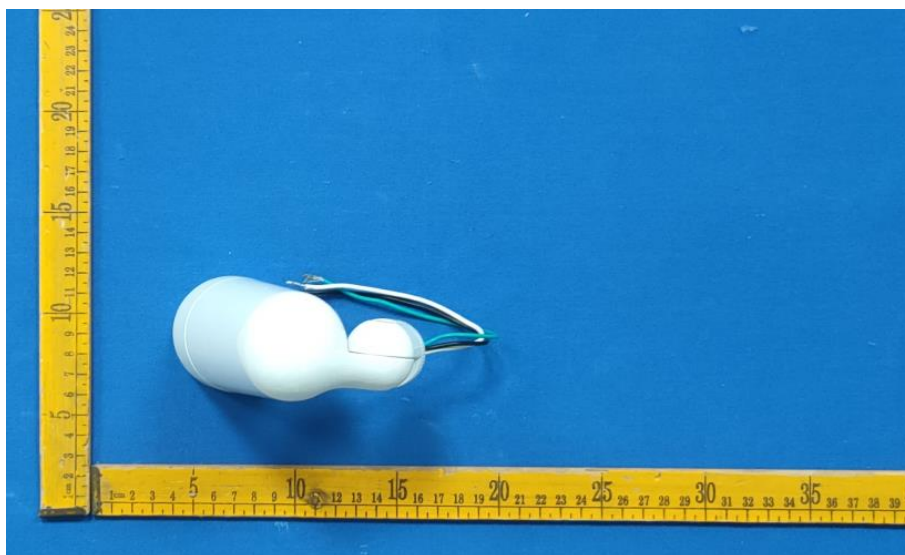
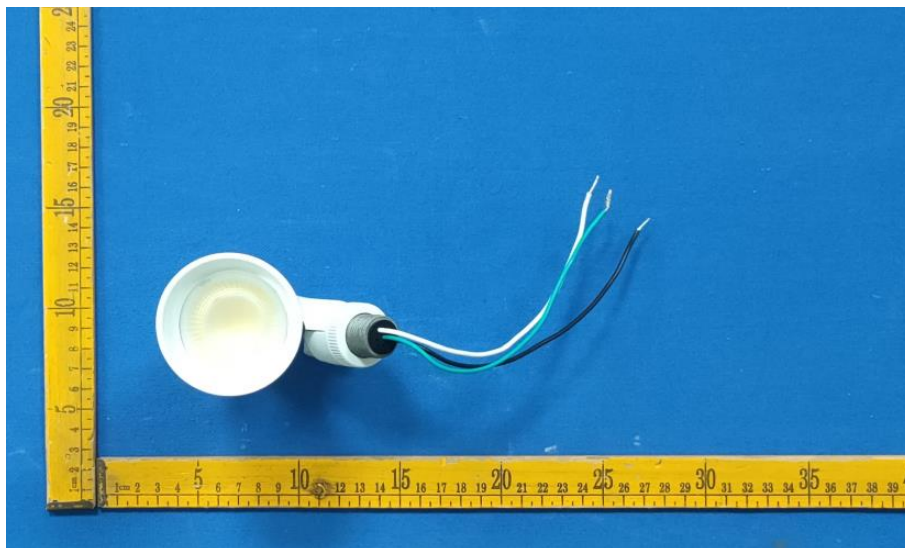
1. The results contained in this report pertain only to the tested samples.
2. This report shall not be reproduced, no limited part or full, without approval of Dongguan New Testing Centre Co., Ltd.
3. This report must not be used by the client to claim product certification, approval, or endorsement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

### 3.0 Product Description

Luminaire Description: Model No. LF34SW @3000K, color tunable from 2700K, 3000K, 3500K, 4000K and 5000K.

Electrical Specification: 120Vac, 50/60Hz

#### Photos of Luminaire Characteristics



## 4.0 LM-79 Measurement and Test Results

### 4.1 Integrating Sphere Test

<b>Model No.</b>	LF34SW @3000K	<b>Sample ID</b>	240812012-S1
<b>Operate time (Min.)</b>	10	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	25.4	<b>Humidity (%RH)</b>	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	0.067	7.8	0.973

CCT (K)	CRI	R9	Duv	Rf	Rg	IES Rcs,h1
3060	82.5	13	-0.0017	83	98	-11%



## 4.1 Integrating Sphere Test

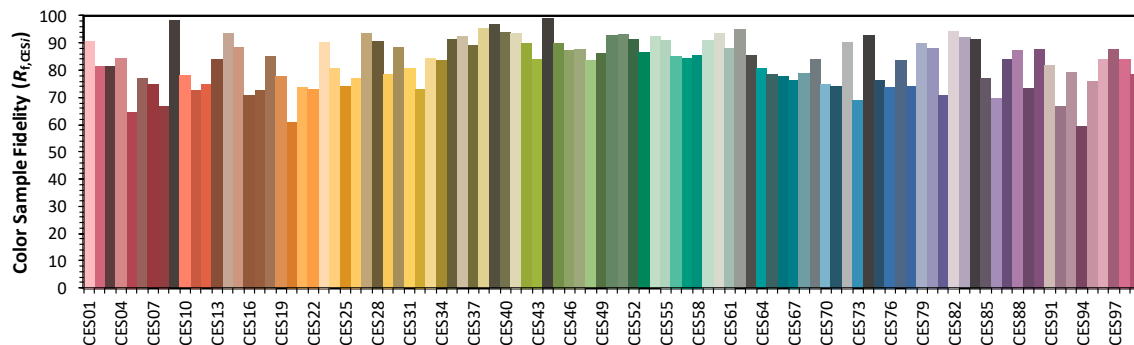
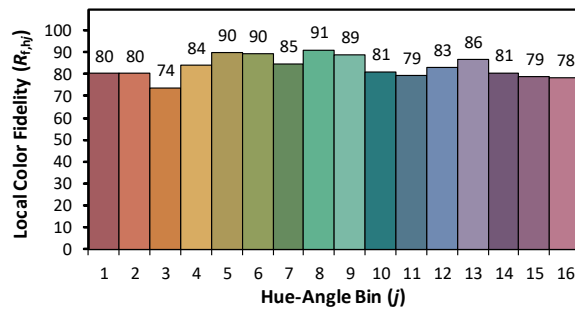
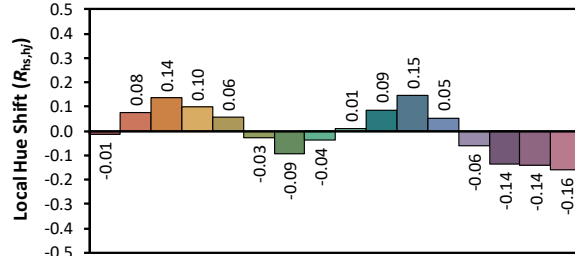
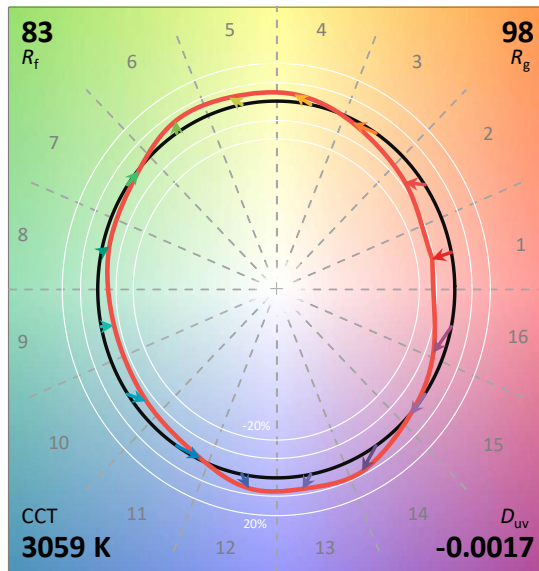
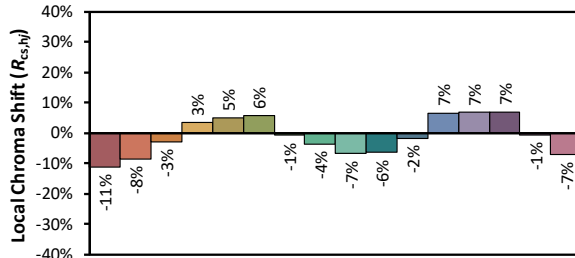
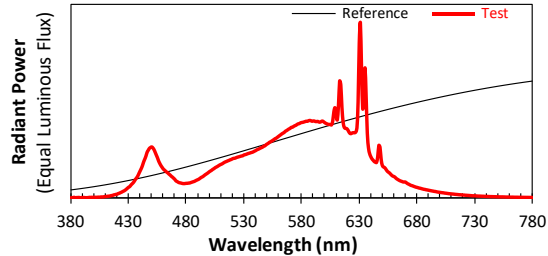
### ANSI/IES TM-30-18 Color Rendition Report

Source: 1 CIE F1

Manufacturer: RAB Lighting Inc.

Date: 2024/8/15

Model: LF34SW @3000K



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

$x$  0.4304  
 $y$  0.3974  
 $u'$  0.2492  
 $v'$  0.5178

CIE 13.3-1995  
(CRI)

$R_a$  82  
 $R_g$  13



## 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	9.00E-07	447	2.66E-04	514	2.02E-04	581	4.22E-04	648	2.83E-04	715	1.88E-05
381	4.00E-07	448	2.77E-04	515	2.04E-04	582	4.24E-04	649	2.16E-04	716	1.81E-05
382	2.30E-06	449	2.82E-04	516	2.07E-04	583	4.27E-04	650	1.82E-04	717	1.74E-05
383	2.90E-06	450	2.85E-04	517	2.10E-04	584	4.29E-04	651	1.73E-04	718	1.73E-05
384	0.00E+00	451	2.80E-04	518	2.13E-04	585	4.28E-04	652	1.69E-04	719	1.64E-05
385	2.00E-06	452	2.70E-04	519	2.15E-04	586	4.31E-04	653	1.61E-04	720	1.58E-05
386	1.80E-06	453	2.55E-04	520	2.18E-04	587	4.33E-04	654	1.52E-04	721	1.57E-05
387	2.60E-06	454	2.39E-04	521	2.21E-04	588	4.32E-04	655	1.45E-04	722	1.48E-05
388	2.00E-07	455	2.24E-04	522	2.22E-04	589	4.29E-04	656	1.41E-04	723	1.45E-05
389	1.70E-06	456	2.06E-04	523	2.24E-04	590	4.30E-04	657	1.34E-04	724	1.40E-05
390	1.60E-06	457	1.93E-04	524	2.27E-04	591	4.30E-04	658	1.27E-04	725	1.35E-05
391	2.30E-06	458	1.81E-04	525	2.29E-04	592	4.27E-04	659	1.22E-04	726	1.30E-05
392	1.40E-06	459	1.71E-04	526	2.31E-04	593	4.27E-04	660	1.20E-04	727	1.25E-05
393	1.10E-06	460	1.62E-04	527	2.33E-04	594	4.28E-04	661	1.16E-04	728	1.18E-05
394	1.30E-06	461	1.56E-04	528	2.34E-04	595	4.25E-04	662	1.09E-04	729	1.18E-05
395	1.80E-06	462	1.50E-04	529	2.36E-04	596	4.24E-04	663	1.05E-04	730	1.14E-05
396	3.00E-06	463	1.44E-04	530	2.40E-04	597	4.27E-04	664	1.01E-04	731	1.10E-05
397	2.70E-06	464	1.39E-04	531	2.42E-04	598	4.30E-04	665	9.68E-05	732	1.07E-05
398	3.20E-06	465	1.33E-04	532	2.44E-04	599	4.26E-04	666	9.40E-05	733	1.01E-05
399	2.90E-06	466	1.28E-04	533	2.46E-04	600	4.21E-04	667	9.19E-05	734	1.00E-05
400	3.30E-06	467	1.21E-04	534	2.49E-04	601	4.17E-04	668	8.92E-05	735	9.70E-06
401	3.40E-06	468	1.16E-04	535	2.51E-04	602	4.14E-04	669	8.88E-05	736	9.40E-06
402	3.20E-06	469	1.10E-04	536	2.53E-04	603	4.11E-04	670	8.85E-05	737	9.10E-06
403	3.70E-06	470	1.04E-04	537	2.55E-04	604	4.11E-04	671	8.39E-05	738	9.00E-06
404	4.10E-06	471	9.53E-05	538	2.57E-04	605	4.10E-04	672	7.93E-05	739	8.40E-06
405	4.00E-06	472	9.16E-05	539	2.61E-04	606	4.09E-04	673	7.64E-05	740	8.30E-06
406	5.10E-06	473	8.75E-05	540	2.64E-04	607	4.30E-04	674	7.27E-05	741	8.10E-06
407	5.10E-06	474	8.47E-05	541	2.68E-04	608	4.82E-04	675	6.96E-05	742	7.70E-06
408	5.50E-06	475	8.35E-05	542	2.71E-04	609	5.04E-04	676	6.79E-05	743	7.40E-06
409	6.70E-06	476	8.17E-05	543	2.74E-04	610	4.59E-04	677	6.52E-05	744	7.10E-06
410	7.60E-06	477	8.02E-05	544	2.77E-04	611	4.38E-04	678	6.28E-05	745	7.10E-06
411	8.20E-06	478	7.98E-05	545	2.81E-04	612	5.19E-04	679	6.04E-05	746	6.80E-06
412	9.20E-06	479	8.04E-05	546	2.83E-04	613	6.53E-04	680	5.88E-05	747	6.70E-06
413	9.80E-06	480	8.14E-05	547	2.88E-04	614	6.32E-04	681	5.69E-05	748	6.50E-06
414	1.09E-05	481	8.16E-05	548	2.91E-04	615	5.05E-04	682	5.49E-05	749	6.20E-06
415	1.28E-05	482	8.27E-05	549	2.96E-04	616	4.24E-04	683	5.36E-05	750	6.10E-06
416	1.36E-05	483	8.34E-05	550	3.01E-04	617	3.94E-04	684	5.16E-05	751	5.70E-06
417	1.64E-05	484	8.58E-05	551	3.05E-04	618	3.89E-04	685	4.98E-05	752	5.60E-06
418	1.76E-05	485	8.80E-05	552	3.10E-04	619	3.88E-04	686	4.81E-05	753	5.40E-06
419	1.95E-05	486	9.02E-05	553	3.13E-04	620	3.81E-04	687	4.71E-05	754	5.50E-06
420	2.09E-05	487	9.23E-05	554	3.17E-04	621	3.69E-04	688	4.54E-05	755	5.30E-06
421	2.41E-05	488	9.57E-05	555	3.22E-04	622	3.61E-04	689	4.44E-05	756	5.10E-06
422	2.63E-05	489	9.90E-05	556	3.26E-04	623	3.60E-04	690	4.29E-05	757	4.70E-06
423	2.95E-05	490	1.02E-04	557	3.31E-04	624	3.64E-04	691	4.16E-05	758	4.60E-06
424	3.23E-05	491	1.05E-04	558	3.34E-04	625	3.64E-04	692	4.03E-05	759	4.60E-06
425	3.60E-05	492	1.10E-04	559	3.39E-04	626	3.64E-04	693	3.89E-05	760	4.50E-06
426	3.90E-05	493	1.15E-04	560	3.44E-04	627	3.68E-04	694	3.78E-05	761	4.20E-06
427	4.32E-05	494	1.18E-04	561	3.49E-04	628	3.91E-04	695	3.64E-05	762	4.10E-06
428	4.84E-05	495	1.22E-04	562	3.54E-04	629	5.35E-04	696	3.56E-05	763	4.20E-06
429	5.42E-05	496	1.28E-04	563	3.59E-04	630	8.63E-04	697	3.41E-05	764	3.90E-06
430	5.96E-05	497	1.32E-04	564	3.62E-04	631	9.79E-04	698	3.27E-05	765	3.60E-06
431	6.36E-05	498	1.36E-04	565	3.67E-04	632	7.14E-04	699	3.17E-05	766	3.60E-06
432	7.18E-05	499	1.41E-04	566	3.73E-04	633	4.99E-04	700	3.08E-05	767	3.60E-06
433	7.84E-05	500	1.46E-04	567	3.76E-04	634	5.95E-04	701	2.98E-05	768	3.40E-06
434	8.50E-05	501	1.50E-04	568	3.81E-04	635	7.27E-04	702	2.88E-05	769	3.20E-06
435	9.39E-05	502	1.55E-04	569	3.85E-04	636	5.61E-04	703	2.82E-05	770	3.20E-06
436	1.04E-04	503	1.60E-04	570	3.88E-04	637	3.62E-04	704	2.69E-05	771	3.10E-06
437	1.13E-04	504	1.63E-04	571	3.94E-04	638	2.80E-04	705	2.62E-05	772	3.10E-06
438	1.23E-04	505	1.69E-04	572	3.95E-04	639	2.48E-04	706	2.53E-05	773	2.90E-06
439	1.37E-04	506	1.72E-04	573	3.99E-04	640	2.31E-04	707	2.43E-05	774	2.90E-06
440	1.51E-04	507	1.76E-04	574	4.03E-04	641	2.19E-04	708	2.35E-05	775	2.70E-06
441	1.65E-04	508	1.80E-04	575	4.06E-04	642	2.11E-04	709	2.28E-05	776	2.70E-06
442	1.81E-04	509	1.84E-04	576	4.10E-04	643	2.03E-04	710	2.22E-05	777	2.60E-06
443	2.01E-04	510	1.87E-04	577	4.14E-04	644	1.99E-04	711	2.15E-05	778	2.40E-06
444	2.17E-04	511	1.90E-04	578	4.15E-04	645	1.98E-04	712	2.09E-05	779	2.50E-06
445	2.34E-04	512	1.94E-04	579	4.19E-04	646	2.29E-04	713	2.00E-05	780	2.50E-06
446	2.55E-04	513	1.98E-04	580	4.21E-04	647	2.93E-04	714	1.94E-05	N/A	N/A



## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

<b>Model No.</b>	LF34SW @3000K	<b>Sample ID</b>	240812012-S1
<b>Operate time (Min.)</b>	30	<b>Stabilization time (Min.)</b>	60
<b>Temperature (°C)</b>	25.0	<b>Humidity (%RH)</b>	44.8

<b>Test Method</b>
<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 <math>25 \pm 1^\circ\text{C}</math>, 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 <math>\pm 0.2</math> 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 <math>1.0^\circ</math> vertical intervals and <math>15^\circ</math> horizontal intervals.</p>

### Test Conditions

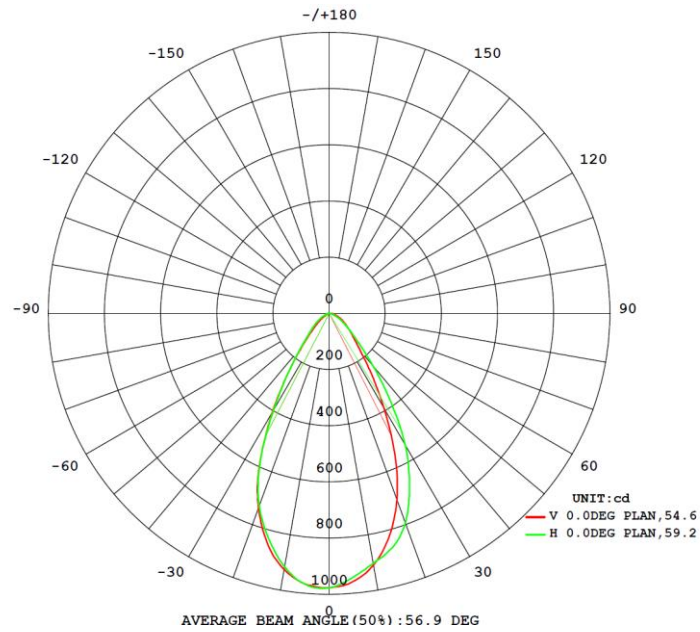
Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
<b>WORST CASE</b>	120.0	60	0.067	7.8	0.973
<b>NON-WORST CASE</b>	N/A	N/A	N/A	N/A	N/A

### Test Result

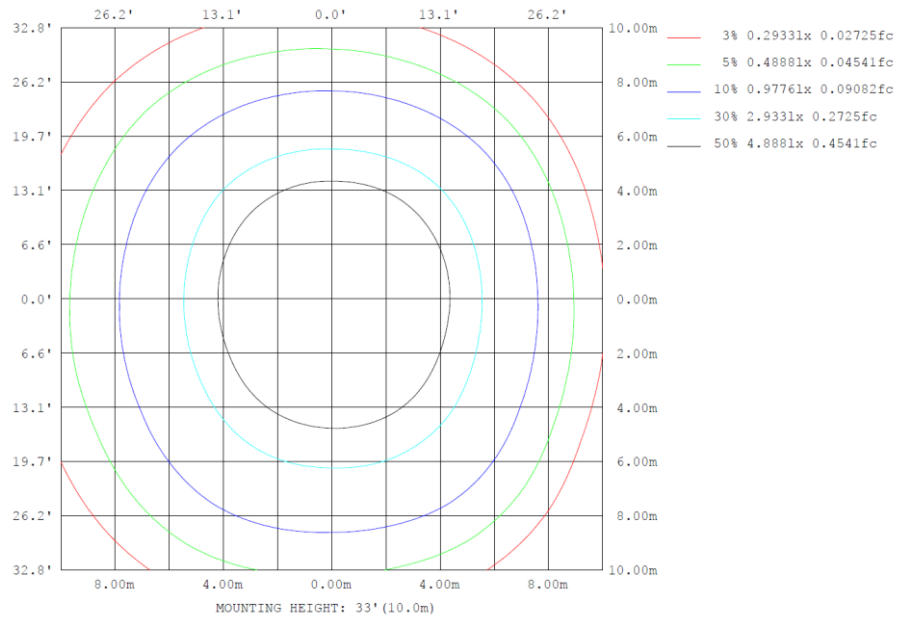
Flux (lm)	Field Angle (10%)		Beam Angle (50%)		Luminous Efficacy (lm/W)	Zonal Lumen Requirement	NEMA Type
	C0-180	C90-270	C0-180	C90-270		(0°-90°)	
985	93.8	96.8	54.6	59.2	126.3	100.0%	5H x 5V

## 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	925.6	908.8	903.8	890.8	909.1	927.1	915.9	938.0	0~ 10	90.22	90.22	9.16, 9.16
20	737.0	772.8	793.7	741.7	705.5	724.5	730.1	749.7	10~ 20	235.1	325.3	33, 33
30	405.1	512.8	542.4	481.8	391.5	433.1	396.6	439.2	20~ 30	276.2	601.5	61.1, 61.1
40	142.1	223.5	243.2	228.4	172.5	181.7	154.5	161.8	30~ 40	188.9	790.3	80.2, 80.2
50	55.28	82.77	99.62	111.4	96.03	93.61	73.77	64.70	40~ 50	97.19	887.5	90.1, 90.1
60	17.83	27.41	47.75	61.22	59.22	54.07	38.38	23.53	50~ 60	53.94	941.5	95.6, 95.6
70	1.438	4.944	18.70	31.33	33.65	27.42	14.81	4.300	60~ 70	27.60	969.1	98.4, 98.4
80	0.0113	0.0174	5.414	12.89	15.29	11.93	4.850	0.0118	70~ 80	11.32	980.4	99.5, 99.5
90	0	0	0	0	0	0	0	0	80~ 90	4.798	985.2	100, 100
100	0	0	0	0	0	0	0	0	90~100	0.0000	985.2	100, 100
110	0	0	0	0	0	0	0	0	100~110	0	985.2	100, 100
120	0	0	0	0	0	0	0	0	110~120	0	985.2	100, 100
130	0	0	0	0	0	0	0	0	120~130	0	985.2	100, 100
140	0	0	0	0	0	0	0	0	130~140	0	985.2	100, 100
150	0	0	0	0	0	0	0	0	140~150	0	985.2	100, 100
160	0	0	0	0	0	0	0	0	150~160	0	985.2	100, 100
170	0	0	0	0	0	0	0	0	160~170	0	985.2	100, 100
180	0	0	0	0	0	0	0	0	170~180	0	985.2	100, 100
DEG	LUMINOUS INTENSITY:cd									UNIT:lm		

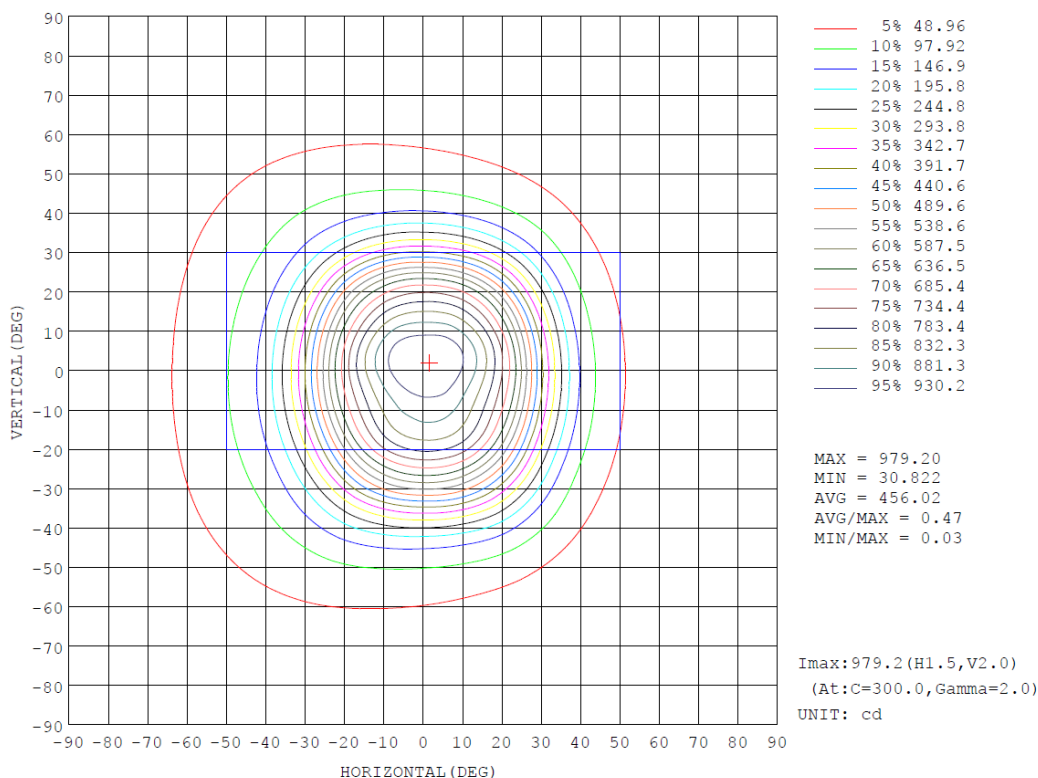
	Zonal (lm)		Total (lm)	Percent
0-10	90.22	0-10	90.22	9.16%
10-20	235.11	0-20	325.33	33.02%
20-30	276.15	0-30	601.48	61.05%
30-40	188.86	0-40	790.34	80.22%
40-50	97.19	0-50	887.53	90.09%
50-60	53.94	0-60	941.47	95.56%
60-70	27.60	0-70	969.07	98.36%
70-80	11.32	0-80	980.39	99.51%
80-90	4.80	0-90	985.19	100.00%
90-100	0.00	0-100	985.19	100.00%
100-110	0.00	0-110	985.19	100.00%
110-120	0.00	0-120	985.19	100.00%
120-130	0.00	0-130	985.19	100.00%
130-140	0.00	0-140	985.19	100.00%
140-150	0.00	0-150	985.19	100.00%
150-160	0.00	0-160	985.19	100.00%
160-170	0.00	0-170	985.19	100.00%
170-180	0.00	0-180	985.19	100.00%

## 4.2 Goniophotometer Test

### Area Flux Diagram

		AREA FLUX DIAGRAM																UNIT:lm			Φ t	Φ a
VERTICAL (DEG)	90	0.02	0.07	0.12	0.15	0.17	0.18	0.16	0.13	0.09	0.05	0.02	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.16	0.00
	80	0.03	0.09	0.15	0.21	0.28	0.32	0.35	0.34	0.30	0.23	0.15	0.08	0.03	0.00	0.00	0.00	0.00	0.00	0.00	2.56	0.00
	70	0.03	0.10	0.19	0.32	0.49	0.66	0.79	0.85	0.82	0.71	0.53	0.33	0.16	0.05	0.01	0.00	0.00	0.00	0.00	6.04	0.00
	60	0.03	0.11	0.26	0.51	0.83	1.18	1.49	1.68	1.71	1.58	1.30	0.90	0.50	0.20	0.04	0.00	0.00	0.00	0.00	12.3	0.00
	50	0.03	0.13	0.35	0.71	1.21	1.82	2.48	3.01	3.26	3.11	2.60	1.86	1.08	0.47	0.13	0.01	0.00	0.00	0.00	22.3	8.09
	40	0.03	0.15	0.43	0.91	1.61	2.69	4.33	6.34	7.67	7.56	6.02	3.76	1.94	0.85	0.26	0.03	0.00	0.00	0.00	44.6	37.8
	30	0.03	0.17	0.51	1.09	2.04	3.93	8.09	13.6	17.0	17.0	13.7	7.90	3.26	1.25	0.40	0.06	0.00	0.00	0.00	90.1	85.0
	20	0.03	0.18	0.56	1.23	2.43	5.44	12.3	20.3	24.6	24.8	20.9	12.8	4.98	1.63	0.53	0.09	0.00	0.00	0.00	133	128
	10	0.03	0.19	0.60	1.32	2.70	6.51	14.8	23.7	28.6	28.8	24.5	15.6	6.22	1.90	0.60	0.10	0.00	0.00	0.00	156	152
	0	0.03	0.19	0.60	1.33	2.75	6.62	14.9	23.2	27.8	28.2	24.0	15.6	6.35	1.95	0.61	0.10	0.00	0.00	0.00	154	150
	-10	0.03	0.18	0.58	1.27	2.56	5.76	12.9	20.8	25.4	25.7	21.7	13.6	5.39	1.74	0.55	0.09	0.00	0.00	0.00	138	134
	-20	0.03	0.17	0.52	1.14	2.18	4.40	9.39	15.9	19.9	20.1	16.5	9.78	3.85	1.36	0.43	0.06	0.00	0.00	0.00	106	101
	-30	0.03	0.15	0.45	0.96	1.75	3.14	5.70	9.10	11.4	11.4	9.23	5.46	2.43	0.94	0.28	0.03	0.00	0.00	0.00	62.5	56.8
	-40	0.03	0.13	0.36	0.76	1.32	2.12	3.19	4.22	4.75	4.62	3.86	2.59	1.34	0.54	0.14	0.01	0.00	0.00	0.00	30.0	21.1
	-50	0.03	0.11	0.28	0.55	0.92	1.36	1.80	2.10	2.19	2.04	1.67	1.15	0.60	0.23	0.05	0.00	0.00	0.00	0.00	15.1	0.00
	-60	0.03	0.10	0.20	0.36	0.56	0.77	0.95	1.04	1.02	0.88	0.66	0.41	0.19	0.06	0.01	0.00	0.00	0.00	0.00	7.24	0.00
	-70	0.03	0.09	0.15	0.23	0.30	0.37	0.41	0.40	0.36	0.28	0.18	0.10	0.04	0.01	0.00	0.00	0.00	0.00	0.00	2.94	0.00
	-80	0.02	0.07	0.12	0.16	0.18	0.19	0.18	0.15	0.11	0.06	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00
	-90	0.02	0.07	0.12	0.16	0.18	0.19	0.18	0.15	0.11	0.06	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.28	0.00
		-90	-80	-70	-60	-50	-40	-30	-20	-10	0	10	20	30	40	50	60	70	80	90		
		Φ t	0.55	2.39	6.43	13.2	24.3	47.5	94.2	147	177	177	148	91.9	38.4	13.2	4.05	0.60	0.02	0.00	985	---
		Φ a	0.00	0.00	0.00	0.00	11.9	38.1	85.9	139	169	170	141	85.5	31.2	2.94	0.00	0.00	0.00	0.00	---	875

### Isocandela



## 4.2 Goniophotometer Test

## Luminous Distribution Intensity Data

Table--1		UNIT: °cd																		
H (DEG)		V (DEG)																		
		-90	-85	-80	-75	-70	-65	-60	-55	-50	-45	-40	-35	-30	-25	-20	-15	-10	-5	0
-180	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	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	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	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	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	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	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	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	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	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	0.00
-80	0.00	10.2	10.7	10.9	10.9	11.0	10.9	10.9	10.8	10.7	10.4	10.1	9.72	9.21	8.59	7.88	7.11	6.28	5.41	
-70	0.00	10.7	11.3	11.8	12.5	13.2	14.4	15.8	17.3	18.7	20.2	21.4	22.2	22.7	22.7	22.4	21.6	20.4	18.7	
-60	0.00	11.1	11.9	13.1	14.9	17.9	21.4	25.4	29.5	33.7	37.9	41.8	45.4	48.2	49.9	50.7	50.7	49.7	47.7	
-50	0.00	11.3	12.6	14.8	18.9	24.3	30.6	37.3	44.3	51.6	59.5	68.1	76.8	85.5	92.9	98.0	101	101	99.6	
-40	0.00	11.5	13.3	17.1	23.5	31.2	39.9	49.1	59.0	70.6	84.7	102	125	152	182	207	229	241	243	
-30	0.00	11.7	14.1	19.4	27.6	37.4	48.1	59.7	73.2	89.9	112	146	196	266	349	431	494	530	542	
-20	0.00	11.9	14.7	21.5	31.0	42.2	54.5	68.2	85.5	108	142	197	287	406	536	647	729	775	794	
-10	0.00	12.0	15.2	22.2	33.0	45.1	58.3	73.7	93.8	121	166	246	363	514	656	759	838	886	904	
0	0.00	12.0	15.3	23.0	33.7	45.9	59.2	75.0	96.0	124	172	263	392	554	706	824	909	959	976	
10	0.00	12.0	15.1	22.5	32.7	44.5	57.4	72.3	91.3	117	159	237	355	504	653	769	857	906	916	
20	0.00	11.9	14.6	21.1	30.4	41.2	52.9	66.0	81.5	102	132	181	264	373	497	601	674	717	730	
30	0.00	11.7	14.0	19.0	26.7	36.2	46.3	57.0	69.2	83.5	102	128	163	209	267	321	366	393	397	
40	0.00	11.5	13.3	16.7	22.6	29.8	38.0	46.4	55.3	64.8	75.7	88.0	102	115	128	140	149	155	158	
50	0.00	11.3	12.5	14.5	18.1	23.0	28.5	34.7	40.8	47.1	53.1	59.2	64.6	69.2	72.9	75.1	76.0	75.7	73.8	
60	0.00	11.0	11.9	12.9	14.5	16.8	19.7	23.2	26.5	30.0	33.2	36.1	38.5	40.2	41.2	41.6	41.2	40.2	38.4	
70	0.00	10.7	11.2	11.7	12.2	12.8	13.6	14.6	15.6	16.5	17.4	18.2	18.6	18.8	18.6	18.1	17.3	16.2	14.8	
80	0.00	10.1	10.5	10.7	10.8	10.7	10.6	10.5	10.4	10.2	9.86	9.47	9.02	8.46	7.82	7.13	6.41	5.65	4.85	
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	4.57	3.72	2.86	1.95	1.05	0.31	0.03	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.00	
-70	16.7	14.4	11.8	9.25	6.79	4.72	3.16	2.05	1.15	0.32	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.00	
-60	44.8	40.9	36.0	30.5	25.0	19.5	14.1	9.14	5.04	2.56	1.28	0.30	0.00	0.01	0.01	0.01	0.01	0.00	
-50	96.6	90.9	83.3	73.9	62.3	49.1	35.8	25.0	16.7	9.63	4.11	1.61	0.47	0.01	0.01	0.01	0.01	0.00	
-40	238	223	200	170	134	101	71.7	49.8	33.0	20.8	11.2	4.21	1.36	0.15	0.01	0.01	0.01	0.00	
-30	536	504	446	364	270	183	119	77.4	52.0	33.3	19.5	9.00	2.65	0.70	0.01	0.01	0.01	0.00	
-20	786	750	675	568	431	289	178	109	69.3	45.2	26.9	13.7	4.40	1.08	0.00	0.01	0.01	0.00	
-10	898	861	787	686	542	375	231	134	82.3	53.1	32.1	16.9	5.94	1.34	0.03	0.01	0.01	0.00	
0	968	926	849	737	585	405	249	142	85.8	55.3	33.7	17.8	6.52	1.44	0.03	0.01	0.01	0.00	
10	913	876	801	686	530	361	220	127	78.7	51.6	31.3	16.5	5.84	1.32	0.02	0.01	0.01	0.00	
20	722	687	615	508	379	255	157	98.9	64.9	42.9	25.6	13.0	4.27	1.04	0.01	0.01	0.01	0.00	
30	389	362	317	257	194	139	98.1	68.5	47.7	30.8	18.1	8.49	2.52	0.65	0.01	0.01	0.01	0.00	
40	150	140	126	110	92.9	74.5	57.9	42.7	29.2	18.6	10.2	3.97	1.27	0.10	0.01	0.01	0.01	0.00	
50	71.1	66.9	61.6	55.2	47.6	38.9	29.7	21.5	14.4	8.32	3.80	1.47	0.36	0.01	0.01	0.01	0.01	0.00	
60	35.9	32.7	28.9	24.7	20.4	15.9	11.6	7.56	4.41	2.26	1.14	0.17	0.00	0.01	0.01	0.01	0.01	0.00	
70	13.3	11.5	9.56	7.53	5.64	4.02	2.74	1.79	0.89	0.16	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.00	
80	4.07	3.26	2.41	1.49	0.65	0.08	0.00	0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	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

<b>Model No.</b>	LF34SW @3000K	<b>Sample ID</b>	240812012-S1
<b>Temperature (°C)</b>	25.4	<b>Humidity (%RH)</b>	41.0

<b>Test Method</b>
<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 <math>25 \pm 1^\circ\text{C}</math>. 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	0.067	7.8	0.973	13.35

## 5.0 Equipment List:

Equipment ID	Equipment Name	Last Cal.	Due Cal.
NTC-F01-001	Goniophotometer System	2023-11-08	2024-11-07
NTC-F01-006	2.0 meter Integrating Sphere	2023-11-08	2024-11-07
NTC-F01-012	Standard Lamp	2023-11-02	2024-11-01
NTC-F01-013	Standard Lamp	2023-11-02	2024-11-01
NTC-F01-031	Digital Power Meter	2023-08-25	2024-08-24
NTC-F01-019	Temperature & Humidity Meter	2023-11-06	2024-11-05

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