



# Photometric Test Report

## Relevant Standards

- IES LM-79-2008
- ANSI C82.77:2014

## Prepared For RAB Lighting Inc.

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## Project Number

DLF2408110

## Report Number

DLF2408110-10a

## Test Date

2024/8/26

## Issue Date

2024/9/3

### Prepared By

Wangzun Zhu

### Approved By

Kevin Jia

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## 1.0 Test Summary

DLC Technical Requirements v5.1

Outdoor - Non-Cutoff and Semi-Cutoff Wall-Mounted Area Luminaires				
Requirement Category	Test Method	Requirements		Test value
Luminaire Output (lm) (Goniophotometer - Section 4.2 (0°-180° zones)	IES LM-79-2008	300		196
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2) (0°-180° zones)	IES LM-79-2008	Standard 105	Premium 120	46.3
Luminaire Output (lm) (Goniophotometer - Section 4.2) (0°-90° zones)	IES LM-79-2008	300		98
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard 105	Premium 120	23.2
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		4.23
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	20.85%
		20.00%	277V	10.00%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.977
		0.9	277V	0.899
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3045±175	3033
		4 step	3045±100	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥70		84
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	-		13
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		97
IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-18% ≤ IES Rcs,h1 ≤ +23%		-11%
Zonal Lumen Requirement (80°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	≤10%		22.36%
Input Voltage (V)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		277
(Goniophotometer - Section 4.2)		Non-Worst Case		120
Input Current (A)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		0.017
(Goniophotometer - Section 4.2)		Non-Worst Case		0.035
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		4.23
(Goniophotometer - Section 4.2)		Non-Worst Case		4.08

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024/8/26	SA-DASHS	ES1-02	J1
2	Goniophotometer Test	2024/8/26	SA-DASHS	ES1-02	J1
3	THD and PF Test	2024/8/26	SA-DASHS	ES1-02	J1

### Remark(If any)

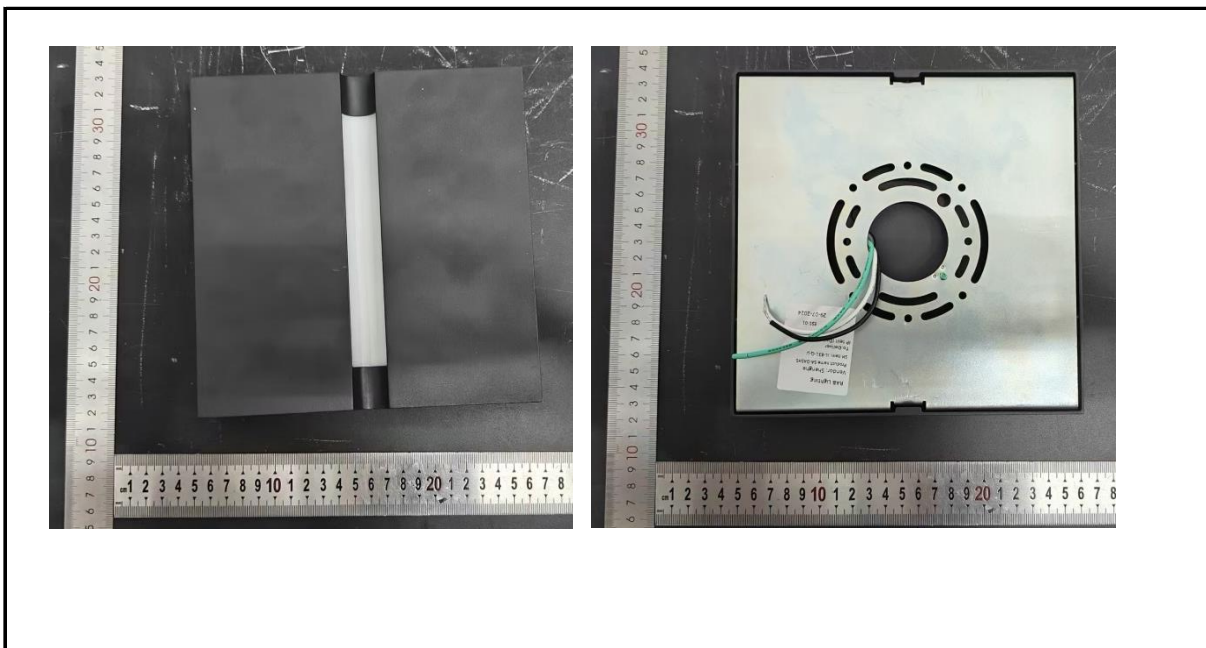
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## 3.0 Production Description

**Luminaire Description:** SA-DASHS

**Electrical Specification:** 120V-277V,50/60HZ

### Photos of Luminaire Characteristics



## 4.0 LM-79 Measurement and Test Results

### 4.1 Integrating Sphere Test

Model No.	SA-DASHS	Sample ID.	J1
Operate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.1	Humidity (%RH)	57.0

#### Test Method

The samples were tested according to the IES LM-79-2008.

Photometric parameters were measured using an integrating sphere, a spectroradiometer and software. The ambient temperature condition inside the sphere was maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ .

The sample measurements were made using a spectroradiometer connected by a fiber optic cable and detector through the detector port of the integrating sphere.

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  $\pm 0.2$  percent under load.

The sample was measured using  $4\pi$  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 780 nm.

#### Test Result

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.03	60	0.035	4.09	0.977
277.08	60	0.017	4.24	0.899

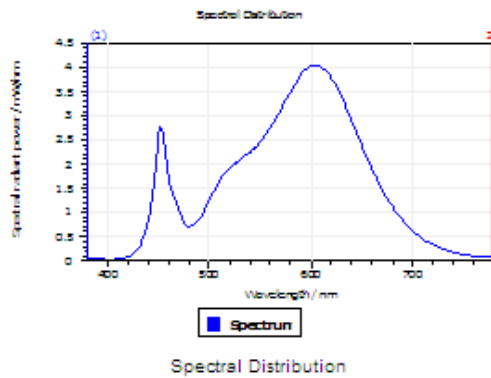
#### Test Result

CCT (K)	CRI	R9	Duv
3033	84	13	-0.0021

Rf	Rg	IES Rcs,h1
84	97	-11%

### 4.1 Integrating Sphere Test

**Results**



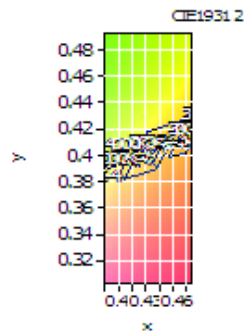
**Spectral values**

DominantWavelength 583.49 nm  
 Purity 0.487  
 PeakWavelength 604.04 nm  
 Radiant Power 0.6089 W  
 Width50%:

**Color Coordinates**

Correlated Color Temperat 3033 K  
 x: 0.4316 u: 0.2502 u': 0.2502  
 y: 0.3970 v: 0.3452 v': 0.5178

CRI01	82.8	CRI09	12.8
CRI02	91.7	CRI10	80.6
CRI03	96.3	CRI11	81.5
CRI04	81.9	CRI12	69.8
CRI05	82.7	CRI13	85.0
CRI06	89.4	CRI14	98.7
CRI07	83.5	CRI15	76.2
CRI08	61.7	CRI16	73.7
ResultsCRI	83.8		



PlanckDistance 2.1E-003

## 4.1 Integrating Sphere Test

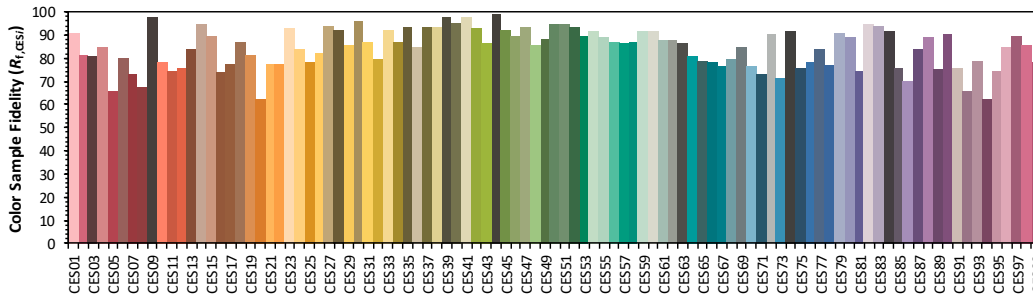
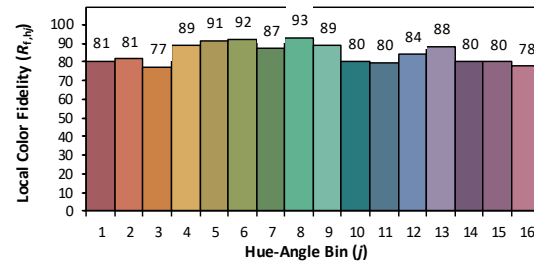
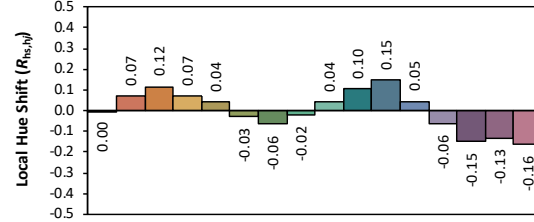
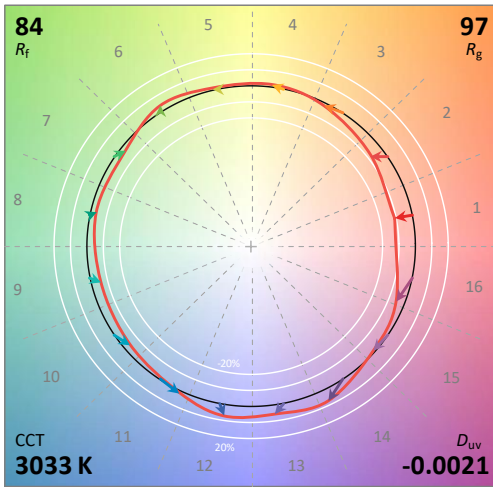
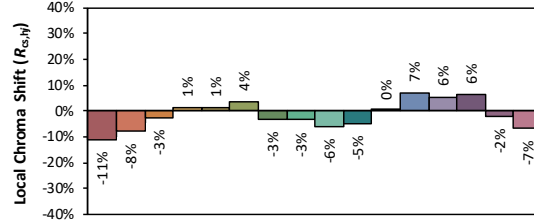
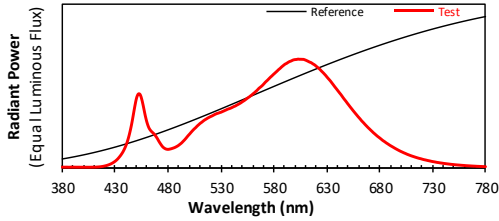
### IES TM-30-18 Color Rendition Report

Source: DLF2408110-10a

Manufacturer: RAB Lighting Inc.

Date: 2024/8/26

Model: SA-DASHS



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

$x$  0.4316  
 $y$  0.3970  
 $u'$  0.2502  
 $v'$  0.5178

CIE 13.3-1995 (CRI)	
$R_a$	84
$R_g$	15

#### 4.1 Integrating Sphere Test

Spectral Distribution over Visible Wavelength							
WL (nm)	Radiant (Watts/nm)	WL (nm)	Radiant (Watts/nm)	WL (nm)	Radiant (Watts/nm)	WL (nm)	Radiant (Watts/nm)
380	3.53E-05	485	7.45E-04	590	3.84E-03	695	7.22E-04
385	3.47E-05	490	8.47E-04	595	3.96E-03	700	6.19E-04
390	3.49E-05	495	1.02E-03	600	4.03E-03	705	5.31E-04
395	3.38E-05	500	1.25E-03	605	4.04E-03	710	4.53E-04
400	3.23E-05	505	1.46E-03	610	4.01E-03	715	3.88E-04
405	3.24E-05	510	1.65E-03	615	3.92E-03	720	3.34E-04
410	3.44E-05	515	1.80E-03	620	3.78E-03	725	2.85E-04
415	4.60E-05	520	1.91E-03	625	3.60E-03	730	2.42E-04
420	7.69E-05	525	2.01E-03	630	3.39E-03	735	2.07E-04
425	1.39E-04	530	2.07E-03	635	3.15E-03	740	1.77E-04
430	2.54E-04	535	2.16E-03	640	2.90E-03	745	1.52E-04
435	4.62E-04	540	2.24E-03	645	2.64E-03	750	1.29E-04
440	8.19E-04	545	2.34E-03	650	2.38E-03	755	1.12E-04
445	1.52E-03	550	2.46E-03	655	2.13E-03	760	9.62E-05
450	2.57E-03	555	2.60E-03	660	1.89E-03	765	8.23E-05
455	2.57E-03	560	2.75E-03	665	1.67E-03	770	7.11E-05
460	1.71E-03	565	2.93E-03	670	1.47E-03	775	6.10E-05
465	1.33E-03	570	3.10E-03	675	1.28E-03	780	5.27E-05
470	1.09E-03	575	3.30E-03	680	1.12E-03		
475	7.87E-04	580	3.49E-03	685	9.71E-04		
480	6.95E-04	585	3.67E-03	690	8.38E-04		

## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

Model No.	SA-DASHS	Sample ID.	J1
Opreate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.3	Humidity (%RH)	54.0

#### Test Method

The samples were tested according to the IES LM-79-2008.

Photometric paramters were measured using a type C goniophotometer and software.

The ambient temperature shall be maintained at 25° C ± 1° C, measured at a point not more than 1 m from the sample and at the same height as the sample.

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.

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 0.5° vertical intervals and 10° horizontal intervals.

#### Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	277.07	60	0.017	4.23	0.899
NON-WORST CASE	120.04	60	0.035	4.08	0.977

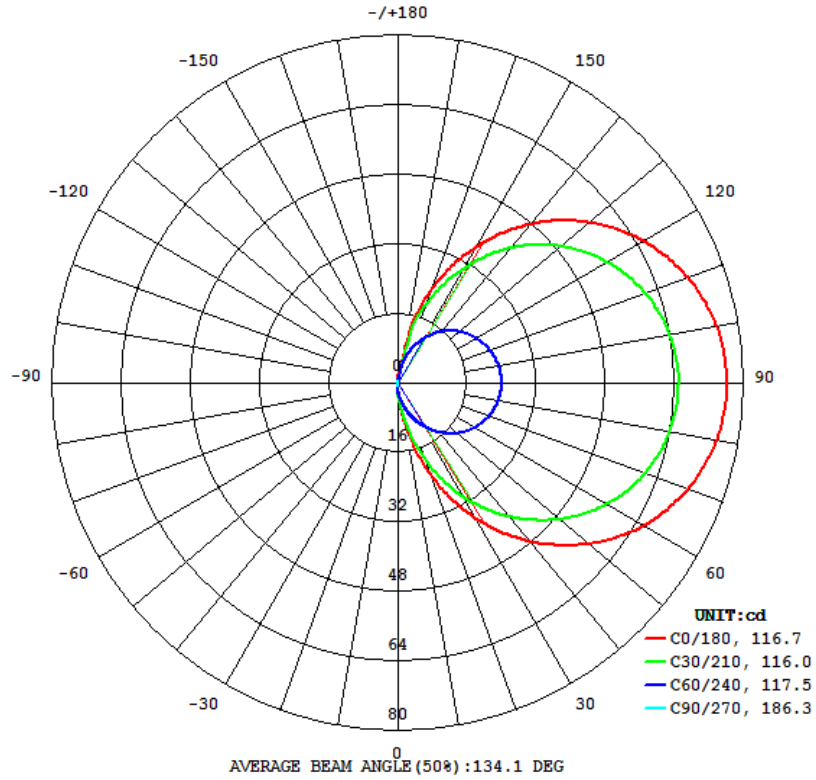
#### Test Result

Result type	Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
		C0-180	C90-270	C0-180	C90-270	
0°-180° zones	196	158.9	334.2	116.7	186.3	46.3
0°-90° zones	98	80.4	72.6	57.9	42.2	23.2

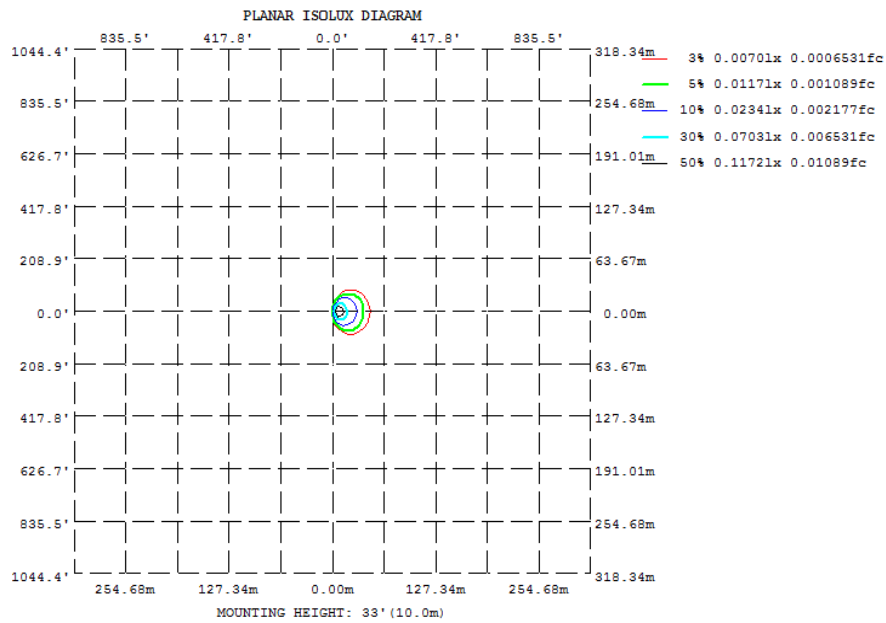
Zonal Lumen Requirement (80°-90°)	BUG rating
22.36%	B0-U3-G1

## 4.2 Goniophotometer Test

### Light Distrubtion Curve



### Isolux Plot



## 4.2 Goniophotometer Test

### Zonal Lumen Summary

$\gamma$	C0	C45	C90	C135	C180	C225	C270	C315
10	8.325	5.342	0.8718	0.1022	0.0575	0.0914	0.7116	4.400
20	22.52	13.50	0.5359	0.0843	0.0788	0.0923	0.4511	11.01
30	35.94	21.58	0.2060	0.0774	0.0703	0.0692	0.1757	17.51
40	47.67	28.85	0.0814	0.0752	0.0634	0.0634	0.0758	23.36
50	57.67	35.03	0.0725	0.0783	0.0692	0.0650	0.0647	28.33
60	65.58	39.99	0.0667	0.0803	0.0739	0.0663	0.0572	32.30
70	71.43	43.61	0.0574	0.0672	0.0703	0.0643	0.0496	35.20
80	74.98	45.90	0.0509	0.0616	0.0509	0.0574	0.0423	36.98
90	76.21	46.69	0.0439	0.0572	0.0512	0.0547	0.0340	37.69
100	74.94	45.99	0.0376	0.0525	0.0605	0.0543	0.0251	37.14
110	71.35	43.85	0.0305	0.0430	0.0647	0.0503	0.0176	35.51
120	65.55	40.34	0.0291	0.0372	0.0594	0.0460	0.0182	32.69
130	57.62	35.53	0.0323	0.0336	0.0538	0.0472	0.0229	28.80
140	47.80	29.51	0.0369	0.0298	0.0443	0.0460	0.0309	23.90
150	36.26	22.33	0.1702	0.0265	0.0249	0.0309	0.0932	17.28
160	23.01	14.24	0.5666	0.0218	0.0107	0.0189	0.1127	8.916
170	2.967	0.0787	0.0238	0.0178	0.0089	0.0133	0.0296	0.0318
180	0.0082	0.0149	0.0182	0.0142	0.0082	0.0116	0.0174	0.0141
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	0.14	0 - 10	0.14	0.07%
10-20	1.26	0 - 20	1.40	0.71%
20-30	3.64	0 - 30	5.04	2.57%
30-40	6.97	0 - 40	12.01	6.13%
40-50	10.80	0 - 50	22.81	11.65%
50-60	14.64	0 - 60	37.45	19.13%
60-70	18.02	0 - 70	55.47	28.33%
70-80	20.53	0 - 80	76.00	38.81%
80-90	21.89	0 - 90	97.89	49.99%
90-100	21.90	0 - 100	119.79	61.18%
100-110	20.58	0 - 110	140.37	71.69%
110-120	18.09	0 - 120	158.46	80.93%
120-130	14.74	0 - 130	173.20	88.45%
130-140	10.92	0 - 140	184.12	94.03%
140-150	7.06	0 - 150	191.18	97.64%
150-160	3.63	0 - 160	194.81	99.49%
160-170	0.99	0 - 170	195.80	99.99%
170-180	0.01	0 - 180	195.81	100.00%

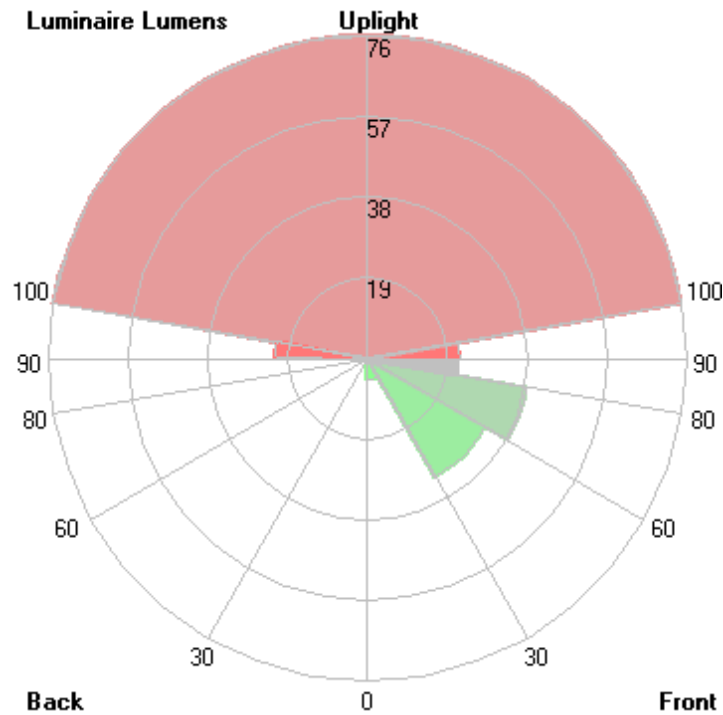


**Deliver**



### 4.2 Goniophotometer Test

LCS/BUG

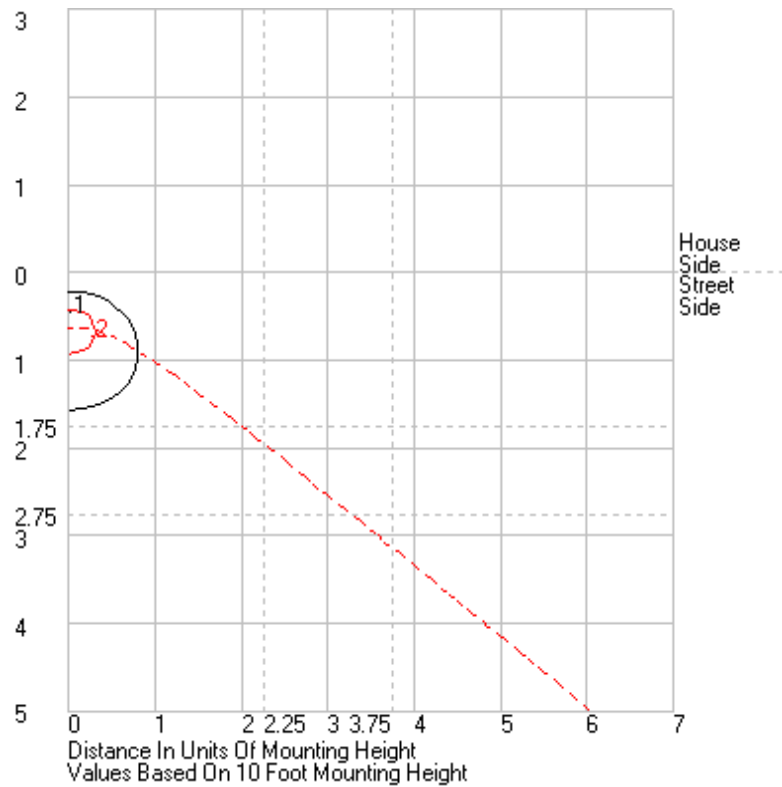


	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	5.0	N.A.	2.5
FM - Front-Medium (30-60)	32.3	N.A.	16.5
FH - Front-High (60-80)	38.5	N.A.	19.6
FVH - Front-Very High (80-90)	21.9	N.A.	11.2
BL - Back-Low (0-30)	0.1	N.A.	0.0
BM - Back-Medium (30-60)	0.1	N.A.	0.0
BH - Back-High (60-80)	0.1	N.A.	0.0
BVH - Back-Very High (80-90)	< 0.05	N.A.	0.0
UL - Uplight-Low (90-100)	21.9	N.A.	11.2
UH - Uplight-High (100-180)	76.0	N.A.	38.8
<b>Total</b>	<b>195.9</b>	<b>N.A.</b>	<b>100.0</b>
<b>BUG Rating</b>	<b>B0-U3-G1</b>		

**Coefficients of Utilization**



**Isolines**





## 4.2 Goniophotometer Test

	0	15	30	45	60	75	90	105	120	135	150	165	180	195	210	225	240	255	270	285	300	315	330	345	360
0	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122	0.122
1	0.33	0.34	0.33	0.33	0.32	0.28	0.24	0.2	0.16	0.11	0.08	0.05	0.04	0.05	0.06	0.09	0.13	0.16	0.19	0.21	0.24	0.26	0.28	0.29	0.33
2	0.66	0.66	0.65	0.61	0.54	0.45	0.35	0.27	0.19	0.13	0.08	0.05	0.04	0.04	0.06	0.1	0.15	0.2	0.26	0.34	0.42	0.49	0.54	0.58	0.66
3	1.14	1.14	1.09	0.98	0.83	0.66	0.48	0.34	0.23	0.14	0.08	0.04	0.04	0.04	0.06	0.1	0.16	0.25	0.36	0.49	0.64	0.79	0.92	1.01	1.14
4	1.76	1.77	1.67	1.46	1.19	0.9	0.62	0.42	0.25	0.14	0.07	0.04	0.04	0.04	0.06	0.1	0.18	0.3	0.46	0.67	0.92	1.18	1.41	1.59	1.76
5	2.57	2.54	2.35	1.99	1.57	1.15	0.75	0.47	0.26	0.13	0.07	0.04	0.04	0.04	0.06	0.1	0.19	0.34	0.56	0.86	1.22	1.63	2.02	2.3	2.57
6	3.49	3.44	3.13	2.57	1.93	1.35	0.85	0.5	0.26	0.12	0.06	0.04	0.04	0.04	0.06	0.1	0.19	0.37	0.65	1.03	1.53	2.1	2.71	3.15	3.49
7	4.58	4.48	4.01	3.2	2.28	1.5	0.9	0.5	0.25	0.12	0.06	0.04	0.04	0.04	0.06	0.09	0.18	0.37	0.7	1.17	1.79	2.63	3.49	4.13	4.58
8	5.77	5.63	4.97	3.88	2.63	1.63	0.9	0.5	0.24	0.11	0.06	0.04	0.05	0.05	0.06	0.09	0.18	0.37	0.72	1.26	2.06	3.18	4.34	5.23	5.77
9	7.03	6.84	6.01	4.61	3	1.73	0.89	0.48	0.23	0.11	0.06	0.04	0.05	0.05	0.06	0.09	0.18	0.37	0.72	1.33	2.33	3.78	5.27	6.36	7.03
10	8.32	8.1	7.06	5.34	3.38	1.84	0.87	0.47	0.22	0.1	0.06	0.04	0.06	0.06	0.06	0.09	0.17	0.36	0.71	1.38	2.59	4.4	6.2	7.52	8.32
11	9.68	9.42	8.17	6.1	3.77	1.93	0.85	0.45	0.21	0.1	0.06	0.04	0.06	0.06	0.07	0.09	0.17	0.35	0.7	1.44	2.87	5.03	7.19	8.77	9.68
12	11.08	10.75	9.3	6.89	4.15	2.03	0.82	0.44	0.2	0.1	0.06	0.04	0.07	0.07	0.07	0.09	0.16	0.34	0.68	1.48	3.14	5.67	8.22	10.08	11.08
13	12.51	12.12	10.47	7.69	4.54	2.13	0.79	0.42	0.19	0.1	0.06	0.04	0.07	0.07	0.07	0.09	0.16	0.33	0.65	1.53	3.42	6.32	9.25	11.35	12.51
14	13.94	13.51	11.64	8.51	4.95	2.23	0.75	0.4	0.19	0.09	0.06	0.04	0.07	0.07	0.08	0.09	0.16	0.32	0.63	1.57	3.7	6.96	10.32	12.66	13.94
15	15.38	14.9	12.81	9.32	5.35	2.33	0.72	0.38	0.18	0.09	0.06	0.04	0.07	0.07	0.08	0.09	0.15	0.3	0.6	1.61	3.98	7.62	11.37	13.99	15.38
16	16.79	16.29	14.02	10.15	5.74	2.42	0.68	0.36	0.17	0.09	0.06	0.04	0.07	0.08	0.08	0.09	0.15	0.29	0.57	1.65	4.26	8.31	12.46	15.33	16.79
17	18.26	17.69	15.22	10.99	6.15	2.52	0.65	0.34	0.17	0.09	0.06	0.04	0.08	0.08	0.08	0.09	0.14	0.28	0.54	1.69	4.53	8.97	13.53	16.66	18.26
18	19.71	19.08	16.42	11.83	6.55	2.62	0.61	0.32	0.16	0.09	0.06	0.04	0.08	0.08	0.08	0.09	0.14	0.26	0.51	1.72	4.81	9.65	14.6	17.97	19.71
19	21.1	20.46	17.6	12.66	6.95	2.71	0.57	0.31	0.15	0.09	0.06	0.04	0.08	0.08	0.08	0.09	0.13	0.25	0.48	1.76	5.09	10.33	15.66	19.33	21.1
20	22.52	21.84	18.79	13.5	7.36	2.81	0.54	0.29	0.14	0.08	0.06	0.04	0.08	0.08	0.08	0.09	0.13	0.24	0.45	1.8	5.36	11.01	16.74	20.6	22.52
21	23.92	23.23	19.96	14.34	7.75	2.91	0.5	0.27	0.14	0.08	0.06	0.04	0.08	0.08	0.08	0.09	0.12	0.22	0.42	1.84	5.64	11.67	17.79	21.92	23.92
22	25.33	24.58	21.14	15.14	8.14	3	0.46	0.25	0.13	0.08	0.06	0.05	0.08	0.08	0.08	0.09	0.12	0.2	0.39	1.88	5.9	12.32	18.83	23.24	25.33
23	26.71	25.91	22.32	15.97	8.55	3.1	0.43	0.23	0.12	0.08	0.06	0.05	0.08	0.08	0.08	0.09	0.11	0.19	0.36	1.92	6.17	13.01	19.89	24.54	26.71
24	28.06	27.25	23.47	16.8	8.94	3.2	0.39	0.21	0.11	0.08	0.06	0.05	0.08	0.08	0.08	0.08	0.1	0.17	0.33	1.96	6.44	13.67	20.91	25.77	28.06
25	29.43	28.56	24.6	17.63	9.34	3.29	0.36	0.19	0.11	0.08	0.06	0.05	0.08	0.07	0.08	0.08	0.1	0.16	0.3	2	6.7	14.31	21.97	27.06	29.43
26	30.71	29.88	25.73	18.39	9.72	3.39	0.32	0.18	0.1	0.08	0.06	0.05	0.08	0.07	0.07	0.08	0.09	0.15	0.27	2.04	6.96	14.95	22.98	28.33	30.71
27	32.08	31.17	26.84	19.22	10.12	3.49	0.29	0.16	0.1	0.08	0.06	0.05	0.08	0.07	0.07	0.07	0.08	0.13	0.25	2.09	7.22	15.6	23.98	29.54	32.08
28	33.42	32.48	27.97	20.03	10.51	3.6	0.26	0.15	0.1	0.08	0.06	0.05	0.07	0.07	0.07	0.07	0.08	0.12	0.22	2.13	7.5	16.27	25.01	30.73	33.42
29	34.66	33.71	29.07	20.81	10.89	3.7	0.23	0.14	0.09	0.08	0.06	0.05	0.07	0.07	0.07	0.07	0.08	0.11	0.2	2.18	7.76	16.89	26.01	31.98	34.66
30	35.94	34.92	30.17	21.58	11.28	3.81	0.21	0.12	0.09	0.08	0.06	0.05	0.07	0.06	0.06	0.07	0.08	0.1	0.18	2.23	8.02	17.51	26.96	33.17	35.94
31	37.19	36.17	31.28	22.34	11.66	3.92	0.18	0.11	0.09	0.08	0.06	0.05	0.07	0.06	0.06	0.07	0.08	0.1	0.16	2.28	8.29	18.14	27.91	34.33	37.19
32	38.43	37.4	32.29	23.13	12.05	4.02	0.16	0.1	0.09	0.08	0.06	0.05	0.07	0.06	0.06	0.07	0.07	0.09	0.14	2.33	8.55	18.75	28.85	35.48	38.43
33	39.67	38.59	33.33	23.84	12.43	4.13	0.14	0.1	0.09	0.08	0.06	0.05	0.07	0.06	0.06	0.07	0.07	0.08	0.12	2.38	8.81	19.35	29.82	36.64	39.67
34	40.87	39.77	34.39	24.59	12.8	4.24	0.12	0.09	0.09	0.08	0.06	0.05	0.07	0.06	0.06	0.07	0.07	0.08	0.11	2.43	9.07	19.95	30.7	37.74	40.87
35	42.06	40.87	35.38	25.35	13.17	4.36	0.11	0.09	0.08	0.08	0.06	0.06	0.07	0.06	0.06	0.07	0.07	0.08	0.1	2.49	9.34	20.55	31.69	38.84	42.06
36	43.22	42.01	36.43	26.03	13.54	4.47	0.1	0.09	0.08	0.08	0.06	0.06	0.07	0.06	0.06	0.07	0.07	0.08	0.09	2.55	9.6	21.14	32.54	39.97	43.22
37	44.4	43.14	37.4	26.74	13.91	4.59	0.09	0.09	0.08	0.08	0.06	0.06	0.07	0.06	0.06	0.07	0.07	0.08	0.08	2.61	9.85	21.7	33.48	41.01	44.4
38	45.46	44.25	38.36	27.46	14.27	4.71	0.08	0.08	0.08	0.08	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.08	0.08	2.68	10.1	22.26	34.35	42.09	45.46
39	46.63	45.37	39.32	28.12	14.62	4.83	0.08	0.08	0.08	0.08	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.08	0.08	2.74	10.35	22.8	35.18	43.16	46.63
40	47.67	46.43	40.29	28.85	14.96	4.95	0.08	0.08	0.08	0.08	0.07	0.06	0.06	0.06	0.06	0.07	0.07	0.07	0.08	2.81	10.59	23.36	36.05	44.16	47.67
41	48.78	47.5	41.21	29.47	15.3	5.06	0.08	0.08	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.07	0.07	0.07	0.07	2.87	10.86	23.91	36.85	45.16	48.78
42	49.85	48.49	42.09	30.16	15.63	5.18	0.08	0.08	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.07	0.07	0.07	0.07	2.94	11.08	24.43	37.69	46.15	49.85
43	50.89	49.5	42.98	30.82	15.95	5.29	0.08	0.08	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.07	0.07	0.07	0.07	2.99	11.3	24.98	38.47	47.16	50.89
44	51.89	50.51	43.87	31.46	16.29	5.4	0.08	0.08	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.07	0.07	0.07	0.07	3.06	11.53	25.45	39.27	48.15	51.89
45	52.89	51.51	44.77	32.07	16.62	5.51	0.08	0.08	0.08	0.08	0.07	0.07	0.06	0.06	0.06	0.07	0.07	0.07	0.07	3.12	11.76	26	40.07	49.09	52.89
46	53.85	52.51	45.61	32.67	16.91	5.62	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.06	0.06	0.07	0.07	0.07	0.07	3.18	11.96	26.49	40.87	50.02	53.85
47	54.83	53.38	46.44	33.29	17.23	5.72	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.06	0.06	0.07	0.07	0.07	0.07	3.24	12.2	26.94	41.62	50.94	54.83
48	55.76	54.33	47.3	33.88	17.52	5.83	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.06	0.06	0.07	0.07	0.07	0.07	3.29	12.4	27.42	42.31	51.78	55.76
49	56.68	55.24	48.1	34.48	17.81	5.92	0.07	0.08	0.08	0.08	0.08	0.08	0.07												



50	57.67	56.12	48.86	35.03	18.12	6.02	0.07	0.08	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.06	0.06	0.07	0.07	0.06	3.41	12.81	28.33	43.72	53.52	57.67
51	58.52	56.93	49.63	35.57	18.41	6.12	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.06	0.06	0.07	0.07	0.06	3.46	13.02	28.78	44.48	54.4	58.52
52	59.41	57.89	50.34	36.08	18.68	6.21	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.06	0.07	0.07	0.06	3.51	13.21	29.22	45.14	55.24	59.41
53	60.28	58.62	51.11	36.63	18.96	6.3	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.06	0.07	0.07	0.06	3.56	13.4	29.63	45.75	56	60.28
54	61.08	59.47	51.84	37.18	19.21	6.4	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.07	0.07	0.06	3.62	13.58	30.08	46.47	56.77	61.08
55	61.83	60.23	52.56	37.66	19.48	6.48	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.06	3.67	13.77	30.46	47.06	57.54	61.83
56	62.7	61.02	53.21	38.18	19.7	6.57	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.06	3.72	13.94	30.87	47.69	58.27	62.7
57	63.41	61.79	53.88	38.64	19.95	6.66	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.06	3.76	14.11	31.22	48.33	59.03	63.41
58	64.17	62.48	54.58	39.1	20.18	6.74	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.06	3.81	14.28	31.59	48.89	59.71	64.17
59	64.95	63.26	55.12	39.52	20.46	6.81	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.06	3.86	14.44	31.98	49.44	60.41	64.95
60	65.58	63.94	55.73	39.99	20.68	6.9	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.06	3.9	14.6	32.3	50.05	61.07	65.58
61	66.38	64.53	56.35	40.37	20.87	6.97	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.06	3.94	14.75	32.62	50.5	61.73	66.38
62	67	65.28	56.91	40.81	21.09	7.04	0.06	0.07	0.08	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.06	3.98	14.91	32.98	51.03	62.34	67
63	67.57	65.84	57.46	41.18	21.28	7.12	0.06	0.07	0.07	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.07	0.06	0.06	0.05	4.02	15.05	33.29	51.57	62.96	67.57
64	68.15	66.47	58.01	41.56	21.48	7.19	0.06	0.07	0.07	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.06	0.06	0.05	4.06	15.18	33.62	52.02	63.55	68.15	
65	68.79	67	58.55	41.95	21.67	7.25	0.06	0.06	0.07	0.08	0.08	0.08	0.08	0.07	0.07	0.07	0.06	0.06	0.05	4.1	15.33	33.9	52.56	64.1	68.79	
66	69.31	67.62	59.03	42.32	21.85	7.31	0.06	0.06	0.07	0.07	0.08	0.08	0.08	0.07	0.07	0.07	0.06	0.06	0.05	4.14	15.46	34.21	53	64.6	69.31	
67	69.83	68.22	59.47	42.65	22.05	7.38	0.06	0.06	0.07	0.07	0.08	0.08	0.08	0.07	0.07	0.07	0.06	0.06	0.05	4.17	15.58	34.47	53.38	65.14	69.83	
68	70.38	68.68	59.98	43.02	22.22	7.44	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.05	4.2	15.7	34.72	53.84	65.67	70.38	
69	70.93	69.27	60.4	43.33	22.36	7.5	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	4.23	15.83	35	54.22	66.12	70.93	
70	71.43	69.64	60.83	43.61	22.53	7.55	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.06	0.05	4.27	15.91	35.2	54.62	66.61	71.43	
71	71.86	70.11	61.19	43.89	22.69	7.61	0.06	0.06	0.06	0.07	0.07	0.07	0.07	0.07	0.07	0.06	0.06	0.05	0.05	4.3	16.02	35.47	54.97	67.07	71.86	
72	72.37	70.53	61.64	44.14	22.83	7.66	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.07	0.07	0.06	0.06	0.05	0.05	4.32	16.13	35.69	55.35	67.39	72.37	
73	72.8	70.98	61.99	44.43	22.98	7.71	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	4.35	16.21	35.85	55.65	67.79	72.8	
74	73.04	71.37	62.35	44.65	23.08	7.74	0.06	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	4.38	16.3	36.09	56.01	68.23	73.04	
75	73.49	71.68	62.61	44.87	23.2	7.79	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	4.4	16.38	36.26	56.33	68.62	73.49	
76	73.79	71.97	62.9	45.09	23.33	7.83	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.05	4.42	16.46	36.42	56.55	68.91	73.79	
77	74.19	72.34	63.26	45.38	23.43	7.87	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.44	16.54	36.57	56.73	69.29	74.19	
78	74.43	72.65	63.52	45.57	23.53	7.91	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.47	16.6	36.78	57.07	69.5	74.43	
79	74.75	72.93	63.79	45.73	23.61	7.94	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.48	16.68	36.9	57.26	69.81	74.75	
80	74.98	73.11	63.92	45.9	23.71	7.97	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.5	16.73	36.98	57.43	70	74.98	
81	75.2	73.48	64.12	46.02	23.78	8	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.51	16.82	37.17	57.65	70.21	75.2	
82	75.46	73.63	64.26	46.17	23.86	8.03	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.53	16.83	37.29	57.77	70.41	75.46	
83	75.7	73.75	64.47	46.25	23.95	8.05	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.54	16.88	37.4	57.9	70.57	75.7	
84	75.75	73.94	64.68	46.4	23.97	8.08	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.56	16.91	37.45	58.05	70.74	75.75	
85	75.94	74.06	64.73	46.45	24.01	8.09	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.56	16.96	37.47	58.13	70.88	75.94	
86	76.04	74.22	64.89	46.56	24.09	8.11	0.05	0.05	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.58	17	37.6	58.26	70.94	76.04	
87	76.18	74.33	64.94	46.6	24.12	8.13	0.05	0.04	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.58	17.03	37.58	58.32	71.09	76.18	
88	76.13	74.35	65	46.65	24.13	8.13	0.05	0.04	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.06	0.05	0.04	4.59	17.03	37.61	58.35	71.13	76.13	
89	76.31	74.35	65	46.67	24.14	8.14	0.04	0.04	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.05	0.04	0.03	4.59	17.03	37.68	58.41	71.21	76.31	
90	76.21	74.41	65.12	46.69	24.17	8.15	0.04	0.04	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.05	0.04	0.03	4.6	17.03	37.69	58.37	71.27	76.21	
91	76.21	74.43	65.05	46.65	24.17	8.15	0.04	0.04	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.05	0.04	0.03	4.59	17.03	37.66	58.37	71.2	76.21	
92	76.16	74.33	65.06	46.66	24.15	8.15	0.04	0.04	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.05	0.04	0.03	4.6	17.04	37.66	58.36	71.13	76.16	
93	76.07	74.22	65.01	46.59	24.14	8.15	0.04	0.04	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.05	0.04	0.03	4.59	17.03	37.66	58.31	71.02	76.07	
94	76.08	74.18	64.87	46.56	24.12	8.14	0.04	0.04	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.05	0.04	0.03	4.59	17.01	37.65	58.24	70.95	76.08	
95	75.96	74.05	64.78	46.54	24.08	8.14	0.04	0.04	0.05	0.06	0.06	0.06	0.06	0.05	0.06	0.06	0.05	0.04	0.03	4.59	17	37.56	58.15	70.89	75.96	
96	75.79	73.96	64.67	46.46	24.09	8.13	0.04	0.04	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.04	0.03	4.59	16.98	37.5	58.13	70.73	75.79	
97	75.66	73.78	64.55	46.32	24.04	8.11	0.04	0.04	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.04	0.03	4.58	16.92	37.41	57.97	70.63	75.66	
98	75.42	73.61	64.41	46.25	23.97	8.1	0.04	0.04	0.05	0.05	0.06	0.06	0.06	0.06	0.06	0.06	0.05	0.04	0.03	4.57	16.89	37.36	57.83	70.48	75.42	
99	75.27	73.39	64.18	46.13	23.9	8.08	0.04	0.04	0.04	0.05	0.06	0.07</														



104	73.84	72.04	63.04	45.32	23.52	7.95	0.03	0.03	0.04	0.05	0.06	0.06	0.06	0.07	0.06	0.05	0.04	0.03	0.02	4.49	16.57	36.61	56.58	68.96	73.84
105	73.46	71.74	62.79	45.15	23.42	7.92	0.03	0.03	0.04	0.05	0.06	0.06	0.06	0.07	0.06	0.05	0.04	0.03	0.02	4.48	16.52	36.46	56.38	68.66	73.46
106	73.04	71.35	62.48	44.9	23.3	7.89	0.03	0.03	0.04	0.05	0.06	0.06	0.06	0.07	0.06	0.05	0.04	0.03	0.02	4.46	16.44	36.29	56.05	68.27	73.04
107	72.69	70.9	62.09	44.66	23.2	7.85	0.03	0.03	0.04	0.05	0.06	0.06	0.06	0.07	0.06	0.05	0.04	0.03	0.02	4.43	16.35	36.1	55.73	67.91	72.69
108	72.32	70.61	61.73	44.42	23.08	7.81	0.03	0.03	0.04	0.04	0.05	0.06	0.06	0.07	0.06	0.05	0.04	0.03	0.02	4.41	16.27	35.9	55.4	67.46	72.32
109	71.87	70.06	61.36	44.2	22.94	7.77	0.03	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.06	0.05	0.04	0.03	0.02	4.39	16.19	35.68	55.09	67.13	71.87
110	71.35	69.62	60.95	43.85	22.81	7.73	0.03	0.03	0.03	0.04	0.05	0.06	0.06	0.07	0.06	0.05	0.04	0.03	0.02	4.36	16.08	35.51	54.68	66.7	71.35
111	70.98	69.2	60.5	43.59	22.67	7.68	0.03	0.02	0.03	0.04	0.05	0.06	0.06	0.07	0.06	0.05	0.04	0.03	0.02	4.34	15.97	35.24	54.39	66.24	70.98
112	70.44	68.76	60.08	43.25	22.49	7.63	0.03	0.02	0.03	0.04	0.05	0.05	0.06	0.06	0.06	0.05	0.04	0.03	0.02	4.31	15.88	35	53.95	65.75	70.44
113	69.86	68.24	59.63	42.96	22.34	7.58	0.03	0.02	0.03	0.04	0.05	0.05	0.06	0.06	0.06	0.05	0.04	0.03	0.02	4.28	15.76	34.73	53.58	65.28	69.86
114	69.38	67.7	59.15	42.65	22.2	7.52	0.03	0.02	0.03	0.04	0.05	0.05	0.06	0.06	0.06	0.05	0.04	0.03	0.02	4.25	15.67	34.46	53.17	64.79	69.38
115	68.81	67.1	58.66	42.31	22.03	7.47	0.03	0.02	0.03	0.04	0.05	0.05	0.06	0.06	0.06	0.05	0.04	0.03	0.02	4.22	15.52	34.18	52.68	64.16	68.81
116	68.2	66.53	58.18	41.94	21.82	7.41	0.03	0.02	0.03	0.04	0.05	0.05	0.06	0.06	0.06	0.05	0.04	0.03	0.02	4.19	15.39	33.94	52.26	63.64	68.2
117	67.52	65.9	57.71	41.56	21.67	7.34	0.03	0.02	0.03	0.04	0.05	0.05	0.06	0.06	0.06	0.05	0.04	0.03	0.02	4.16	15.27	33.61	51.76	63.11	67.52
118	66.95	65.28	57.07	41.18	21.46	7.28	0.03	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.05	0.04	0.03	0.02	4.12	15.15	33.32	51.34	62.48	66.95
119	66.19	64.61	56.55	40.76	21.27	7.22	0.03	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.06	0.05	0.04	0.03	0.02	4.08	15	33.03	50.83	61.88	66.19
120	65.55	63.98	55.87	40.34	21.07	7.15	0.03	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.05	0.05	0.04	0.03	0.02	4.05	14.87	32.69	50.26	61.23	65.55
121	64.85	63.34	55.33	39.92	20.84	7.08	0.03	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.05	0.05	0.04	0.03	0.02	4.01	14.71	32.33	49.74	60.6	64.85
122	64.17	62.57	54.8	39.49	20.63	7.01	0.03	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.05	0.05	0.04	0.03	0.02	3.97	14.57	31.94	49.18	59.98	64.17
123	63.43	61.91	54.07	39.13	20.43	6.93	0.03	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.05	0.05	0.04	0.03	0.02	3.93	14.4	31.6	48.61	59.26	63.43
124	62.65	61.17	53.41	38.58	20.17	6.86	0.03	0.02	0.03	0.04	0.04	0.05	0.06	0.06	0.05	0.05	0.04	0.03	0.02	3.89	14.26	31.24	48.03	58.52	62.65
125	61.92	60.38	52.76	38.12	19.92	6.78	0.03	0.02	0.03	0.04	0.04	0.04	0.06	0.06	0.05	0.05	0.04	0.03	0.02	3.84	14.09	30.85	47.41	57.76	61.92
126	61.11	59.58	52.05	37.64	19.7	6.7	0.03	0.02	0.03	0.04	0.04	0.04	0.06	0.06	0.05	0.05	0.04	0.03	0.02	3.8	13.92	30.45	46.81	57.03	61.11
127	60.18	58.79	51.4	37.12	19.43	6.62	0.03	0.02	0.03	0.03	0.04	0.04	0.06	0.06	0.05	0.05	0.04	0.03	0.02	3.75	13.74	30.08	46.19	56.27	60.18
128	59.37	57.97	50.7	36.62	19.2	6.54	0.03	0.02	0.03	0.03	0.04	0.04	0.06	0.06	0.05	0.05	0.04	0.03	0.02	3.7	13.56	29.65	45.51	55.51	59.37
129	58.54	57.14	49.91	36.11	18.93	6.44	0.03	0.02	0.03	0.03	0.04	0.04	0.06	0.06	0.05	0.05	0.04	0.03	0.02	3.66	13.39	29.23	44.88	54.67	58.54
130	57.62	56.27	49.16	35.53	18.63	6.35	0.03	0.02	0.03	0.03	0.04	0.04	0.05	0.06	0.05	0.05	0.04	0.03	0.02	3.61	13.2	28.8	44.19	53.89	57.62
131	56.78	55.35	48.38	35	18.35	6.26	0.03	0.02	0.03	0.03	0.04	0.04	0.05	0.06	0.05	0.05	0.04	0.03	0.02	3.56	13.02	28.36	43.52	53.07	56.78
132	55.86	54.56	47.57	34.46	18.09	6.16	0.03	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.05	0.04	0.03	0.02	3.51	12.81	27.91	42.85	52.2	55.86
133	54.9	53.58	46.7	33.87	17.8	6.07	0.03	0.02	0.03	0.03	0.04	0.04	0.05	0.05	0.05	0.05	0.04	0.03	0.03	3.45	12.6	27.46	42.09	51.3	54.9
134	53.97	52.64	45.96	33.28	17.5	5.97	0.03	0.02	0.03	0.03	0.03	0.04	0.05	0.05	0.05	0.05	0.04	0.03	0.03	3.4	12.4	26.97	41.35	50.41	53.97
135	53	51.76	45.1	32.7	17.19	5.87	0.03	0.02	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.04	0.03	0.03	3.35	12.19	26.5	40.6	49.51	53
136	51.98	50.77	44.26	32.09	16.88	5.77	0.04	0.02	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.04	0.04	0.03	3.29	11.97	26.03	39.8	48.56	51.98
137	50.99	49.76	43.39	31.45	16.56	5.66	0.04	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.04	0.04	0.03	3.23	11.75	25.5	39.04	47.57	50.99
138	49.99	48.74	42.53	30.79	16.24	5.56	0.04	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.04	0.04	0.03	3.16	11.5	24.98	38.22	46.65	49.99
139	48.95	47.67	41.62	30.18	15.93	5.45	0.04	0.03	0.03	0.03	0.03	0.03	0.05	0.05	0.05	0.05	0.04	0.04	0.03	3.09	11.26	24.46	37.43	45.66	48.95
140	47.8	46.68	40.69	29.51	15.58	5.34	0.04	0.03	0.03	0.03	0.03	0.03	0.04	0.05	0.05	0.05	0.04	0.04	0.03	3.02	11.01	23.9	36.53	44.65	47.8
141	46.76	45.63	39.77	28.85	15.23	5.23	0.04	0.03	0.03	0.03	0.03	0.03	0.04	0.05	0.05	0.04	0.04	0.04	0.03	2.95	10.75	23.36	35.71	43.63	46.76
142	45.66	44.58	38.88	28.15	14.89	5.11	0.04	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.05	0.04	0.04	0.04	0.03	2.86	10.47	22.73	34.82	42.59	45.66
143	44.57	43.48	37.87	27.44	14.54	5	0.04	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.04	0.04	0.03	2.77	10.16	22.12	33.92	41.52	44.57
144	43.43	42.38	36.86	26.79	14.18	4.88	0.05	0.03	0.03	0.03	0.03	0.02	0.04	0.04	0.04	0.04	0.04	0.03	0.03	2.67	9.85	21.46	32.99	40.46	43.43
145	42.26	41.21	35.85	26.05	13.81	4.77	0.06	0.03	0.03	0.03	0.03	0.02	0.03	0.04	0.04	0.04	0.04	0.03	0.04	2.57	9.54	20.82	32.02	39.3	42.26
146	41.1	40.1	34.84	25.35	13.46	4.66	0.08	0.03	0.03	0.03	0.03	0.02	0.03	0.04	0.04	0.04	0.04	0.04	0.05	2.48	9.22	20.17	31.06	38.23	41.1
147	39.92	38.93	33.87	24.61	13.07	4.55	0.09	0.03	0.03	0.03	0.03	0.02	0.03	0.03	0.04	0.04	0.04	0.04	0.05	2.39	8.89	19.49	30.12	37.06	39.92
148	38.72	37.74	32.84	23.87	12.71	4.45	0.12	0.04	0.03	0.03	0.03	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.07	2.29	8.55	18.8	29.07	35.86	38.72
149	37.51	36.59	31.78	23.1	12.32	4.34	0.14	0.05	0.03	0.03	0.02	0.02	0.03	0.03	0.03	0.03	0.03	0.04	0.08	2.17	8.18	18.05	28.03	34.66	37.51
150	36.26	35.37	30.71	22.33	11.93	4.23	0.17	0.06	0.03	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.04	0.09	2.06	7.8	17.28	26.98	33.43	36.26
151	35	34.12	29.64	21.57	11.56	4.13	0.2	0.07	0.03	0.03	0.02	0.02	0.02	0.03	0.03	0.03	0.03	0.05	0.11	1.92	7.4	16.47	25.82	32.15	35
152	33.75	32.88	28.58	20.77	11.17	4.03	0.23	0.08	0.03	0.03	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.05	0.13	1.79	7.01	15.64	24.7	30.91	33.75
153	32.46	31.59	27.45	20	10.77	3.93	0.27	0.1	0.03	0.03	0.02	0.02	0.02	0.02	0.03	0.03	0.03	0.06	0.15	1.66	6.61	14.			



158	25.77	25.09	21.79	15.91	8.79	3.43	0.48	0.2	0.06	0.02	0.02	0.01	0.01	0.02	0.02	0.02	0.03	0.09	0.23	1.01	4.59	10.56	17.58	22.77	25.77
159	24.41	23.76	20.6	15.1	8.38	3.33	0.52	0.22	0.07	0.02	0.02	0.01	0.01	0.01	0.02	0.02	0.02	0.09	0.24	0.9	4.22	9.74	16.36	21.39	24.41
160	23.01	22.42	19.45	14.24	7.97	3.23	0.57	0.24	0.08	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.09	0.11	0.72	3.84	8.92	15.14	19.97	23.01
161	21.59	21.03	18.26	13.1	7.56	3.13	0.61	0.27	0.09	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.04	0.3	3.44	8.1	13.97	18.58	21.59
162	20.18	19.65	17.05	11.16	7.12	3.03	0.66	0.29	0.09	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.04	0.1	2.58	7.32	12.79	17.17	20.18
163	18.75	18.28	15.82	8.6	6.5	2.92	0.71	0.31	0.09	0.02	0.02	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.07	0.07	1.85	6.35	11.57	15.84	18.75
164	17.34	16.9	14.41	6.17	5.68	2.81	0.76	0.34	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.26	0.15	1.29	4.88	9.46	14.37	17.34
165	15.89	15.48	12.61	3.86	4.53	2.61	0.8	0.3	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.31	0.49	1.06	3.48	6.87	12.78	15.89
166	14.44	14.03	9.69	1.54	2.89	1.98	0.6	0.1	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.25	0.63	0.89	2.18	4.33	11.17	14.44
167	12.53	11.36	6.47	0.29	1.6	1.07	0.19	0.03	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.08	0.32	0.4	1.06	1.98	7.97	12.53
168	9	7.64	3.69	0.13	0.54	0.53	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.03	0.03	0.05	0.26	0.23	0.33	4.68	9
169	5.67	4.7	0.92	0.11	0.04	0.16	0.03	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.17	0.04	0.03	1.86	5.67
170	2.97	1.78	0.05	0.08	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.03	0.02	0.12	2.97
171	1.51	0.18	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.02	1.51
172	2.2	0.43	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.01	2.2
173	1.79	0.53	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.03	0.03	0.03	0.03	0.02	0.01	1.79
174	0.61	0.29	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.02	0.02	0.01	0.61
175	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.02	0.02	0.02	0.01	0.01
176	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
177	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01
178	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01
179	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.02	0.01	0.01	0.01
180	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

Model No.	SA-DASHS	Sample ID.	J1
Temperature (°C)	25.1	Humidity (%RH)	57.0

#### Test Method

The samples were tested according to the ANSI C82.77:2014.

The total harmonic distortion shall be measured to the 40th order.

The ambient temperature condition was maintained at 25° C ± 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 were calculated.

#### Test Results

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
120.03	60	0.035	4.09	0.977	20.85%
277.08	60	0.017	4.24	0.899	10.00%

## 5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2023/12/24	2024/12/23
DLF108	Auxiliary Lamp	2023/12/24	2024/12/23
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-derectional	2023/12/24	2024/12/23
DLF116	AC Power Source	2023/12/16	2024/12/15
DLF516	Power Meter	2023/12/16	2024/12/15
DLF112	Temperature Recorder	2023/12/28	2024/12/27
DLF114	Temperature & Humidity Datalogger	2023/12/28	2024/12/27
DLF101	Goniophotometer	2023/12/24	2024/12/23
DLF511	AC Power Source	2023/12/16	2024/12/15
DLF512	AC Power Source	2023/12/16	2024/12/15
DLF513	AC Power Source	2023/12/16	2024/12/15
DLF507	DC Power Source	2023/12/16	2024/12/15
DLF111	Temperature & Humidity Datalogger	2023/12/28	2024/12/27
DLF119	Power Meter	2023/12/16	2024/12/15
DLF031	Temperature data logger	2024/6/20	2025/6/19
DLF073	Power Analyzer	2024/6/20	2025/6/19
DLF003	Temperature & Humidity Datalogger	2024/6/20	2025/6/19

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