

# Photometric Test Report

## Relevant Standards

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

## Prepared For RAB Lighting Inc.

Room 6A33, No.1388, Wuzhong road, Shanghai, China

Xiao Xiang, 15921313292, Gary.Xiao@rabweb.com

## Prepared By

Deliver Co., Ltd.

Block 11, 78 Keling Road, SSTP, Suzhou, China

0512-66801950, kevin.jia@szdeliver.com

## Project Number

**DLF2409113**

## Report Number

**DLF2409113-8a**

## Test Date

**2024/8/31**

## Issue Date

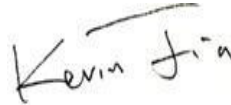
**2024/9/2**

## 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		5345
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2) (0°-180° zones)	IES LM-79-2008	Standard 105	Premium 120	138.5
Luminaire Output (lm) (Goniophotometer - Section 4.2) (0°-90° zones)	IES LM-79-2008	300		5051
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard 105	Premium 120	130.9
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		38.6
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	9.94%
		20.00%	277V	9.42%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.995
		0.9	277V	0.981
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3985±275	4002
		4 step	3985±154	
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	-		15
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		96
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%		4.28%
Input Voltage (V)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		120
(Goniophotometer - Section 4.2)		Non-Worst Case		277
Input Current (A)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		0.323
(Goniophotometer - Section 4.2)		Non-Worst Case		0.142
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		38.6
(Goniophotometer - Section 4.2)		Non-Worst Case		38.6

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024/8/31	WPT @ 40W/4000K	N/A	H1
2	Goniophotometer Test	2024/8/31	WPT @ 40W/4000K	N/A	H1
3	THD and PF Test	2024/8/31	WPT @ 40W/4000K	N/A	H1

### Remark(If any)

1、 This report shall not be used by the client to claim product endorsement by NVLAP, NIST or any agency of the US government.

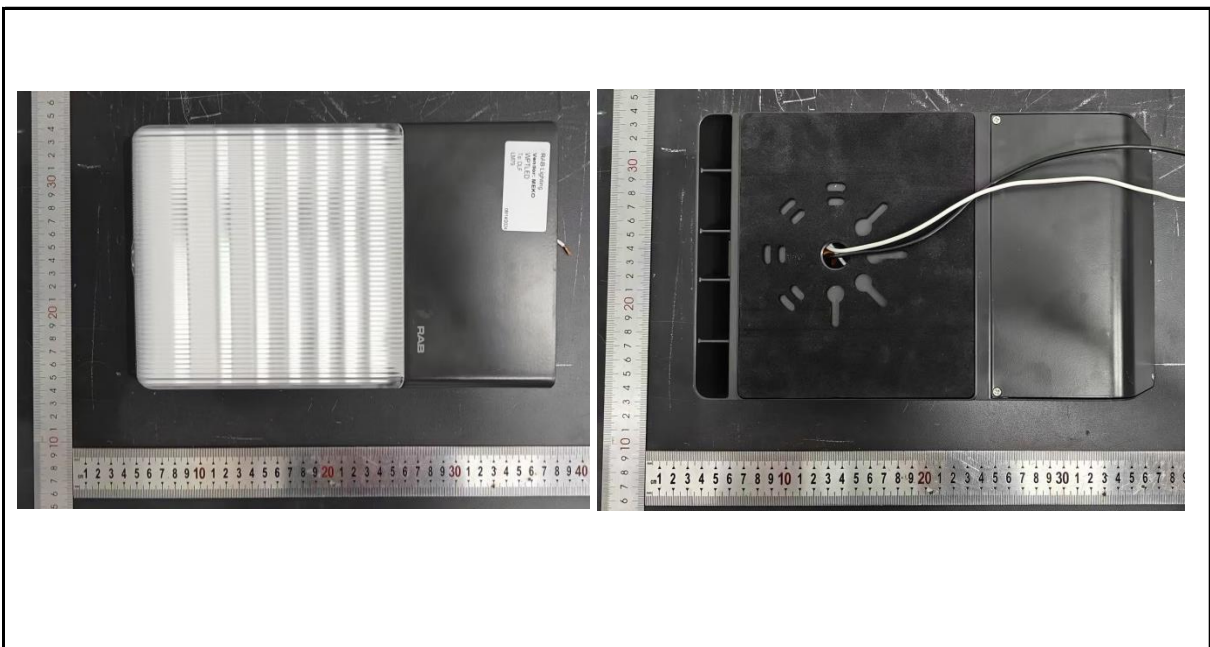
2、 The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing period only and are not to be used to indicate applicability to other similar products. This report does not imply that the product(s) has met the criteria for certification.

## 3.0 Production Description

**Luminaire Description:** WPT @ 40W/4000K

**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.	WPT @ 40W/4000K	Sample ID.	H1
Opreate 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 paramters 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

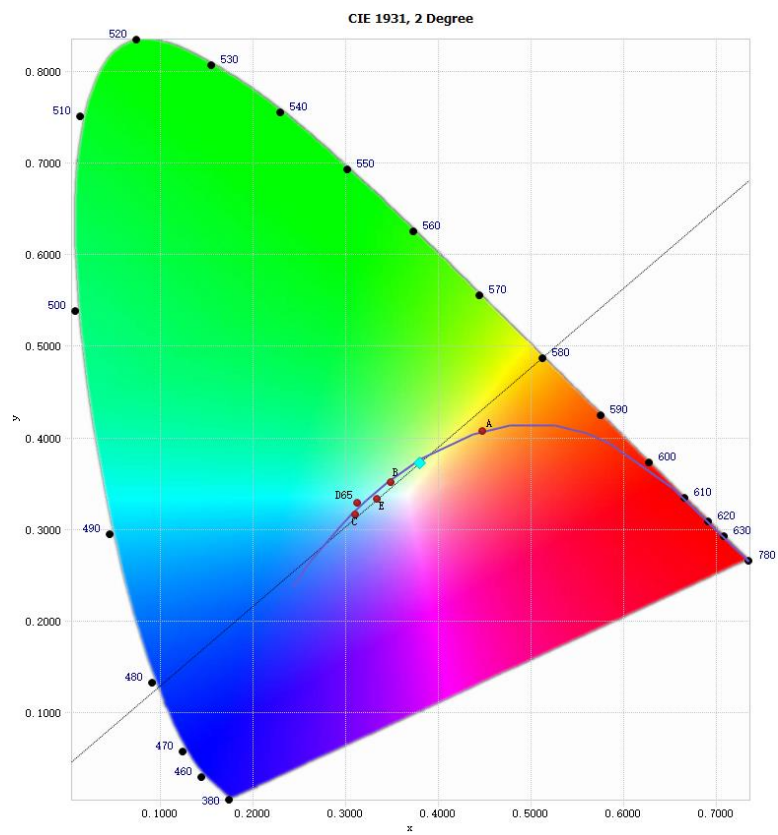
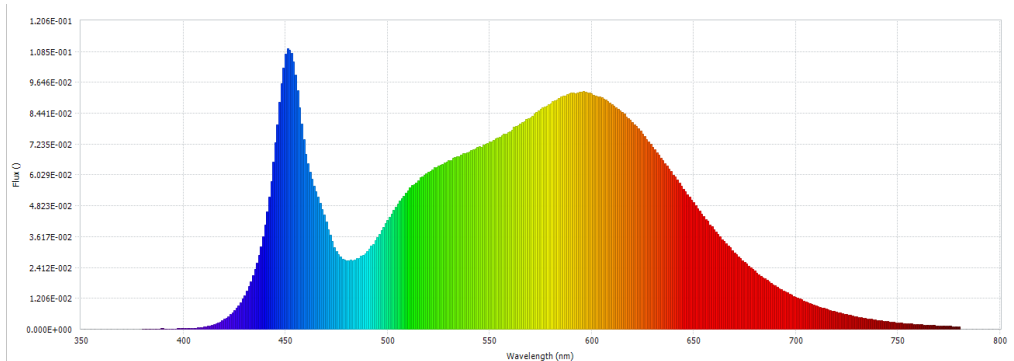
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.06	60	0.322	38.5	0.995
277.04	60	0.142	38.5	0.981

#### Test Result

CCT (K)	CRI	R9	Duv
4002	84	15	-0.0014

Rf	Rg	IES Rcs,h1
84	96	-11%

## 4.1 Integrating Sphere Test



## 4.1 Integrating Sphere Test

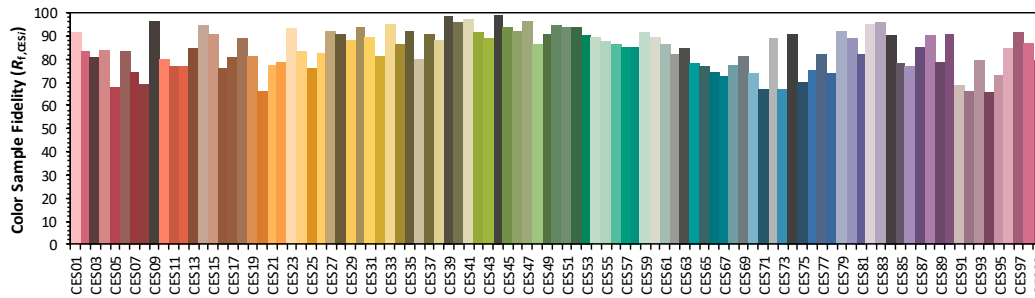
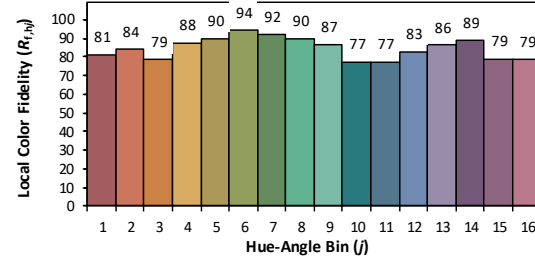
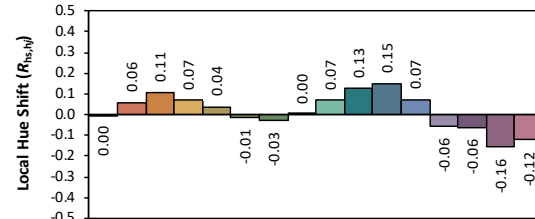
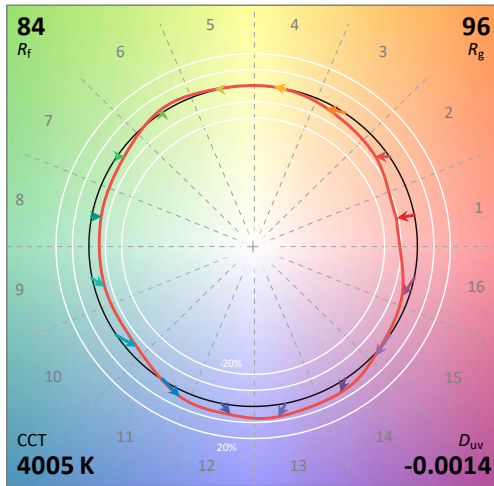
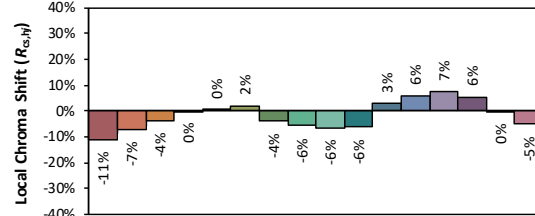
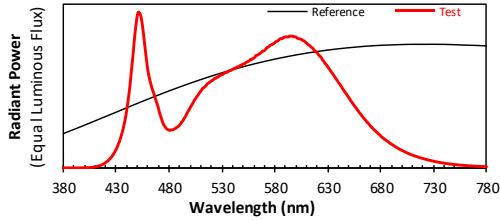
### IES TM-30-18 Color Rendition Report

Source: DLF2409113-8a

Manufacturer: RAB Lighting Inc.

Date: 2024/8/31

Model: WPT @ 40W/4000K



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

$x$  0.3792  
 $y$  0.3730  
 $u'$  0.2258  
 $v'$  0.4997

CIE 13.3-1995  
(CRI)

$R_a$  85  
 $R_g$  20



#### 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	1.26E-04	485	2.76E-02	590	9.22E-02	695	1.45E-02
385	1.09E-04	490	3.03E-02	595	9.28E-02	700	1.25E-02
390	1.55E-04	495	3.57E-02	600	9.21E-02	705	1.06E-02
395	1.49E-04	500	4.25E-02	605	9.05E-02	710	9.10E-03
400	1.88E-04	505	4.88E-02	610	8.79E-02	715	7.81E-03
405	3.74E-04	510	5.40E-02	615	8.48E-02	720	6.71E-03
410	8.22E-04	515	5.80E-02	620	8.09E-02	725	5.66E-03
415	1.85E-03	520	6.14E-02	625	7.61E-02	730	4.85E-03
420	3.86E-03	525	6.37E-02	630	7.11E-02	735	4.09E-03
425	7.28E-03	530	6.60E-02	635	6.60E-02	740	3.40E-03
430	1.32E-02	535	6.73E-02	640	6.02E-02	745	2.92E-03
435	2.33E-02	540	6.93E-02	645	5.48E-02	750	2.50E-03
440	4.08E-02	545	7.12E-02	650	4.94E-02	755	2.12E-03
445	7.27E-02	550	7.32E-02	655	4.40E-02	760	1.82E-03
450	1.07E-01	555	7.52E-02	660	3.88E-02	765	1.57E-03
455	9.92E-02	560	7.73E-02	665	3.42E-02	770	1.32E-03
460	6.85E-02	565	8.01E-02	670	2.99E-02	775	1.12E-03
465	5.37E-02	570	8.26E-02	675	2.61E-02	780	9.22E-04
470	4.18E-02	575	8.59E-02	680	2.26E-02		
475	3.04E-02	580	8.82E-02	685	1.96E-02		
480	2.66E-02	585	9.09E-02	690	1.69E-02		

## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

Model No.	WPT @ 40W/4000K	Sample ID.	H1
Operate 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 parameters were measured using a type C goniophotometer and software.

The ambient temperature shall be maintained at  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , measured at a point not more than 1 m from the sample and at the same height as the sample.

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 samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at  $0.5^{\circ}$  vertical intervals and  $10^{\circ}$  horizontal intervals.

#### Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	120.03	60	0.323	38.6	0.995
NON-WORST CASE	277.04	60	0.142	38.6	0.981

#### Test Result

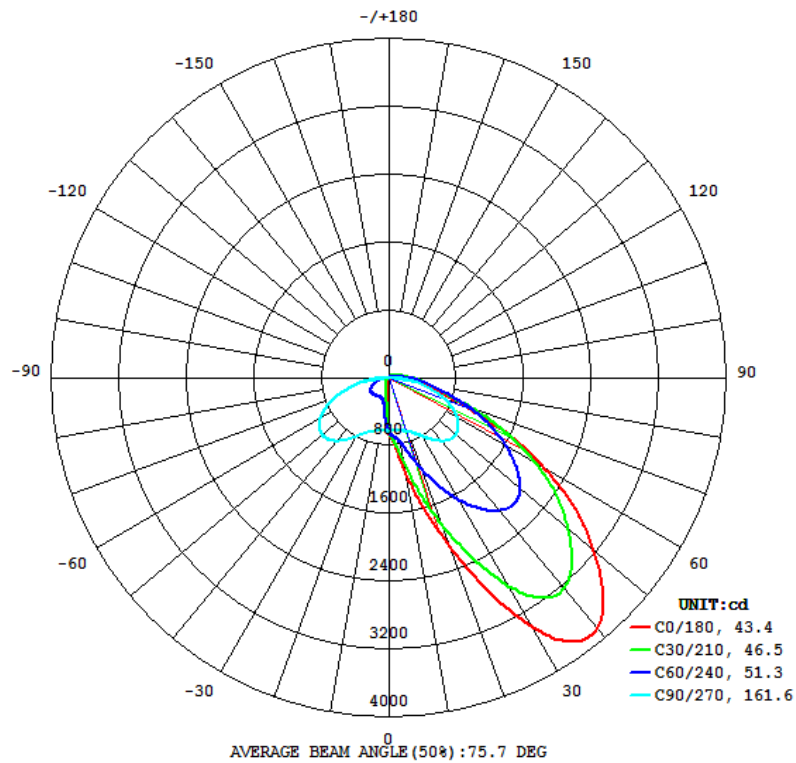
Result type	Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
		C0-180	C90-270	C0-180	C90-270	
$0^{\circ}$ - $180^{\circ}$ zones	5345	87.5	183.3	43.4	161.6	138.5
$0^{\circ}$ - $90^{\circ}$ zones	5051	87.5	179.3	43.4	161.6	130.9

Zonal Lumen Requirement ( $80^{\circ}$ - $90^{\circ}$ )	BUG rating
4.28%	B1-U3-G2

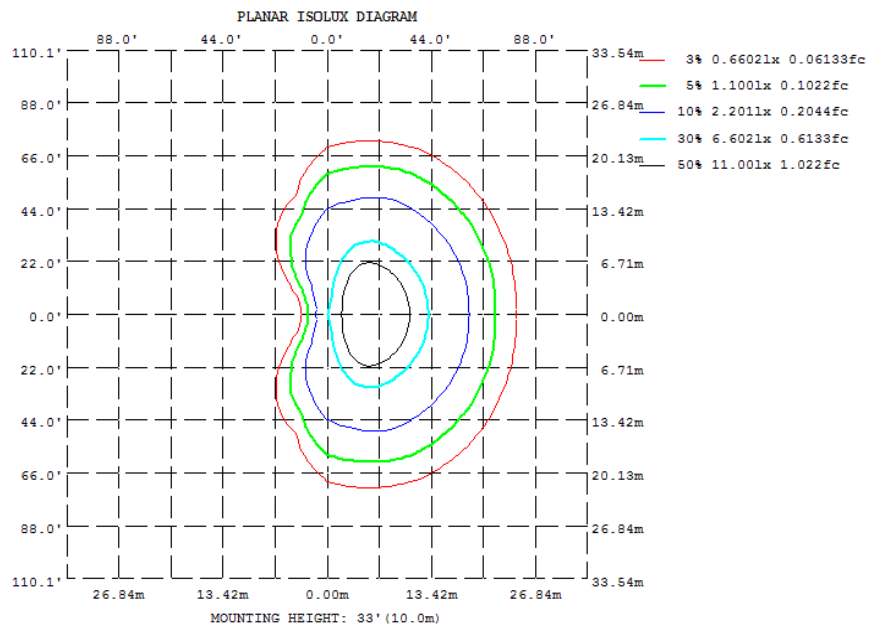


## 4.2 Goniophotometer Test

### Light Distrubtion Curve



### Isolux Plot



## 4.2 Goniophotometer Test

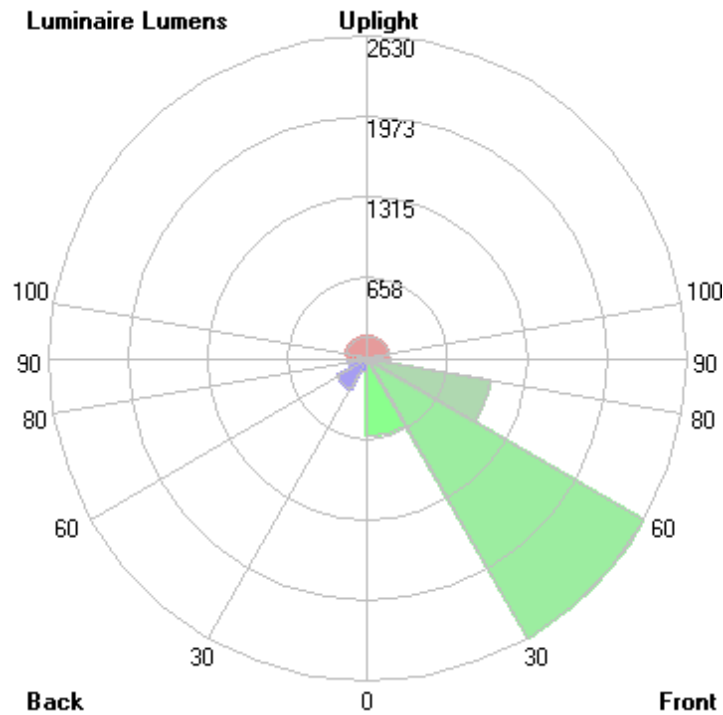
### Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	1109	874.2	636.3	254.6	184.2	254.6	636.3	874.2
20	2127	1524	681.7	159.0	67.96	159.0	681.7	1524
30	3386	2287	801.0	138.8	34.21	138.8	801.0	2287
40	3847	2724	979.6	140.9	18.88	140.9	979.6	2724
50	3174	2431	1043	138.0	6.898	138.0	1043	2431
60	2134	1818	943.6	111.3	0.4252	111.3	943.6	1818
70	935.6	1062	688.4	74.13	0.2022	74.13	688.4	1062
80	459.5	514.8	346.3	44.53	0.2112	44.53	346.3	514.8
90	273.6	290.5	85.83	24.15	0.3333	24.15	85.83	290.5
100	175.8	173.5	26.96	14.38	0.9929	14.38	26.96	173.5
110	120.7	112.5	17.36	9.746	1.661	9.746	17.36	112.5
120	81.99	76.95	12.96	7.415	2.127	7.415	12.96	76.95
130	63.29	56.16	9.869	6.142	2.551	6.142	9.869	56.16
140	51.75	41.31	7.311	5.158	2.790	5.158	7.311	41.31
150	40.11	27.99	5.259	3.818	2.402	3.818	5.259	27.99
160	24.57	13.21	3.528	2.530	1.890	2.530	3.528	13.21
170	4.462	2.946	2.127	1.789	1.674	1.789	2.127	2.946
180	1.469	1.557	1.594	1.531	1.468	1.531	1.594	1.557
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	56.36	0 - 10	56.36	1.05%
10-20	205.39	0 - 20	261.75	4.90%
20-30	482.38	0 - 30	744.13	13.92%
30-40	846.16	0 - 40	1590.29	29.75%
40-50	1055.53	0 - 50	2645.82	49.50%
50-60	1012.85	0 - 60	3658.67	68.45%
60-70	757.56	0 - 70	4416.23	82.63%
70-80	418.19	0 - 80	4834.42	90.45%
80-90	216.30	0 - 90	5050.72	94.50%
90-100	116.23	0 - 100	5166.95	96.67%
100-110	69.82	0 - 110	5236.77	97.98%
110-120	43.49	0 - 120	5280.26	98.79%
120-130	28.03	0 - 130	5308.29	99.32%
130-140	18.31	0 - 140	5326.60	99.66%
140-150	11.10	0 - 150	5337.70	99.87%
150-160	5.35	0 - 160	5343.05	99.97%
160-170	1.46	0 - 170	5344.51	100.00%
170-180	0.18	0 - 180	5344.69	100.00%

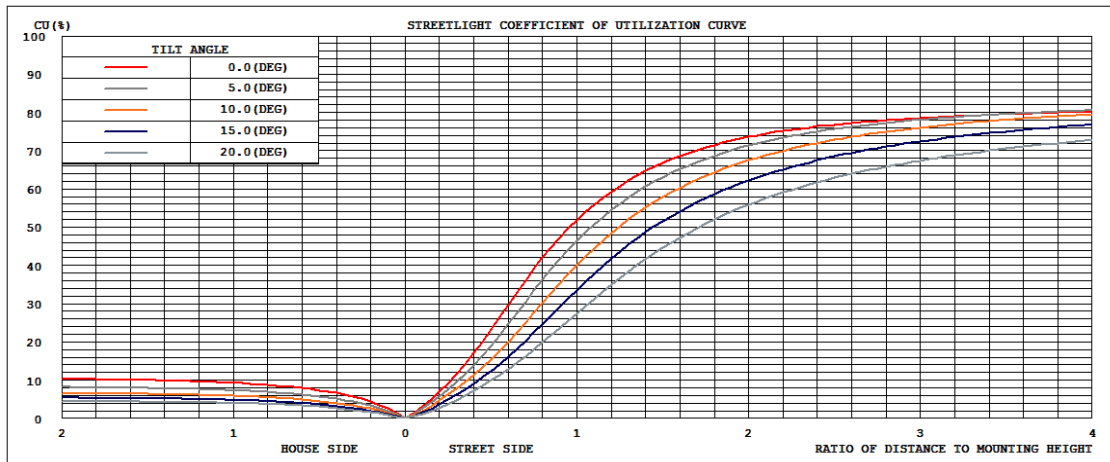
## 4.2 Goniophotometer Test

LCS/BUG

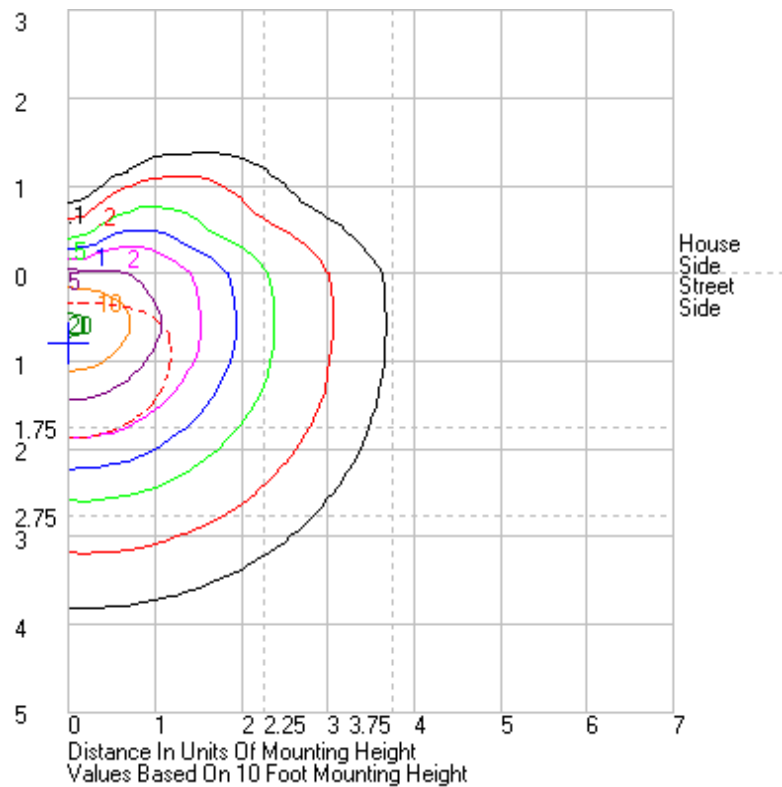


	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	630.7	N.A.	11.8
FM - Front-Medium (30-60)	2630.1	N.A.	49.2
FH - Front-High (60-80)	1022.8	N.A.	19.1
FVH - Front-Very High (80-90)	185.3	N.A.	3.5
BL - Back-Low (0-30)	113.5	N.A.	2.1
BM - Back-Medium (30-60)	284.5	N.A.	5.3
BH - Back-High (60-80)	153.0	N.A.	2.9
BVH - Back-Very High (80-90)	31.0	N.A.	0.6
UL - Uplight-Low (90-100)	116.2	N.A.	2.2
UH - Uplight-High (100-180)	177.7	N.A.	3.3
<b>Total</b>	<b>5344.8</b>	<b>N.A.</b>	<b>100.0</b>
<b>BUG Rating</b>	<b>B1-U3-G2</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	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048	636.048
1	673.51	665.71	662.61	657.27	650.61	642.78	637.51	627.87	618.24	609.52	602.43	597.81	607.48	597.81	602.43	609.52	618.24	627.87	637.51	642.78	650.61	657.27	662.61	665.71	673.51
2	699.64	692.11	686.55	677.12	664.78	649.52	636.13	618.58	599.98	581.42	565.47	554.24	558	554.24	565.47	581.42	599.98	618.58	636.13	649.52	664.78	677.12	686.55	692.11	699.64
3	722.89	713.96	706.67	694.01	677.57	655.76	634.15	606.38	575.01	539.95	509.71	487.53	490.09	487.53	509.71	539.95	575.01	606.38	634.15	655.76	677.57	694.01	706.67	713.96	722.89
4	746.68	737.01	725.68	709.01	688.72	662.18	632.64	593.96	545.84	490.53	441.78	409.15	407.96	409.15	441.78	490.53	545.84	593.96	632.64	662.18	688.72	709.01	725.68	737.01	746.68
5	779.15	765.19	747.15	724.29	699.52	668.77	632	582.24	514.17	436.55	372.28	338.97	335.69	338.97	372.28	436.55	514.17	582.24	632	668.77	699.52	724.29	747.15	765.19	779.15
6	823.08	803.83	776.33	741.8	709.13	675.1	631.74	570.57	481.27	381.31	316.85	288.72	285.4	288.72	316.85	381.31	481.27	570.57	631.74	675.1	709.13	741.8	776.33	803.83	823.08
7	879.83	854.22	815.03	764.5	719.47	680.5	632.13	559.62	446.66	334.34	277.79	256	252.68	256	277.79	334.34	446.66	559.62	632.13	680.5	719.47	764.5	815.03	854.22	879.83
8	946.83	916.46	863.14	793.56	731.45	685.66	632.98	548.86	412.9	299.13	250.87	231.52	228.34	231.52	250.87	299.13	412.9	548.86	632.98	685.66	731.45	793.56	863.14	916.46	946.83
9	1024.1	987.32	920.79	830.25	745.96	690.42	634.24	539.32	381.43	273.36	230.14	209.48	206.04	209.48	230.14	273.36	381.43	539.32	634.24	690.42	745.96	830.25	920.79	987.32	1024.1
10	1108.86	1067.25	986.57	874.19	764.72	694.98	636.31	530.71	354.52	254.63	211.93	188.7	184.16	188.7	211.93	254.63	354.52	530.71	636.31	694.98	764.72	874.19	986.57	1067.25	1108.86
11	1198.87	1152.2	1059.58	924.31	786.98	699.58	639.18	522.92	332.75	240.39	194.61	168.86	165	168.86	194.61	240.39	332.75	522.92	639.18	699.58	786.98	924.31	1059.58	1152.2	1198.87
12	1288.79	1242.05	1136.78	979.59	814.04	704.34	641.82	516.26	315.48	228.25	178.33	151.8	147.46	151.8	178.33	228.25	315.48	516.26	641.82	704.34	814.04	979.59	1136.78	1242.05	1288.79
13	1378.74	1331.95	1217.91	1039.47	844.43	709.71	645.45	510.18	302.25	217.21	163.37	135.74	129.99	135.74	163.37	217.21	302.25	510.18	645.45	709.71	844.43	1039.47	1217.91	1331.95	1378.74
14	1475.48	1423.22	1299.98	1104.27	879	716.35	649.13	504.76	292.38	206.58	149.95	121.82	116.72	121.82	149.95	206.58	292.38	504.76	649.13	716.35	879	1104.27	1299.98	1423.22	1475.48
15	1576.14	1518.2	1382.46	1171.41	917.26	724.81	653.35	500.16	285.19	196.58	137.93	110.41	105.57	110.41	137.93	196.58	285.19	500.16	653.35	724.81	917.26	1171.41	1382.46	1518.2	1576.14
16	1677.86	1618.43	1467.81	1241.43	958.88	735.05	658.12	496.43	279.7	187.29	127.56	100.5	95.82	100.5	127.56	187.29	279.7	496.43	658.12	735.05	958.88	1241.43	1467.81	1618.43	1677.86
17	1783.99	1719.51	1557.12	1310.24	1003.31	746.84	663.11	493.39	275.51	178.8	118.94	92.06	87.56	92.06	118.94	178.8	275.51	493.39	663.11	746.84	1003.31	1310.24	1557.12	1719.51	1783.99
18	1895.34	1825.11	1648.86	1379.46	1049.36	760.51	668.74	491.66	272.07	171.26	111.49	84.7	80.17	84.7	111.49	171.26	272.07	491.66	668.74	760.51	1049.36	1379.46	1648.86	1825.11	1895.34
19	2006.38	1932.91	1741.98	1449.52	1097.63	775.98	674.83	491.12	269.24	164.64	105.13	78.3	73.75	78.3	105.13	164.64	269.24	491.12	674.83	775.98	1097.63	1449.52	1741.98	1932.91	2006.38
20	2126.98	2043.88	1836.88	1523.73	1147.47	793.21	681.66	491.37	266.74	158.98	99.67	72.62	67.96	72.62	99.67	158.98	266.74	491.37	681.66	793.21	1147.47	1523.73	1836.88	2043.88	2126.98
21	2245.47	2156.64	1933.97	1599.03	1197.88	812	689.18	492.69	264.47	154.35	94.91	67.57	62.78	67.57	94.91	154.35	264.47	492.69	689.18	812	1197.88	1599.03	1933.97	2156.64	2245.47
22	2366.33	2272.48	2033.45	1674.39	1248.99	832.41	696.77	494.93	262.6	150.6	90.86	63.07	58.2	63.07	90.86	150.6	262.6	494.93	696.77	832.41	1248.99	1674.39	2033.45	2272.48	2366.33
23	2492.21	2391.74	2134.92	1751.9	1300.04	854.73	706.11	497.88	260.98	147.56	87.3	59.15	54.01	59.15	87.3	147.56	260.98	497.88	706.11	854.73	1300.04	1751.9	2134.92	2391.74	2492.21
24	2619.34	2510.64	2234.67	1827.89	1349.33	877.52	715.85	501.69	259.79	145.23	84.32	55.56	50.35	55.56	84.32	145.23	259.79	501.69	715.85	877.52	1349.33	1827.89	2234.67	2510.64	2619.34
25	2751.76	2634.28	2336.85	1905.12	1398.95	901.64	727.19	505.77	258.94	143.36	81.72	52.37	47	52.37	81.72	143.36	258.94	505.77	727.19	901.64	1398.95	1905.12	2336.85	2634.28	2751.76
26	2883.48	2757.47	2439.28	1984.49	1451.89	926.41	739.32	510.71	258.46	141.93	79.46	49.52	43.94	49.52	79.46	141.93	258.46	510.71	739.32	926.41	1451.89	1984.49	2439.28	2757.47	2883.48
27	3012.74	2877.31	2540.13	2061.72	1504.16	952.77	752.69	516.1	258.31	140.84	77.5	46.94	41.16	46.94	77.5	140.84	258.31	516.1	752.69	952.77	1504.16	2061.72	2540.13	2877.31	3012.74
28	3141.23	2997.88	2641.21	2139.49	1556.95	979.71	767.93	521.8	258.72	139.97	75.78	44.61	38.66	44.61	75.78	139.97	258.72	521.8	767.93	979.71	1556.95	2139.49	2641.21	2997.88	3141.23
29	3268.84	3113.33	2737.97	2213.82	1607.67	1006.48	783.81	527.75	259.32	139.34	74.3	42.5	36.32	42.5	74.3	139.34	259.32	527.75	783.81	1006.48	1607.67	2213.82	2737.97	3113.33	3268.84
30	3385.67	3223.71	2829.66	2287.05	1659.51	1033.87	801.03	533.9	260.38	138.83	73	40.57	34.21	40.57	73	138.83	260.38	533.9	801.03	1033.87	1659.51	2287.05	2829.66	3223.71	3385.67
31	3495.06	3324.66	2916.18	2357.86	1709.12	1061.47	819.07	539.56	261.49	138.51	71.82	38.83	32.25	38.83	71.82	138.51	261.49	539.56	819.07	1061.47	1709.12	2357.86	2916.18	3324.66	3495.06
32	3593.61	3416.6	2993.74	2425.16	1757.28	1088.54	837.48	545.08	262.73	138.31	70.76	37.22	30.45	37.22	70.76	138.31	262.73	545.08	837.48	1088.54	1757.28	2425.16	2993.74	3416.6	3593.61
33	3677.94	3496.33	3062.96	2486.01	1804.67	1116.15	856.64	550.02	263.87	138.28	69.81	35.71	28.72	35.71	69.81	138.28	263.87	550.02	856.64	1116.15	1804.67	2486.01	3062.96	3496.33	3677.94
34	3743.67	3559.25	3123.33	2541.48	1848.02	1143.35	875.86	554.4	264.88	138.31	68.9	34.3	27.13	34.3	68.9	138.31	264.88	554.4	875.86	1143.35	1848.02	2541.48	3123.33	3559.25	3743.67
35	3799.03	3609.61	3170.81	2591.69	1890.27	1169.34	894.64	558.5	266	138.48	68.03	32.98	25.58	32.98	68.03	138.48	266	558.5	894.64	1169.34	1890.27	2591.69	3170.81	3609.61	3799.03
36	3836.35	3645.12	3205.53	2635.92	1929.11	1195.51	913.27	561.47	266.98	138.88	67.23	31.75	24.17	31.75	67.23	138.88	266.98	561.47	913.27	1195.51	1929.11	2635.92	3205.53	3645.12	3836.35
37	3859.49	3667.16	3227.73	2671.28	1964.14	1219.97	931.18	563.83	267.92	139.38	66.39	30.54	22.76	30.54	66.39	139.38	267.92	563.83	931.18	1219.97	1964.14	2671.28	3227.73	3667.16	3859.49
38	3866.58	3678.45	3239.34	2697.71	1994.38	1243.63	948.51	565.23	268.83	139.97	65.52	29.38	21.42	29.38	65.52	139.97	268.83	565.23	948.51	1243.63	1994.38	2697.71	3239.34	3678.45	3866.58
39	3863.66	3676.68	3240.88	2715.36	2021.1	1266.8	964.47	565.53	270.05	140.51	64.64	28.26	20.15	28.26	64.64	140.51	270.05	565.53	964.47	1266.8	2021.1	2715.36	3240.88	3676.68	3863.66
40	3846.9	3665	3234.04	2723.67	2044.7	1287.65	979.6	564.36	271.33	140.94	63.73	27.16	18.88	27.16	63.73	140.94	271.33	564.36	979.6	1287.65	2044.7	2723.67	3234.04	3665	3846.9
41	3818.38	3641.83	3217.35	2724.																					

50	3173.9	3084.66	2778.82	2431.27	2037	1369.56	1042.99	493.74	281.67	137.98	50.38	15.81	6.9	15.81	50.38	137.98	281.67	493.74	1042.99	1369.56	2037	2431.27	2778.82	3084.66	3173.9
51	3083.62	3003.98	2713	2376.34	2009.69	1363.62	1040.35	483.3	280.9	136.52	48.75	14.94	5.93	14.94	48.75	136.52	280.9	483.3	1040.35	1363.62	2009.69	2376.34	2713	3003.98	3083.62
52	2991.77	2922.2	2644.84	2319.09	1976.58	1355.22	1036.31	473.17	279.75	134.74	47.16	13.95	5.14	13.95	47.16	134.74	279.75	473.17	1036.31	1355.22	1976.58	2319.09	2644.84	2922.2	2991.77
53	2896.34	2836.2	2575.28	2261.63	1940.8	1345.22	1030.95	462.85	278.09	132.66	45.56	13.13	4.54	13.13	45.56	132.66	278.09	462.85	1030.95	1345.22	1940.8	2261.63	2575.28	2836.2	2896.34
54	2797.17	2747.06	2504.39	2201.97	1899.94	1331.52	1024.14	452.43	276.11	130.14	44.01	12.5	4.05	12.5	44.01	130.14	276.11	452.43	1024.14	1331.52	1899.94	2201.97	2504.39	2747.06	2797.17
55	2695.47	2652.2	2430.85	2141.63	1856.04	1316.06	1014.9	442.09	273.54	127.44	42.46	11.92	3.58	11.92	42.46	127.44	273.54	442.09	1014.9	1316.06	1856.04	2141.63	2430.85	2652.2	2695.47
56	2586.98	2554.08	2352.42	2080.32	1809.1	1297.93	1004.22	431.34	270.81	124.5	41	11.41	3.16	11.41	41	124.5	270.81	431.34	1004.22	1297.93	1809.1	2080.32	2352.42	2554.08	2586.98
57	2477.28	2451.38	2271.32	2017.77	1760.45	1279.02	991.87	420.91	267.66	121.43	39.59	10.93	2.82	10.93	39.59	121.43	267.66	420.91	991.87	1279.02	1760.45	2017.77	2271.32	2451.38	2477.28
58	2362.52	2345.32	2185.11	1953.49	1709.66	1258.67	977.49	410.31	264.16	118.2	38.23	10.49	2.54	10.49	38.23	118.2	264.16	410.31	977.49	1258.67	1709.66	1953.49	2185.11	2345.32	2362.52
59	2247.17	2240.03	2097.79	1886.22	1656.87	1236.74	961.26	400	260.02	114.74	36.91	10.16	2.27	10.16	36.91	114.74	260.02	400	961.26	1236.74	1656.87	1886.22	2097.79	2240.03	2247.17
60	2134.22	2134.45	2008.85	1817.97	1603.01	1214.97	943.63	389.53	255.43	111.31	35.7	9.33	0.43	9.33	35.7	111.31	255.43	389.53	943.63	1214.97	1603.01	1817.97	2008.85	2134.45	2134.22
61	2019.82	2026.72	1918.95	1747.52	1546.59	1191.65	924.43	379.29	250.03	107.66	34.49	8.01	0.2	8.01	34.49	107.66	250.03	379.29	924.43	1191.65	1546.59	1747.52	1918.95	2026.72	2019.82
62	1904.9	1918.76	1829.34	1675.63	1489.88	1162.5	904.13	369.11	244.2	103.93	32.98	7.57	0.2	7.57	32.98	103.93	244.2	369.11	904.13	1162.5	1489.88	1675.63	1829.34	1918.76	1904.9
63	1786.8	1807.23	1737.61	1602.3	1432.08	1131.17	882.09	358.73	237.59	100.21	30.92	7.39	0.2	7.39	30.92	100.21	237.59	358.73	882.09	1131.17	1432.08	1602.3	1737.61	1807.23	1786.8
64	1662.4	1690.76	1642.78	1528.66	1372.53	1096.83	858.91	348.33	229.91	96.44	29.65	7.2	0.21	7.2	29.65	96.44	229.91	348.33	858.91	1096.83	1372.53	1528.66	1642.78	1690.76	1662.4
65	1536.03	1570.97	1545.26	1453.5	1313.61	1059.03	834.25	337.85	221.59	92.76	28.66	7.01	0.21	7.01	28.66	92.76	221.59	337.85	834.25	1059.03	1313.61	1453.5	1545.26	1570.97	1536.03
66	1401.09	1446.96	1443.84	1376.16	1255.71	1019.42	808.01	327.23	212.74	88.57	27.69	6.84	0.21	6.84	27.69	88.57	212.74	327.23	808.01	1019.42	1255.71	1376.16	1443.84	1446.96	1401.09
67	1273.85	1328.38	1342.57	1300.65	1197.35	976.99	780.46	316.71	203.98	84.41	26.72	6.66	0.21	6.66	26.72	84.41	203.98	316.71	780.46	976.99	1197.35	1300.65	1342.57	1328.38	1273.85
68	1150.72	1210.41	1241.29	1223.05	1135.01	932.17	750.71	306.21	194.94	80.88	25.76	6.48	0.21	6.48	25.76	80.88	194.94	306.21	750.71	932.17	1135.01	1223.05	1241.29	1210.41	1150.72
69	1035.71	1096.79	1140.19	1143.06	1071.42	885.78	720.54	296	186.2	77.45	24.85	6.29	0.2	6.29	24.85	77.45	186.2	296	720.54	885.78	1071.42	1143.06	1140.19	1096.79	1035.71
70	935.63	993.23	1043.66	1062.12	1007.55	838.19	688.38	285.33	177.36	74.13	23.92	6.11	0.2	6.11	23.92	74.13	177.36	285.33	688.38	838.19	1007.55	1062.12	1043.66	993.23	935.63
71	846.49	902.16	954.92	983.29	942.85	790.54	655.18	274.37	168.43	70.9	23.02	5.92	0.2	5.92	23.02	70.9	168.43	274.37	655.18	790.54	942.85	983.29	954.92	902.16	846.49
72	773.35	822.9	875.55	909.62	879.23	743	621.78	263.5	159.8	67.71	22.14	5.74	0.2	5.74	22.14	67.71	159.8	263.5	621.78	743	879.23	909.62	875.55	822.9	773.35
73	711.08	755.84	805.12	839.69	817.18	694.39	587.06	252.26	151.74	64.54	21.28	5.56	0.2	5.56	21.28	64.54	151.74	252.26	587.06	694.39	817.18	839.69	805.12	755.84	711.08
74	658.74	697.96	744.26	777.09	758.41	648.49	552.5	240.75	144.32	61.51	20.44	5.38	0.19	5.38	20.44	61.51	144.32	240.75	552.5	648.49	758.41	777.09	744.26	697.96	658.74
75	617.98	647.97	689.96	719.51	703.11	602.99	517.72	228.29	136.92	58.47	19.6	5.21	0.2	5.21	19.6	58.47	136.92	228.29	517.72	602.99	703.11	719.51	689.96	647.97	617.98
76	580.73	607.68	643.72	668.49	651.78	558.26	483.26	215.12	129.9	55.57	18.8	5.03	0.2	5.03	18.8	55.57	129.9	215.12	483.26	558.26	651.78	668.49	643.72	607.68	580.73
77	546.25	569.84	604.2	624.66	607.7	515.11	448.53	201.14	123.34	52.72	18.01	4.86	0.2	4.86	18.01	52.72	123.34	201.14	448.53	515.11	607.7	624.66	604.2	569.84	546.25
78	514.86	535.14	566.89	585.04	565.85	472.57	413.84	186.85	116.97	49.88	17.25	4.69	0.2	4.69	17.25	49.88	116.97	186.85	413.84	472.57	565.85	585.04	566.89	535.14	514.86
79	486.57	504.48	533.29	547.81	527.45	433.43	380.57	173.12	110.91	47.18	16.5	4.53	0.21	4.53	16.5	47.18	110.91	173.12	380.57	433.43	527.45	547.81	533.29	504.48	486.57
80	459.54	476.01	502.87	514.77	490.91	395.22	346.29	160.18	104.89	44.53	15.78	4.38	0.21	4.38	15.78	44.53	104.89	160.18	346.29	395.22	490.91	514.77	502.87	476.01	459.54
81	435.57	449.57	474.59	484.32	457.55	359.86	312.95	148	98.95	41.98	15.07	4.22	0.22	4.22	15.07	41.98	98.95	148	312.95	359.86	457.55	484.32	474.59	449.57	435.57
82	412.72	425.48	448.62	456.48	427.38	327.5	280.84	136.72	93.19	39.54	14.39	4.07	0.22	4.07	14.39	39.54	93.19	136.72	280.84	327.5	427.38	456.48	448.62	425.48	412.72
83	391.55	402.98	424.45	430.58	400.02	297.56	249.97	126.73	87.59	37.17	13.73	3.93	0.23	3.93	13.73	37.17	87.59	126.73	249.97	297.56	400.02	430.58	424.45	402.98	391.55
84	371.59	381.83	401.75	406.74	374.89	270.05	221.03	117.65	82.15	34.93	13.11	3.79	0.24	3.79	13.11	34.93	82.15	117.65	221.03	270.05	374.89	406.74	401.75	381.83	371.59
85	352.49	361.9	380.51	384.2	352.07	245.52	194.29	109.57	76.99	32.82	12.51	3.66	0.25	3.66	12.51	32.82	76.99	109.57	194.29	245.52	352.07	384.2	380.51	361.9	352.49
86	334.56	343.31	360.59	363.1	331.07	223.55	169.03	102.1	72.07	30.83	11.92	3.54	0.26	3.54	11.92	30.83	72.07	102.1	169.03	223.55	331.07	363.1	360.59	343.31	334.56
87	317.84	325.7	341.9	343.2	311.5	204.39	145.51	94.96	67.46	28.97	11.37	3.42	0.27	3.42	11.37	28.97	67.46	94.96	145.51	204.39	311.5	343.2	341.9	325.7	317.84
88	302.03	309.37	324.26	324.63	293.31	188.01	123.1	88.38	63.3	27.24	10.85	3.31	0.29	3.31	10.85	27.24	63.3	88.38	123.1	188.01	293.31	324.63	324.26	309.37	302.03
89	287.28	293.89	307.5	307.02	276.31	173.9	102.79	82.03	59.25	25.62	10.35	3.21	0.31	3.21	10.35	25.62	59.25	82.03	102.79	173.9	276.31	307.02	307.5	293.89	287.28
90	273.58	279.38	292.16	290.51	260.42	161.88	85.83	76.03	55.46	24.15	9.89	3.12	0.33	3.12	9.89	24.15	55.46	76.03	85.83	161.88	260.42	290.51	292.16	279.38	273.58
91	260.53	265.95	277.43	274.99	245.29	151.2	71.56	70.47	52	22.77	9.44	3.02	0.35	3.02	9.44	22.77	52	70.47	71.56	151.2	245.29	274.99	277.43	265.95	260.53
92	248.44	253.37	263.8	260.43	231.51	141.5	60.31	65.24	48.79	21.49	9.02	2.94	0.37	2.94	9.02	21.49	48.79	65.24	60.31	141.5	231.51	260.43	263.8	253.37	248.44
93	237.15	241.65	251.1	246.92	218.35	132.97	51.52	60.65	45.87	20.32	8.64	2.86	0.4	2.86	8.64										



104	150.86	152.47	154.62	145.19	121.4	70.49	21.9	29.64	24.61	12.14	5.98	2.61	1.27	2.61	5.98	12.14	24.61	29.64	21.9	70.49	121.4	145.19	154.62	152.47	150.86
105	145.37	146.88	148.79	139	115.76	66.96	20.96	28.06	23.39	11.66	5.82	2.6	1.33	2.6	5.82	11.66	23.39	28.06	20.96	66.96	115.76	139	148.79	146.88	145.37
106	140.17	141.45	143	133.07	110.29	63.54	20.1	26.6	22.25	11.22	5.68	2.6	1.39	2.6	5.68	11.22	22.25	26.6	20.1	63.54	110.29	133.07	143	141.45	140.17
107	135.08	136.17	137.37	127.59	105.05	60.33	19.32	25.26	21.19	10.81	5.55	2.6	1.46	2.6	5.55	10.81	21.19	25.26	19.32	60.33	105.05	127.59	137.37	136.17	135.08
108	130.18	131.16	132.24	122.39	99.98	57.3	18.61	24.03	20.2	10.43	5.44	2.61	1.53	2.61	5.44	10.43	20.2	24.03	18.61	57.3	99.98	122.39	132.24	131.16	130.18
109	125.43	126.4	127.31	117.41	95.27	54.5	17.97	22.87	19.28	10.07	5.33	2.62	1.6	2.62	5.33	10.07	19.28	22.87	17.97	54.5	95.27	117.41	127.31	126.4	125.43
110	120.7	121.68	122.5	112.54	90.78	51.88	17.36	21.78	18.42	9.75	5.23	2.63	1.66	2.63	5.23	9.75	18.42	21.78	17.36	51.88	90.78	112.54	122.5	121.68	120.7
111	116.06	117.06	117.74	107.97	86.53	49.38	16.8	20.78	17.59	9.44	5.13	2.64	1.72	2.64	5.13	9.44	17.59	20.78	16.8	49.38	86.53	107.97	117.74	117.06	116.06
112	111.48	112.52	113.25	103.56	82.65	47.09	16.29	19.86	16.85	9.16	5.05	2.65	1.78	2.65	5.05	9.16	16.85	19.86	16.29	47.09	82.65	103.56	113.25	112.52	111.48
113	106.9	108.04	108.84	99.41	78.99	44.86	15.8	18.99	16.13	8.89	4.96	2.66	1.83	2.66	4.96	8.89	16.13	18.99	15.8	44.86	78.99	99.41	108.84	108.04	106.9
114	102.52	103.8	104.71	95.55	75.6	42.82	15.33	18.18	15.46	8.63	4.88	2.66	1.85	2.66	4.88	8.63	15.46	18.18	15.33	42.82	75.6	95.55	104.71	103.8	102.52
115	98.37	99.78	100.8	91.97	72.38	40.9	14.9	17.41	14.82	8.39	4.8	2.65	1.88	2.65	4.8	8.39	14.82	17.41	14.9	40.9	72.38	91.97	100.8	99.78	98.37
116	94.5	95.98	97.15	88.52	69.35	39.09	14.47	16.69	14.23	8.16	4.72	2.66	1.92	2.66	4.72	8.16	14.23	16.69	14.47	39.09	69.35	88.52	97.15	95.98	94.5
117	90.88	92.52	93.77	85.4	66.64	37.39	14.07	16.03	13.68	7.95	4.66	2.67	1.96	2.67	4.66	7.95	13.68	16.03	14.07	37.39	66.64	85.4	93.77	92.52	90.88
118	87.66	89.33	90.6	82.4	64.07	35.78	13.7	15.4	13.16	7.76	4.61	2.69	2.02	2.69	4.61	7.76	13.16	15.4	13.7	35.78	64.07	82.4	90.6	89.33	87.66
119	84.74	86.44	87.65	79.61	61.58	34.28	13.33	14.81	12.67	7.58	4.56	2.7	2.07	2.7	4.56	7.58	12.67	14.81	13.33	34.28	61.58	79.61	87.65	86.44	84.74
120	81.99	83.73	84.87	76.95	59.2	32.88	12.96	14.26	12.2	7.42	4.52	2.72	2.13	2.72	4.52	7.42	12.2	14.26	12.96	59.2	32.88	76.95	84.87	83.73	81.99
121	79.55	81.23	82.27	74.41	57	31.54	12.63	13.74	11.76	7.26	4.48	2.75	2.19	2.75	4.48	7.26	11.76	13.74	12.63	31.54	57	74.41	82.27	81.23	79.55
122	77.23	78.91	79.79	71.99	54.92	30.27	12.29	13.25	11.34	7.12	4.45	2.77	2.25	2.77	4.45	7.12	11.34	13.25	12.29	30.27	54.92	71.99	79.79	78.91	77.23
123	75.07	76.71	77.46	69.71	52.94	29.08	11.97	12.78	10.96	6.99	4.42	2.79	2.31	2.79	4.42	6.99	10.96	12.78	11.97	29.08	52.94	69.71	77.46	76.71	75.07
124	73.05	74.68	75.24	67.51	51.09	27.93	11.65	12.33	10.6	6.85	4.39	2.81	2.36	2.81	4.39	6.85	10.6	12.33	11.65	27.93	51.09	67.51	75.24	74.68	73.05
125	71.17	72.74	73.11	65.47	49.27	26.84	11.33	11.91	10.24	6.72	4.35	2.82	2.4	2.82	4.35	6.72	10.24	11.91	11.33	26.84	49.27	65.47	73.11	72.74	71.17
126	69.44	70.87	71.09	63.45	47.58	25.8	11.04	11.52	9.92	6.59	4.32	2.83	2.44	2.83	4.32	6.59	9.92	11.52	11.04	25.8	47.58	63.45	71.09	70.87	69.44
127	67.73	69.14	69.11	61.53	45.94	24.81	10.74	11.13	9.61	6.47	4.29	2.84	2.47	2.84	4.29	6.47	9.61	11.13	10.74	24.81	45.94	61.53	69.11	69.14	67.73
128	66.16	67.48	67.25	59.66	44.38	23.85	10.45	10.76	9.3	6.36	4.26	2.85	2.5	2.85	4.26	6.36	9.3	10.76	10.45	23.85	44.38	59.66	67.25	67.48	66.16
129	64.68	65.89	65.42	57.88	42.89	22.93	10.15	10.41	9.02	6.24	4.22	2.85	2.52	2.85	4.22	6.24	9.02	10.41	10.15	22.93	42.89	57.88	65.42	65.89	64.68
130	63.29	64.35	63.68	56.16	41.42	22.06	9.87	10.07	8.75	6.14	4.19	2.86	2.55	2.86	4.19	6.14	8.75	10.07	9.87	22.06	41.42	56.16	63.68	64.35	63.29
131	61.98	62.91	62.01	54.5	40.05	21.22	9.59	9.74	8.5	6.04	4.15	2.86	2.58	2.86	4.15	6.04	8.5	9.74	9.59	21.22	40.05	54.5	62.01	62.91	61.98
132	60.68	61.49	60.36	52.89	38.71	20.42	9.31	9.43	8.25	5.94	4.12	2.86	2.61	2.86	4.12	5.94	8.25	9.43	9.31	20.42	38.71	52.89	60.36	61.49	60.68
133	59.43	60.13	58.78	51.32	37.4	19.64	9.03	9.13	8.02	5.84	4.09	2.86	2.64	2.86	4.09	5.84	8.02	9.13	9.03	19.64	37.4	51.32	58.78	60.13	59.43
134	58.24	58.8	57.23	49.8	36.15	18.88	8.76	8.84	7.79	5.75	4.05	2.86	2.66	2.86	4.05	5.75	7.79	8.84	8.76	18.88	36.15	49.8	57.23	58.8	58.24
135	57.12	57.5	55.74	48.31	34.92	18.16	8.5	8.56	7.57	5.66	4.02	2.86	2.69	2.86	4.02	5.66	7.57	8.56	8.5	18.16	34.92	48.31	55.74	57.5	57.12
136	56.01	56.26	54.28	46.86	33.73	17.47	8.25	8.29	7.37	5.56	3.99	2.86	2.73	2.86	3.99	5.56	7.37	8.29	8.25	17.47	33.73	46.86	54.28	56.26	56.01
137	54.9	55.04	52.83	45.44	32.57	16.79	8	8.03	7.17	5.47	3.95	2.86	2.75	2.86	3.95	5.47	7.17	8.03	8	16.79	32.57	45.44	52.83	55.04	54.9
138	53.84	53.82	51.44	44.05	31.43	16.12	7.77	7.76	6.97	5.37	3.9	2.84	2.77	2.84	3.9	5.37	6.97	7.76	7.77	16.12	31.43	44.05	51.44	53.82	53.84
139	52.78	52.64	50.04	42.65	30.31	15.47	7.54	7.51	6.77	5.27	3.86	2.83	2.78	2.83	3.86	5.27	6.77	7.51	7.54	15.47	30.31	42.65	50.04	52.64	52.78
140	51.75	51.46	48.69	41.31	29.21	14.84	7.31	7.26	6.57	5.16	3.81	2.81	2.79	2.81	3.81	5.16	6.57	7.26	7.31	14.84	29.21	41.31	48.69	51.46	51.75
141	50.7	50.29	47.33	39.97	28.13	14.22	7.1	7.02	6.36	5.04	3.74	2.78	2.77	2.78	3.74	5.04	6.36	7.02	7.1	14.22	28.13	39.97	47.33	50.29	50.7
142	49.62	49.11	45.99	38.65	27.04	13.59	6.88	6.8	6.16	4.92	3.67	2.75	2.75	2.75	3.67	4.92	6.16	6.8	6.88	13.59	27.04	38.65	45.99	49.11	49.62
143	48.55	47.92	44.65	37.33	25.99	12.95	6.68	6.58	5.97	4.8	3.61	2.72	2.74	2.72	3.61	4.8	5.97	6.58	6.68	12.95	25.99	37.33	44.65	47.92	48.55
144	47.44	46.7	43.31	36.01	24.9	12.31	6.48	6.35	5.77	4.67	3.53	2.67	2.7	2.67	3.53	4.67	5.77	6.35	6.48	12.31	24.9	36.01	43.31	46.7	47.44
145	46.3	45.48	41.97	34.7	23.8	11.69	6.27	6.13	5.57	4.54	3.44	2.63	2.66	2.63	3.44	4.54	5.57	6.13	6.27	11.69	23.8	34.7	41.97	45.48	46.3
146	45.14	44.22	40.6	33.4	22.74	11.1	6.06	5.9	5.36	4.39	3.34	2.56	2.61	2.56	3.34	4.39	5.36	5.9	6.06	11.1	22.74	33.4	40.6	44.22	45.14
147	43.95	42.97	39.26	32.12	21.68	10.52	5.85	5.68	5.16	4.25	3.25	2.51	2.56	2.51	3.25	4.25	5.16	5.68	5.85	10.52	21.68	32.12	39.26	42.97	43.95
148	42.69	41.66	37.9	30.81	20.62	9.95	5.65	5.47	4.96	4.1	3.15	2.44	2.49	2.44	3.15	4.1	4.96	5.47	5.65	9.95	20.62	30.81	37.9	41.66	42.69
149	41.42	40.33	36.51	29.42	19.57	9.4	5.45	5.26	4.77	3.95	3.05	2.38	2.43	2.38	3.05	3.95	4.77	5.26	5.45	9.4	19.57	29.42	36.51	40.33	41.42
150	40.11	38.95	35.1	27.99	18.54	8.87	5.26	5.06	4.58	3.82	2.96	2.34	2.4	2.34	2.96	3.82	4.58	5.06	5.26	8.87	18.54	27.99	35.1	38.95	40.11
151	38.73	37.52	33.68	26.56	17.47	8.33	5.07	4.88	4.41	3.69	2.88	2.29	2.38	2.29	2.88	3.69	4.41	4.88	5.07	8.33	17.47	26.56	33.68	37.52	38.73
152	37.3	36.08	32.21	25.15	16.35	7.81	4.																		

158	27.95	26.64	22.25	16.59	9.72	5.01	3.87	3.65	3.27	2.77	2.25	1.94	1.98	1.94	2.25	2.77	3.27	3.65	3.87	5.01	9.72	16.59	22.25	26.64	27.95
159	26.27	24.36	20.54	15.03	8.73	4.62	3.69	3.48	3.11	2.64	2.16	1.88	1.93	1.88	2.16	2.64	3.11	3.48	3.69	4.62	8.73	15.03	20.54	24.36	26.27
160	24.57	21.84	18.83	13.21	7.82	4.27	3.53	3.31	2.97	2.53	2.09	1.84	1.89	1.84	2.09	2.53	2.97	3.31	3.53	4.27	7.82	13.21	18.83	21.84	24.57
161	22.84	19.91	17.12	11.33	6.97	3.94	3.36	3.16	2.83	2.42	2.02	1.8	1.85	1.8	2.02	2.42	2.83	3.16	3.36	3.94	6.97	11.33	17.12	19.91	22.84
162	21.09	18.2	15.24	9.69	6.18	3.65	3.2	3	2.69	2.32	1.95	1.78	1.81	1.78	1.95	2.32	2.69	3	3.2	3.65	6.18	9.69	15.24	18.2	21.09
163	19.35	16.48	13.25	8.3	5.49	3.4	3.05	2.86	2.57	2.23	1.9	1.75	1.77	1.75	1.9	2.23	2.57	2.86	3.05	3.4	5.49	8.3	13.25	16.48	19.35
164	17.54	14.42	10.78	7.2	4.85	3.18	2.9	2.72	2.45	2.14	1.85	1.73	1.74	1.73	1.85	2.14	2.45	2.72	2.9	3.18	4.85	7.2	10.78	14.42	17.54
165	15.21	12.14	8.62	6.28	4.29	2.98	2.75	2.59	2.34	2.06	1.8	1.71	1.72	1.71	1.8	2.06	2.34	2.59	2.75	2.98	4.29	6.28	8.62	12.14	15.21
166	12.15	9.43	7	5.46	3.8	2.79	2.61	2.46	2.24	1.99	1.76	1.69	1.7	1.69	1.76	1.99	2.24	2.46	2.61	2.79	3.8	5.46	7	9.43	12.15
167	9.25	7.39	5.81	4.68	3.38	2.61	2.48	2.35	2.15	1.93	1.73	1.68	1.69	1.68	1.73	1.93	2.15	2.35	2.48	2.61	3.38	4.68	5.81	7.39	9.25
168	7.16	5.94	4.88	4.04	3.01	2.45	2.35	2.24	2.07	1.88	1.7	1.68	1.68	1.68	1.7	1.88	2.07	2.24	2.35	2.45	3.01	4.04	4.88	5.94	7.16
169	5.81	4.74	4.11	3.46	2.69	2.3	2.24	2.14	1.99	1.83	1.68	1.68	1.67	1.68	1.68	1.83	1.99	2.14	2.24	2.3	2.69	3.46	4.11	4.74	5.81
170	4.46	3.93	3.45	2.95	2.42	2.16	2.13	2.05	1.93	1.79	1.66	1.68	1.67	1.68	1.66	1.79	1.93	2.05	2.13	2.16	2.42	2.95	3.45	3.93	4.46
171	3.85	3.31	2.91	2.54	2.2	2.04	2.03	1.96	1.86	1.75	1.65	1.67	1.67	1.67	1.65	1.75	1.86	1.96	2.03	2.04	2.2	2.54	2.91	3.31	3.85
172	3.27	2.6	2.43	2.22	2.02	1.93	1.93	1.89	1.81	1.72	1.64	1.67	1.67	1.67	1.64	1.72	1.81	1.89	1.93	1.93	2.02	2.22	2.43	2.6	3.27
173	2.54	2.11	2.07	1.98	1.87	1.84	1.85	1.82	1.76	1.69	1.62	1.67	1.66	1.67	1.62	1.69	1.76	1.82	1.85	1.84	1.87	1.98	2.07	2.11	2.54
174	1.4	1.82	1.84	1.81	1.75	1.76	1.77	1.76	1.72	1.66	1.61	1.67	1.65	1.67	1.61	1.66	1.72	1.76	1.77	1.76	1.75	1.81	1.84	1.82	1.4
175	1.32	1.64	1.69	1.67	1.67	1.7	1.71	1.7	1.68	1.63	1.61	1.66	1.63	1.66	1.61	1.63	1.68	1.7	1.71	1.7	1.67	1.67	1.69	1.64	1.32
176	1.34	1.49	1.56	1.58	1.61	1.64	1.66	1.66	1.64	1.61	1.59	1.64	1.61	1.64	1.59	1.61	1.64	1.66	1.66	1.64	1.61	1.58	1.56	1.49	1.34
177	1.36	1.48	1.5	1.53	1.57	1.6	1.61	1.61	1.6	1.58	1.57	1.62	1.57	1.62	1.57	1.58	1.6	1.61	1.61	1.6	1.57	1.53	1.5	1.48	1.36
178	1.39	1.49	1.5	1.53	1.56	1.58	1.59	1.59	1.58	1.56	1.55	1.59	1.54	1.59	1.55	1.56	1.58	1.59	1.59	1.58	1.56	1.53	1.5	1.49	1.39
179	1.43	1.5	1.52	1.55	1.57	1.59	1.59	1.58	1.57	1.54	1.53	1.57	1.5	1.57	1.53	1.54	1.57	1.58	1.59	1.59	1.57	1.55	1.52	1.5	1.43
180	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47	1.47

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

Model No.	WPT @ 40W/4000K	Sample ID.	H1
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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ . 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 were calculated.

#### Test Results

Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor	THD
120.06	60	0.322	38.5	0.995	9.94%
277.04	60	0.142	38.5	0.981	9.42%

## 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\*\*\*\*\*