

# Photometric Test Report

## Relevant Standards

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

## Prepared For

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## Project Number

**DLF2409113**

## Report Number

**DLF2409113-4a**

## Test Date

**2024/8/31**

## Issue Date

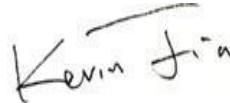
**2024/9/2**

## 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		3385
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2) (0°-180° zones)	IES LM-79-2008	Standard 105	Premium 120	136.5
Luminaire Output (lm) (Goniophotometer - Section 4.2) (0°-90° zones)	IES LM-79-2008	300		3200
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard 105	Premium 120	129.0
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		24.8
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	11.63%
		20.00%	277V	12.20%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.993
		0.9	277V	0.963
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3045±175	3070
		4 step	3045±100	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥70		82
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	-		4
Minimum Rf (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥70		84
Minimum Rg (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	≥89		98
IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-11%
Zonal Lumen Requirement (80°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	≤10%		4.27%
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		0.093
(Goniophotometer - Section 4.2)		Non-Worst Case		0.204
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		24.8
(Goniophotometer - Section 4.2)		Non-Worst Case		24.3

## 2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024/8/31	WPT @ 25W/3000K	N/A	D1
2	Goniophotometer Test	2024/8/31	WPT @ 25W/3000K	N/A	D1
3	THD and PF Test	2024/8/31	WPT @ 25W/3000K	N/A	D1

### 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.

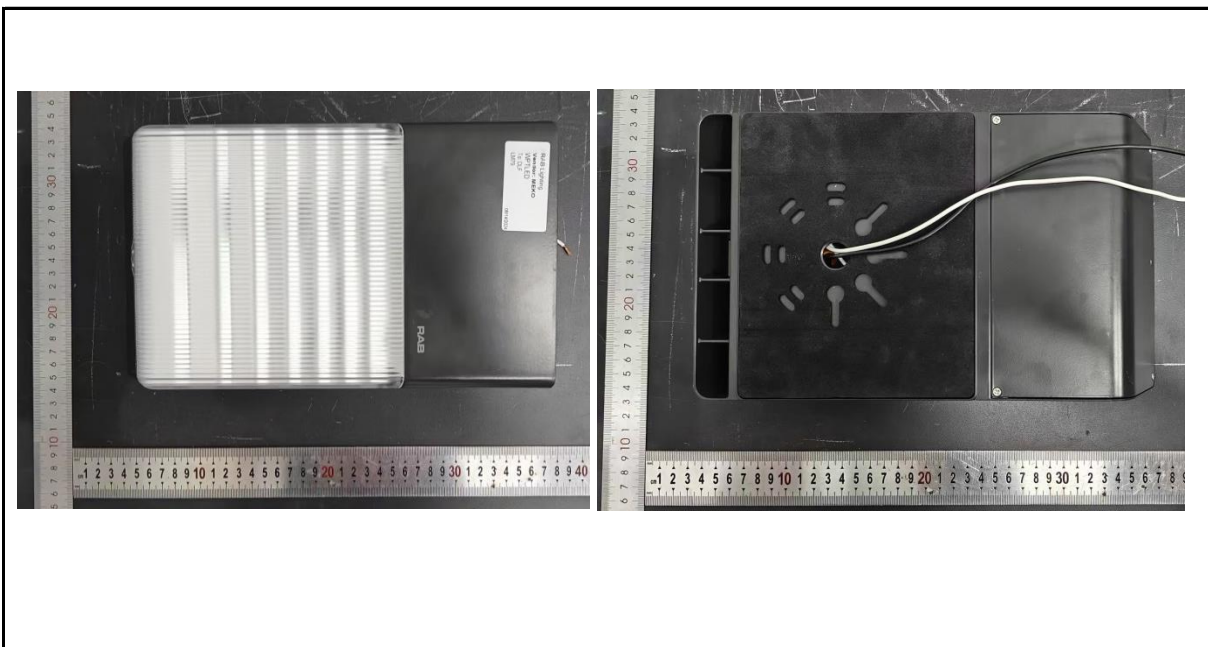
2、 The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing 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 @ 25W/3000K

**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 @ 25W/3000K	Sample ID.	D1
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

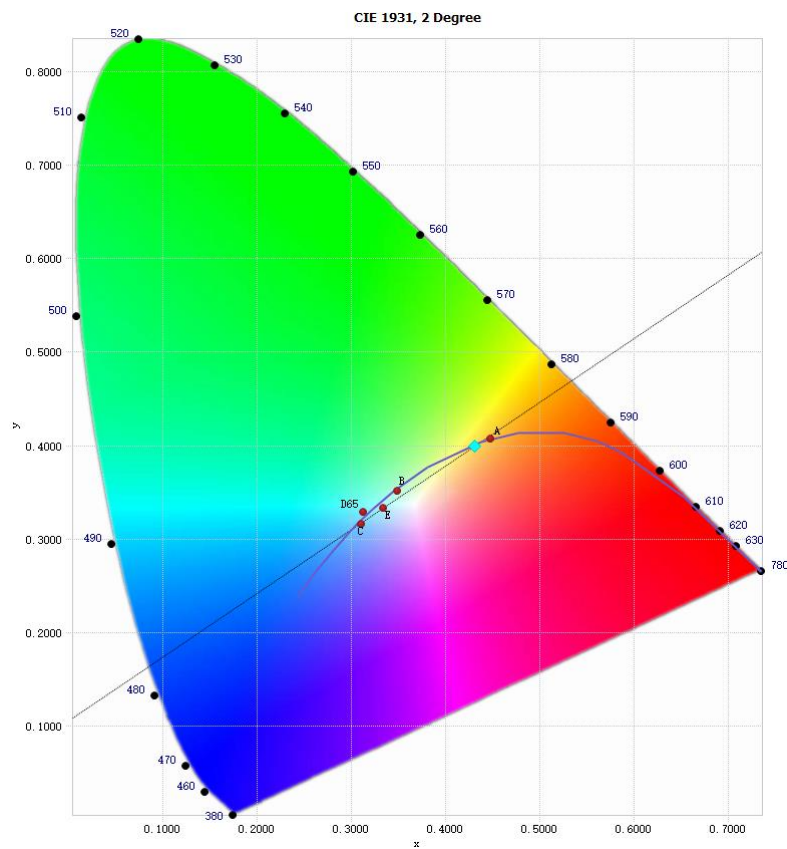
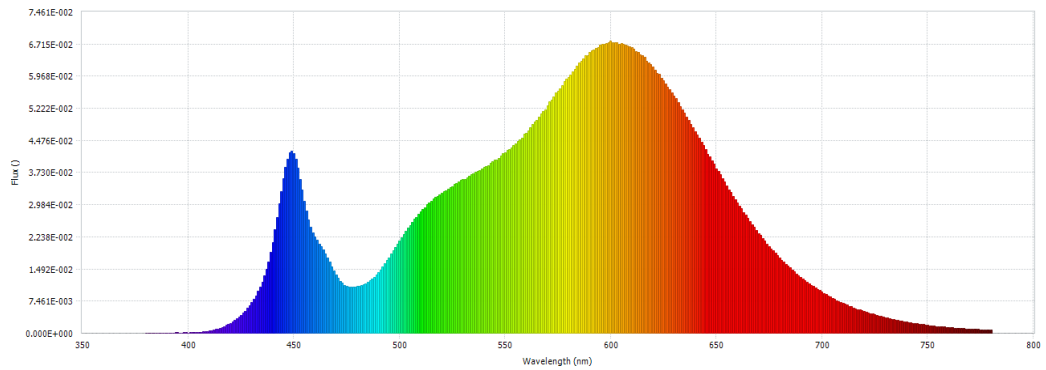
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
120.05	60	0.203	24.2	0.993
276.95	60	0.093	24.7	0.963

#### Test Result

CCT (K)	CRI	R9	Duv
3070	82	4	-0.001

Rf	Rg	IES Rcs,h1
84	98	-11%

## 4.1 Integrating Sphere Test



## 4.1 Integrating Sphere Test

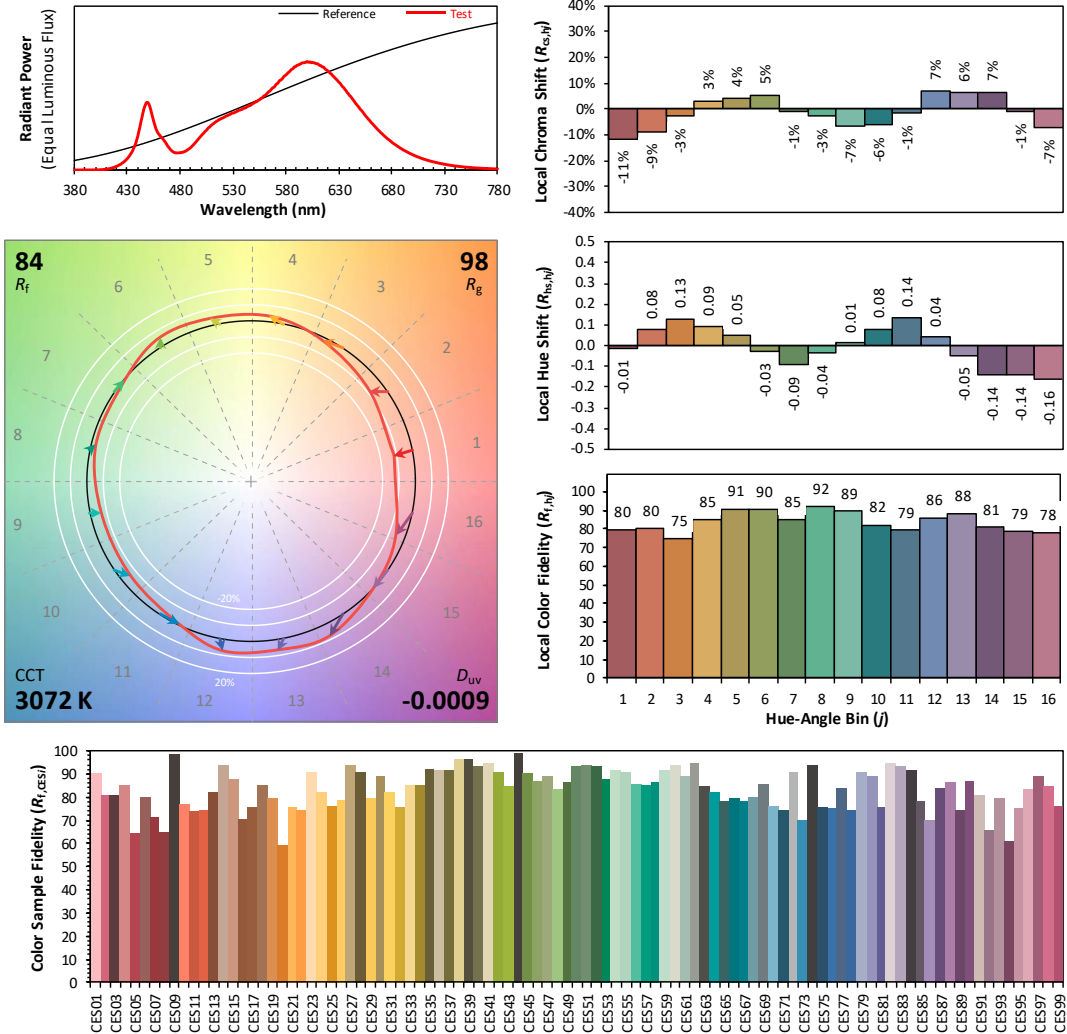
### IES TM-30-18 Color Rendition Report

Source: DLF2409113-4a

Manufacturer: RAB Lighting Inc.

Date: 2024/8/31

Model: WPT @ 25W/3000K



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

$x$  0.4306  
 $y$  0.3995  
 $u'$  0.2485  
 $v'$  0.5186

CIE 13.3-1995  
(CRI)

$R_a$  83  
 $R_g$  9



#### 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	6.94E-05	485	1.17E-02	590	6.52E-02	695	1.12E-02
385	7.79E-05	490	1.40E-02	595	6.69E-02	700	9.55E-03
390	7.15E-05	495	1.75E-02	600	6.78E-02	705	8.17E-03
395	1.02E-04	500	2.15E-02	605	6.73E-02	710	6.91E-03
400	8.26E-05	505	2.49E-02	610	6.64E-02	715	5.92E-03
405	2.26E-04	510	2.82E-02	615	6.44E-02	720	5.08E-03
410	5.21E-04	515	3.06E-02	620	6.17E-02	725	4.27E-03
415	1.18E-03	520	3.25E-02	625	5.86E-02	730	3.60E-03
420	2.33E-03	525	3.41E-02	630	5.50E-02	735	3.05E-03
425	4.22E-03	530	3.57E-02	635	5.12E-02	740	2.54E-03
430	7.07E-03	535	3.71E-02	640	4.67E-02	745	2.17E-03
435	1.19E-02	540	3.86E-02	645	4.27E-02	750	1.84E-03
440	2.10E-02	545	4.02E-02	650	3.82E-02	755	1.58E-03
445	3.59E-02	550	4.19E-02	655	3.42E-02	760	1.34E-03
450	4.18E-02	555	4.40E-02	660	3.03E-02	765	1.13E-03
455	3.06E-02	560	4.65E-02	665	2.67E-02	770	9.68E-04
460	2.24E-02	565	4.95E-02	670	2.31E-02	775	8.24E-04
465	1.84E-02	570	5.28E-02	675	2.02E-02	780	7.00E-04
470	1.36E-02	575	5.62E-02	680	1.75E-02		
475	1.09E-02	580	5.94E-02	685	1.51E-02		
480	1.08E-02	585	6.27E-02	690	1.30E-02		

## 4.0 LM-79 Measurement and Test Results

### 4.2 Goniophotometer Test

Model No.	WPT @ 25W/3000K	Sample ID.	D1
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  $25^{\circ}\text{C} \pm 1^{\circ}\text{C}$ , 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	277.03	60	0.093	24.8	0.963
NON-WORST CASE	120.05	60	0.204	24.3	0.993

#### Test Result

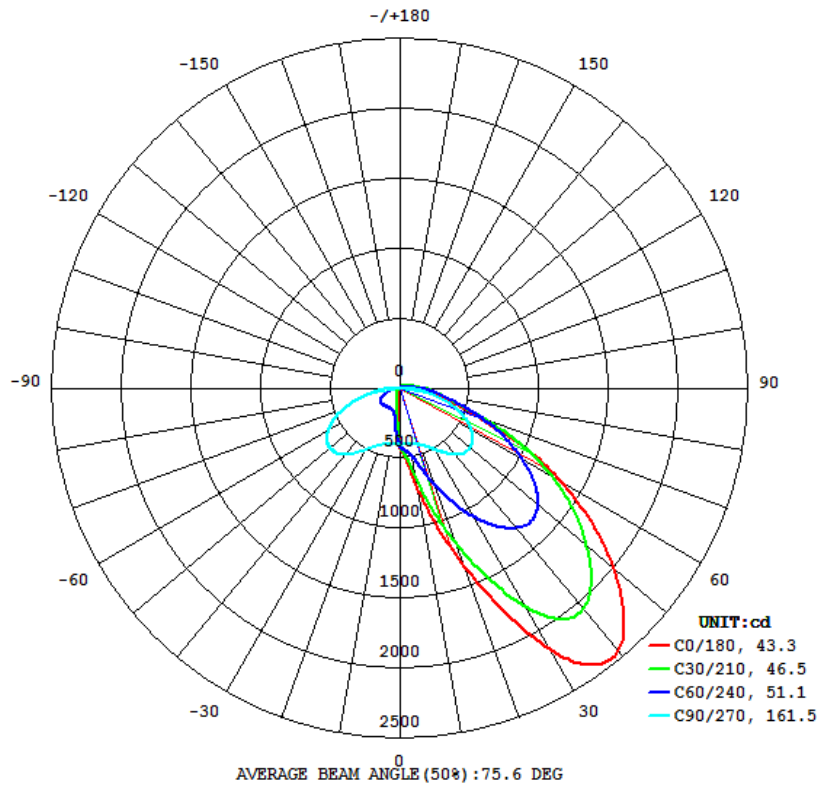
Result type	Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
		C0-180	C90-270	C0-180	C90-270	
$0^{\circ}$ - $180^{\circ}$ zones	3385	87.4	183.2	43.3	161.5	136.5
$0^{\circ}$ - $90^{\circ}$ zones	3200	87.4	179.3	43.3	161.5	129.0

Zonal Lumen Requirement ( $80^{\circ}$ - $90^{\circ}$ )	BUG rating
4.27%	B0-U3-G2

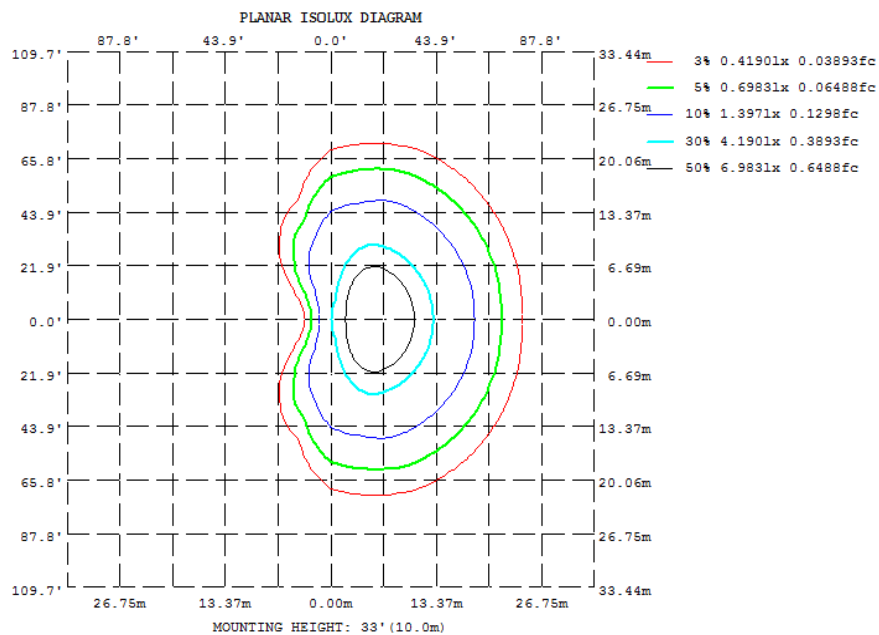


## 4.2 Goniophotometer Test

### Light Distrubtion Curve



### Isolux Plot



## 4.2 Goniophotometer Test

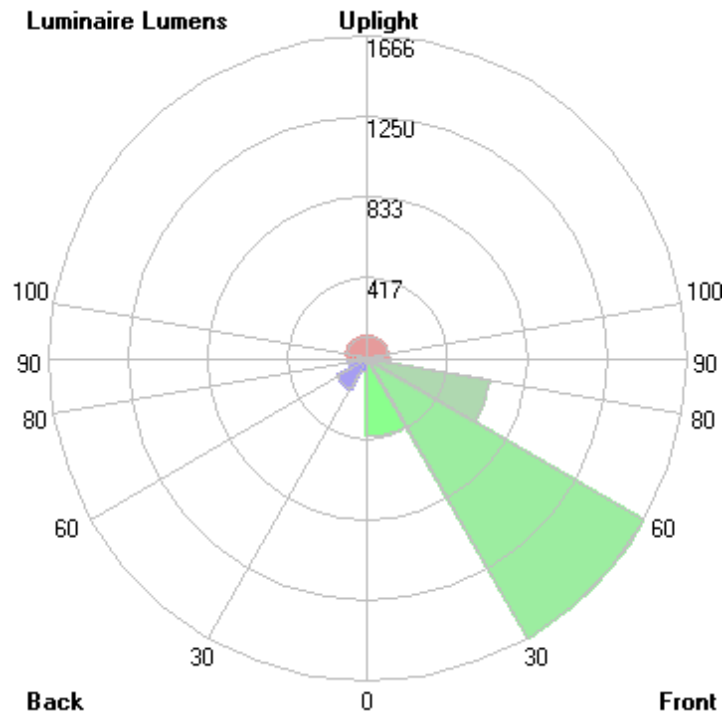
### Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	702.7	558.1	406.1	162.7	116.5	162.7	406.1	558.1
20	1354	973.3	433.5	101.1	42.97	101.1	433.5	973.3
30	2147	1454	508.3	87.98	21.58	87.98	508.3	1454
40	2443	1728	620.6	89.12	11.87	89.12	620.6	1728
50	2003	1538	662.5	86.99	4.277	86.99	662.5	1538
60	1339	1147	598.0	70.10	0.2299	70.10	598.0	1147
70	599.9	668.3	436.5	46.60	0.1266	46.60	436.5	668.3
80	291.4	324.5	219.9	27.96	0.1333	27.96	219.9	324.5
90	173.2	183.3	55.10	15.17	0.2092	15.17	55.10	183.3
100	111.4	109.5	16.92	9.045	0.6290	9.045	16.92	109.5
110	76.41	71.02	10.91	6.151	1.050	6.151	10.91	71.02
120	51.93	48.59	8.149	4.682	1.340	4.682	8.149	48.59
130	39.99	35.40	6.232	3.865	1.602	3.865	6.232	35.40
140	32.64	26.01	4.619	3.243	1.751	3.243	4.619	26.01
150	25.29	17.62	3.313	2.401	1.508	2.401	3.313	17.62
160	15.48	8.295	2.220	1.590	1.186	1.590	2.220	8.295
170	2.800	1.841	1.335	1.122	1.050	1.122	1.335	1.841
180	0.9226	0.9817	1.001	0.9598	0.9210	0.9598	1.001	0.9817
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	36.05	0 - 10	36.05	1.06%
10-20	131.09	0 - 20	167.14	4.94%
20-30	306.92	0 - 30	474.06	14.00%
30-40	537.50	0 - 40	1011.56	29.88%
40-50	669.36	0 - 50	1680.92	49.65%
50-60	639.75	0 - 60	2320.67	68.55%
60-70	478.16	0 - 70	2798.83	82.68%
70-80	264.32	0 - 80	3063.15	90.48%
80-90	136.58	0 - 90	3199.73	94.52%
90-100	73.38	0 - 100	3273.11	96.69%
100-110	44.09	0 - 110	3317.20	97.99%
110-120	27.47	0 - 120	3344.67	98.80%
120-130	17.69	0 - 130	3362.36	99.32%
130-140	11.54	0 - 140	3373.90	99.66%
140-150	6.99	0 - 150	3380.89	99.87%
150-160	3.36	0 - 160	3384.25	99.97%
160-170	0.92	0 - 170	3385.17	100.00%
170-180	0.11	0 - 180	3385.28	100.00%

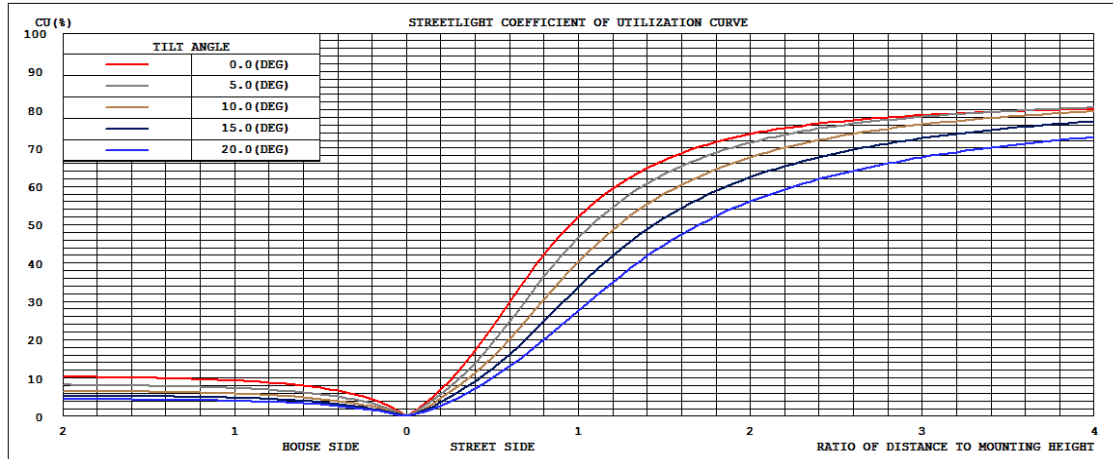
## 4.2 Goniophotometer Test

LCS/BUG

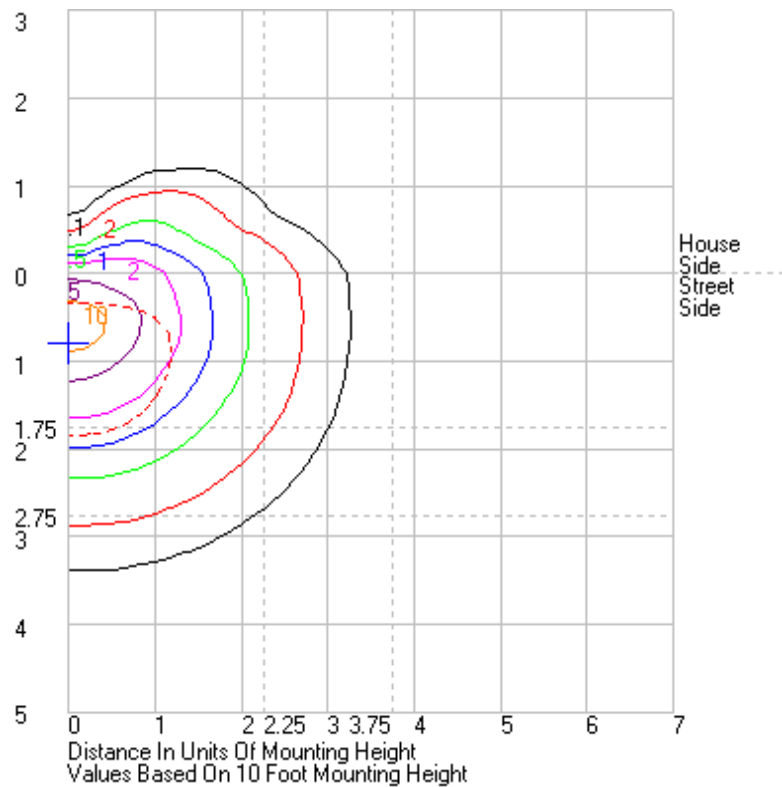


	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	401.6	N.A.	11.9
FM - Front-Medium (30-60)	1666.4	N.A.	49.2
FH - Front-High (60-80)	645.9	N.A.	19.1
FVH - Front-Very High (80-90)	117.0	N.A.	3.5
BL - Back-Low (0-30)	72.4	N.A.	2.1
BM - Back-Medium (30-60)	180.2	N.A.	5.3
BH - Back-High (60-80)	96.5	N.A.	2.9
BVH - Back-Very High (80-90)	19.6	N.A.	0.6
UL - Uplight-Low (90-100)	73.4	N.A.	2.2
UH - Uplight-High (100-180)	112.2	N.A.	3.3
Total	3385.2	N.A.	100.0
BUG Rating	B0-U3-G2		

## 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	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804	407.804
1	428.65	426.71	424.62	421.13	417.21	412.38	406.97	401.58	396.46	392.13	388.41	386.54	387.26	386.54	388.41	392.13	396.46	401.58	406.97	412.38	417.21	421.13	424.62	426.71	428.65
2	444.81	442.85	439.2	433.54	425.85	416.87	406.24	395.05	383.89	372.8	362.67	356.26	355.52	356.26	362.67	372.8	383.89	395.05	406.24	416.87	425.85	433.54	439.2	442.85	444.81
3	459.27	456.76	451.95	444.22	433.64	420.44	405.08	388	368.48	347.08	327.72	314.26	312.34	314.26	327.72	347.08	368.48	388	405.08	420.44	433.64	444.22	451.95	456.76	459.27
4	474.56	470.92	463.86	453.69	440.79	424.46	403.96	380.4	350.23	316	284.97	263.81	260.46	263.81	284.97	316	350.23	380.4	403.96	424.46	440.79	453.69	463.86	470.92	474.56
5	494.53	488.6	477.28	462.82	447.32	428.5	403.59	372.95	330.74	281.22	240.31	218.32	213.65	218.32	240.31	281.22	330.74	372.95	403.59	428.5	447.32	462.82	477.28	488.6	494.53
6	521.43	513.28	495.86	473.96	453.28	432.26	403.31	365.91	309.9	245.82	203.66	185.47	181.33	185.47	203.66	245.82	309.9	365.91	403.31	432.26	453.28	473.96	495.86	513.28	521.43
7	557.28	546	520.35	488.69	459.79	435.66	403.6	358.63	287.55	215	177.92	163.82	162.42	163.82	177.92	215	287.55	358.63	403.6	435.66	459.79	488.69	520.35	546	557.28
8	599.71	587.67	551.19	507.18	467.23	438.68	403.91	351.95	265.46	191.68	160.4	148.24	146.34	148.24	160.4	191.68	265.46	351.95	403.91	438.68	467.23	507.18	551.19	587.67	599.71
9	648.91	631.39	589.1	530.5	476.63	441.55	404.72	346.01	245.36	174.93	147.39	133.73	130.3	133.73	147.39	174.93	245.36	346.01	404.72	441.55	476.63	530.5	589.1	631.39	648.91
10	702.72	679.17	629.57	558.06	488.54	444.23	406.12	340.63	227.93	162.74	135.17	120.31	116.46	120.31	135.17	162.74	227.93	340.63	406.12	444.23	488.54	558.06	629.57	679.17	702.72
11	760.57	733.64	673.84	589.56	502.76	446.86	407.59	336.1	213.69	153.61	124.15	107.64	103.65	107.64	124.15	153.61	213.69	336.1	407.59	446.86	502.76	589.56	673.84	733.64	760.57
12	820.59	790.76	724.02	622.97	520.06	449.7	409.32	331.59	202.05	146.01	113.48	96.19	92.17	96.19	113.48	146.01	202.05	331.59	409.32	449.7	520.06	622.97	724.02	790.76	820.59
13	881.87	849.53	774.84	661.81	539.45	453.16	411.73	327.64	193.27	138.61	103.86	86.16	82.49	86.16	103.86	138.61	193.27	327.64	411.73	453.16	539.45	661.81	774.84	849.53	881.87
14	943.98	910.15	828.17	702.92	561.54	457.49	413.71	324.18	186.9	131.75	95.23	77.62	73.93	77.62	95.23	131.75	186.9	324.18	413.71	457.49	561.54	702.92	828.17	910.15	943.98
15	1008.54	970.9	881.59	745.1	585.89	462.77	416.4	321.18	182.29	125.35	87.78	70.28	66.87	70.28	87.78	125.35	182.29	321.18	416.4	462.77	585.89	745.1	881.59	970.9	1008.54
16	1075.57	1034.98	937.76	788.88	611.69	469.35	418.91	318.73	178.59	119.28	81.27	64.14	60.72	64.14	81.27	119.28	178.59	318.73	418.91	469.35	611.69	788.88	937.76	1034.98	1075.57
17	1143.76	1100.31	995.48	833.91	638.08	476.74	422.36	316.8	175.83	113.79	75.65	58.83	55.4	58.83	75.65	113.79	175.83	316.8	422.36	476.74	638.08	833.91	995.48	1100.31	1143.76
18	1213.76	1166.36	1053.44	879.72	667.84	485.4	425.56	315.7	173.69	108.96	70.87	53.89	50.77	53.89	70.87	108.96	173.69	315.7	425.56	485.4	667.84	879.72	1053.44	1166.36	1213.76
19	1284.09	1234.96	1112.54	926.6	698.13	495.41	429.4	315.06	171.94	104.77	67.1	49.77	46.65	49.77	67.1	104.77	171.94	315.06	429.4	495.41	698.13	926.6	1112.54	1234.96	1284.09
20	1354.22	1303.85	1173.6	973.31	730.11	506.61	433.5	315.18	170.21	101.12	63.58	46.12	42.97	46.12	63.58	101.12	170.21	315.18	433.5	506.61	730.11	973.31	1173.6	1303.85	1354.22
21	1424.35	1372.54	1235.36	1021.55	761.63	518.37	438.28	315.55	168.62	98.11	60.34	42.91	39.7	42.91	60.34	98.11	168.62	315.55	438.28	518.37	761.63	1021.55	1235.36	1372.54	1424.35
22	1500.58	1445.16	1296.94	1069.86	794.03	531.08	442.99	316.91	167.37	95.74	57.75	40.04	36.83	40.04	57.75	95.74	167.37	316.91	442.99	531.08	794.03	1069.86	1296.94	1445.16	1500.58
23	1580.96	1519.58	1358.31	1118.86	826.81	545.07	448.62	318.82	166.39	93.8	55.47	37.5	34.19	37.5	55.47	93.8	166.39	318.82	448.62	545.07	826.81	1118.86	1358.31	1519.58	1580.96
24	1661.08	1595.43	1419.71	1167.4	859.68	559.62	454.82	321.19	165.62	92.21	53.53	35.23	31.84	35.23	53.53	92.21	165.62	321.19	454.82	559.62	859.68	1167.4	1419.71	1595.43	1661.08
25	1743.76	1674.46	1484.92	1217.14	893.02	574.92	461.8	323.75	164.92	90.99	51.86	33.19	29.71	33.19	51.86	90.99	164.92	323.75	461.8	574.92	893.02	1217.14	1484.92	1674.46	1743.76
26	1827.6	1750.84	1549.4	1268.11	926.68	590.51	469.44	326.5	164.61	90.02	50.41	31.36	27.76	31.36	50.41	90.02	164.61	326.5	469.44	590.51	926.68	1268.11	1549.4	1750.84	1827.6
27	1910.03	1827.9	1613.29	1315.4	959.94	606.86	478.21	329.95	164.49	89.32	49.14	29.73	26	29.73	49.14	89.32	164.49	329.95	478.21	606.86	959.94	1315.4	1613.29	1827.9	1910.03
28	1992.79	1904.19	1676.51	1361.94	993.39	623.71	487.36	333.46	164.58	88.73	48.08	28.24	24.4	28.24	48.08	88.73	164.58	333.46	487.36	623.71	993.39	1361.94	1676.51	1904.19	1992.79
29	2071.79	1977.14	1738.09	1407.6	1026.3	641.17	497.6	337.12	165.07	88.32	47.12	26.91	22.94	26.91	47.12	88.32	165.07	337.12	497.6	641.17	1026.3	1407.6	1738.09	1977.14	2071.79
30	2146.76	2047.09	1796.4	1453.72	1058.23	658.48	508.34	340.54	165.64	87.98	46.28	25.66	21.58	25.66	46.28	87.98	165.64	340.54	508.34	658.48	1058.23	1453.72	1796.4	2047.09	2146.76
31	2217.98	2111.18	1851.21	1498.57	1089.88	675.81	519.63	344.32	166.28	87.79	45.56	24.55	20.36	24.55	45.56	87.79	166.28	344.32	519.63	675.81	1089.88	1498.57	1851.21	2111.18	2217.98
32	2281.08	2168.3	1900.23	1540.24	1121.07	693.18	531.25	347.68	167.08	87.58	44.87	23.53	19.19	23.53	44.87	87.58	167.08	347.68	531.25	693.18	1121.07	1540.24	1900.23	2168.3	2281.08
33	2335.92	2192.32	1945.37	1579.01	1150.94	710.25	543.44	350.78	167.64	87.49	44.24	22.57	18.12	22.57	44.24	87.49	167.64	350.78	543.44	710.25	1150.94	1579.01	1945.37	2192.32	2335.92
34	2377.63	2259	1982.45	1614.7	1178.57	727.2	555.26	353.31	168.29	87.47	43.67	21.68	17.09	21.68	43.67	87.47	168.29	353.31	555.26	727.2	1178.57	1614.7	1982.45	2259	2377.63
35	2413.44	2290.63	2012.82	1646.45	1204.94	743.92	567.4	355.8	168.84	87.63	43.09	20.83	16.13	20.83	43.09	87.63	168.84	355.8	567.4	743.92	1204.94	1646.45	2012.82	2290.63	2413.44
36	2436.48	2312.7	2035.92	1673.06	1229.91	759.86	578.97	357.73	169.36	87.83	42.58	20.04	15.22	20.04	42.58	87.83	169.36	357.73	578.97	759.86	1229.91	1673.06	2035.92	2312.7	2436.48
37	2450.62	2325.81	2049.23	1695.53	1251.92	775.49	590.29	359.07	169.82	88.1	42.02	19.28	14.34	19.28	42.02	88.1	169.82	359.07	590.29	775.49	1251.92	1695.53	2049.23	2325.81	2450.62
38	2458.55	2333.43	2055.86	1713.3	1270.82	790.29	601.08	359.72	170.43	88.47	41.49	18.54	13.51	18.54	41.49	88.47	170.43	359.72	601.08	790.29	1270.82	1713.3	2055.86	2333.43	2458.55
39	2454.33	2331.56	2057.39	1724.17	1288.18	804.08	611.07	359.53	171.04	88.8	40.93	17.83	12.68	17.83	40.93	88.8	171.04	359.53	611.07	804.08	1288.18	1724.17	2057.39	2331.56	2454.33
40	2443.39	2322.56	2052.8	1728.25	1303.76	817.83	620.61	358.97	171.75	89.12	40.34	17.13	11.87	17.13	40.34	89.12	171.75	358.97	620.61	817.83	1303.76	1728.25	2052.8	2322.56	2443.39
41	2425.18	2306.91	2041.03	1728.43	1315.97	830.51	629.93	357.6	172.51	89.26	39.74	16.45	11.05	16.45	39.74	89.26	172.51	357.6	629.93	830.51					

50	2003.43	1944.06	1753.77	1537.95	1297.68	873.8	662.54	312.62	177.69	86.99	31.84	9.92	4.28	9.92	31.84	86.99	177.69	312.62	662.54	873.8	1297.68	1537.95	1753.77	1944.06	2003.43
51	1945.19	1891.67	1711.04	1502.5	1282.1	869.71	661.46	305.86	177.05	86.07	30.79	9.36	3.66	9.36	30.79	86.07	177.05	305.86	661.46	869.71	1282.1	1502.5	1711.04	1891.67	1945.19
52	1884.98	1837.65	1666.17	1466.21	1260.8	864.63	658.56	299.18	176.14	85	29.76	8.74	3.16	8.74	29.76	85	176.14	299.18	658.56	864.63	1260.8	1466.21	1666.17	1837.65	1884.98
53	1823.6	1782.14	1621.48	1428.48	1236.91	858.3	654.64	292.8	174.99	83.63	28.74	8.23	2.78	8.23	28.74	83.63	174.99	292.8	654.64	858.3	1236.91	1428.48	1621.48	1782.14	1823.6
54	1761.02	1726.52	1574.94	1389.71	1211.32	850.3	649.69	286.05	173.81	82.12	27.74	7.84	2.47	7.84	27.74	82.12	173.81	286.05	649.69	850.3	1211.32	1389.71	1574.94	1726.52	1761.02
55	1692.89	1665.34	1527.04	1352.07	1182.87	839.48	643.18	279.03	172.25	80.4	26.75	7.47	2.17	7.47	26.75	80.4	172.25	279.03	643.18	839.48	1182.87	1352.07	1527.04	1665.34	1692.89
56	1623.64	1600.97	1477.09	1314.61	1152.57	827.83	636.57	272.34	170.44	78.59	25.83	7.12	1.91	7.12	25.83	78.59	170.44	272.34	636.57	827.83	1152.57	1314.61	1477.09	1600.97	1623.64
57	1552.39	1536.52	1424.75	1276.07	1120.83	814.37	628.82	265.82	168.49	76.69	24.91	6.82	1.69	6.82	24.91	76.69	168.49	265.82	628.82	814.37	1120.83	1276.07	1424.75	1536.52	1552.39
58	1480.22	1469.87	1371.84	1234.98	1088.61	800.61	619.78	259.31	166.33	74.57	24.07	6.55	1.51	6.55	24.07	74.57	166.33	259.31	619.78	800.61	1088.61	1234.98	1371.84	1469.87	1480.22
59	1408.23	1403.26	1318.75	1190.89	1054.57	785.25	608.97	252.62	163.84	72.36	23.22	6.33	1.35	6.33	23.22	72.36	163.84	252.62	608.97	785.25	1054.57	1190.89	1318.75	1403.26	1408.23
60	1339.14	1338.99	1265.8	1146.97	1019.68	770.2	598.04	246.18	160.94	70.1	22.44	5.89	0.23	5.89	22.44	70.1	160.94	246.18	598.04	770.2	1019.68	1146.97	1265.8	1338.99	1339.14
61	1267.25	1273.85	1208.74	1101.21	983.09	753.38	586.22	239.59	157.42	67.77	21.68	4.9	0.13	4.9	21.68	67.77	157.42	239.59	586.22	753.38	983.09	1101.21	1208.74	1273.85	1267.25
62	1196.43	1207.57	1151.39	1055.53	946.59	735.1	573.52	232.95	153.63	65.43	20.84	4.76	0.13	4.76	20.84	65.43	153.63	232.95	573.52	735.1	946.59	1055.53	1151.39	1207.57	1196.43
63	1123.45	1138.28	1094.33	1009.8	908.99	715.91	559.82	226.33	149.44	63.07	19.42	4.65	0.13	4.65	19.42	63.07	149.44	226.33	559.82	715.91	908.99	1009.8	1094.33	1138.28	1123.45
64	1046.33	1066.08	1035.77	962.99	870.95	693.72	544.64	219.84	144.6	60.71	18.7	4.53	0.13	4.53	18.7	60.71	144.6	219.84	544.64	693.72	870.95	962.99	1035.77	1066.08	1046.33
65	966.91	991.3	974.65	915.82	832.25	670.52	529.27	213.33	139.23	58.34	18.06	4.42	0.13	4.42	18.06	58.34	139.23	213.33	529.27	670.52	832.25	915.82	974.65	991.3	966.91
66	885.72	914.69	910.79	867.82	793.63	645.78	513	206.53	133.6	55.72	17.44	4.3	0.13	4.3	17.44	55.72	133.6	206.53	513	645.78	793.63	867.82	910.79	914.69	885.72
67	805.18	837.07	846.39	818.85	754.59	619.21	495.6	199.72	128.04	53.1	16.83	4.19	0.13	4.19	16.83	53.1	128.04	199.72	495.6	619.21	754.59	818.85	846.39	837.07	805.18
68	728.18	761.97	780.84	768.84	715.47	590.88	476.61	192.71	122.33	50.85	16.24	4.08	0.13	4.08	16.24	50.85	122.33	192.71	476.61	590.88	715.47	768.84	780.84	761.97	728.18
69	655.95	691.05	717.65	718.3	675.69	561.03	457.02	185.97	116.81	48.72	15.65	3.96	0.13	3.96	15.65	48.72	116.81	185.97	457.02	561.03	675.69	718.3	717.65	691.05	655.95
70	599.93	628.29	657.01	668.27	635.15	531.16	436.51	179.32	111.26	46.6	15.07	3.85	0.13	3.85	15.07	46.6	111.26	179.32	436.51	531.16	635.15	668.27	657.01	628.29	599.93
71	544.18	572.7	602.23	620.37	594.41	500.37	415.83	172.17	105.73	44.54	14.51	3.73	0.12	3.73	14.51	44.54	105.73	172.17	415.83	500.37	594.41	620.37	602.23	572.7	544.18
72	493.61	521.03	554.1	574.39	554.86	470.86	394.22	165.05	100.31	42.52	13.95	3.62	0.12	3.62	13.95	42.52	100.31	165.05	394.22	470.86	554.86	574.39	554.1	521.03	493.61
73	454.05	478.45	509.31	530.95	515.69	440.51	372.02	158.14	95.26	40.56	13.4	3.5	0.12	3.5	13.4	40.56	95.26	158.14	372.02	440.51	515.69	530.95	509.31	478.45	454.05
74	420.86	442.05	470.97	491.48	478.9	410.87	350.1	150.66	90.49	38.61	12.87	3.39	0.12	3.39	12.87	38.61	90.49	150.66	350.1	410.87	478.9	491.48	470.97	442.05	420.86
75	392.41	410.55	437.03	455.06	443.84	381.07	328.48	143.12	86.02	36.73	12.35	3.27	0.12	3.27	12.35	36.73	86.02	143.12	328.48	381.07	443.84	455.06	437.03	410.55	392.41
76	368.02	383.06	407.49	422.81	412.03	352.69	306.82	135.05	81.73	34.89	11.85	3.17	0.12	3.17	11.85	34.89	81.73	135.05	306.82	352.69	412.03	422.81	407.49	383.06	368.02
77	346.42	359.5	381.34	394.09	382.88	325.34	284.99	126.58	77.64	33.09	11.35	3.06	0.13	3.06	11.35	33.09	77.64	126.58	284.99	325.34	382.88	394.09	381.34	359.5	346.42
78	326.17	337.64	357.75	368.34	356.17	298.25	263.22	117.51	73.59	31.3	10.86	2.95	0.13	2.95	10.86	31.3	73.59	117.51	263.22	298.25	356.17	368.34	357.75	337.64	326.17
79	308.11	318.1	336.77	345.46	331.82	273.46	241.37	108.81	69.75	29.6	10.39	2.85	0.13	2.85	10.39	29.6	69.75	108.81	241.37	273.46	331.82	345.46	336.77	318.1	308.11
80	291.44	300.13	317.16	324.46	309.17	249.52	219.95	100.62	65.89	27.96	9.93	2.75	0.13	2.75	9.93	27.96	65.89	100.62	219.95	249.52	309.17	324.46	317.16	300.13	291.44
81	276.01	283.87	299.52	305.35	288.31	227.03	199.04	92.95	62.24	26.35	9.48	2.65	0.14	2.65	9.48	26.35	62.24	92.95	199.04	227.03	288.31	305.35	299.52	283.87	276.01
82	261.68	268.62	283.06	287.77	269.26	206.19	178.71	85.98	58.71	24.79	9.05	2.56	0.14	2.56	9.05	24.79	58.71	85.98	178.71	206.19	269.26	287.77	283.06	268.62	261.68
83	247.84	254.33	267.73	271.51	252.09	186.96	159.92	79.78	55.22	23.32	8.64	2.47	0.14	2.47	8.64	23.32	55.22	79.78	159.92	186.96	252.09	271.51	267.73	254.33	247.84
84	235.19	240.87	253.51	256.41	236.46	169.83	142.04	74.14	51.83	21.92	8.25	2.38	0.15	2.38	8.25	21.92	51.83	74.14	142.04	169.83	236.46	256.41	253.51	240.87	235.19
85	223.27	228.43	240.06	242.22	222.01	154.71	124.3	69.07	48.57	20.61	7.87	2.3	0.16	2.3	7.87	20.61	48.57	69.07	124.3	154.71	222.01	242.22	240.06	228.43	223.27
86	211.95	216.65	227.53	229.11	208.78	141.07	108.36	64.24	45.5	19.36	7.51	2.23	0.16	2.23	7.51	19.36	45.5	64.24	108.36	141.07	208.78	229.11	227.53	216.65	211.95
87	201.29	205.53	215.59	216.64	196.51	128.29	93.05	59.91	42.56	18.19	7.16	2.15	0.17	2.15	7.16	18.19	42.56	59.91	93.05	128.29	196.51	216.64	215.59	205.53	201.29
88	191.31	195.34	204.62	204.77	185	117.96	78.72	55.83	39.86	17.11	6.84	2.08	0.18	2.08	6.84	17.11	39.86	55.83	78.72	117.96	185	204.77	204.62	195.34	191.31
89	181.93	185.78	194.17	193.76	174.33	109.26	65.96	51.86	37.37	16.1	6.53	2.02	0.2	2.02	6.53	16.1	37.37	51.86	65.96	109.26	174.33	193.76	194.17	185.78	181.93
90	173.2	176.51	184.42	183.31	164.24	101.66	55.1	48.13	35.01	15.17	6.24	1.96	0.21	1.96	6.24	15.17	35.01	48.13	55.1	101.66	164.24	183.31	184.42	176.51	173.2
91	165	168.12	175.33	173.61	154.98	94.86	45.27	44.61	32.83	14.3	5.96	1.9	0.22	1.9	5.96	14.3	32.83	44.61	45.27	94.86	154.98	173.61	175.33	168.12	165
92	157.31	160.13	166.67	164.45	146.14	88.84	37.91	41.32	30.81	13.51	5.7	1.85	0.23	1.85	5.7	13.51	30.81	41.32	37.91	88.84	146.14	164.45	166.67	160.13	157.31
93	150.38	152.74	158.76	155.9	137.63	83.51	32.28	38.33	28.94	12.8	5.45	1.8	0.25	1.8	5.45	12.8	28.94	38.33	32.28	83.51	137.63	155.9	158.76	152.74	150.38
94	143.53	145.76	151.28	147.89	129.82	78.43																			



104	95.61	96.33	97.72	91.45	76.7	44.4	13.76	18.79	15.54	7.63	3.77	1.64	0.8	1.64	3.77	7.63	15.54	18.79	13.76	44.4	76.7	91.45	97.72	96.33	95.61
105	92.15	92.82	93.89	87.63	73.17	42.12	13.18	17.78	14.77	7.35	3.67	1.63	0.84	1.63	3.67	7.35	14.77	17.78	13.18	42.12	73.17	87.63	93.89	92.82	92.15
106	88.79	89.36	90.25	84.07	69.68	40	12.61	16.85	14.05	7.07	3.58	1.63	0.88	1.63	3.58	7.07	14.05	16.85	12.61	40	69.68	84.07	90.25	89.36	88.79
107	85.52	86.11	86.85	80.58	66.34	37.98	12.13	16.01	13.38	6.82	3.5	1.64	0.92	1.64	3.5	6.82	13.38	16.01	12.13	37.98	66.34	80.58	86.85	86.11	85.52
108	82.45	82.95	83.58	77.24	63.22	36.1	11.68	15.21	12.77	6.58	3.42	1.64	0.97	1.64	3.42	6.58	12.77	15.21	11.68	36.1	63.22	77.24	83.58	82.95	82.45
109	79.45	79.89	80.42	74.08	60.21	34.32	11.28	14.49	12.17	6.36	3.36	1.64	1.01	1.64	3.36	6.36	12.17	14.49	11.28	34.32	60.21	74.08	80.42	79.89	79.45
110	76.41	76.87	77.36	71.02	57.34	32.67	10.91	13.81	11.62	6.15	3.29	1.65	1.05	1.65	3.29	6.15	11.62	13.81	10.91	32.67	57.34	71.02	77.36	76.87	76.41
111	73.57	73.97	74.35	68.14	54.68	31.11	10.55	13.18	11.11	5.96	3.23	1.66	1.09	1.66	3.23	5.96	11.11	13.18	10.55	31.11	54.68	68.14	74.35	73.97	73.57
112	70.63	71.09	71.47	65.39	52.22	29.63	10.23	12.58	10.63	5.78	3.18	1.66	1.12	1.66	3.18	5.78	10.63	12.58	10.23	29.63	52.22	65.39	71.47	71.09	70.63
113	67.66	68.25	68.71	62.82	49.87	28.25	9.92	12.02	10.18	5.61	3.12	1.67	1.15	1.67	3.12	5.61	10.18	12.02	9.92	28.25	49.87	62.82	68.71	68.25	67.66
114	64.99	65.51	66.1	60.36	47.74	26.96	9.63	11.5	9.75	5.45	3.07	1.67	1.17	1.67	3.07	5.45	9.75	11.5	9.63	26.96	47.74	60.36	66.1	65.51	64.99
115	62.46	63.42	63.7	58.06	45.73	25.74	9.36	11.02	9.35	5.29	3.02	1.66	1.19	1.66	3.02	5.29	9.35	11.02	9.36	25.74	45.73	58.06	63.7	63.42	62.46
116	59.94	60.79	61.4	55.88	43.81	24.6	9.09	10.56	8.97	5.15	2.97	1.67	1.21	1.67	2.97	5.15	8.97	10.56	9.09	24.6	43.81	55.88	61.4	60.79	59.94
117	57.55	58.44	59.21	53.89	42.05	23.52	8.84	10.14	8.62	5.02	2.93	1.68	1.24	1.68	2.93	5.02	8.62	10.14	8.84	23.52	42.05	53.89	59.21	58.44	57.55
118	55.52	56.43	57.2	52.02	40.39	22.51	8.61	9.74	8.29	4.9	2.9	1.69	1.27	1.69	2.9	4.9	8.29	9.74	8.61	22.51	40.39	52.02	57.2	56.43	55.52
119	53.64	54.61	55.35	50.25	38.84	21.58	8.38	9.36	7.98	4.79	2.87	1.7	1.31	1.7	2.87	4.79	7.98	9.36	8.38	21.58	38.84	50.25	55.35	54.61	53.64
120	51.93	52.9	53.6	48.59	37.37	20.68	8.15	9.01	7.69	4.68	2.85	1.71	1.34	1.71	2.85	4.68	7.69	9.01	8.15	20.68	37.37	48.59	53.6	52.9	51.93
121	50.35	51.34	51.96	46.97	35.96	19.84	7.94	8.68	7.42	4.58	2.82	1.72	1.38	1.72	2.82	4.58	7.42	8.68	7.94	19.84	35.96	46.97	51.96	51.34	50.35
122	48.9	49.84	50.42	45.46	34.64	19.04	7.73	8.36	7.16	4.49	2.8	1.74	1.42	1.74	2.8	4.49	7.16	8.36	7.73	19.04	34.64	45.46	50.42	49.84	48.9
123	47.48	48.48	48.9	43.99	33.4	18.28	7.53	8.07	6.92	4.4	2.78	1.75	1.45	1.75	2.78	4.4	6.92	8.07	7.53	18.28	33.4	43.99	48.9	48.48	47.48
124	46.21	47.18	47.51	42.6	32.22	17.56	7.34	7.79	6.69	4.32	2.76	1.76	1.49	1.76	2.76	4.32	6.69	7.79	7.34	17.56	32.22	42.6	47.51	47.18	46.21
125	45.04	45.95	46.15	41.28	31.09	16.88	7.14	7.52	6.47	4.23	2.74	1.77	1.51	1.77	2.74	4.23	6.47	7.52	7.14	16.88	31.09	41.28	46.15	45.95	45.04
126	43.92	44.8	44.87	40.01	29.99	16.22	6.96	7.27	6.26	4.15	2.72	1.78	1.53	1.78	2.72	4.15	6.26	7.27	6.96	16.22	29.99	40.01	44.87	44.8	43.92
127	42.87	43.69	43.62	38.79	28.95	15.59	6.78	7.03	6.07	4.07	2.7	1.78	1.55	1.78	2.7	4.07	6.07	7.03	6.78	15.59	28.95	38.79	43.62	43.69	42.87
128	41.85	42.62	42.44	37.63	27.98	14.99	6.6	6.8	5.87	4	2.68	1.79	1.57	1.79	2.68	4	5.87	6.8	6.6	14.99	27.98	37.63	42.44	42.62	41.85
129	40.92	41.62	41.29	36.5	27.02	14.41	6.42	6.58	5.69	3.93	2.65	1.79	1.59	1.79	2.65	3.93	5.69	6.58	6.42	14.41	27.02	36.5	41.29	41.62	40.92
130	39.99	40.66	40.17	35.4	26.11	13.85	6.23	6.36	5.52	3.87	2.63	1.79	1.6	1.79	2.63	3.87	5.52	6.36	6.23	13.85	26.11	35.4	40.17	40.66	39.99
131	39.12	39.7	39.11	34.35	25.22	13.33	6.06	6.16	5.36	3.8	2.61	1.79	1.62	1.79	2.61	3.8	5.36	6.16	6.06	13.33	25.22	34.35	39.11	39.7	39.12
132	38.31	38.81	38.06	33.33	24.38	12.82	5.88	5.96	5.21	3.74	2.59	1.8	1.64	1.8	2.59	3.74	5.21	5.96	5.88	12.82	24.38	33.33	38.06	38.81	38.31
133	37.53	37.95	37.08	32.36	23.55	12.34	5.7	5.77	5.06	3.68	2.57	1.79	1.66	1.79	2.57	3.68	5.06	5.77	5.7	12.34	23.55	32.36	37.08	37.95	37.53
134	36.77	37.11	36.1	31.38	22.77	11.85	5.54	5.58	4.92	3.62	2.55	1.79	1.67	1.79	2.55	3.62	4.92	5.58	5.54	11.85	22.77	31.38	36.1	37.11	36.77
135	36.05	36.28	35.15	30.43	21.97	11.4	5.37	5.41	4.78	3.56	2.53	1.79	1.69	1.79	2.53	3.56	4.78	5.41	5.37	11.4	21.97	30.43	35.15	36.28	36.05
136	35.36	35.5	34.22	29.52	21.22	10.96	5.21	5.24	4.65	3.5	2.51	1.79	1.71	1.79	2.51	3.5	4.65	5.24	5.21	10.96	21.22	29.52	34.22	35.5	35.36
137	34.66	34.72	33.31	28.61	20.49	10.54	5.06	5.07	4.52	3.44	2.48	1.79	1.73	1.79	2.48	3.44	4.52	5.07	5.06	10.54	20.49	28.61	33.31	34.72	34.66
138	33.99	33.96	32.42	27.73	19.77	10.12	4.91	4.91	4.39	3.38	2.45	1.78	1.74	1.78	2.45	3.38	4.39	4.91	4.91	10.12	19.77	27.73	32.42	33.96	33.99
139	33.32	33.2	31.54	26.86	19.05	9.7	4.76	4.75	4.26	3.31	2.43	1.77	1.75	1.77	2.43	3.31	4.26	4.75	4.76	9.7	19.05	26.86	31.54	33.2	33.32
140	32.64	32.47	30.68	26.01	18.36	9.31	4.62	4.59	4.13	3.24	2.39	1.76	1.75	1.76	2.39	3.24	4.13	4.59	4.62	9.31	18.36	26.01	30.68	32.47	32.64
141	31.97	31.72	29.81	25.16	17.68	8.91	4.48	4.44	4.01	3.17	2.35	1.74	1.74	1.74	2.35	3.17	4.01	4.44	4.48	8.91	17.68	25.16	29.81	31.72	31.97
142	31.31	30.97	28.96	24.31	17	8.51	4.35	4.29	3.88	3.09	2.31	1.72	1.73	1.72	2.31	3.09	3.88	4.29	4.35	8.51	17	24.31	28.96	30.97	31.31
143	30.63	30.21	28.12	23.48	16.32	8.11	4.22	4.15	3.76	3.02	2.27	1.71	1.72	1.71	2.27	3.02	3.76	4.15	4.22	8.11	16.32	23.48	28.12	30.21	30.63
144	29.94	29.45	27.26	22.65	15.64	7.71	4.08	4.01	3.63	2.94	2.22	1.68	1.69	1.68	2.22	2.94	3.63	4.01	4.08	7.71	15.64	22.65	27.26	29.45	29.94
145	29.21	28.66	26.43	21.83	14.96	7.32	3.95	3.86	3.5	2.85	2.16	1.65	1.67	1.65	2.16	2.85	3.5	3.86	3.95	7.32	14.96	21.83	26.43	28.66	29.21
146	28.48	27.89	25.56	21.01	14.28	6.96	3.82	3.72	3.38	2.76	2.1	1.61	1.64	1.61	2.1	2.76	3.38	3.72	3.82	6.96	14.28	21.01	25.56	27.89	28.48
147	27.72	27.08	24.71	20.2	13.61	6.6	3.69	3.58	3.25	2.67	2.04	1.57	1.61	1.57	2.04	2.67	3.25	3.58	3.69	6.6	13.61	20.2	24.71	27.08	27.72
148	26.95	26.24	23.84	19.37	12.94	6.25	3.56	3.44	3.12	2.58	1.98	1.53	1.57	1.53	1.98	2.58	3.12	3.44	3.56	6.25	12.94	19.37	23.84	26.24	26.95
149	26.13	25.4	22.96	18.5	12.28	5.91	3.43	3.31	3	2.49	1.92	1.5	1.53	1.5	1.92	2.49	3	3.31	3.43	5.91	12.28	18.5	22.96	25.4	26.13
150	25.29	24.54	22.08	17.62	11.62	5.57	3.31	3.19	2.89	2.4	1.86	1.47	1.51	1.47	1.86	2.4	2.89	3.19	3.31	5.57	11.62	17.62	22.08	24.54	25.29
151	24.44	23.63	21.16	16.7	10.95	5.24	3.19	3.07	2.78	2.32	1.81	1.44	1.49	1.44	1.81	2.32	2.78	3.07	3.19	5.24	10.95	16.7	21.16	23.63	24.44
152	23.53	22.72	20.24	15.81	10.24	4.91	3.08	2.95	2.67	2.24	1.75	1.41	1.47	1.41	1.75	2.24	2.67	2.95	3.08	4.91	10.24	15.81	20.24	22.72	23.53

158	17.61	16.76	13.92	10.39	6.09	3.14	2.43	2.29	2.06	1.74	1.41	1.22	1.25	1.22	1.41	1.74	2.06	2.29	2.43	3.14	6.09	10.39	13.92	16.76	17.61
159	16.55	15.29	12.87	9.41	5.48	2.91	2.32	2.19	1.96	1.66	1.36	1.18	1.21	1.18	1.36	1.66	1.96	2.19	2.32	2.91	5.48	9.41	12.87	15.29	16.55
160	15.48	13.82	11.8	8.29	4.91	2.68	2.22	2.09	1.87	1.59	1.31	1.16	1.19	1.16	1.31	1.59	1.87	2.09	2.22	2.68	4.91	8.29	11.8	13.82	15.48
161	14.39	12.49	10.73	7.13	4.38	2.48	2.12	1.99	1.78	1.52	1.27	1.13	1.16	1.13	1.27	1.52	1.78	1.99	2.12	2.48	4.38	7.13	10.73	12.49	14.39
162	13.32	11.41	9.62	6.09	3.88	2.3	2.02	1.89	1.69	1.46	1.23	1.12	1.13	1.12	1.23	1.46	1.69	1.89	2.02	2.3	3.88	6.09	9.62	11.41	13.32
163	12.22	10.41	8.3	5.22	3.44	2.14	1.92	1.8	1.62	1.4	1.19	1.1	1.11	1.1	1.19	1.4	1.62	1.8	1.92	2.14	3.44	5.22	8.3	10.41	12.22
164	11.08	9.13	6.77	4.56	3.04	2	1.82	1.71	1.54	1.34	1.16	1.09	1.1	1.09	1.16	1.34	1.54	1.71	1.82	2	3.04	4.56	6.77	9.13	11.08
165	9.6	7.63	5.48	3.93	2.69	1.87	1.73	1.63	1.47	1.29	1.13	1.07	1.08	1.07	1.13	1.29	1.47	1.63	1.73	1.87	2.69	3.93	5.48	7.63	9.6
166	7.7	5.92	4.47	3.37	2.38	1.75	1.64	1.55	1.41	1.25	1.11	1.06	1.07	1.06	1.11	1.25	1.41	1.55	1.64	1.75	2.38	3.37	4.47	5.92	7.7
167	6.03	4.76	3.61	2.93	2.12	1.64	1.56	1.48	1.35	1.21	1.09	1.06	1.06	1.06	1.09	1.21	1.35	1.48	1.56	1.64	2.12	2.93	3.61	4.76	6.03
168	4.71	3.69	3.01	2.52	1.88	1.54	1.48	1.41	1.3	1.18	1.07	1.06	1.06	1.06	1.07	1.18	1.3	1.41	1.48	1.54	1.88	2.52	3.01	3.69	4.71
169	3.57	2.93	2.56	2.16	1.68	1.44	1.4	1.35	1.25	1.15	1.06	1.06	1.05	1.06	1.06	1.15	1.25	1.35	1.4	1.44	1.68	2.16	2.56	2.93	3.57
170	2.8	2.44	2.16	1.84	1.51	1.36	1.34	1.29	1.21	1.12	1.05	1.06	1.05	1.06	1.05	1.12	1.21	1.29	1.34	1.36	1.51	1.84	2.16	2.44	2.8
171	2.42	2.07	1.82	1.59	1.38	1.28	1.27	1.24	1.17	1.1	1.04	1.05	1.05	1.05	1.04	1.1	1.17	1.24	1.27	1.28	1.38	1.59	1.82	2.07	2.42
172	2.06	1.64	1.52	1.39	1.27	1.22	1.21	1.19	1.14	1.08	1.03	1.05	1.05	1.05	1.03	1.08	1.14	1.19	1.21	1.22	1.27	1.39	1.52	1.64	2.06
173	1.63	1.32	1.3	1.24	1.17	1.16	1.16	1.14	1.11	1.06	1.02	1.05	1.04	1.05	1.02	1.06	1.11	1.14	1.16	1.16	1.17	1.24	1.3	1.32	1.63
174	0.9	1.14	1.15	1.13	1.1	1.1	1.11	1.1	1.08	1.04	1.02	1.05	1.03	1.05	1.02	1.04	1.08	1.1	1.11	1.1	1.13	1.15	1.14	0.9	
175	0.83	1.03	1.06	1.05	1.04	1.07	1.08	1.07	1.05	1.03	1.01	1.04	1.02	1.04	1.01	1.03	1.05	1.07	1.08	1.07	1.04	1.05	1.06	1.03	0.83
176	0.84	0.94	0.98	0.99	1.01	1.03	1.04	1.04	1.03	1.01	1	1.04	1.01	1.04	1	1.01	1.03	1.04	1.04	1.03	1.01	0.99	0.98	0.94	0.84
177	0.86	0.93	0.94	0.96	0.99	1.01	1.02	1.01	1.01	1	0.99	1.02	0.99	1.02	0.99	1	1.01	1.01	1.02	1.01	0.99	0.96	0.94	0.93	0.86
178	0.87	0.94	0.94	0.97	0.98	1	1	1	0.99	0.98	0.98	1	0.96	1	0.98	0.98	0.99	1	1	1	0.98	0.97	0.94	0.94	0.87
179	0.9	0.95	0.95	0.97	0.99	1	1	1	0.99	0.97	0.97	0.99	0.94	0.99	0.97	0.97	0.99	1	1	1	0.99	0.97	0.95	0.95	0.9
180	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92

## 4.0 LM-79 Measurement and Test Results

### 4.3 THD and PF Test

Model No.	WPT @ 25W/3000K	Sample ID.	D1
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
120.05	60	0.203	24.2	0.993	11.63%
276.95	60	0.093	24.7	0.963	12.20%

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