

Photometric Test Report

Relevant Standards

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

Prepared For

RAB Lighting Inc.

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Project Number

DLF2409113

Report Number

DLF2409113-5a

Test Date

2024/8/31

Issue Date

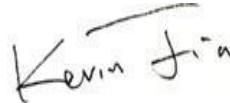
2024/9/2

Prepared By



Wangzun Zhu

Approved By



Kevin Jia

The results contained in this report pertain only to the tested sample.

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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		3681
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2) (0°-180° zones)	IES LM-79-2008	Standard 105	Premium 120	146.1
Luminaire Output (lm) (Goniophotometer - Section 4.2) (0°-90° zones)	IES LM-79-2008	300		3479
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2) (0°-90° zones)	IES LM-79-2008	Standard 105	Premium 120	138.1
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		25.2
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%	120V	11.38%
		20.00%	277V	11.88%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9	120V	0.993
		0.9	277V	0.964
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3985±275	4006
		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	-		16
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%		4.27%
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		0.094
(Goniophotometer - Section 4.2)		Non-Worst Case		0.206
Power (Input Wattage - W)				
(Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		25.2
(Goniophotometer - Section 4.2)		Non-Worst Case		24.6

2.0 Test List

Test Item	Test	Test Date	Model Number	Build Level	Sample No.
1	Integrating Sphere Test	2024/8/31	WPT @ 25W/4000K	N/A	E1
2	Goniophotometer Test	2024/8/31	WPT @ 25W/4000K	N/A	E1
3	THD and PF Test	2024/8/31	WPT @ 25W/4000K	N/A	E1

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.

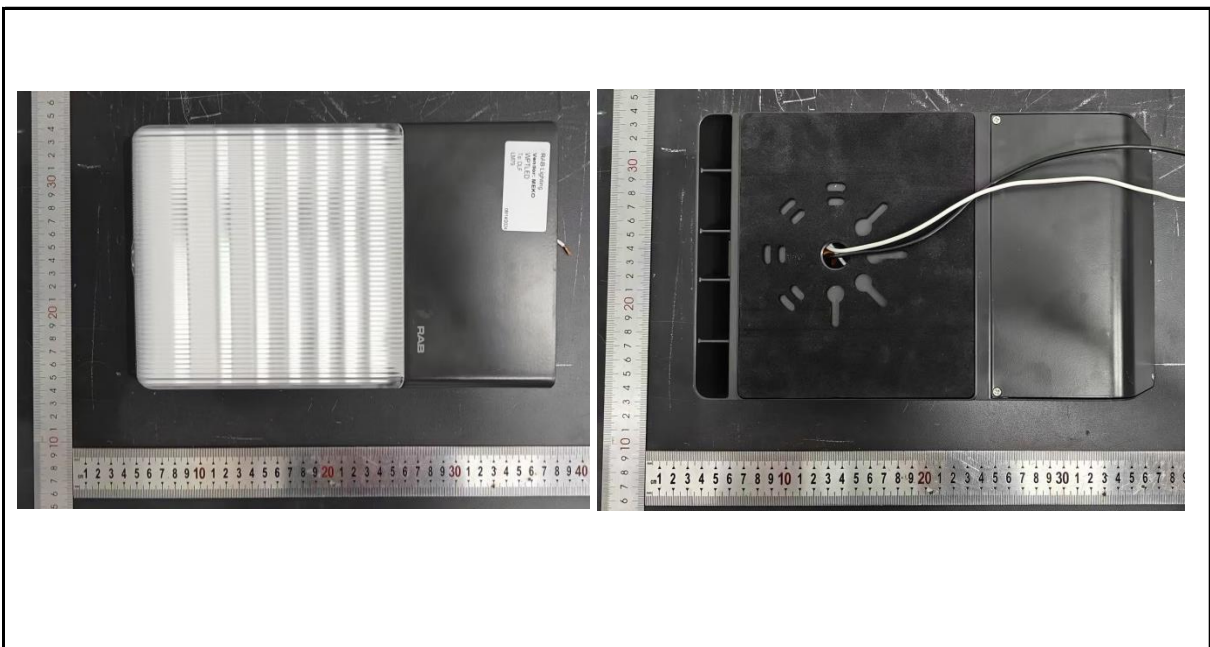
2、 The results reported herein have been performed in accordance with the laboratory's terms of accreditation. This report shall not be reproduced except in full without the written approval of the Laboratory. The results in this report apply to the test sample(s) mentioned above at the time of the testing 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/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 @ 25W/4000K	Sample ID.	E1
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 ± 0.2 percent under load.

The sample was measured using 4π geometry and operated at rated voltage and was stabilized before measurement. Chromaticity coordinates, correlated color temperature and color rendering index were calculated from the spectral radiant flux measurements taken at 1 nm intervals over the range of 380 to 780 nm.

Test Result

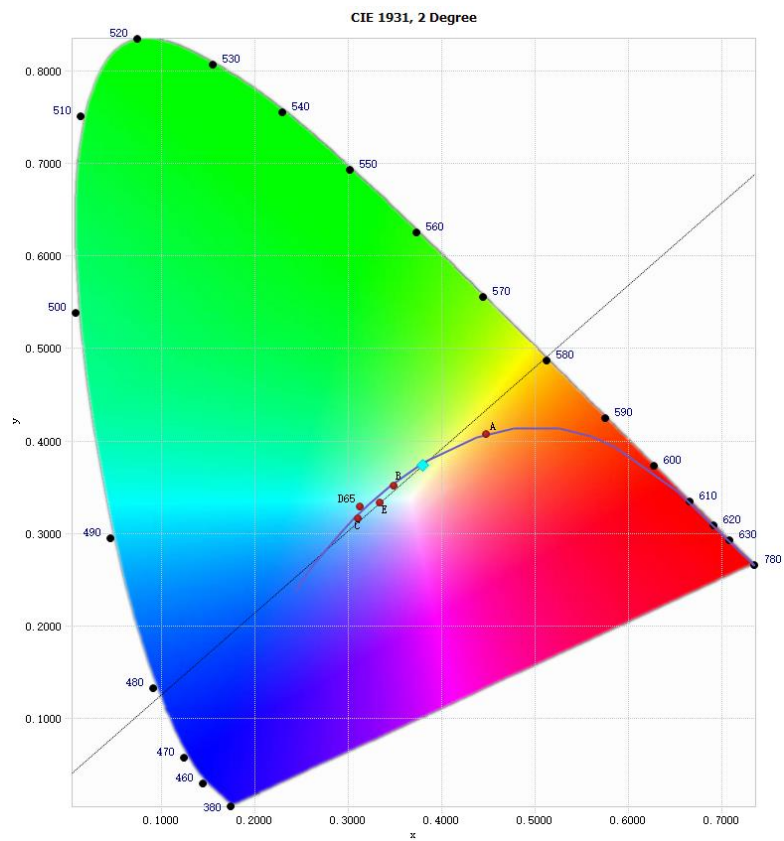
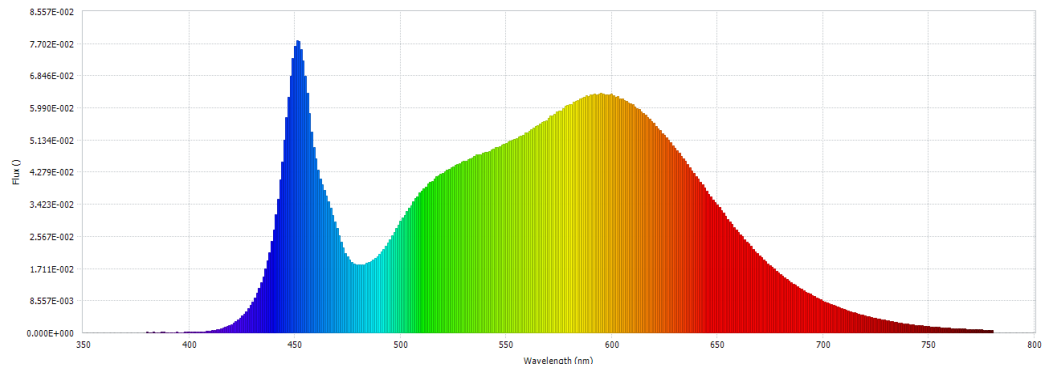
Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
119.97	60	0.206	24.6	0.993
277.03	60	0.094	25.2	0.964

Test Result

CCT (K)	CRI	R9	Duv
4006	84	16	-0.001

Rf	Rg	IES Rcs,h1
84	96	-11%

4.1 Integrating Sphere Test



4.1 Integrating Sphere Test

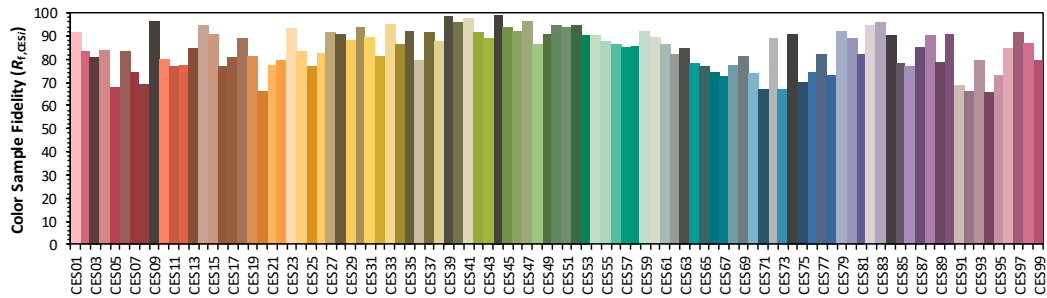
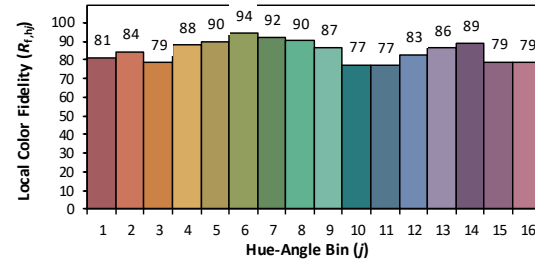
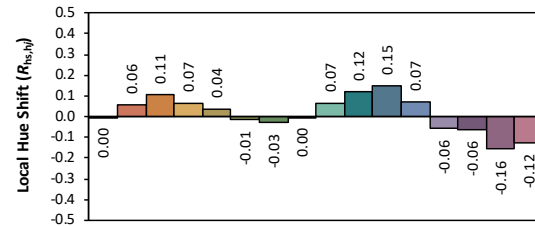
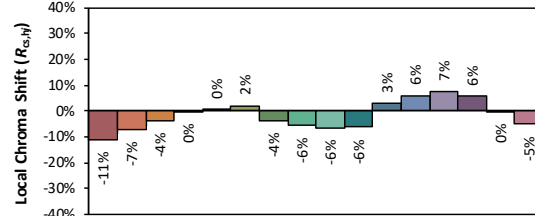
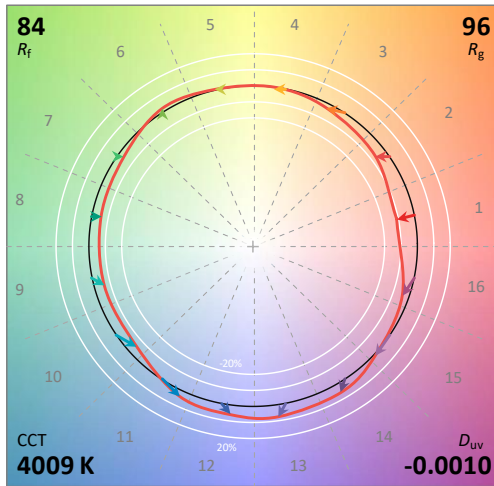
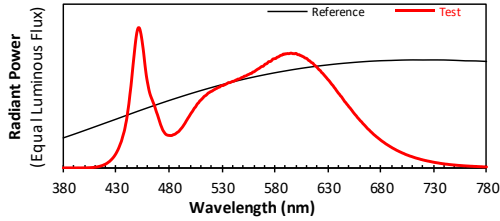
IES TM-30-18 Color Rendition Report

Source: DLF2409113-5a

Manufacturer: RAB Lighting Inc.

Date: 2024/8/31

Model: WPT @ 25W/4000K



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

x 0.3793
 y 0.3739
 u' 0.2255
 v' 0.5001

CIE 13.3-1995
(CRI)

R_a 85
 R_g 21

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	1.08E-04	485	1.86E-02	590	6.33E-02	695	9.89E-03
385	9.66E-05	490	2.09E-02	595	6.37E-02	700	8.49E-03
390	1.00E-04	495	2.48E-02	600	6.36E-02	705	7.25E-03
395	1.06E-04	500	2.96E-02	605	6.23E-02	710	6.23E-03
400	1.35E-04	505	3.39E-02	610	6.08E-02	715	5.30E-03
405	2.20E-04	510	3.77E-02	615	5.84E-02	720	4.50E-03
410	4.58E-04	515	4.04E-02	620	5.57E-02	725	3.85E-03
415	1.07E-03	520	4.25E-02	625	5.26E-02	730	3.26E-03
420	2.22E-03	525	4.42E-02	630	4.92E-02	735	2.76E-03
425	4.43E-03	530	4.58E-02	635	4.57E-02	740	2.33E-03
430	8.22E-03	535	4.69E-02	640	4.16E-02	745	1.96E-03
435	1.50E-02	540	4.80E-02	645	3.78E-02	750	1.69E-03
440	2.73E-02	545	4.93E-02	650	3.40E-02	755	1.43E-03
445	5.13E-02	550	5.04E-02	655	3.03E-02	760	1.21E-03
450	7.63E-02	555	5.18E-02	660	2.68E-02	765	1.03E-03
455	6.83E-02	560	5.33E-02	665	2.36E-02	770	8.94E-04
460	4.63E-02	565	5.52E-02	670	2.06E-02	775	7.62E-04
465	3.63E-02	570	5.71E-02	675	1.79E-02	780	6.41E-04
470	2.78E-02	575	5.90E-02	680	1.55E-02		
475	2.02E-02	580	6.07E-02	685	1.34E-02		
480	1.81E-02	585	6.23E-02	690	1.16E-02		

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	WPT @ 25W/4000K	Sample ID.	E1
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 ± 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	277.08	60	0.094	25.2	0.964
NON-WORST CASE	120.02	60	0.206	24.6	0.993

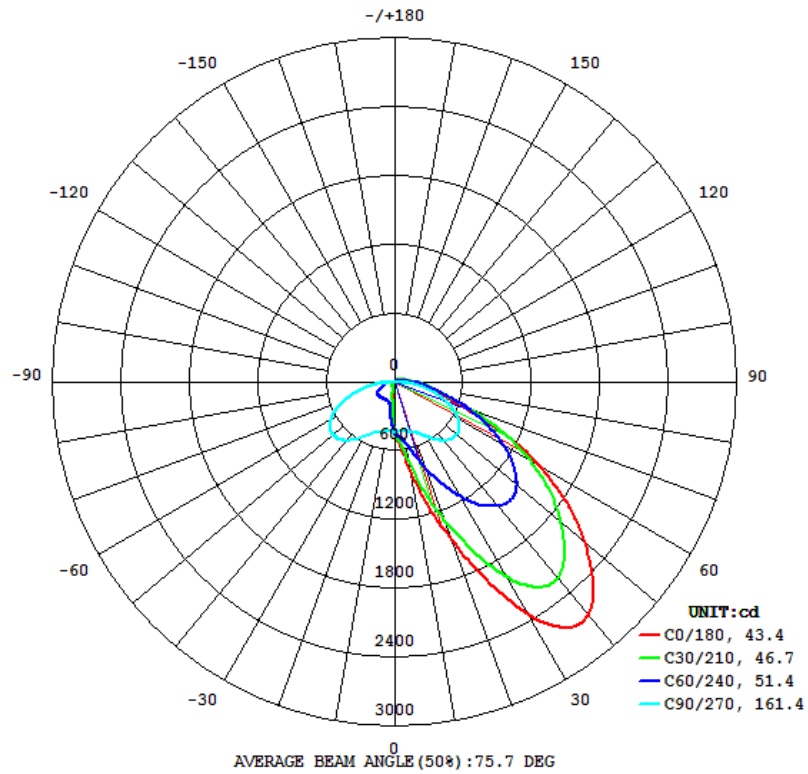
Test Result

Result type	Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
		C0-180	C90-270	C0-180	C90-270	
0° - 180° zones	3681	87.5	183.3	43.4	161.4	146.1
0° - 90° zones	3479	87.5	179.3	43.4	161.4	138.1

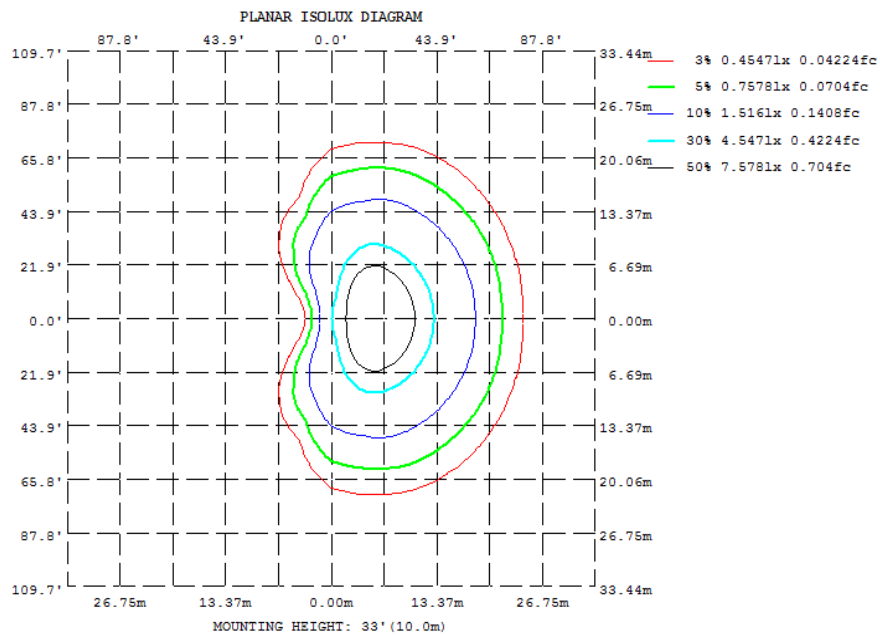
Zonal Lumen Requirement (80° - 90°)	BUG rating
4.27%	B0-U3-G2

4.2 Goniophotometer Test

Light Distrubtion Curve



Isolux Plot



4.2 Goniophotometer Test

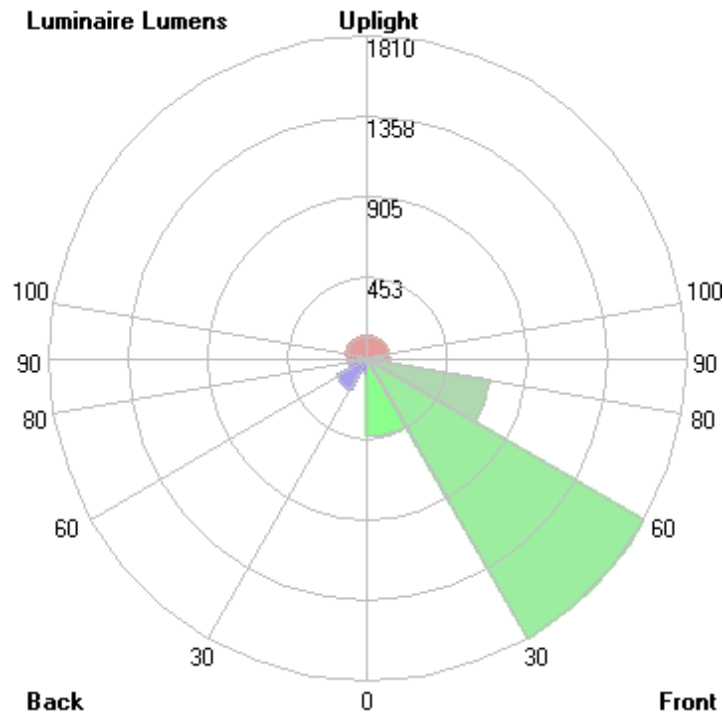
Zonal Lumen Summary

γ	C0	C45	C90	C135	C180	C225	C270	C315
10	767.0	613.7	441.0	177.8	127.1	177.8	441.0	613.7
20	1466	1062	469.4	110.4	46.93	110.4	469.4	1062
30	2330	1582	549.8	96.01	23.58	96.01	549.8	1582
40	2645	1877	671.4	97.20	13.01	97.20	671.4	1877
50	2178	1669	715.8	95.22	4.752	95.22	715.8	1669
60	1462	1250	647.8	77.05	0.3538	77.05	647.8	1250
70	640.4	726.2	472.7	51.39	0.1379	51.39	472.7	726.2
80	315.6	352.6	237.8	30.92	0.1448	30.92	237.8	352.6
90	187.7	199.4	59.98	16.78	0.2293	16.78	59.98	199.4
100	120.9	119.2	18.68	9.980	0.6874	9.980	18.68	119.2
110	83.04	77.34	12.00	6.767	1.142	6.767	12.00	77.34
120	56.47	52.91	8.937	5.137	1.460	5.137	8.937	52.91
130	43.59	38.58	6.800	4.238	1.751	4.238	6.800	38.58
140	35.61	28.34	5.044	3.552	1.916	3.552	5.044	28.34
150	27.55	19.15	3.620	2.630	1.651	2.630	3.620	19.15
160	16.84	8.932	2.428	1.742	1.298	1.742	2.428	8.932
170	3.041	1.998	1.463	1.231	1.151	1.231	1.463	1.998
180	1.010	1.072	1.094	1.053	1.009	1.053	1.094	1.072
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	39.28	0 - 10	39.28	1.07%
10-20	142.91	0 - 20	182.19	4.95%
20-30	334.14	0 - 30	516.33	14.03%
30-40	584.10	0 - 40	1100.43	29.89%
40-50	726.63	0 - 50	1827.06	49.63%
50-60	695.87	0 - 60	2522.93	68.54%
60-70	520.10	0 - 70	3043.03	82.67%
70-80	287.30	0 - 80	3330.33	90.47%
80-90	148.56	0 - 90	3478.89	94.51%
90-100	79.93	0 - 100	3558.82	96.68%
100-110	48.02	0 - 110	3606.84	97.98%
110-120	29.92	0 - 120	3636.76	98.80%
120-130	19.28	0 - 130	3656.04	99.32%
130-140	12.58	0 - 140	3668.62	99.66%
140-150	7.62	0 - 150	3676.24	99.87%
150-160	3.66	0 - 160	3679.90	99.97%
160-170	1.00	0 - 170	3680.90	100.00%
170-180	0.12	0 - 180	3681.02	100.00%

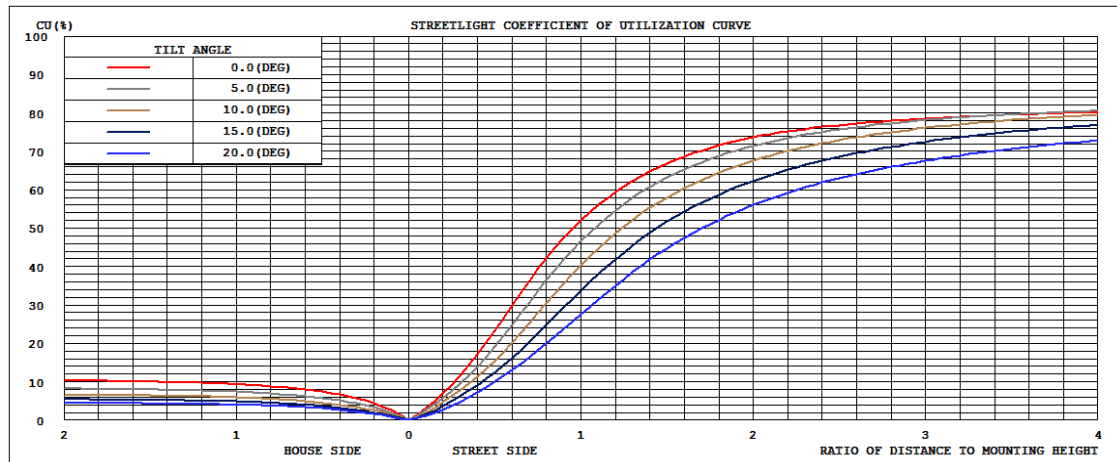
4.2 Goniophotometer Test

LCS/BUG

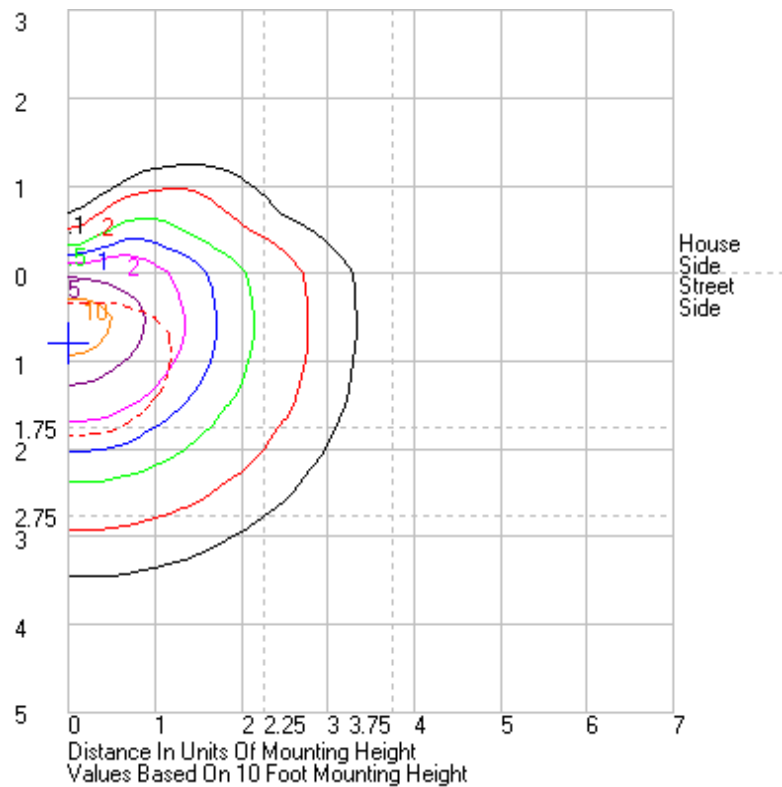


	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	437.4	N.A.	11.9
FM - Front-Medium (30-60)	1810.3	N.A.	49.2
FH - Front-High (60-80)	702.0	N.A.	19.1
FVH - Front-Very High (80-90)	127.2	N.A.	3.5
BL - Back-Low (0-30)	78.9	N.A.	2.1
BM - Back-Medium (30-60)	196.3	N.A.	5.3
BH - Back-High (60-80)	105.4	N.A.	2.9
BVH - Back-Very High (80-90)	21.4	N.A.	0.6
UL - Uplight-Low (90-100)	79.9	N.A.	2.2
UH - Uplight-High (100-180)	122.2	N.A.	3.3
Total	3681.0	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	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185	443.185
1	465.09	463.44	461.31	458.08	453.6	448.04	442.35	436.53	431.05	426.35	422.68	420.18	419.91	420.18	422.68	426.35	431.05	436.53	442.35	448.04	453.6	458.08	461.31	463.44	465.09
2	483.1	481.09	477.23	471.14	463.1	452.9	441.39	429.66	417.71	405.92	395.43	388.83	387.17	388.83	395.43	405.92	417.71	429.66	441.39	452.9	463.1	471.14	477.23	481.09	483.1
3	498.6	496.02	490.98	482.67	471.36	456.98	439.95	421.83	401.44	379.04	357.78	344.02	341.19	344.02	357.78	379.04	401.44	421.83	439.95	456.98	471.36	482.67	490.98	496.02	498.6
4	515.47	511.89	504.11	492.87	478.87	461.18	439.07	413.77	382.23	345.74	311.99	290.14	284.94	290.14	311.99	345.74	382.23	413.77	439.07	461.18	478.87	492.87	504.11	511.89	515.47
5	537.61	532.37	519.73	503.41	485.86	465.34	438.54	405.82	360.97	308.57	264.3	239.34	234.26	239.34	264.3	308.57	360.97	405.82	438.54	465.34	485.86	503.41	519.73	532.37	537.61
6	568.15	559.85	540.34	515.85	492.64	469.23	438.29	397.97	338.35	269.63	223.77	202.77	198.69	202.77	223.77	269.63	338.35	397.97	438.29	469.23	492.64	515.85	540.34	559.85	568.15
7	607.38	595.64	569.21	532.36	499.83	473.02	438.43	390.52	315.12	236.27	194.88	178.68	174.95	178.68	194.88	236.27	315.12	390.52	438.43	473.02	499.83	532.36	569.21	595.64	607.38
8	654.79	634.64	603.53	553.38	508.49	476.71	438.75	383.52	291.72	210.03	175.19	161.77	158.4	161.77	175.19	210.03	291.72	383.52	438.75	476.71	508.49	553.38	603.53	634.64	654.79
9	709.59	686.56	641.11	581.49	519.28	479.74	439.77	377.05	269.95	191.39	160.54	146.43	142.2	146.43	160.54	191.39	269.95	377.05	439.77	479.74	519.28	581.49	641.11	686.56	709.59
10	767	742.26	686.22	613.66	532.67	482.7	441.02	371.05	250.48	177.82	148	131.41	127.09	131.41	148	177.82	250.48	371.05	441.02	482.7	532.67	613.66	686.22	742.26	767
11	829.13	801.8	736.48	642.51	548.7	485.78	442.58	365.78	234.21	167.45	135.82	117.83	113.2	117.83	135.82	167.45	234.21	365.78	442.58	485.78	548.7	642.51	736.48	801.8	829.13
12	894.03	863.49	789.93	681.54	567.71	489.26	444.35	361.32	221.55	158.96	124.17	105.27	100.66	105.27	124.17	158.96	221.55	361.32	444.35	489.26	567.71	681.54	789.93	863.49	894.03
13	960.73	927.09	846.75	723.23	588.79	493.32	446.58	357.36	211.82	151.4	113.78	94.35	89.91	94.35	113.78	151.4	211.82	357.36	446.58	493.32	588.79	723.23	846.75	927.09	960.73
14	1028.6	992.27	904.26	768.27	610.56	498.43	448.97	353.65	204.43	144.09	104.33	84.87	80.64	84.87	104.33	144.09	204.43	353.65	448.97	498.43	610.56	768.27	904.26	992.27	1028.6
15	1099.01	1059.11	962.62	814.51	637.66	504.58	451.62	350.52	198.91	137.02	96.04	76.87	72.93	76.87	96.04	137.02	198.91	350.52	451.62	504.58	637.66	814.51	962.62	1059.11	1099.01
16	1170.58	1127.88	1023.31	862.47	666.86	511.75	454.6	347.81	194.82	130.35	88.87	69.93	66.21	69.93	88.87	130.35	194.82	347.81	454.6	511.75	666.86	862.47	1023.31	1127.88	1170.58
17	1244.01	1198.89	1085.04	910.64	697.61	520.22	457.73	345.96	191.7	124.36	82.77	64.47	60.43	64.47	82.77	124.36	191.7	345.96	457.73	520.22	697.61	910.64	1085.04	1198.89	1244.01
18	1314.69	1270.73	1148.81	960.65	730.15	530.01	461.13	344.65	189.3	119.1	77.52	59.28	55.36	59.28	77.52	119.1	189.3	344.65	461.13	530.01	730.15	960.65	1148.81	1270.73	1314.69
19	1385.26	1342.59	1213.39	1010.97	763.19	541.08	465.1	344.24	187.24	114.39	73.05	54.45	50.95	54.45	73.05	114.39	187.24	344.24	465.1	541.08	763.19	1010.97	1213.39	1342.59	1385.26
20	1465.91	1415.96	1278.28	1062.18	797.18	553.22	469.45	344.2	185.43	110.42	69.19	50.41	46.93	50.41	69.19	110.42	185.43	344.2	469.45	553.22	797.18	1062.18	1278.28	1415.96	1465.91
21	1547.08	1493.39	1343.24	1113.93	832.22	566.65	474.22	344.85	183.9	107.15	65.98	46.92	43.37	46.92	65.98	107.15	183.9	344.85	474.22	566.65	832.22	1113.93	1343.24	1493.39	1547.08
22	1632.33	1572.82	1408.47	1166.49	867.35	580.74	479.47	346.26	182.56	104.44	63.21	43.82	40.19	43.82	63.21	104.44	182.56	346.26	479.47	580.74	867.35	1166.49	1408.47	1572.82	1632.33
23	1718.93	1655.02	1477.48	1219.68	903.05	596.12	485.37	348.18	181.4	102.29	60.6	41.01	37.31	41.01	60.6	102.29	181.4	348.18	485.37	596.12	903.05	1219.68	1477.48	1655.02	1718.93
24	1804.41	1738.04	1546.86	1272.72	938.25	612.33	492.01	350.55	180.51	100.61	58.48	38.54	34.73	38.54	58.48	100.61	180.51	350.55	492.01	612.33	938.25	1272.72	1546.86	1738.04	1804.41
25	1895.51	1821.59	1616.56	1324.67	974.33	628.99	499.44	353.43	179.87	99.24	56.65	36.32	32.42	36.32	56.65	99.24	179.87	353.43	499.44	628.99	974.33	1324.67	1616.56	1821.59	1895.51
26	1985.12	1905.94	1688.05	1375.9	1010.81	646.46	507.57	356.8	179.47	98.21	55.07	34.3	30.32	34.3	55.07	98.21	179.47	356.8	507.57	646.46	1010.81	1375.9	1688.05	1905.94	1985.12
27	2074.08	1989.7	1757.08	1427.55	1047.06	664.26	516.8	360.47	179.32	97.4	53.7	32.52	28.42	32.52	53.7	97.4	179.32	360.47	516.8	664.26	1047.06	1427.55	1757.08	1989.7	2074.08
28	2164.14	2070.96	1825.99	1480.33	1083.18	682.91	527.15	364.13	179.42	96.8	52.49	30.89	26.63	30.89	52.49	96.8	179.42	364.13	527.15	682.91	1083.18	1480.33	1825.99	2070.96	2164.14
29	2248.64	2150.66	1890.97	1531.72	1119.19	701.56	537.93	368.17	179.81	96.35	51.45	29.43	25.04	29.43	51.45	96.35	179.81	368.17	537.93	701.56	1119.19	1531.72	1890.97	2150.66	2248.64
30	2329.57	2226.4	1954.53	1582.05	1154.14	720.48	549.76	372.3	180.45	96.01	50.55	28.09	23.58	28.09	50.55	96.01	180.45	372.3	549.76	720.48	1154.14	1582.05	1954.53	2226.4	2329.57
31	2406.8	2295.01	2012.9	1630.07	1188.94	739.49	561.94	376.08	181.11	95.74	49.75	26.86	22.23	26.86	49.75	95.74	181.11	376.08	561.94	739.49	1188.94	1630.07	2012.9	2295.01	2406.8
32	2471.68	2357.5	2066.38	1675.16	1221.77	758.19	574.65	379.9	181.92	95.56	49	25.73	20.98	25.73	49	95.56	181.92	379.9	574.65	758.19	1221.77	1675.16	2066.38	2357.5	2471.68
33	2531.42	2411.04	2113.86	1717.6	1254.32	777	587.36	383.16	182.63	95.46	48.3	24.71	19.81	24.71	48.3	95.46	182.63	383.16	587.36	777	1254.32	1717.6	2113.86	2411.04	2531.42
34	2576.55	2454.11	2154.19	1755.38	1283.95	795.37	600.49	386.16	183.33	95.48	47.67	23.73	18.7	23.73	47.67	95.48	183.33	386.16	600.49	795.37	1283.95	1755.38	2154.19	2454.11	2576.55
35	2613.28	2487.01	2185.88	1789.81	1312.98	813.76	613.53	388.62	184.05	95.62	47.07	22.81	17.65	22.81	47.07	95.62	184.05	388.62	613.53	813.76	1312.98	1789.81	2185.88	2487.01	2613.28
36	2637.42	2510.91	2209.02	1818.79	1337.86	831.55	626.2	390.7	184.65	95.86	46.48	21.95	16.65	21.95	46.48	95.86	184.65	390.7	626.2	831.55	1337.86	1818.79	2209.02	2510.91	2637.42
37	2653.47	2525.44	2223.76	1842.42	1359.27	848.39	638.4	392.3	185.16	96.17	45.9	21.12	15.7	21.12	45.9	96.17	185.16	392.3	638.4	848.39	1359.27	1842.42	2223.76	2525.44	2653.47
38	2660.04	2532.06	2230.74	1860.3	1378.99	864.75	650.08	393.05	185.78	96.53	45.32	20.31	14.78	20.31	45.32	96.53	185.78	393.05	650.08	864.75	1378.99	1860.3	2230.74	2532.06	2660.04
39	2656.35	2530.5	2231.01	1871.69	1396.91	880.3	660.96	393.02	186.48	96.86	44.71	19.54	13.9	19.54	44.71	96.86	186.48	393.02	660.96	880.3	1396.91	1871.69	2231.01	2530.5	2656.35
40	2645.06	2520.9	2225.35	1876.83	1412.96	894.66	671.42	392.35	187.25	97.2	44.08	18.78	13.01	18.78	44.08	97.2	187.25	392.35	671.42	894.66	1412.96	1876.83	2225.35	2520.9	2645.06
41	2624.12	2504.12	2214.22	1876.02	1426.72	907.53	680.67	390.62	188.12	97.46	43.44	18.04	12.16	18.04	43.44	97.46	188.12								

50	2177.7	2115.34	1906.93	1669.4	1402.85	952.56	715.8	342.07	193.98	95.22	34.88	10.94	4.75	10.94	34.88	95.22	193.98	342.07	715.8	952.56	1402.85	1669.4	1906.93	2115.34	2177.7
51	2115.44	2058.51	1860.92	1631.78	1383.14	948.44	714.03	334.85	193.45	94.22	33.77	10.33	4.09	10.33	33.77	94.22	193.45	334.85	714.03	948.44	1383.14	1631.78	1860.92	2058.51	2115.44
52	2051.7	2000.54	1813.82	1592.65	1360.2	942.46	711.29	327.5	192.67	92.97	32.66	9.66	3.54	9.66	32.66	92.97	192.67	327.5	711.29	942.46	1360.2	1592.65	1813.82	2000.54	2051.7
53	1986.51	1941.82	1765.75	1552.27	1334.72	934.53	707.69	320.14	191.53	91.55	31.56	9.08	3.12	9.08	31.56	91.55	191.53	320.14	707.69	934.53	1334.72	1552.27	1765.75	1941.82	1986.51
54	1918.47	1879.35	1716.43	1511.45	1307.19	925.66	702.9	312.93	190.15	89.97	30.49	8.63	2.77	8.63	30.49	89.97	190.15	312.93	702.9	925.66	1307.19	1511.45	1716.43	1879.35	1918.47
55	1847.21	1813.71	1664.75	1469.27	1277.67	914.47	696.77	305.52	188.52	88.18	29.41	8.26	2.45	8.26	29.41	88.18	188.52	305.52	696.77	914.47	1277.67	1469.27	1664.75	1813.71	1847.21
56	1772.51	1746.38	1610.44	1427.26	1247.41	902.06	689.19	298.13	186.61	86.21	28.4	7.87	2.16	7.87	28.4	86.21	186.61	298.13	689.19	902.06	1247.41	1427.26	1610.44	1746.38	1772.51
57	1694.83	1674.78	1553.86	1383.75	1214.58	888.9	680.98	290.92	184.43	84.09	27.41	7.55	1.93	7.55	27.41	84.09	184.43	290.92	680.98	888.9	1214.58	1383.75	1553.86	1674.78	1694.83
58	1617.25	1602.98	1495.12	1339.6	1179.6	874.27	671.03	283.68	182.06	81.83	26.48	7.24	1.73	7.24	26.48	81.83	182.06	283.68	671.03	874.27	1179.6	1339.6	1495.12	1602.98	1617.25
59	1538.7	1530.84	1434.81	1294.66	1142.95	858.35	660.04	276.32	179.27	79.47	25.57	7.01	1.57	7.01	25.57	79.47	179.27	276.32	660.04	858.35	1142.95	1294.66	1434.81	1530.84	1538.7
60	1461.53	1457.68	1374.21	1249.9	1105.45	841.93	647.77	268.97	176.1	77.05	24.71	6.6	0.35	6.6	24.71	77.05	176.1	268.97	647.77	841.93	1105.45	1249.9	1374.21	1457.68	1461.53
61	1381.93	1384.27	1313.8	1202.15	1066.52	823.28	634.7	261.64	172.45	74.55	23.88	5.43	0.14	5.43	23.88	74.55	172.45	261.64	634.7	823.28	1066.52	1202.15	1313.8	1384.27	1381.93
62	1302.98	1312.38	1254.55	1152.58	1027.22	803.17	620.79	254.66	168.58	72.02	22.96	5.23	0.14	5.23	22.96	72.02	168.58	254.66	620.79	803.17	1027.22	1152.58	1254.55	1312.38	1302.98
63	1222.25	1238.51	1191.95	1102.25	986.87	781.35	605.54	247.41	163.96	69.44	21.48	5.1	0.14	5.1	21.48	69.44	163.96	247.41	605.54	781.35	986.87	1102.25	1191.95	1238.51	1222.25
64	1136.31	1160.01	1127.37	1050.56	945.44	757.22	589.77	240.24	158.8	66.85	20.56	4.97	0.14	4.97	20.56	66.85	158.8	240.24	589.77	757.22	945.44	1050.56	1127.37	1160.01	1136.31
65	1049.3	1076.39	1059.61	998.95	904.43	731.26	572.69	232.99	153.13	64.31	19.87	4.85	0.14	4.85	19.87	64.31	153.13	232.99	572.69	731.26	904.43	998.95	1059.61	1076.39	1049.3
66	959.02	992.05	990.03	945.74	862.53	703.28	554.61	225.66	147.11	61.45	19.2	4.72	0.14	4.72	19.2	61.45	147.11	225.66	554.61	703.28	862.53	945.74	990.03	992.05	959.02
67	871.91	907.38	918.74	892.38	820.74	673.7	535.62	218.41	140.8	58.59	18.53	4.6	0.14	4.6	18.53	58.59	140.8	218.41	535.62	673.7	820.74	892.38	918.74	907.38	871.91
68	787.58	825.6	847.23	836.9	777.48	642.68	515.42	211.15	134.61	56.09	17.87	4.48	0.14	4.48	17.87	56.09	134.61	211.15	515.42	642.68	777.48	836.9	847.23	825.6	787.58
69	709.04	748.29	777.88	781.78	734.21	610.57	494.64	203.95	128.47	53.72	17.23	4.35	0.14	4.35	17.23	53.72	128.47	203.95	494.64	610.57	734.21	781.78	777.88	748.29	709.04
70	640.37	677.33	712.17	726.18	689.8	578.32	472.66	196.58	122.47	51.39	16.6	4.22	0.14	4.22	16.6	51.39	122.47	196.58	472.66	578.32	689.8	726.18	712.17	677.33	640.37
71	588.8	617.91	651.74	672.66	650.99	545.2	449.97	189.14	116.27	49.11	15.98	4.1	0.14	4.1	15.98	49.11	116.27	189.14	449.97	545.2	650.99	672.66	651.74	617.91	588.8
72	537.34	565.59	600.72	622.94	606.14	512.38	426.91	181.69	110.28	46.97	15.37	3.97	0.14	3.97	15.37	46.97	110.28	181.69	426.91	512.38	606.14	622.94	600.72	565.59	537.34
73	491.43	517.45	552.77	576.56	562.13	479.15	403.08	174.05	104.75	44.78	14.77	3.84	0.13	3.84	14.77	44.78	104.75	174.05	403.08	479.15	562.13	576.56	552.77	517.45	491.43
74	455.24	478.46	510.28	533.11	521.81	446.85	379.43	166.14	99.51	42.69	14.19	3.72	0.13	3.72	14.19	42.69	99.51	166.14	379.43	446.85	521.81	533.11	510.28	478.46	455.24
75	424.71	444.71	473.85	494.16	483.91	414.98	355.72	157.61	94.48	40.6	13.61	3.6	0.13	3.6	13.61	40.6	94.48	157.61	355.72	414.98	483.91	494.16	473.85	444.71	424.71
76	398.17	415.32	441.69	459.34	449.19	383.92	331.62	148.65	89.77	38.55	13.05	3.48	0.14	3.48	13.05	38.55	89.77	148.65	331.62	383.92	449.19	459.34	441.69	415.32	398.17
77	374.6	389.45	413.47	428.52	417.26	354.07	308.12	138.83	85.27	36.59	12.51	3.36	0.14	3.36	12.51	36.59	85.27	138.83	308.12	354.07	417.26	428.52	413.47	389.45	374.6
78	353.39	366.17	387.94	400.5	388.37	325.39	284.57	128.98	80.84	34.65	11.98	3.24	0.14	3.24	11.98	34.65	80.84	128.98	284.57	325.39	388.37	400.5	387.94	366.17	353.39
79	333.72	345.07	365.19	375.57	361.78	297.94	260.96	119.47	76.64	32.75	11.46	3.13	0.14	3.13	11.46	32.75	76.64	119.47	260.96	297.94	361.78	375.57	365.19	345.07	333.72
80	315.62	325.75	344.27	352.63	336.83	272.05	237.84	110.49	72.52	30.92	10.95	3.02	0.14	3.02	10.95	30.92	72.52	110.49	237.84	272.05	336.83	352.63	344.27	325.75	315.62
81	298.95	307.93	325.14	332.03	313.96	247.72	214.88	102.07	68.46	29.16	10.46	2.92	0.15	2.92	10.46	29.16	68.46	102.07	214.88	247.72	313.96	332.03	325.14	307.93	298.95
82	283.56	291.22	307.31	312.9	293.25	225.29	192.68	94.39	64.44	27.43	9.99	2.82	0.15	2.82	9.99	27.43	64.44	94.39	192.68	225.29	293.25	312.9	307.31	291.22	283.56
83	268.68	275.88	290.87	295.41	274.48	204.82	171.76	87.5	60.66	25.82	9.54	2.72	0.16	2.72	9.54	25.82	60.66	87.5	171.76	204.82	274.48	295.41	290.87	275.88	268.68
84	254.94	261.46	275.31	278.9	257.27	186.05	152.47	81.28	56.91	24.26	9.1	2.62	0.16	2.62	9.1	24.26	56.91	81.28	152.47	186.05	257.27	278.9	275.31	261.46	254.94
85	241.96	247.82	260.85	263.49	241.64	168.98	134.12	75.65	53.35	22.79	8.68	2.53	0.17	2.53	8.68	22.79	53.35	75.65	134.12	168.98	241.64	263.49	260.85	247.82	241.96
86	229.8	235.25	247.19	249.02	227.37	153.98	116.21	70.48	49.95	21.42	8.28	2.45	0.18	2.45	8.28	21.42	49.95	70.48	116.21	153.98	227.37	249.02	247.19	235.25	229.8
87	218.19	223.15	234.3	235.56	213.86	141.11	99.62	65.64	46.76	20.13	7.89	2.37	0.19	2.37	7.89	20.13	46.76	65.64	99.62	141.11	213.86	235.56	234.3	223.15	218.19
88	207.56	211.86	222.31	222.71	201.47	129.63	84.58	61.1	43.77	18.93	7.53	2.29	0.2	2.29	7.53	18.93	43.77	61.1	84.58	129.63	201.47	222.71	222.31	211.86	207.56
89	197.27	201.43	211.06	210.74	189.74	119.56	71.04	56.75	41	17.81	7.2	2.22	0.21	2.22	7.2	17.81	41	56.75	71.04	119.56	189.74	210.74	211.06	201.43	197.27
90	187.74	191.55	200.45	199.42	178.83	111.17	59.98	52.62	38.41	16.78	6.87	2.15	0.23	2.15	6.87	16.78	38.41	52.62	59.98	111.17	178.83	199.42	200.45	191.55	187.74
91	179.08	182.39	190.4	188.87	168.65	103.84	50.04	48.74	36.02	15.82	6.57	2.09	0.24	2.09	6.57	15.82	36.02	48.74	50.04	103.84	168.65	188.87	190.4	182.39	179.08
92	170.94	173.86	181.14	178.86	159.04	97.2	41.68	45.15	33.79	14.93	6.28	2.03	0.26	2.03	6.28	14.93	33.79	45.15	41.68	97.2	159.04	178.86	181.14	173.86	170.94
93	163.06	165.75	172.47	169.65	150.2	91.29	35.44	41.89	31.75	14.12	6.01	1.98	0.28	1.98	6.01	14.12	31.75	41.89	35.44	91.29	150.2	169.65	172.47	165.75	163.06
94	155.72	158.2																							

104	103.97	104.65	106.16	99.62	83.48	48.52	15.16	20.48	17.04	8.41	4.14	1.79	0.88	1.79	4.14	8.41	17.04	20.48	15.16	48.52	83.48	99.62	106.16	104.65	103.97
105	100.06	100.82	102.08	95.48	79.6	46.03	14.51	19.4	16.19	8.08	4.04	1.79	0.92	1.79	4.04	8.08	16.19	19.4	14.51	46.03	79.6	95.48	102.08	100.82	100.06
106	96.45	97.16	98.14	91.51	75.82	43.69	13.91	18.37	15.39	7.77	3.94	1.79	0.96	1.79	3.94	7.77	15.39	18.37	13.91	43.69	75.82	91.51	98.14	97.16	96.45
107	93.02	93.6	94.47	87.73	72.23	41.49	13.39	17.45	14.66	7.5	3.85	1.79	1.01	1.79	3.85	7.5	14.66	17.45	13.39	41.49	72.23	87.73	94.47	93.6	93.02
108	89.69	90.14	90.93	84.13	68.74	39.43	12.89	16.59	13.97	7.23	3.76	1.79	1.05	1.79	3.76	7.23	13.97	16.59	12.89	39.43	68.74	84.13	90.93	90.14	89.69
109	86.33	86.84	87.51	80.71	65.53	37.5	12.42	15.79	13.33	6.99	3.69	1.8	1.1	1.8	3.69	6.99	13.33	15.79	12.42	37.5	65.53	80.71	87.51	86.84	86.33
110	83.04	83.61	84.17	77.34	62.48	35.67	12	15.05	12.75	6.77	3.61	1.81	1.14	1.81	3.61	6.77	12.75	15.05	12	35.67	62.48	77.34	84.17	83.61	83.04
111	79.81	80.44	80.9	74.16	59.54	33.96	11.61	14.35	12.18	6.55	3.55	1.81	1.19	1.81	3.55	6.55	12.18	14.35	11.61	33.96	59.54	74.16	80.9	80.44	79.81
112	76.71	77.29	77.83	71.15	56.86	32.37	11.25	13.73	11.65	6.35	3.49	1.82	1.22	1.82	3.49	6.35	11.65	13.73	11.25	32.37	56.86	71.15	77.83	77.29	76.71
113	73.63	74.19	74.78	68.31	54.35	30.84	10.91	13.12	11.16	6.17	3.43	1.82	1.26	1.82	3.43	6.17	11.16	13.12	10.91	30.84	54.35	68.31	74.78	74.19	73.63
114	70.55	71.26	71.93	65.72	52.01	29.42	10.58	12.55	10.68	5.98	3.37	1.82	1.27	1.82	3.37	5.98	10.68	12.55	10.58	29.42	52.01	65.72	71.93	71.26	70.55
115	67.6	68.51	69.24	63.28	49.82	28.1	10.28	12.02	10.25	5.81	3.31	1.82	1.29	1.82	3.31	5.81	10.25	12.02	10.28	28.1	49.82	63.28	69.24	68.51	67.6
116	64.87	65.92	66.75	60.93	47.73	26.85	9.99	11.52	9.83	5.66	3.26	1.82	1.32	1.82	3.26	5.66	9.83	11.52	9.99	26.85	47.73	60.93	66.75	65.92	64.87
117	62.81	63.85	64.28	58.7	45.82	25.68	9.71	11.07	9.44	5.51	3.22	1.83	1.35	1.83	3.22	5.51	9.44	11.07	9.71	25.68	45.82	58.7	64.28	63.85	62.81
118	60.46	61.62	62.21	56.66	44.02	24.57	9.44	10.63	9.08	5.38	3.18	1.85	1.39	1.85	3.18	5.38	9.08	10.63	9.44	24.57	44.02	56.66	62.21	61.62	60.46
119	58.32	59.42	60.24	54.73	42.31	23.54	9.18	10.22	8.74	5.25	3.15	1.86	1.42	1.86	3.15	5.25	8.74	10.22	9.18	23.54	42.31	54.73	60.24	59.42	58.32
120	56.47	57.59	58.33	52.91	40.71	22.56	8.94	9.83	8.42	5.14	3.12	1.87	1.46	1.87	3.12	5.14	8.42	9.83	8.94	22.56	40.71	52.91	58.33	57.59	56.47
121	54.73	55.88	56.56	51.16	39.19	21.64	8.7	9.47	8.12	5.03	3.09	1.89	1.5	1.89	3.09	5.03	8.12	9.47	8.7	21.64	39.19	51.16	56.56	55.88	54.73
122	53.16	54.29	54.87	49.53	37.75	20.77	8.47	9.13	7.84	4.92	3.07	1.9	1.54	1.9	3.07	4.92	7.84	9.13	8.47	20.77	37.75	49.53	54.87	54.29	53.16
123	51.7	52.8	53.27	47.92	36.4	19.95	8.24	8.81	7.57	4.83	3.05	1.92	1.58	1.92	3.05	4.83	7.57	8.81	8.24	19.95	36.4	47.92	53.27	52.8	51.7
124	50.34	51.37	51.73	46.42	35.09	19.16	8.02	8.51	7.32	4.74	3.03	1.93	1.62	1.93	3.03	4.74	7.32	8.51	8.02	19.16	35.09	46.42	51.73	51.37	50.34
125	49.03	50.04	50.27	44.98	33.85	18.4	7.8	8.22	7.08	4.64	3	1.94	1.65	1.94	3	4.64	7.08	8.22	7.8	18.4	33.85	44.98	50.27	50.04	49.03
126	47.8	48.77	48.88	43.59	32.69	17.69	7.6	7.94	6.86	4.55	2.98	1.94	1.67	1.94	2.98	4.55	6.86	7.94	7.6	17.69	32.69	43.59	48.88	48.77	47.8
127	46.65	47.58	47.54	42.26	31.55	17	7.39	7.67	6.65	4.46	2.96	1.95	1.69	1.95	2.96	4.46	6.65	7.67	7.39	17	31.55	42.26	47.54	47.58	46.65
128	45.56	46.44	46.23	40.99	30.47	16.34	7.19	7.41	6.44	4.39	2.93	1.96	1.71	1.96	2.93	4.39	6.44	7.41	7.19	16.34	30.47	40.99	46.23	46.44	45.56
129	44.56	45.32	44.97	39.76	29.43	15.71	6.99	7.17	6.23	4.31	2.91	1.96	1.73	1.96	2.91	4.31	6.23	7.17	6.99	15.71	29.43	39.76	44.97	45.32	44.56
130	43.59	44.29	43.76	38.58	28.43	15.11	6.8	6.94	6.05	4.24	2.89	1.96	1.75	1.96	2.89	4.24	6.05	6.94	6.8	15.11	28.43	38.58	43.76	44.29	43.59
131	42.66	43.27	42.61	37.43	27.48	14.53	6.61	6.72	5.88	4.17	2.86	1.96	1.77	1.96	2.86	4.17	5.88	6.72	6.61	14.53	27.48	37.43	42.61	43.27	42.66
132	41.75	42.3	41.49	36.31	26.55	13.97	6.42	6.51	5.7	4.1	2.84	1.97	1.79	1.97	2.84	4.1	5.7	6.51	6.42	13.97	26.55	36.31	41.49	42.3	41.75
133	40.9	41.36	40.4	35.26	25.66	13.44	6.23	6.3	5.54	4.03	2.82	1.97	1.81	1.97	2.82	4.03	5.54	6.3	6.23	13.44	25.66	35.26	40.4	41.36	40.9
134	40.09	40.44	39.34	34.2	24.78	12.93	6.05	6.1	5.38	3.96	2.79	1.97	1.83	1.97	2.79	3.96	5.38	6.1	6.05	12.93	24.78	34.2	39.34	40.44	40.09
135	39.31	39.55	38.3	33.17	23.94	12.43	5.87	5.91	5.24	3.9	2.77	1.97	1.85	1.97	2.77	3.9	5.24	5.91	5.87	12.43	23.94	33.17	38.3	39.55	39.31
136	38.53	38.7	37.3	32.17	23.11	11.95	5.69	5.72	5.09	3.83	2.75	1.96	1.87	1.96	2.75	3.83	5.09	5.72	5.69	11.95	23.11	32.17	37.3	38.7	38.53
137	37.79	37.86	36.31	31.18	22.32	11.47	5.52	5.54	4.95	3.77	2.72	1.96	1.89	1.96	2.72	3.77	4.95	5.54	5.52	11.47	22.32	31.18	36.31	37.86	37.79
138	37.06	37.02	35.34	30.22	21.53	11.02	5.36	5.36	4.8	3.7	2.69	1.95	1.9	1.95	2.69	3.7	4.8	5.36	5.36	11.02	21.53	30.22	35.34	37.02	37.06
139	36.34	36.2	34.39	29.28	20.75	10.57	5.2	5.19	4.67	3.63	2.66	1.94	1.91	1.94	2.66	3.63	4.67	5.19	5.2	10.57	20.75	29.28	34.39	36.2	36.34
140	35.61	35.39	33.44	28.34	20	10.14	5.04	5.02	4.52	3.55	2.62	1.93	1.92	1.93	2.62	3.55	4.52	5.02	5.04	10.14	20	28.34	33.44	35.39	35.61
141	34.87	34.57	32.51	27.42	19.25	9.71	4.89	4.84	4.38	3.47	2.57	1.91	1.9	1.91	2.57	3.47	4.38	4.84	4.89	9.71	19.25	27.42	32.51	34.57	34.87
142	34.12	33.75	31.57	26.5	18.51	9.28	4.75	4.68	4.24	3.39	2.53	1.89	1.89	1.89	2.53	3.39	4.24	4.68	4.75	9.28	18.51	26.5	31.57	33.75	34.12
143	33.4	32.92	30.65	25.6	17.78	8.83	4.6	4.53	4.11	3.31	2.48	1.87	1.88	1.87	2.48	3.31	4.11	4.53	4.6	8.83	17.78	25.6	30.65	32.92	33.4
144	32.65	32.09	29.73	24.68	17.03	8.4	4.46	4.37	3.97	3.22	2.43	1.84	1.86	1.84	2.43	3.22	3.97	4.37	4.46	8.4	17.03	24.68	29.73	32.09	32.65
145	31.85	31.24	28.8	23.79	16.28	7.97	4.32	4.22	3.83	3.12	2.37	1.8	1.83	1.8	2.37	3.12	3.83	4.22	4.32	7.97	16.28	23.79	28.8	31.24	31.85
146	31.04	30.38	27.87	22.89	15.54	7.56	4.17	4.06	3.69	3.02	2.3	1.76	1.79	1.76	2.3	3.02	3.69	4.06	4.17	7.56	15.54	22.89	27.87	30.38	31.04
147	30.2	29.5	26.93	22	14.81	7.17	4.03	3.91	3.56	2.92	2.23	1.72	1.76	1.72	2.23	2.92	3.56	3.91	4.03	7.17	14.81	22	26.93	29.5	30.2
148	29.35	28.59	25.98	21.1	14.08	6.79	3.89	3.76	3.42	2.82	2.17	1.68	1.71	1.68	2.17	2.82	3.42	3.76	3.89	6.79	14.08	21.1	25.98	28.59	29.35
149	28.47	27.66	25.03	20.15	13.36	6.41	3.75	3.62	3.28	2.72	2.1	1.64	1.67	1.64	2.1	2.72	3.28	3.62	3.75	6.41	13.36	20.15	25.03	27.66	28.47
150	27.55	26.71	24.05	19.15	12.64	6.04	3.62	3.49	3.16	2.63	2.04	1.61	1.65	1.61	2.04	2.63	3.16	3.49	3.62	6.04	12.64	19.15	24.05	26.71	27.55
151	26.59	25.73	23.06	18.17	11.91	5.68	3.49	3.36	3.04	2.54	1.98	1.58	1.63	1.58	1.98	2.54	3.04	3.36	3.49	5.68	11.91	18.17	23.06	25.73	26.59
152	25.62	24.73	22.05	17.2	11.13	5.32	3.37	3.23	2.92	2.45	1.92	1.55	1.61	1.55	1.92	2.45	2.92	3.23	3.37	5.32	11.13	17.2	22.05		



158	19.17	18.22	15.16	11.28	6.59	3.4	2.66	2.51	2.25	1.91	1.55	1.33	1.36	1.33	1.55	1.91	2.25	2.51	2.66	3.4	6.59	11.28	15.16	18.22	19.17
159	18.01	16.67	13.99	10.19	5.94	3.14	2.54	2.39	2.14	1.82	1.49	1.3	1.33	1.3	1.49	1.82	2.14	2.39	2.54	3.14	5.94	10.19	13.99	16.67	18.01
160	16.84	15.18	12.81	8.93	5.33	2.9	2.43	2.28	2.04	1.74	1.44	1.27	1.3	1.27	1.44	1.74	2.04	2.28	2.43	2.9	5.33	8.93	12.81	15.18	16.84
161	15.64	13.68	11.66	7.66	4.74	2.68	2.31	2.17	1.95	1.67	1.39	1.24	1.27	1.24	1.39	1.67	1.95	2.17	2.31	2.68	4.74	7.66	11.66	13.68	15.64
162	14.46	12.4	10.41	6.56	4.21	2.49	2.2	2.07	1.86	1.6	1.35	1.22	1.24	1.22	1.35	1.6	1.86	2.07	2.2	2.49	4.21	6.56	10.41	12.4	14.46
163	13.26	11.3	8.94	5.67	3.72	2.32	2.1	1.97	1.77	1.53	1.31	1.2	1.22	1.2	1.31	1.53	1.77	1.97	2.1	2.32	3.72	5.67	8.94	11.3	13.26
164	12	9.86	7.24	4.93	3.29	2.17	1.99	1.87	1.69	1.47	1.27	1.19	1.2	1.19	1.27	1.47	1.69	1.87	1.99	2.17	3.29	4.93	7.24	9.86	12
165	10.38	8.17	5.89	4.25	2.91	2.03	1.89	1.78	1.61	1.42	1.24	1.18	1.18	1.18	1.24	1.42	1.61	1.78	1.89	2.03	2.91	4.25	5.89	8.17	10.38
166	8.25	6.33	4.8	3.66	2.58	1.9	1.8	1.7	1.54	1.37	1.21	1.17	1.17	1.21	1.37	1.54	1.7	1.8	1.9	2.58	3.66	4.8	6.33	8.25	
167	6.46	5.09	3.9	3.18	2.29	1.79	1.71	1.62	1.48	1.33	1.19	1.16	1.16	1.16	1.19	1.33	1.48	1.62	1.71	1.79	2.29	3.18	3.9	5.09	6.46
168	5.06	3.97	3.27	2.74	2.04	1.67	1.62	1.54	1.42	1.29	1.17	1.15	1.16	1.15	1.17	1.29	1.42	1.54	1.62	1.67	2.04	2.74	3.27	3.97	5.06
169	3.85	3.17	2.79	2.35	1.83	1.58	1.54	1.47	1.37	1.26	1.16	1.15	1.15	1.15	1.16	1.26	1.37	1.47	1.54	1.58	1.83	2.35	2.79	3.17	3.85
170	3.04	2.66	2.34	2	1.65	1.48	1.46	1.41	1.33	1.23	1.14	1.15	1.15	1.15	1.14	1.23	1.33	1.41	1.46	1.48	1.65	2	2.34	2.66	3.04
171	2.63	2.24	1.96	1.72	1.5	1.4	1.39	1.35	1.28	1.2	1.13	1.15	1.15	1.15	1.13	1.2	1.28	1.35	1.39	1.4	1.5	1.72	1.96	2.24	2.63
172	2.23	1.76	1.65	1.51	1.38	1.33	1.33	1.3	1.24	1.18	1.12	1.15	1.15	1.15	1.12	1.18	1.24	1.3	1.33	1.33	1.38	1.51	1.65	1.76	2.23
173	1.73	1.43	1.41	1.35	1.28	1.27	1.27	1.25	1.21	1.16	1.12	1.15	1.14	1.15	1.12	1.16	1.21	1.25	1.27	1.27	1.28	1.35	1.41	1.43	1.73
174	0.97	1.24	1.26	1.24	1.2	1.21	1.22	1.21	1.18	1.14	1.11	1.15	1.13	1.15	1.11	1.14	1.18	1.21	1.22	1.21	1.2	1.24	1.26	1.24	0.97
175	0.91	1.12	1.15	1.14	1.14	1.17	1.18	1.17	1.15	1.12	1.11	1.14	1.12	1.14	1.11	1.12	1.15	1.17	1.18	1.17	1.14	1.14	1.15	1.12	0.91
176	0.92	1.03	1.07	1.08	1.1	1.13	1.14	1.14	1.13	1.11	1.1	1.13	1.1	1.13	1.1	1.11	1.13	1.14	1.14	1.13	1.1	1.08	1.07	1.03	0.92
177	0.94	1.02	1.03	1.05	1.08	1.1	1.11	1.11	1.1	1.09	1.08	1.12	1.08	1.12	1.08	1.09	1.1	1.11	1.11	1.1	1.08	1.05	1.03	1.02	0.94
178	0.96	1.02	1.03	1.06	1.07	1.09	1.1	1.09	1.09	1.07	1.07	1.1	1.06	1.1	1.07	1.07	1.09	1.09	1.1	1.09	1.07	1.06	1.03	1.02	0.96
179	0.98	1.03	1.04	1.06	1.08	1.09	1.09	1.09	1.08	1.06	1.06	1.08	1.03	1.08	1.06	1.06	1.08	1.09	1.09	1.09	1.08	1.06	1.04	1.03	0.98
180	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01	1.01

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	WPT @ 25W/4000K	Sample ID.	E1
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
119.97	60	0.206	24.6	0.993	11.38%
277.03	60	0.094	25.2	0.964	11.88%

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*****