

Photometric Test Report

Relevant Standards

- ☒ IES LM-79-2008
- ☒ ANSI C82.77:2017

Prepared For

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2021/11/9

Prepared By



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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 - Architectural Flood and Spot Luminaires				
Requirement Category	Test Method	Requirements		Test value
Luminaire Output (lm) (Goniophotometer - Section 4.2)	IES LM-79-2008	1000		17066
Minimum Luminaire Efficacy (lm/W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Standard 105	Premium 120	160.4
Power (Input Wattage) (W) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		106.4
Total Harmonic Distortion (A%) (THD & PF - section 4.3)	ANSI C82.77:2014	20.00%		21.22%
Power Factor (THD & PF - section 4.3)	ANSI C82.77:2014	0.9		0.853
Allowable CCTs* (K) (Integrating Sphere - Section 4.1)	IES LM-79-2008	7 step	3985±275	4109
		4 step	3985±154	
Minimum CRI (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥70		83
Minimum R9 (Integrating Sphere - Section 4.1)	IES LM-79-2008 CIE 13.3-1995	≥-40		7
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
Minimum IES Rcs,h1 (Integrating Sphere - Section 4.1)	ANSI/IES TM-30-18	-18%≤IES Rcs,h1≤+23%		-12%
Zonal Lumen Requirement (0°-90°) (Goniophotometer - Section 4.2)	IES LM-79-2008	85%		99.89%
Input Voltage (V) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		480
Input Current (A) (Goniophotometer - Section 4.2)	IES LM-79-2008	Worst Case		0.260

2.0 Test List

Test Item	Test	Test Date	Model Number	Sample No.
1	Integrating Sphere Test	2021/11/4	FFLEDL @ 120W / 4000K/480	A1
2	Goniophotometer Test	2021/11/4	FFLEDL @ 120W / 4000K/480	A1
3	THD and PF Test	2021/11/4	FFLEDL @ 120W / 4000K/480	A1

Remark(If any)

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- 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: FFLEDL @ 120W / 4000K/480

Electrical Specification: 480V,50/60HZ

Photos of Luminaire Characteristics



4.0 LM-79 Measurement and Test Results

4.1 Integrating Sphere Test

Model No.	FFLEDL @ 120W / 4000K/480	Sample ID.	A1
Opreate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.4	Humidity (%RH)	54.0

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° C ± 1° 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
480.03	60	0.258	105.8	0.853

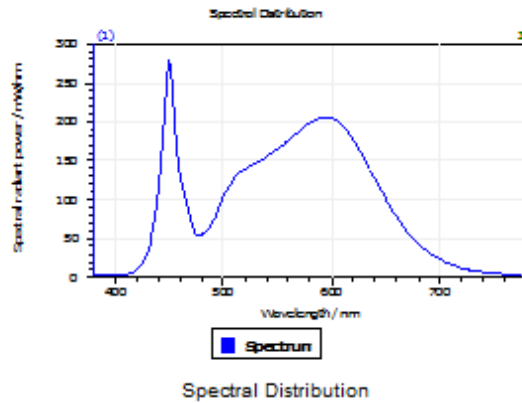
Test Result

CCT (K)	CRI	R9	Duv
4109	83	7	0.00086

Rf	Rg	IES Rcs,h1
84	96	-12%

4.1 Integrating Sphere Test

Results



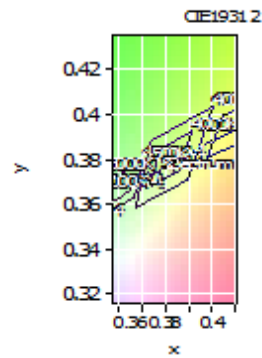
Spectral values

DominantWavelength 579.18 nm
Purity 0.242
PeakWavelength 450.11 nm
Radiant Power 36.14 W
Width50%:

Color Coordinates

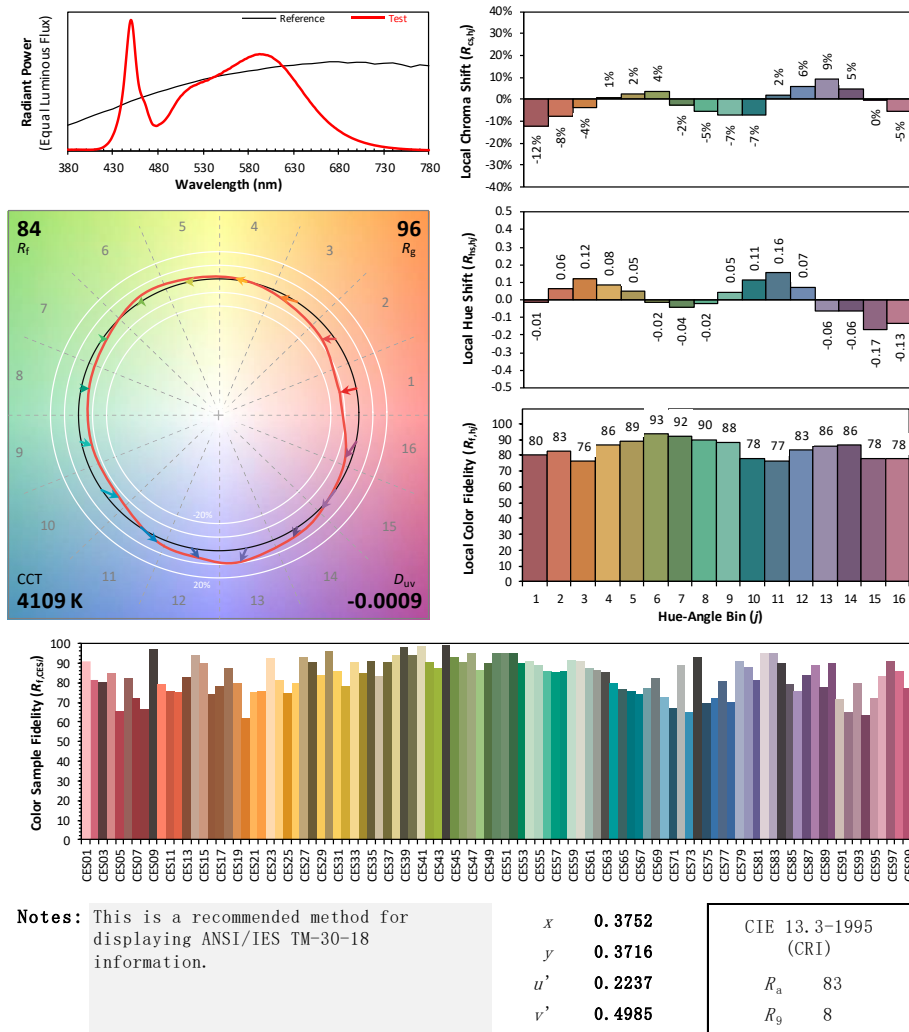
Correlated Color Temperat 4109 K
x: 0.3752 u: 0.2237 u': 0.2237
y: 0.3717 v: 0.3324 v': 0.4985

CRI01	81.3	CRI09	7.4
CRI02	88.8	CRI10	73.6
CRI03	94.3	CRI11	81.9
CRI04	82.5	CRI12	61.9
CRI05	81.8	CRI13	83.1
CRI06	84.5	CRI14	97.0
CRI07	85.5	CRI15	75.0
CRI08	64.4	CRI16	73.0
ResultsCRI	82.9		



PlankDistance 8.6E-004

4.1 Integrating Sphere Test



Colors are for visual orientation purposes only. Created with the ANSI/IES TM-30-18 Calculator Version 2.0

4.0 LM-79 Measurement and Test Results

4.2 Goniophotometer Test

Model No.	FFLEDL @ 120W / 4000K/480	Sample ID.	A1
Opreate time (Min.)	90	Stabilization time (Min.)	45
Temperature (°C)	25.3	Humidity (%RH)	54.0

Test Method

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

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

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

The voltage of an AC power supply (RMS voltage) or DC power supply (instantaneous voltage) applied to the device under test shall be regulated to within ±0.2 percent under load.

The samples were operated at rated voltage and was stabilized before measurement. Luminous flux, luminaire efficacy, zonal lumen were calculated from the software taken at 0.5° vertical intervals and 10° horizontal intervals.

Test Conditions

Condition	Voltage (Vac)	Frequency (Hz)	Current (A)	Power (W)	Power Factor
WORST CASE	479.99	60	0.260	106.4	0.853

Test Result

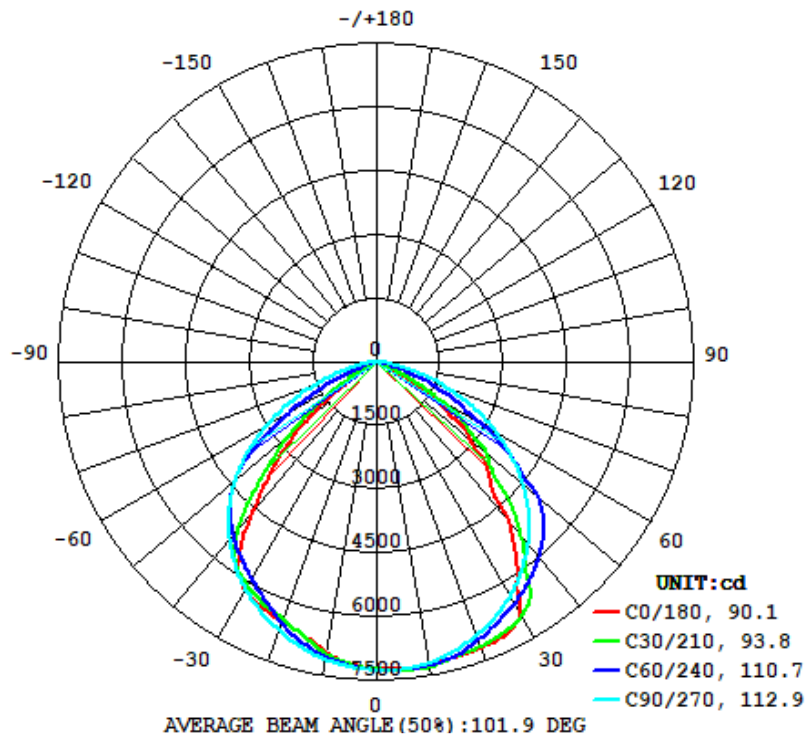
Flux (lm)	Field Angle(10%)		Beam Angle(50%)		Luminous Efficacy (lm/W)
	C0-180	C90-270	C0-180	C90-270	
17066	118.8	153.3	90.1	112.9	160.4

Zonal Lumen Requirement (0°-90°)

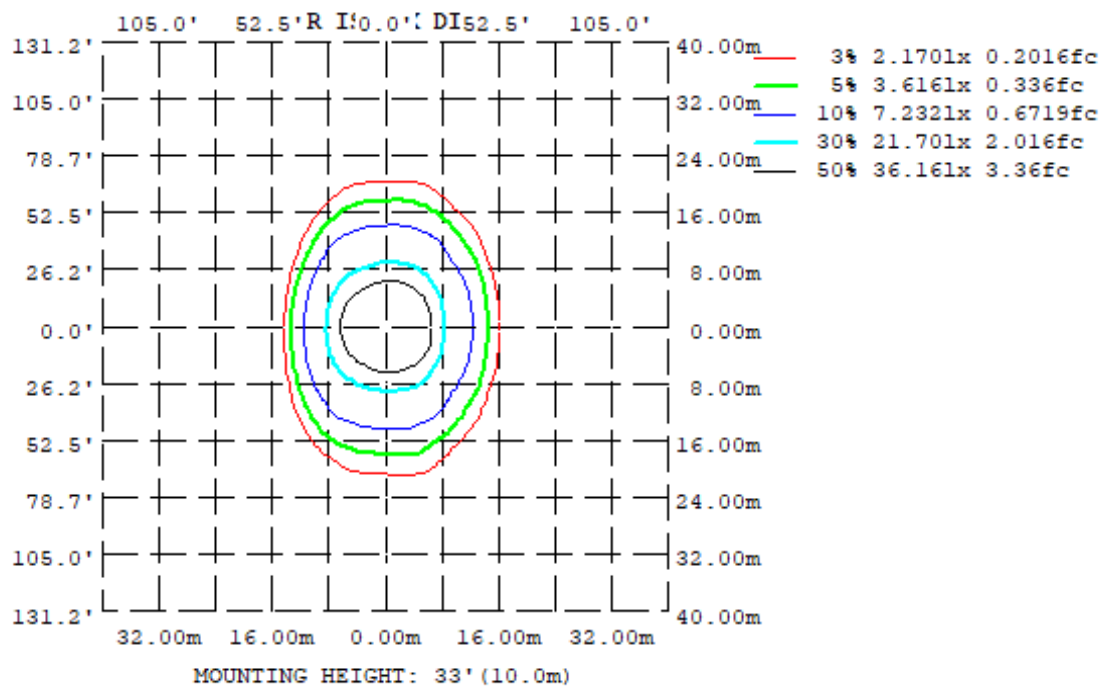
99.89%

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	7251	7296	7189	7075	6947	7019	7115	7239
20	7168	7040	6861	6559	6510	6460	6739	6936
30	6847	6752	6343	6101	6211	5998	6186	6604
40	4803	5987	5593	5550	4560	5396	5404	5926
50	2964	4003	4544	3976	2300	3528	4370	3958
60	1058	2192	3231	1822	353.1	1395	3024	2131
70	33.82	376.1	1773	179.8	83.41	132.3	1528	384.8
80	1.413	5.325	431.9	52.35	13.69	33.05	286.7	1.903
90	1.179	1.424	1.146	2.829	0.4146	1.530	1.133	1.124
100	0.4869	1.056	1.403	1.964	2.496	1.717	1.478	0.7108
110	1.045	1.649	2.705	2.132	1.217	1.795	2.373	1.350
120	1.913	2.319	3.162	2.950	1.962	2.345	2.869	1.918
130	3.082	3.070	4.216	3.928	3.314	3.223	3.830	2.895
140	4.033	4.042	4.895	4.874	4.931	4.621	4.753	4.218
150	4.854	4.983	5.226	5.638	5.727	5.412	5.401	5.272
160	5.448	5.366	5.839	5.877	6.396	5.722	5.536	5.743
170	5.731	5.488	5.594	5.646	5.447	5.578	5.072	5.178
180	6.346	5.968	5.674	5.983	6.263	6.091	5.729	5.891
DEG	LUMINOUS INTENSITY:cd							

	Zonal (lm)		Total (lm)	Percent
0-10	687.89	0 - 10	687.89	4.03%
10-20	1972.02	0 - 20	2659.91	15.59%
20-30	3053.71	0 - 30	5713.62	33.48%
30-40	3703.55	0 - 40	9417.17	55.18%
40-50	3499.34	0 - 50	12916.50	75.68%
50-60	2558.55	0 - 60	15475.05	90.68%
60-70	1223.68	0 - 70	16698.73	97.85%
70-80	325.34	0 - 80	17024.08	99.75%
80-90	22.83	0 - 90	17046.91	99.89%
90-100	2.16	0 - 100	17049.07	99.90%
100-110	1.56	0 - 110	17050.63	99.91%
110-120	2.04	0 - 120	17052.67	99.92%
120-130	2.59	0 - 130	17055.27	99.94%
130-140	3.10	0 - 140	17058.37	99.95%
140-150	3.10	0 - 150	17061.47	99.97%
150-160	2.58	0 - 160	17064.06	99.99%
160-170	1.60	0 - 170	17065.66	100.00%
170-180	0.54	0 - 180	17066.20	100.00%

4.2 Goniophotometer Test

Axial Candela

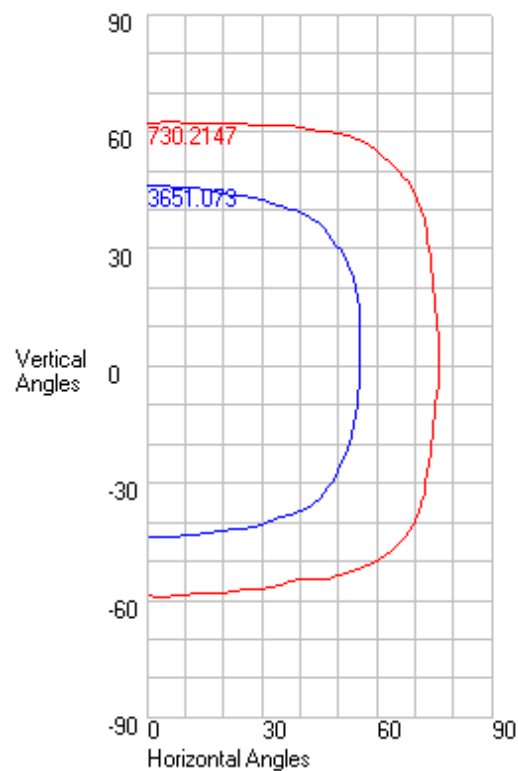
DEG.	HOR.	DEG.	VERT.
90	1.131	90	1.181
85	27.04	85	1.42
75	833.66	75	5.36
65	2282.4	65	228.76
55	3729.35	55	2041.07
47.5	4657.745	47.5	3483.625
42.5	5169.965	42.5	4080.18
37.5	5623.42	37.5	5327.325
33	5982.18	33	6132.62
29	6252.09	29	6936.67
25.5	6461.945	25.5	7087.41
22.5	6620.34	22.5	7151.25
19.5	6761.025	19.5	7172.02
17	6868.1	17	7182.08
15	6951.23	15	7189.11
13	7021.81	13	7195.41
11	7082.64	11	7226.58
9	7134.74	9	7274.49
7	7178.67	7	7296.52
5	7207.56	5	7266.66
3	7229.43	3	7245.73
1	7247.54	1	7235.71
0	7252.843	0	7252.843
-1	7258.69	-1	7225.83
-3	7261.29	-3	7199.95
-5	7259.46	-5	7146.27
-7	7236.46	-7	7082.93
-9	7208.44	-9	7002.28
-11	7164.28	-11	6883.18
-13	7106.43	-13	6763.33
-15	7046.45	-15	6673.59
-17	6978.89	-17	6592.3
-19.5	6880.875	-19.5	6522.13
-22.5	6752.87	-22.5	6461.46
-25.5	6598.265	-25.5	6385.49
-29	6393.03	-29	6261.73
-33	6143.61	-33	5962.84
-37.5	5802.365	-37.5	5199.235
-42.5	5356.91	-42.5	3942.51
-47.5	4832.735	-47.5	2869.915
-55	3923.26	-55	1120.79
-65	2507.85	-65	129.29
-75	1060.91	-75	48.09
-85	42.19	-85	10.43
-90	1.152	-90	0.417

4.2 Goniophotometer Test

Characteristics

NEMA Type	7 H x 6 V
Maximum Candela	7302.147
Maximum Candela Angle	-3 H 7 V
Horizontal Beam Angle (50%)	113
Vertical Beam Angle (50%)	90.3
Horizontal Field Angle (10%)	154
Vertical Field Angle (10%)	121.6
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Beam Lumens	13390
Beam Efficiency	N.A.
Field Lumens	16703
Field Efficiency	N.A.
Spill Lumens	363
Luminaire Lumens	17066
Total Efficiency	N.A.
Total Luminaire Watts	106.384
Ballast Factor	1

ISOCANDELA CURVES



Axial Candela

	0	1	3	5	7	9	11	13	15	17	19.5	22.5	25.5	29	33	37.5	42.5	47.5	55	65	75	85	90
90	1.181	1.177	1.169	1.161	1.153	1.145	1.137	1.129	1.121	1.118	1.115	1.111	1.107	1.102	1.105	1.111	1.117	1.127	1.147	1.094	0.96	1.073	1.13
85	1.42	1.419	1.416	1.413	1.411	1.408	1.405	1.401	1.398	1.392	1.384	1.374	1.363	1.35	1.346	1.345	1.343	1.329	1.3	1.174	0.961	1.103	1.13
75	5.36	5.456	5.648	5.84	5.678	5.598	5.419	5.13	4.968	5.415	5.707	5.902	5.619	4.218	6.288	6.996	4.611	6.847	7.429	12.441	1.997	1.171	1.13
65	228.76	233.924	244.248	245.57	247.494	246.864	243.813	238.474	247.961	257.857	258.71	242.327	231.827	236.882	262.489	245.052	189.773	226.778	171.118	135.883	32.48	1.261	1.13
55	2041.07 *	2062.049 *	2103.982 *	2111.019 *	2110.859 *	2088.498 *	2040.045 *	1987.774 *	2006.486 *	2024.405 *	2028.674 *	1996.097 *	1830.02 *	1767.774 *	1717.617 *	1648.698 *	1415.387 *	1231.124 *	973.984 *	483.726	130.837	1.381	1.131
47.5	3483.625 *	3487.72 *	3488.225 *	3481.212 *	3469.937 *	3447.001 *	3418.129 *	3378.654 *	3306.515 *	3230.287 *	3199.626 *	3181.863 *	3052.625 *	2869.375 *	2779.647 *	2677.171 *	2389.936 *	2039.103 *	1645.262 *	912.378 *	254.161	3.884	1.131
42.5	4080.18 *	4091.754 *	4103.4 *	4093.535 *	4054.989 *	4020.289 *	4017.863 *	4077.515 *	4074.841 *	4030.205 *	3849.476 *	3782.625 *	3795.557 *	3753.741 *	3435.225 *	3245.125 *	3106.039 *	2703.116 *	2061.085 *	1243.619 *	340.531	6.03	1.131
37.5	5327.325 *	5335.875 *	5339.506 *	5324.83 *	5302.166 *	5242.753 *	5220.285 *	5191.438 *	5146.795 *	5076.773 *	4979.515 *	4873.715 *	4752.882 *	4569.166 *	4369.847 *	4148.518 *	3710.011 *	3299.181 *	2455.795 *	1589.895 *	426.019	8.334	1.131
33	6132.62 *	6141.688 *	6141.792 *	6125.551 *	6089.103 *	6075.897 *	6081.982 *	6051.725 *	5932.427 *	5822.769 *	5761.317 *	5714.661 *	5605.875 *	5262.931 *	5010.877 *	4760.557 *	4459.695 *	3731.472 *	2872.645 *	1821.805 *	500.674	11.326	1.131
29	6936.67 *	6936.146 *	6923.686 *	6904.854 *	6880.663 *	6825.174 *	6759.868 *	6676.024 *	6621.196 *	6545.892 *	6389.545 *	6187.334 *	6127.517 *	5886.189 *	5418.098 *	5188.421 *	4800.193 *	4037.373 *	3169.515 *	1958.68 *	564.665	14.231	1.131
25.5	7087.41 *	7084.432 *	7075.556 *	7063.316 *	7038.682 *	6984.969 *	6922.066 *	6856.955 *	6783.936 *	6698.084 *	6585.244 *	6443.597 *	6271.395 *	6035.853 *	5726.069 *	5418.235 *	4924.842 *	4283.979 *	3383.189 *	2058.751 *	622.825	16.593	1.131
22.5	7151.25 *	7147.449 *	7138.442 *	7127.188 *	7092.681 *	7042.468 *	6986.944 *	6923.192 *	6844.3 *	6758.243 *	6652.275 *	6506.224 *	6333.043 *	6114.299 *	5834.796 *	5476.68 *	5007.786 *	4425.245 *	3541.72 *	2134.995 *	666.374	18.471	1.131
19.5	7172.02 *	7168.647 *	7160.836 *	7151.941 *	7112.378 *	7066.823 *	7015.429 *	6948.802 *	6872.817 *	6789.237 *	6681.205 *	6537.104 *	6368.209 *	6148.624 *	5883.877 *	5524.849 *	5051.132 *	4501.479 *	3612.346 *	2188.245 *	705.248	20.202	1.131
17	7182.08 *	7179.855 *	7173.933 *	7158.961 *	7121.697 *	7081.344 *	7024.361 *	6958.941 *	6885.51 *	6807.315 *	6698.134 *	6551.427 *	6383.699 *	6184.886 *	5918.114 *	5554.207 *	5077.599 *	4539.694 *	3659.766 *	2226.236 *	734.666 *	21.524	1.131
15	7189.11 *	7188.228 *	7184.492 *	7166.309 *	7132.594 *	7089.547 *	7034.397 *	6969.052 *	6899.634 *	6824.145 *	6712.153 *	6561.067 *	6406.31 *	6214.674 *	5943.576 *	5570.652 *	5091.046 *	4581.213 *	3690.521 *	2251.711 *	755.505 *	22.496	1.131
13	7195.41 *	7197.126 *	7197.992 *	7180.999 *	7148.301 *	7109.455 *	7054.166 *	6984.678 *	6922.662 *	6845.295 *	6729.669 *	6579.44 *	6437.013 *	6241.662 *	5963.793 *	5583.635 *	5122.503 *	4614.893 *	3719.226 *	2273.076 *	773.922 *	23.39	1.131
11	7226.58 *	7233.511 *	7236.947 *	7217.039 *	7185.268 *	7143.218 *	7085.911 *	7023.863 *	6953.764 *	6870.773 *	6751.203 *	6608.693 *	6463.349 *	6264.738 *	5981.58 *	5600.827 *	5142.502 *	4639.742 *	3735.955 *	2289.007 *	789.898 *	25.698	1.131
9	7274.49 *	7283.038 *	7281.221 *	7259.167 *	7224.181 *	7182.095 *	7120.171 *	7058.443 *	6987.065 *	6891.87 *	6774.088 *	6633.057 *	6485.754 *	6283.768 *	6003.942 *	5623.103 *	5163.745 *	4658.291 *	3749.155 *	2299.555 *	803.42 *	25.94	1.131
7	7296.52 *	7301.22 *	7293.354 *	7267.712 *	7238.734 *	7185.796 *	7130.704 *	7069.897 *	6986.272 *	6896.691 *	6784.222 *	6648.512 *	6498.697 *	6291.832 *	6008.38 *	5642.685 *	5178.366 *	4670.128 *	3755.951 *	2304.781 *	814.474 *	26.183	1.131
5	7266.66 *	7279.329 *	7270.696 *	7244.155 *	7208.788 *	7163.962 *	7115.375 *	7048.653 *	6970.215 *	6885.895 *	6782.642 *	6652.329 *	6497.696 *	6290.126 *	6010.808 *	5643.833 *	5185.115 *	4675.056 *	3756.333 *	2304.765 *	830.796 *	26.427	1.131
3	7245.73 *	7271.253 *	7251.043 *	7221.996 *	7190.578 *	7144.555 *	7086.411 *	7028.019 *	6960.441 *	6882.457 *	6779.548 *	6644.473 *	6488.99 *	6280.872 *	6005.499 *	5641.397 *	5184.468 *	4673.24 *	3757.402 *	2305.134 *	831.94 *	26.672	1.131
1	7235.71 *	7263.891 *	7237.896 *	7213.847 *	7183.675 *	7139.733 *	7087.288 *	7027.456 *	6958.025 *	6876.227 *	6769.197 *	6630.271 *	6472.907 *	6264.742 *	5993.124 *	5631.265 *	5176.573 *	4664.619 *	3738.708 *	2289.983 *	833.086 *	27.04	1.131
0	7252.843 *	7247.54 *	7229.43 *	7207.56 *	7178.67 *	7134.74 *	7082.64 *	7021.81 *	6951.23 *	6868.1 *	6761.025 *	6620.34 *	6461.945 *	6252.09 *	5982.18 *	5623.42 *	5169.965 *	4657.745 *	3729.35 *	2282.4 *	833.66 *	27.04	1.131
-1	7225.83 *	7239.072 *	7225.593 *	7203.296 *	7172.673 *	7128.511 *	7073.696 *	7010.489 *	6938.147 *	6855.044 *	6746.175 *	6605.025 *	6445.769 *	6236.216 *	5964.035 *	5604.116 *	5154.042 *	4646.11 *	3728.034 *	2285.499 *	829.382 *	26.935	1.131
-3	7199.95 *	7195.448 *	7191.143 *	7173.285 *	7138.73 *	7097.987 *	7042.057 *	6974.204 *	6899.745 *	6818.017 *	6709.613 *	6567.812 *	6407.192 *	6194.922 *	5918.03 *	5559.987 *	5117.008 *	4617.848 *	3725.404 *	2291.691 *	820.833 *	26.725	1.131
-5	7146.27 *	7143.514 *	7128.455 *	7118.086 *	7086.816 *	7045.81 *	6995.624 *	6924.888 *	6851.797 *	6771.843 *	6663.225 *	6521.828 *	6360.117 *	6145.895 *	5864.508 *	5508.279 *	5073.117 *	4583.181 *	3703.536 *	2282.427 *	812.302 *	26.515	1.131
-7	7082.93 *	7081.55 *	7065.655 *	7047.92 *	7023.678 *	6983.291 *	6928.125 *	6862.267 *	6790.747 *	6706.253 *	6594.14 *	6457.776 *	6302.894 *	6087.9 *	5802.492 *	5453.32 *	5022.476 *	4542.431 *	3682.807 *	2273.62 *	788.535 *	26.307	1.131
-9	7002.28 *	7003.044 *	6984.32 *	6963.665 *	6936.914 *	6900.445 *	6839.132 *	6778.982 *	6711.945 *	6624.077 *	6508.669 *	6373.615 *	6226.46 *	6020.784 *	5738.149 *	5381.077 *	4964.562 *	4496.066 *	3656.426 *	2259.679 *	770.062 *	26.099	1.131
-11	6883.18 *	6884.779 *	6863.741 *	6852.546 *	6816.896 *	6781.998 *	6726.658 *	6671.502 *	6608.616 *	6524.276 *	6410.219 *	6282.304 *	6141.41 *	5947.831 *	5663.079 *	5307.214 *	4900.869 *	4444.857 *	3624.606 *	2240.558 *	749.115 *	25.892	1.131
-13	6763.33 *	6763.883 *	6747.561 *	6729.047 *	6699.71 *	6668.428 *	6619.564 *	6559.982 *	6503.97 *	6429.908 *	6321.015 *	6184.676 *	6051.922 *	5869.809 *	5606.739 *	5251.979 *	4839.4 *	4389.296 *	3590.245 *	2216.221 *	725.707	23.615	1.131
-15	6673.59 *	6672.479 *	6657.83 *	6637.828 *	6609.381 *	6571.969 *	6530.181 *	6472.159 *	6409.512 *	6342.48 *	6246.569 *	6107.544 *	5960.318 *	5790.836 *	5551.7 *	5212.654 *	4773.995 *	4328.298 *	3544.579 *	2186.647 *	699.851	22.753	1.131
-17	6592.3 *	6590.489 *	6577.633 *	6557.417 *	6531.791 *	6493.294 *	6449.04 *	6399.178 *	6333.931 *	6262.836 *	6178.63 *	6052.649 *	5891.144 *	5714.17 *	5496.149 *	5171.081 *	4740.061 *	4263.327 *	3497.872 *	2151.385 *	671.566	21.812	1.131
-19.5	6522.13 *	6518.099 *	6506.406 *	6490.496 *	6461.737 *	6423.511 *	6378.838 *	6331.325 *	6267.831 *	6193.794 *	6110.796 *	5989.889 *	5835.226 *	5642.701 *	5423.278 *	5111.903 *	4690.983 *	4215.365 *	3432.8 *	2098.932 *	632.831	20.528	1.131
-22.5	6461.46 *	6456.037 *	6441.941 *	6423.572 *	6394.659 *	6357.876 *	6312.288 *	6255.928 *	6198.602 *	6134.047 *	6040.196 *	5911.809 *	5768.913 *	5587.124 *	5331.703 *	5032.759 *	4628.201 *	4133.416 *	3344.885 *	2026.801 *	584.138	18.84	1.131
-25.5	6385.49 *	6380.458 *	6367.018 *	6349.747 *	6323.787 *	6281.192 *	6233.697 *	6179.849 *	6116.076 *	6044.003 *	5952.594 *	5833.864 *	5693.221 *	5499.734 *	5242.685 *	4950.208 *	4532.889 *	4012.613 *	3179.712 *	1926.557 *	532.589	17.001	1.131
-29	6261.73 *	6257.566 *	6242.226 *	6221.824 *	6195.993 *	6150.254 *	6096.633 *	6042.154 *	5988.134 *	5916.758 *	5815.062 *	5690.956 *	5565.675 *	5365.69 *	5060.372 *	4760.77 *	4386.645 *	3908.077 *	2947.952 *	1796.783 *	466.401	14.681	1.131
-33	5962.84 *	5961.369 *	5944.265 *	5917.116 *	5879.319 *	5842.776 *	5785.11 *	5732.011 *	5671.366 *	5612.161 *	5495.753 *	5337.902 *	5210.246 *	5051.738 *	4700.717 *	4361.072 *	4087.073 *	3482.733 *	2634.868 *	1623.378 *	391.371	11.817	1.131
-37.5	5199.235 *	5202.598 *	5195.064 *	5169.955 *	5139.698 *	5057.946 *	5016.623 *	4966.886 *	4911.17 *	4843.573 *	4740.137 *	4596.888 *	4461.796 *	4336.854 *	4025.158 *	3720.111 *	3442.275 *	2982.013 *	2227.351 *	1342.804 *	305.976	8.866	1.131
-42.5	3942.51 *	3950.342 *	3952.933 *	3938.419 *	3907.267 *	3854.615 *	3805.922 *	3797.457 *	3743.354 *	3688.559 *	3593.809 *	3497.95 *	3430.208 *	3289.847 *	3064.712 *	2887.775 *	2649.549 *	2270.217 *	1726.191 *	985.63 *	217.755	6.615	1.131
-47.5	2869.915 *	2874.136 *	2872.137 *	2855.435 *	2823.158 *	2778.05 *	2724.69 *	2713.826 *	2690.939 *	2652.304 *	2583.219 *	2483.545 *	2415.237 *	2307.471 *	2171.981 *	1999.875 *	1789.743 *	1564.977 *	1179.396 *	669.628	140.14	4.517	1.131
-55	1120.79 *	1129.478 *	1146.847 *	1133.498 *	1120.256 *	1095.787 *																	

LUMEN TABULATION

	0	1	3	5	7	9	11	13	15	17	20	23	26	29	33	38	43	48	55	65	75	85	90	Total
90																								
85	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.1	0.1	0.1	0.1	0.1	0.1	0	0	0
65	0.4	0.7	0.8	0.8	0.8	0.8	0.7	0.7	0.7	0.9	1.1	1	1.1	1.3	1.5	1.3	1.2	1.5	1.3	0.5	0.1	0	0	0
55	3.48 *	7.06 *	7.14 *	7.13 *	7.06 *	6.92 *	6.72 *	6.63 *	6.65 *	8.26 *	9.61 *	8.93 *	9.63 *	10.44 *	10.86 *	10.18 *	8.27 *	9.4	6.9	2.2	0.3	0	0	0
47.5	6.33 *	12.72 *	12.75 *	12.70 *	12.59 *	12.38 *	12.11 *	11.86 *	11.64 *	14.28 *	16.70 *	15.77 *	17.00 *	18.07 *	18.67 *	17.88 *	14.43 *	16.00 *	11.74 *	3.7	0.4	0	0	0
42.5	5.77 *	11.55 *	11.53 *	11.46 *	11.34 *	11.21 *	11.12 *	10.98 *	10.72 *	12.97 *	15.04 *	14.51 *	16.07 *	16.88 *	17.13 *	16.84 *	13.95 *	15.39 *	11.49 *	3.8	0.5	0	0	0
37.5	7.17 *	14.37 *	14.34 *	14.24 *	14.08 *	13.92 *	13.84 *	13.70 *	13.43 *	16.25 *	18.74 *	18.07 *	20.12 *	21.17 *	21.36 *	20.90 *	17.46 *	19.21 *	14.42 *	4.91 *	0.6	0	0	0
33	7.86 *	15.73 *	15.69 *	15.60 *	15.46 *	15.31 *	15.15 *	14.87 *	14.53 *	17.70 *	20.61 *	19.76 *	21.63 *	22.79 *	23.24 *	22.55 *	18.59 *	20.31 *	15.38 *	5.33 *	0.6	0	0	0
29	7.97 *	15.92 *	15.87 *	15.78 *	15.65 *	15.49 *	15.28 *	14.99 *	14.67 *	17.84 *	20.67 *	19.88 *	21.85 *	22.80 *	23.18 *	22.71 *	18.58 *	20.21 *	15.43 *	5.35 *	0.7	0	0	0
25.5	7.48 *	14.94 *	14.89 *	14.81 *	14.68 *	14.49 *	14.26 *	14.02 *	13.76 *	16.72 *	19.29 *	18.50 *	20.42 *	21.36 *	21.68 *	21.18 *	17.34 *	19.08 *	14.64 *	5.07 *	0.6	0	0	0
22.5	6.51 *	13.00 *	12.96 *	12.90 *	12.78 *	12.63 *	12.45 *	12.24 *	12.00 *	14.62 *	16.94 *	16.20 *	17.84 *	18.86 *	19.19 *	18.62 *	15.38 *	17.21 *	13.23 *	4.59 *	0.6	0	0	0
19.5	6.54 *	13.08 *	13.04 *	12.97 *	12.86 *	12.71 *	12.53 *	12.32 *	12.08 *	14.73 *	17.07 *	16.32 *	18.00 *	19.09 *	19.43 *	18.82 *	15.69 *	17.74 *	13.66 *	4.76 *	0.6	0	0	0
17	5.47 *	10.92 *	10.90 *	10.84 *	10.74 *	10.62 *	10.47 *	10.30 *	10.10 *	12.31 *	14.27 *	13.65 *	15.07 *	16.00 *	16.29 *	15.79 *	13.22 *	15.01 *	11.58 *	4.09 *	0.6	0	0	0
15	4.38 *	8.75 *	8.73 *	8.68 *	8.61 *	8.51 *	8.39 *	8.25 *	8.10 *	9.87 *	11.44 *	10.94 *	12.10 *	12.85 *	13.08 *	12.67 *	10.64 *	12.12 *	9.38 *	3.33 *	0.5	0	0	0
13	4.38 *	8.76 *	8.74 *	8.69 *	8.62 *	8.53 *	8.41 *	8.27 *	8.12 *	9.89 *	11.46 *	10.97 *	12.14 *	12.90 *	13.11 *	12.71 *	10.70 *	12.20 *	9.45 *	3.38 *	0.5	0	0	0
11	4.39 *	8.79 *	8.77 *	8.72 *	8.65 *	8.55 *	8.43 *	8.30 *	8.14 *	9.92 *	11.49 *	11.02 *	12.19 *	12.94 *	13.14 *	12.75 *	10.75 *	12.27 *	9.51 *	3.42 *	0.5	0	0	0
9	4.42 *	8.84 *	8.82 *	8.77 *	8.70 *	8.60 *	8.48 *	8.34 *	8.17 *	9.95 *	11.53 *	11.06 *	12.23 *	12.97 *	13.18 *	12.79 *	10.79 *	12.31 *	9.54 *	3.45 *	0.5	0	0	0
7	4.44 *	8.88 *	8.85 *	8.81 *	8.73 *	8.63 *	8.51 *	8.36 *	8.19 *	9.98 *	11.57 *	11.09 *	12.25 *	13.00 *	13.21 *	12.83 *	10.82 *	12.34 *	9.56 *	3.47 *	0.5	0	0	0
5	4.44 *	8.87 *	8.85 *	8.80 *	8.73 *	8.63 *	8.50 *	8.36 *	8.19 *	9.98 *	11.58 *	11.10 *	12.26 *	13.00 *	13.23 *	12.85 *	10.83 *	12.34 *	9.56 *	3.49 *	0.5	0	0	0
3	4.42 *	8.85 *	8.83 *	8.78 *	8.70 *	8.60 *	8.48 *	8.34 *	8.18 *	9.97 *	11.58 *	11.09 *	12.25 *	13.00 *	13.23 *	12.85 *	10.82 *	12.33 *	9.55 *	3.50 *	0.5	0	0	0
1	4.42 *	8.84 *	8.81 *	8.76 *	8.68 *	8.58 *	8.46 *	8.32 *	8.17 *	9.96 *	11.55 *	11.07 *	12.22 *	12.97 *	13.21 *	12.83 *	10.81 *	12.30 *	9.52 *	3.49 *	0.5	0	0	0
0	2.21 *	4.42 *	4.40 *	4.38 *	4.34 *	4.29 *	4.23 *	4.16 *	4.08 *	4.97 *	5.77 *	5.52 *	6.10 *	6.47 *	6.59 *	6.41 *	5.39 *	6.13 *	4.74 *	1.74 *	0.3	0	0	0

-1	2.21 *	4.41 *	4.40 *	4.37 *	4.34 *	4.29 *	4.22 *	4.15 *	4.07 *	4.96 *	5.75 *	5.51 *	6.08 *	6.46 *	6.58 *	6.39 *	5.38 *	6.12 *	4.73 *	1.74 *	0.3	0	0
-3	4.40 *	8.80 *	8.77 *	8.72 *	8.65 *	8.55 *	8.42 *	8.28 *	8.12 *	9.89 *	11.47 *	10.98 *	12.12 *	12.86 *	13.10 *	12.72 *	10.72 *	12.21 *	9.46 *	3.48 *	0.5	0	0
-5	4.37 *	8.75 *	8.72 *	8.67 *	8.59 *	8.50 *	8.37 *	8.23 *	8.07 *	9.83 *	11.40 *	10.91 *	12.04 *	12.77 *	13.00 *	12.63 *	10.64 *	12.14 *	9.44 *	3.47 *	0.5	0	0
-7	4.34 *	8.67 *	8.64 *	8.60 *	8.52 *	8.43 *	8.31 *	8.16 *	8.00 *	9.75 *	11.30 *	10.82 *	11.94 *	12.66 *	12.88 *	12.52 *	10.56 *	12.06 *	9.39 *	3.45 *	0.5	0	0
-9	4.29 *	8.58 *	8.56 *	8.51 *	8.44 *	8.34 *	8.22 *	8.08 *	7.92 *	9.65 *	11.18 *	10.71 *	11.83 *	12.54 *	12.75 *	12.39 *	10.45 *	11.96 *	9.34 *	3.42 *	0.5	0	0
-11	4.23 *	8.46 *	8.44 *	8.39 *	8.32 *	8.23 *	8.10 *	7.97 *	7.82 *	9.52 *	11.03 *	10.57 *	11.68 *	12.40 *	12.60 *	12.24 *	10.34 *	11.85 *	9.27 *	3.38 *	0.5	0	0
-13	4.16 *	8.32 *	8.30 *	8.25 *	8.18 *	8.09 *	7.98 *	7.85 *	7.70 *	9.38 *	10.87 *	10.41 *	11.52 *	12.24 *	12.45 *	12.09 *	10.21 *	11.72 *	9.19 *	3.34 *	0.5	0	0
-15	4.09 *	8.19 *	8.17 *	8.12 *	8.05 *	7.97 *	7.86 *	7.73 *	7.59 *	9.25 *	10.72 *	10.26 *	11.36 *	12.09 *	12.32 *	11.95 *	10.07 *	11.58 *	9.09 *	3.29 *	0.5	0	0
-17	4.04 *	8.08 *	8.06 *	8.02 *	7.95 *	7.86 *	7.75 *	7.63 *	7.48 *	9.13 *	10.59 *	10.14 *	11.21 *	11.94 *	12.20 *	11.84 *	9.95 *	11.41 *	8.96 *	3.24 *	0.5	0	0
-20	4.99 *	9.98 *	9.96 *	9.91 *	9.82 *	9.71 *	9.58 *	9.42 *	9.24 *	11.28 *	13.09 *	12.53 *	13.83 *	14.73 *	15.07 *	14.65 *	12.30 *	14.05 *	11.01 *	3.95 *	0.5	0	0
-23	5.93 *	11.86 *	11.83 *	11.76 *	11.66 *	11.53 *	11.37 *	11.18 *	10.97 *	13.38 *	15.52 *	14.86 *	16.40 *	17.43 *	17.80 *	17.33 *	14.55 *	16.55 *	12.89 *	4.58 *	0.6	0	0
-26	5.87 *	11.73 *	11.70 *	11.64 *	11.54 *	11.40 *	11.24 *	11.05 *	10.84 *	13.22 *	15.32 *	14.67 *	16.20 *	17.18 *	17.50 *	17.03 *	14.26 *	16.09 *	12.43 *	4.38 *	0.6	0	0
-29	6.74 *	13.47 *	13.43 *	13.36 *	13.24 *	13.08 *	12.89 *	12.68 *	12.44 *	15.15 *	17.56 *	16.82 *	18.57 *	19.62 *	19.92 *	19.36 *	16.16 *	17.97 *	13.75 *	4.82 *	0.6	0	0
-33	7.45 *	14.89 *	14.84 *	14.75 *	14.63 *	14.44 *	14.22 *	13.99 *	13.73 *	16.72 *	19.31 *	18.46 *	20.41 *	21.50 *	21.63 *	21.04 *	17.54 *	19.18 *	14.55 *	5.08 *	0.6	0	0
-38	7.66 *	15.31 *	15.27 *	15.18 *	15.03 *	14.83 *	14.61 *	14.37 *	14.09 *	17.16 *	19.79 *	18.86 *	20.87 *	21.99 *	21.96 *	21.30 *	17.83 *	19.33 *	14.51 *	5.04 *	0.6	0	0
-43	6.97 *	13.97 *	13.96 *	13.88 *	13.72 *	13.53 *	13.37 *	13.17 *	12.90 *	15.69 *	18.11 *	17.32 *	19.18 *	20.20 *	20.24 *	19.64 *	16.45 *	17.87 *	13.30 *	4.6	0.5	0	0
-48	5.20 *	10.43 *	10.44 *	10.38 *	10.26 *	10.10 *	9.98 *	9.86 *	9.67 *	11.77 *	13.57 *	12.99 *	14.38 *	15.14 *	15.27 *	14.83 *	12.34 *	13.50 *	10.09 *	3.4	0.4	0	0
-55	4.57 *	9.22 *	9.24 *	9.18 *	9.07 *	8.89 *	8.72 *	8.63 *	8.52 *	10.42 *	11.99 *	11.35 *	12.55 *	13.41 *	13.55 *	12.99 *	10.92 *	12.17 *	9.3	3.2	0.4	0	0
-65	1.9	3.9	3.9	3.9	3.9	3.8	3.7	3.6	3.6	4.5	5.2	4.8	5.4	6	6.1	5.8	5.2	6	5	2	0.2	0	0
-75	0.3	0.6	0.6	0.6	0.5	0.5	0.5	0.5	0.5	0.7	0.8	0.7	0.9	1	1.1	1.1	1.1	1.4	1.4	0.6	0.1	0	0
-85	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.3	0.4	0.4	0.2	0	0	0
-90	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	196	393	392	390	386	382	376	370	363	443	513	490	541	573	583	566	473	531	408	144	19.1	0.08	8533.1

4.0 LM-79 Measurement and Test Results

4.3 THD and PF Test

Model No.	FFLEDL @ 120W / 4000K/480	Sample ID.	A1
Temperature (°C)	25.4	Humidity (%RH)	54.0

Test Method

The samples were tested according to the ANSI C82.77:2002.

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
480.03	60	0.258	105.8	0.853	21.22%

5.0 Equipment Information

Test Equipment			
Equipment ID	Equipment Name	Last Calibration Date	Calibration Due Date
DLF107	Integrating Sphere System	2020/12/26	2021/12/25
DLF108	Auxiliary Lamp	2020/12/26	2021/12/25
DLF122	Measurement Standard Lamp Standard Lamp Type: 220 V, 0.4720 A, Tungsten, Omni-derectional	2020/12/26	2021/12/25
DLF116	AC Power Source	2020/12/26	2021/12/25
DLF113	Power Meter	2020/12/26	2021/12/25
DLF112	Temperature Recorder	2020/12/26	2021/12/25
DLF114	Temperature & Humidity Datalogger	2020/12/26	2021/12/25
DLF101	Goniophotometer	2020/12/26	2021/12/25
DLF125	Standard Lamp Standard Lamp Type: 76.58 V, 6.7875 A, Tungsten, Omni-derectional	2020/12/26	2021/12/25
DLF104	AC Power Source	2020/12/26	2021/12/25
DLF507	DC Power Source	2020/12/26	2021/12/25
DLF102	Power Meter	2020/12/26	2021/12/25
DLF111	Temperature & Humidity Datalogger	2020/12/26	2021/12/25
DLF119	Power Meter	2020/12/26	2021/12/25
DLF031	Temperature data logger	2020/12/26	2021/12/25
DLF022	Digital power meter	2020/12/26	2021/12/25
DLF003	Temperature & Humidity Datalogger	2020/12/26	2021/12/25

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