

Cooper Lighting Solutions Photometric Lab
1121 Highway 74 South
Peachtree City, GA 30269



Scaled data based on original data using
LM-79-2019 Approved Method: Electrical and Photometric Measurements of Solid-
State Lighting Products

Test Report Prepared for
Cooper Lighting Solutions

Brand: NEO-RAY

Report Number: P906697

Luminaire Tested: DFN2DIP-SQ4F0-060D160US835-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P906697
REPORT IS A COMBINATION OF REPORTS P901723 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-060D160US835-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

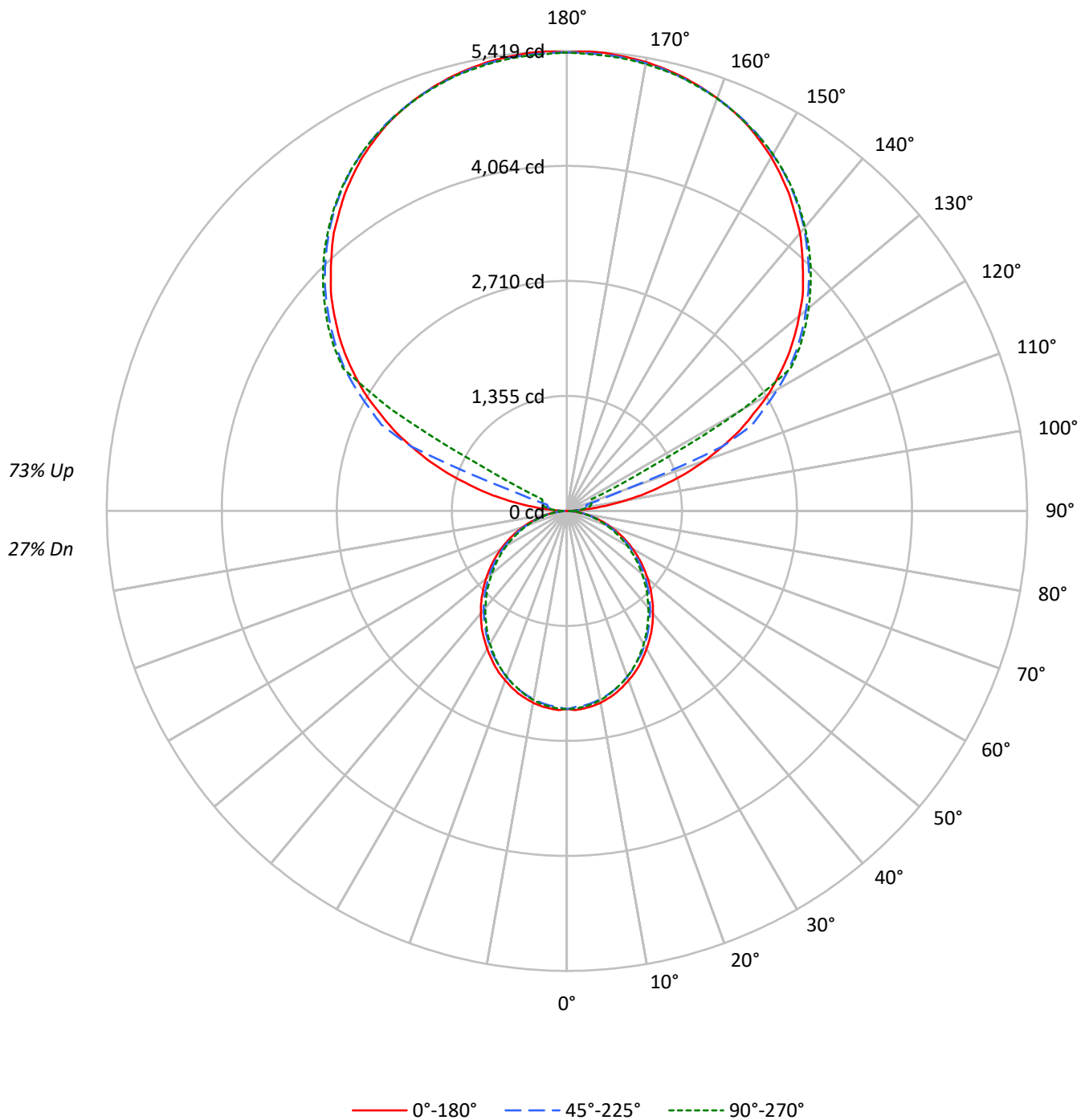
Lumens per Lamp: N/A
Luminaire Lumens: 21780.0 lumens
Efficiency: N/A
Efficacy: 126.6 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 172.1
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.946
Total Harmonic Distortion (THDi): 0.132
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 24 FT

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Luminous Intensity Polar Plot



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COEFFICIENT OF UTILIZATION - ZONAL CAVITY METHOD:

RF	20				20				20				20				20
RC	80				70				50				30				10
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10
RCR																	
0	102	102	102	102	91	91	91	91	71	71	71	52	52	52	35	35	35
1	93	89	85	81	83	79	76	73	62	60	58	46	45	43	31	30	30
2	84	77	71	66	75	69	64	60	54	51	48	40	38	36	27	26	25
3	77	68	61	55	68	61	55	50	48	44	40	36	33	31	24	23	21
4	70	60	52	47	63	54	47	42	42	38	34	32	29	26	22	20	18
5	64	53	45	40	57	48	41	36	38	33	29	28	25	23	19	18	16
6	59	48	40	34	53	43	36	31	34	29	25	25	22	20	18	16	14
7	55	43	35	30	49	39	32	27	31	26	22	23	20	17	16	14	12
8	51	39	31	26	45	35	28	24	28	23	20	21	18	15	15	13	11
9	47	35	28	23	42	32	26	21	25	21	17	19	16	14	14	12	10
10	44	32	25	21	39	29	23	19	23	19	16	18	15	12	13	11	9

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1638	1638	1638
5°	1641	1616	1627
10°	1627	1594	1605
15°	1603	1568	1571
20°	1571	1532	1536
25°	1539	1489	1496
30°	1499	1449	1445
35°	1460	1401	1390
40°	1413	1353	1339
45°	1366	1305	1286
50°	1315	1255	1225
55°	1261	1196	1169
60°	1201	1127	1104
65°	1134	1055	1028
70°	1050	968	947
75°	933	863	873
80°	793	730	729
85°	573	499	490

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 2894 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	219.7	1.0
10°-20°	618.3	2.8
20°-30°	908.6	4.2
30°-40°	1055.3	4.8
40°-50°	1054.0	4.8
50°-60°	919.0	4.2
60°-70°	679.4	3.1
70°-80°	384.4	1.8
80°-90°	110.9	0.5
90°-100°	178.0	0.8
100°-110°	663.8	3.0
110°-120°	1760.4	8.1
120°-130°	2919.7	13.4
130°-140°	3101.5	14.2
140°-150°	2882.5	13.2
150°-160°	2317.4	10.6
160°-170°	1493.3	6.9
170°-180°	514.0	2.4
0°-30°	1746.6	8.0
0°-40°	2801.8	12.9
0°-60°	4774.8	21.9
0°-90°	5949.5	27.3
90°-120°	2602.2	11.9
90°-150°	11505.9	52.8
90°-180°	15831.0	72.7
0°-180°	21780.0	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2335	2335	2335	2335	2335	
5°	2335	2326	2301	2319	2315	222
15°	2222	2209	2180	2189	2178	626
25°	2011	1994	1955	1960	1955	926
35°	1735	1713	1677	1663	1652	1084
45°	1412	1396	1363	1338	1329	1090
55°	1069	1055	1028	1001	990	955
65°	721	707	685	664	653	713
75°	377	373	361	348	352	402
85°	92	90	88	81	79	103
90°	4	47	78	98	105	20
95°	254	125	152	172	168	301
105°	1188	1305	238	281	297	1269
115°	2247	2313	2411	602	321	2212
125°	3176	3227	3302	3329	3341	2833
135°	3931	3994	4028	4068	4060	3036
145°	4560	4556	4622	4650	4630	2852
155°	5021	4986	5033	5056	5025	2314
165°	5290	5267	5279	5306	5279	1495
175°	5411	5384	5392	5419	5380	515
180°	5400	5400	5400	5400	5400	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2334.6	2334.6	2334.6	2334.6	2334.6
2.5°	2348.2	2337.0	2312.2	2334.6	2330.3
5°	2334.6	2325.8	2301.0	2318.9	2314.6
7.5°	2318.9	2305.6	2280.8	2298.9	2294.4
10°	2294.4	2278.7	2251.7	2269.6	2262.9
12.5°	2260.6	2247.2	2220.3	2231.5	2227.0
15°	2222.4	2209.1	2179.8	2188.9	2177.7
17.5°	2175.3	2162.0	2132.7	2143.8	2132.7
20°	2123.6	2110.3	2078.8	2085.5	2076.7
22.5°	2072.2	2051.9	2022.6	2022.6	2018.1
25°	2011.4	1993.6	1955.4	1959.7	1955.4
27.5°	1944.0	1928.3	1899.2	1892.6	1881.4
30°	1876.9	1858.7	1825.2	1818.5	1809.4
32.5°	1804.9	1791.6	1755.6	1742.0	1733.0
35°	1735.4	1713.0	1677.0	1663.4	1652.2
37.5°	1656.8	1636.5	1600.6	1584.8	1573.6
40°	1576.0	1557.9	1522.0	1502.0	1492.9
42.5°	1497.4	1479.3	1443.6	1421.0	1407.6
45°	1412.2	1396.4	1362.6	1338.1	1329.0
47.5°	1329.0	1313.3	1277.4	1252.6	1239.2
50°	1241.4	1230.2	1198.8	1167.3	1156.1
52.5°	1156.1	1140.4	1111.3	1086.6	1070.9
55°	1068.7	1055.1	1028.2	1001.3	990.1
57.5°	981.1	969.9	940.6	913.7	904.6
60°	893.4	884.6	853.2	828.4	821.7
62.5°	808.1	792.4	770.0	747.6	738.6
65°	720.7	707.2	684.8	664.5	653.3
67.5°	630.9	619.5	599.5	583.8	574.7
70°	547.8	538.8	518.5	502.8	494.0
72.5°	462.5	453.5	442.3	426.6	419.9
75°	377.0	372.8	361.3	348.0	352.5
77.5°	300.8	291.8	287.2	280.6	273.9
80°	224.6	222.2	217.7	211.0	206.5
82.5°	152.7	152.7	150.5	141.5	141.5
85°	91.9	89.8	87.6	80.7	78.6
87.5°	40.5	36.0	31.4	24.8	22.4
90°	3.7	46.9	77.9	97.9	105.3
92.5°	97.9	82.1	93.7	101.6	105.3
95°	253.8	124.8	152.2	172.1	168.0
97.5°	457.0	136.9	199.0	211.1	214.8
100°	691.8	156.4	222.7	253.8	261.7
102.5°	949.3	941.9	230.6	273.3	285.3
105°	1187.8	1305.2	238.5	281.2	296.9
107.5°	1465.2	1562.7	246.4	289.1	304.8
110°	1731.1	1812.8	683.9	293.2	308.5

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1981.2	2051.3	1984.9	300.7	312.7
115°	2246.6	2312.9	2410.8	601.8	320.6
117.5°	2477.2	2555.1	2622.0	2062.9	1039.3
120°	2735.2	2793.6	2864.1	2911.0	2383.5
122.5°	2953.7	3016.3	3094.7	3117.9	3122.1
125°	3176.4	3227.4	3301.7	3329.1	3340.7
127.5°	3379.6	3434.4	3493.3	3532.3	3536.0
130°	3571.3	3633.9	3676.6	3719.7	3716.0
132.5°	3766.6	3817.6	3860.3	3895.6	3891.9
135°	3930.8	3993.5	4028.3	4067.7	4059.8
137.5°	4102.5	4149.4	4188.8	4227.8	4216.2
140°	4270.5	4302.0	4344.7	4380.0	4360.5
142.5°	4411.5	4438.9	4489.5	4520.6	4501.1
145°	4560.0	4555.8	4622.2	4649.5	4630.1
147.5°	4688.5	4676.9	4743.3	4762.8	4747.4
150°	4813.8	4786.4	4849.1	4872.3	4852.8
152.5°	4919.1	4888.0	4946.5	4970.2	4942.8
155°	5020.7	4985.9	5032.8	5056.0	5024.9
157.5°	5102.9	5071.8	5107.0	5134.4	5102.9
160°	5173.4	5149.7	5173.4	5196.6	5169.2
162.5°	5235.6	5212.4	5231.8	5259.2	5224.0
165°	5290.3	5267.1	5278.7	5306.1	5278.7
167.5°	5333.5	5309.8	5321.9	5349.2	5314.0
170°	5368.7	5345.1	5352.9	5380.3	5345.1
172.5°	5391.9	5368.7	5376.6	5404.0	5368.7
175°	5411.4	5384.0	5391.9	5419.3	5380.3
177.5°	5419.3	5391.9	5396.1	5423.5	5388.2
180°	5399.8	5399.8	5399.8	5399.8	5399.8

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CIE UGR TABLE:

Reflectances:											
Ceiling		0.7	0.7	0.5	0.5	0.3	0.7	0.7	0.5	0.5	0.3
Wall		0.5	0.3	0.5	0.3	0.3	0.5	0.3	0.5	0.3	0.3
Reference plane		0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Room dimensions		Viewed crosswise					Viewed endwise				
X=2H	Y=2H	6.40	7.09	7.54	8.22	9.78	5.96	6.65	7.09	7.77	9.33
	3H	8.06	8.67	9.19	9.80	11.38	7.57	8.18	8.70	9.31	10.89
	4H	8.64	9.22	9.79	10.36	11.94	8.14	8.73	9.29	9.86	11.44
	6H	9.03	9.57	10.19	10.71	12.30	8.53	9.07	9.69	10.20	11.80
	8H	9.13	9.65	10.29	10.80	12.38	8.63	9.15	9.79	10.29	11.88
	12H	9.18	9.67	10.34	10.81	12.42	8.67	9.16	9.83	10.30	11.91
4H	2H	6.85	7.43	8.00	8.56	10.14	6.49	7.08	7.65	8.21	9.79
	3H	8.70	9.19	9.86	10.35	11.94	8.29	8.78	9.45	9.94	11.53
	4H	9.41	9.86	10.57	11.01	12.62	8.99	9.44	10.15	10.58	12.20
	6H	9.92	10.30	11.09	11.47	13.08	9.49	9.87	10.66	11.04	12.64
	8H	10.07	10.43	11.23	11.59	13.21	9.63	9.99	10.80	11.15	12.77
	12H	10.13	10.46	11.32	11.63	13.26	9.68	10.01	10.87	11.18	12.81
8H	4H	9.59	9.95	10.76	11.11	12.73	9.22	9.58	10.38	10.74	12.36
	6H	10.22	10.52	11.41	11.72	13.34	9.84	10.14	11.03	11.34	12.95
	8H	10.44	10.70	11.64	11.88	13.52	10.05	10.31	11.24	11.49	13.13
	12H	10.57	10.80	11.77	11.97	13.65	10.16	10.39	11.36	11.56	13.23
12H	4H	9.57	9.90	10.75	11.07	12.69	9.20	9.53	10.39	10.70	12.33
	6H	10.25	10.51	11.44	11.69	13.33	9.88	10.14	11.07	11.32	12.96
	8H	10.49	10.71	11.68	11.89	13.56	10.11	10.33	11.30	11.51	13.18

END OF REPORT