

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: P906696

Luminaire Tested: DFN2DIP-SQ4F0-060D160US835-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P906696
REPORT IS A COMBINATION OF REPORTS P900203 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-060D160US835-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

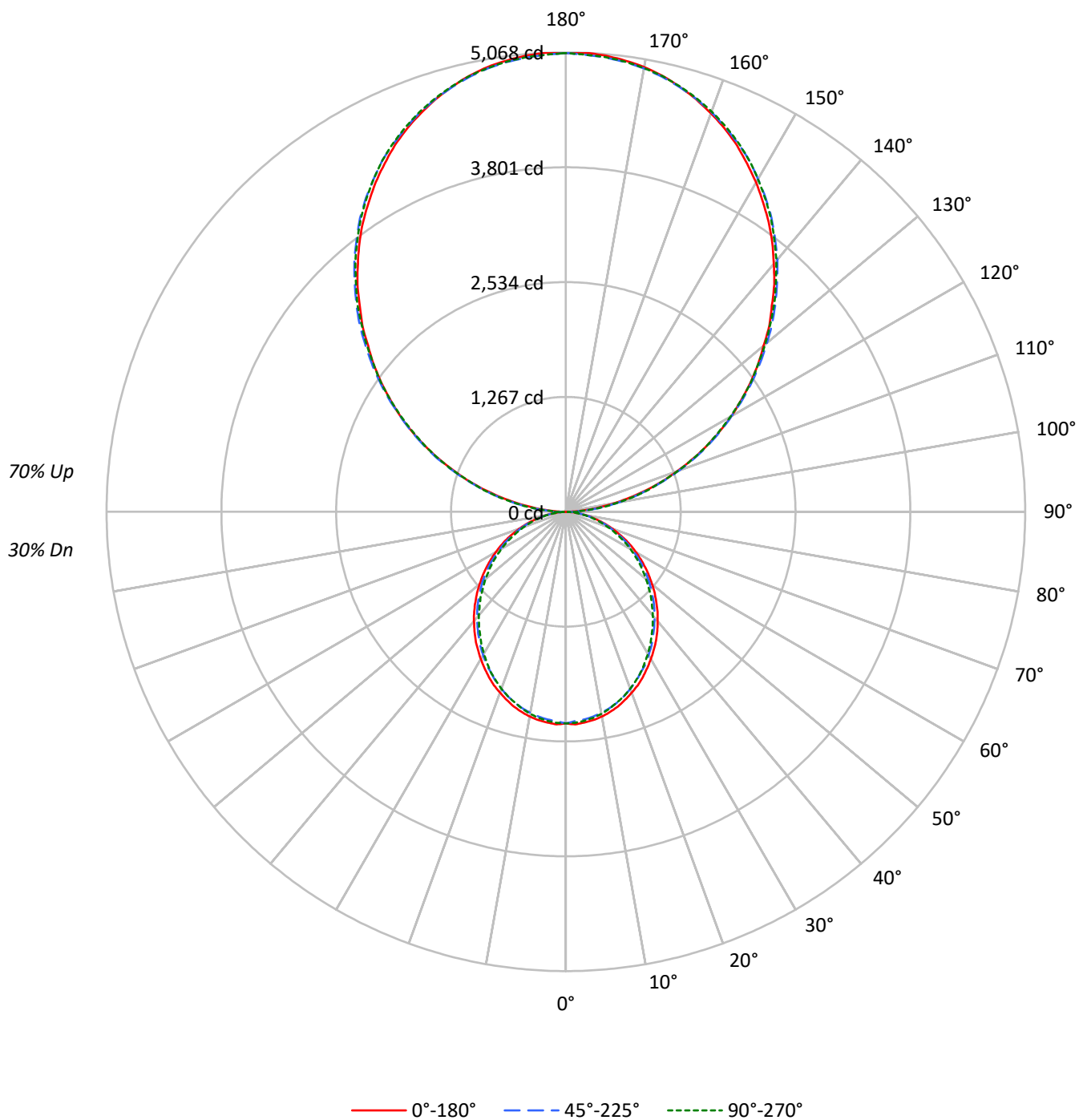
Lumens per Lamp: N/A
Luminaire Lumens: 20101.0 lumens
Efficiency: N/A
Efficacy: 116.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

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	92	92	92	92	72	72	72	54	54	54	37	37	37
1	93	89	85	82	83	80	77	74	63	61	59	47	46	45	33	32	32
2	85	78	72	67	76	70	65	61	55	52	49	42	39	37	29	28	27
3	77	68	61	56	69	61	55	51	49	44	41	37	34	32	26	24	23
4	71	60	53	47	63	54	48	43	43	38	35	33	30	27	23	21	19
5	65	54	46	40	58	48	42	37	38	34	30	29	26	23	21	19	17
6	60	48	40	34	53	43	37	32	35	30	26	26	23	20	19	17	15
7	55	43	35	30	49	39	32	28	31	26	23	24	20	18	17	15	13
8	51	39	32	26	46	35	29	24	28	24	20	22	18	16	16	13	12
9	47	35	28	23	42	32	26	22	26	21	18	20	17	14	14	12	11
10	44	32	25	21	40	29	23	19	24	19	16	18	15	13	13	11	10

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: 3982 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	219.7	1.1
10°-20°	618.3	3.1
20°-30°	908.6	4.5
30°-40°	1055.3	5.2
40°-50°	1054.0	5.2
50°-60°	919.0	4.6
60°-70°	679.4	3.4
70°-80°	384.4	1.9
80°-90°	115.8	0.6
90°-100°	313.1	1.6
100°-110°	995.0	4.9
110°-120°	1702.7	8.5
120°-130°	2239.3	11.1
130°-140°	2513.5	12.5
140°-150°	2464.8	12.3
150°-160°	2067.6	10.3
160°-170°	1371.2	6.8
170°-180°	479.3	2.4
0°-30°	1746.6	8.7
0°-40°	2801.8	13.9
0°-60°	4774.8	23.8
0°-90°	5954.4	29.6
90°-120°	3010.8	15.0
90°-150°	10228.5	50.9
90°-180°	14147.0	70.4
0°-180°	20101.0	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°	5	55	150	140	145	20
95°	223	266	273	273	266	248
105°	918	931	940	947	947	969
115°	1709	1733	1726	1721	1709	1690
125°	2485	2523	2511	2498	2493	2221
135°	3214	3262	3271	3266	3254	2485
145°	3903	3933	3958	3962	3945	2438
155°	4462	4475	4488	4510	4496	2054
165°	4855	4850	4850	4880	4859	1369
175°	5051	5039	5030	5061	5035	480
180°	5061	5061	5061	5061	5061	

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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°	4.6	54.9	149.5	140.4	144.9
92.5°	94.6	128.2	132.7	137.3	137.3
95°	222.7	265.5	273.1	273.1	265.5
97.5°	370.7	410.4	427.2	427.2	427.2
100°	541.6	576.7	588.9	588.9	584.3
102.5°	721.6	747.6	764.3	768.9	764.3
105°	918.4	930.6	939.8	947.4	947.4
107.5°	1113.7	1132.0	1132.0	1135.1	1113.7
110°	1302.9	1327.3	1327.3	1327.3	1315.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1507.3	1533.3	1528.7	1516.5	1507.3
115°	1708.7	1733.1	1725.5	1720.9	1708.7
117.5°	1908.6	1942.1	1920.8	1908.6	1896.4
120°	2110.0	2143.5	2110.0	2110.0	2096.2
122.5°	2293.0	2335.8	2314.4	2302.2	2293.0
125°	2485.3	2523.4	2511.2	2497.5	2492.9
127.5°	2672.9	2720.2	2703.4	2685.1	2672.9
130°	2848.4	2903.3	2895.7	2886.5	2869.7
132.5°	3045.2	3087.9	3090.9	3069.6	3057.4
135°	3214.5	3261.8	3271.0	3266.4	3254.2
137.5°	3403.7	3441.8	3449.5	3446.4	3428.1
140°	3570.0	3608.1	3629.5	3629.5	3612.7
142.5°	3740.9	3779.0	3791.2	3795.8	3779.0
145°	3902.6	3933.1	3957.5	3962.1	3945.3
147.5°	4047.5	4085.7	4104.0	4111.6	4094.8
150°	4197.0	4223.0	4239.8	4253.5	4239.8
152.5°	4329.8	4355.7	4377.1	4393.8	4377.1
155°	4462.5	4474.7	4488.4	4509.8	4496.1
157.5°	4576.9	4586.1	4593.7	4624.2	4602.9
160°	4679.1	4688.3	4692.9	4718.8	4700.5
162.5°	4773.7	4773.7	4778.3	4807.3	4785.9
165°	4854.6	4850.0	4850.0	4880.5	4859.2
167.5°	4927.8	4914.1	4914.1	4944.6	4923.2
170°	4982.7	4970.5	4966.0	4996.5	4970.5
172.5°	5020.9	5008.7	5004.1	5034.6	5008.7
175°	5051.4	5039.2	5030.0	5060.6	5034.6
177.5°	5068.2	5056.0	5046.8	5072.8	5046.8
180°	5060.6	5060.6	5060.6	5060.6	5060.6

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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	6.73	7.43	7.84	8.54	10.08	6.29	6.99	7.40	8.10	9.63
	3H	8.38	9.01	9.51	10.13	11.68	7.89	8.52	9.02	9.64	11.19
	4H	8.97	9.56	10.10	10.68	12.24	8.47	9.07	9.60	10.19	11.75
	6H	9.36	9.91	10.50	11.03	12.60	8.86	9.41	10.00	10.53	12.10
	8H	9.46	9.99	10.61	11.12	12.68	8.96	9.49	10.11	10.62	12.18
	12H	9.51	10.01	10.66	11.14	12.72	9.00	9.50	10.15	10.63	12.21
4H	2H	7.17	7.77	8.31	8.89	10.45	6.82	7.42	7.96	8.53	10.09
	3H	9.03	9.53	10.17	10.67	12.24	8.62	9.12	9.77	10.26	11.83
	4H	9.74	10.20	10.89	11.33	12.92	9.32	9.78	10.46	10.91	12.50
	6H	10.25	10.64	11.40	11.80	13.38	9.82	10.21	10.97	11.37	12.95
	8H	10.40	10.77	11.55	11.91	13.51	9.96	10.33	11.11	11.48	13.07
	12H	10.47	10.80	11.64	11.96	13.56	10.02	10.35	11.19	11.51	13.11
8H	4H	9.92	10.29	11.08	11.44	13.04	9.55	9.91	10.70	11.06	12.66
	6H	10.55	10.86	11.73	12.05	13.64	10.17	10.47	11.34	11.66	13.26
	8H	10.78	11.04	11.95	12.21	13.82	10.38	10.65	11.56	11.82	13.43
	12H	10.90	11.14	12.09	12.30	13.95	10.49	10.72	11.67	11.89	13.54
12H	4H	9.90	10.24	11.07	11.39	13.00	9.53	9.87	10.70	11.03	12.63
	6H	10.58	10.85	11.76	12.02	13.63	10.21	10.48	11.39	11.64	13.26
	8H	10.82	11.05	12.00	12.22	13.86	10.44	10.67	11.62	11.84	13.48