

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: P923060

Luminaire Tested: DFN2DIP-SQ4F0-060D140US940-FLLFLL

Issue Date: 11/21/2024

**Test Information**

Test Method: LM-79-2019  
Report Number: P923060  
REPORT IS A COMBINATION OF REPORTS P900185 AND P896915  
Test Lab: INNOVATION CENTER  
Issue Date: 11/21/2024  
Manufacturer: COOPER LIGHTING SOLUTIONS  
Product Line: NEO-RAY  
Catalog Number: DFN2DIP-SQ4F0-060D140US940-FLLFLL  
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens  
Light Source: -  
Ballast/Driver: -

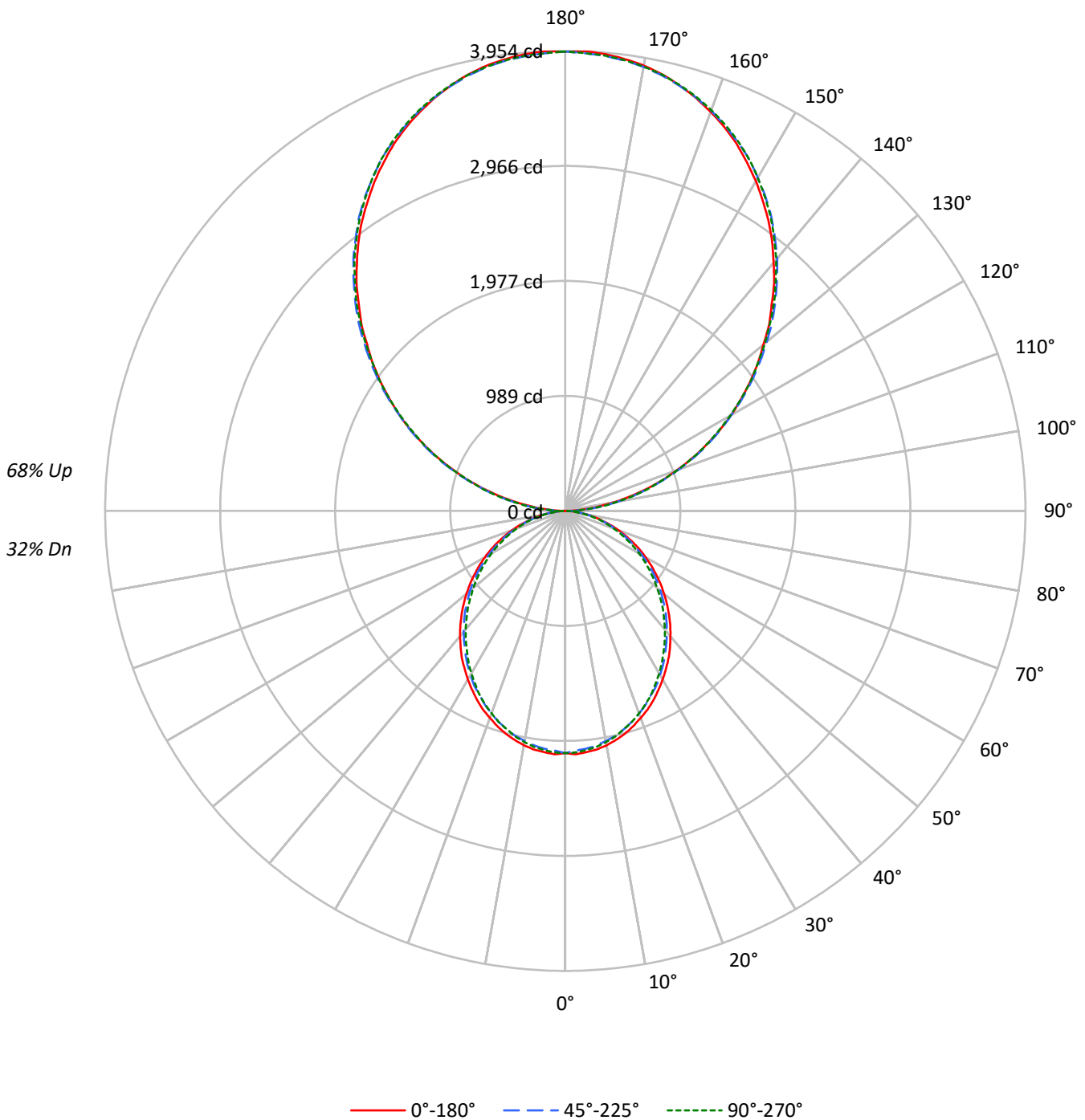
**Summary**

Lumens per Lamp: N/A  
Luminaire Lumens: 16345.1 lumens  
Efficiency: N/A  
Efficacy: 104.9 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): 155.8  
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				20
RC	80				70				50				30				10				0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																					
0	103	103	103	103	93	93	93	93	74	74	74	56	56	56	40	40	40	40	40	40	32
1	94	90	86	82	84	81	78	75	64	62	60	49	48	47	35	34	34	35	34	34	27
2	85	78	72	67	77	71	66	61	56	53	50	43	41	39	31	30	28	31	30	28	23
3	78	69	62	56	70	62	56	51	50	45	42	38	35	33	28	26	24	28	26	24	19
4	71	61	53	47	64	55	48	43	44	39	36	34	31	28	25	23	21	34	31	28	17
5	65	54	46	40	59	49	42	37	39	34	31	30	27	24	22	20	18	30	27	24	14
6	60	48	40	35	54	44	37	32	35	30	27	27	24	21	20	18	16	27	24	21	13
7	55	43	36	30	50	40	33	28	32	27	23	25	21	19	18	16	14	25	21	19	11
8	51	39	32	27	46	36	29	25	29	24	21	23	19	17	17	14	13	23	19	17	10
9	48	36	29	24	43	33	26	22	27	22	18	21	17	15	15	13	11	21	17	15	9
10	44	33	26	21	40	30	24	20	24	20	16	19	16	13	14	12	10	19	16	13	8

**AVERAGE LUMINANCE (cd/sqm):**

	0°	45°	90°
0°	1461	1461	1461
5°	1463	1441	1451
10°	1451	1422	1431
15°	1430	1399	1401
20°	1401	1366	1370
25°	1372	1328	1334
30°	1336	1292	1288
35°	1302	1249	1240
40°	1260	1207	1194
45°	1219	1164	1147
50°	1173	1119	1092
55°	1125	1067	1042
60°	1071	1005	985
65°	1012	941	917
70°	936	863	844
75°	832	770	778
80°	707	651	650
85°	510	445	437

**MAXIMUM LUMINANCE 45°-90°:**

Horizontal Angle: 90°  
 Vertical Angle: 90°  
 Luminance: 3108 cd/sqm



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**ZONAL LUMENS:**

Zone	Lumens	% Fixture
0°-10°	195.9	1.2
10°-20°	551.3	3.4
20°-30°	810.2	5.0
30°-40°	941.0	5.8
40°-50°	939.8	5.7
50°-60°	819.5	5.0
60°-70°	605.8	3.7
70°-80°	342.7	2.1
80°-90°	101.7	0.6
90°-100°	244.3	1.5
100°-110°	776.3	4.7
110°-120°	1328.4	8.1
120°-130°	1747.1	10.7
130°-140°	1961.0	12.0
140°-150°	1923.0	11.8
150°-160°	1613.2	9.9
160°-170°	1069.8	6.5
170°-180°	373.9	2.3
0°-30°	1557.4	9.5
0°-40°	2498.4	15.3
0°-60°	4257.8	26.0
0°-90°	5308.0	32.5
90°-120°	2349.0	14.4
90°-150°	7980.2	48.8
90°-180°	11037.0	67.5
0°-180°	16345.1	100.0

**CANDELA DISTRIBUTION:**

	0°	22.5°	45°	67.5°	90°	Flux
0°	2082	2082	2082	2082	2082	
5°	2082	2074	2052	2068	2064	198
15°	1982	1970	1944	1952	1942	558
25°	1794	1778	1744	1748	1744	825
35°	1548	1528	1495	1483	1473	966
45°	1259	1245	1215	1193	1185	972
55°	953	941	917	893	883	852
65°	643	631	611	592	583	635
75°	336	332	322	310	314	359
85°	82	80	78	72	70	91
90°	4	43	117	110	113	16
95°	174	207	213	213	207	193
105°	717	726	733	739	739	756
115°	1333	1352	1346	1343	1333	1319
125°	1939	1969	1959	1948	1945	1733
135°	2508	2545	2552	2548	2539	1938
145°	3045	3069	3088	3091	3078	1902
155°	3482	3491	3502	3518	3508	1603
165°	3788	3784	3784	3808	3791	1068
175°	3941	3932	3924	3948	3928	374
180°	3948	3948	3948	3948	3948	



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**CANDELA DISTRIBUTION (FULL):**

	0°	22.5°	45°	67.5°	90°
0°	2081.8	2081.8	2081.8	2081.8	2081.8
2.5°	2093.9	2083.9	2061.8	2081.8	2078.0
5°	2081.8	2073.9	2051.8	2067.8	2064.0
7.5°	2067.8	2055.9	2033.8	2050.0	2045.9
10°	2045.9	2031.9	2007.9	2023.8	2017.9
12.5°	2015.8	2003.9	1979.9	1989.9	1985.8
15°	1981.7	1969.9	1943.8	1951.9	1941.9
17.5°	1939.7	1927.9	1901.8	1911.6	1901.8
20°	1893.6	1881.8	1853.7	1859.7	1851.8
22.5°	1847.8	1829.7	1803.6	1803.6	1799.6
25°	1793.6	1777.7	1743.7	1747.5	1743.7
27.5°	1733.5	1719.5	1693.5	1687.7	1677.7
30°	1673.7	1657.4	1627.5	1621.6	1613.5
32.5°	1609.4	1597.6	1565.5	1553.4	1545.3
35°	1547.5	1527.5	1495.4	1483.3	1473.3
37.5°	1477.4	1459.3	1427.3	1413.2	1403.2
40°	1405.3	1389.2	1357.2	1339.3	1331.2
42.5°	1335.2	1319.1	1287.3	1267.1	1255.2
45°	1259.3	1245.2	1215.0	1193.2	1185.1
47.5°	1185.1	1171.1	1139.1	1117.0	1105.0
50°	1107.0	1097.0	1069.0	1040.9	1030.9
52.5°	1030.9	1016.9	991.0	968.9	954.9
55°	953.0	940.8	916.9	892.9	882.9
57.5°	874.9	864.9	838.7	814.8	806.6
60°	796.7	788.8	760.8	738.7	732.7
62.5°	720.6	706.6	686.6	666.6	658.6
65°	642.7	630.6	610.6	592.5	582.6
67.5°	562.6	552.4	534.6	520.6	512.5
70°	488.5	480.5	462.4	448.4	440.5
72.5°	412.4	404.4	394.4	380.4	374.4
75°	336.2	332.4	322.2	310.3	314.3
77.5°	268.2	260.2	256.1	250.2	244.2
80°	200.3	198.1	194.1	188.2	184.1
82.5°	136.2	136.2	134.2	126.2	126.2
85°	81.9	80.1	78.1	72.0	70.1
87.5°	36.1	32.1	28.0	22.1	20.0
90°	3.6	42.9	116.6	109.5	113.1
92.5°	73.8	100.0	103.5	107.1	107.1
95°	173.8	207.1	213.0	213.0	207.1
97.5°	289.3	320.2	333.3	333.3	333.3
100°	422.6	450.0	459.4	459.4	455.8
102.5°	563.0	583.3	596.4	599.9	596.4
105°	716.6	726.1	733.3	739.1	739.1
107.5°	868.9	883.2	883.2	885.6	868.9
110°	1016.5	1035.5	1035.5	1035.5	1026.0



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**CANDELA DISTRIBUTION (continued):**

	0°	22.5°	45°	67.5°	90°
112.5°	1176.0	1196.2	1192.7	1183.1	1176.0
115°	1333.1	1352.2	1346.2	1342.6	1333.1
117.5°	1489.1	1515.3	1498.6	1489.1	1479.5
120°	1646.2	1672.4	1646.2	1646.2	1635.5
122.5°	1789.0	1822.3	1805.7	1796.2	1789.0
125°	1939.0	1968.7	1959.2	1948.5	1944.9
127.5°	2085.4	2122.3	2109.2	2094.9	2085.4
130°	2222.2	2265.1	2259.1	2252.0	2238.9
132.5°	2375.8	2409.1	2411.5	2394.9	2385.3
135°	2507.9	2544.9	2552.0	2548.4	2538.9
137.5°	2655.5	2685.3	2691.3	2688.9	2674.6
140°	2785.3	2815.0	2831.7	2831.7	2818.6
142.5°	2918.6	2948.4	2957.9	2961.5	2948.4
145°	3044.7	3068.6	3087.6	3091.2	3078.1
147.5°	3157.8	3187.6	3201.9	3207.8	3194.7
150°	3274.4	3294.7	3307.8	3318.5	3307.8
152.5°	3378.1	3398.3	3415.0	3428.0	3415.0
155°	3481.6	3491.1	3501.8	3518.5	3507.8
157.5°	3570.9	3578.0	3584.0	3607.8	3591.1
160°	3650.7	3657.8	3661.4	3681.6	3667.2
162.5°	3724.4	3724.4	3728.0	3750.6	3733.9
165°	3787.5	3784.0	3784.0	3807.8	3791.1
167.5°	3844.6	3833.9	3833.9	3857.7	3841.0
170°	3887.5	3878.0	3874.4	3898.2	3878.0
172.5°	3917.3	3907.7	3904.2	3928.0	3907.7
175°	3941.1	3931.6	3924.4	3948.2	3928.0
177.5°	3954.1	3944.7	3937.5	3957.7	3937.5
180°	3948.2	3948.2	3948.2	3948.2	3948.2



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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	6.71	7.44	7.81	8.53	10.03	6.27	6.99	7.36	8.08	9.58
	3H	8.37	9.01	9.47	10.11	11.63	7.88	8.52	8.98	9.62	11.14
	4H	8.95	9.56	10.06	10.67	12.19	8.46	9.07	9.57	10.17	11.70
	6H	9.35	9.91	10.47	11.02	12.55	8.85	9.41	9.97	10.52	12.05
	8H	9.45	9.99	10.57	11.11	12.64	8.95	9.49	10.07	10.61	12.13
	12H	9.49	10.01	10.62	11.12	12.67	8.98	9.50	10.11	10.61	12.16
4H	2H	7.16	7.77	8.28	8.87	10.40	6.80	7.42	7.92	8.52	10.04
	3H	9.01	9.53	10.14	10.66	12.19	8.61	9.12	9.73	10.25	11.78
	4H	9.73	10.20	10.86	11.32	12.87	9.30	9.77	10.43	10.89	12.45
	6H	10.24	10.64	11.37	11.78	13.33	9.80	10.21	10.94	11.35	12.90
	8H	10.39	10.76	11.52	11.90	13.46	9.95	10.33	11.09	11.46	13.02
	12H	10.45	10.80	11.61	11.94	13.51	10.00	10.35	11.16	11.49	13.06
8H	4H	9.91	10.29	11.05	11.42	12.99	9.53	9.91	10.67	11.04	12.61
	6H	10.54	10.85	11.70	12.03	13.59	10.16	10.47	11.32	11.64	13.21
	8H	10.76	11.04	11.93	12.19	13.77	10.37	10.64	11.53	11.80	13.38
	12H	10.89	11.13	12.06	12.28	13.90	10.48	10.72	11.65	11.87	13.49
12H	4H	9.89	10.23	11.04	11.38	12.95	9.52	9.87	10.68	11.01	12.58
	6H	10.57	10.84	11.73	12.00	13.58	10.20	10.47	11.36	11.63	13.21
	8H	10.81	11.05	11.98	12.20	13.82	10.43	10.67	11.60	11.82	13.44