

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: P923325

Luminaire Tested: DFN2DIP-SQ4F0-160D070US940-FLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P923325
REPORT IS A COMBINATION OF REPORTS P901613 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D070US940-FLLONL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

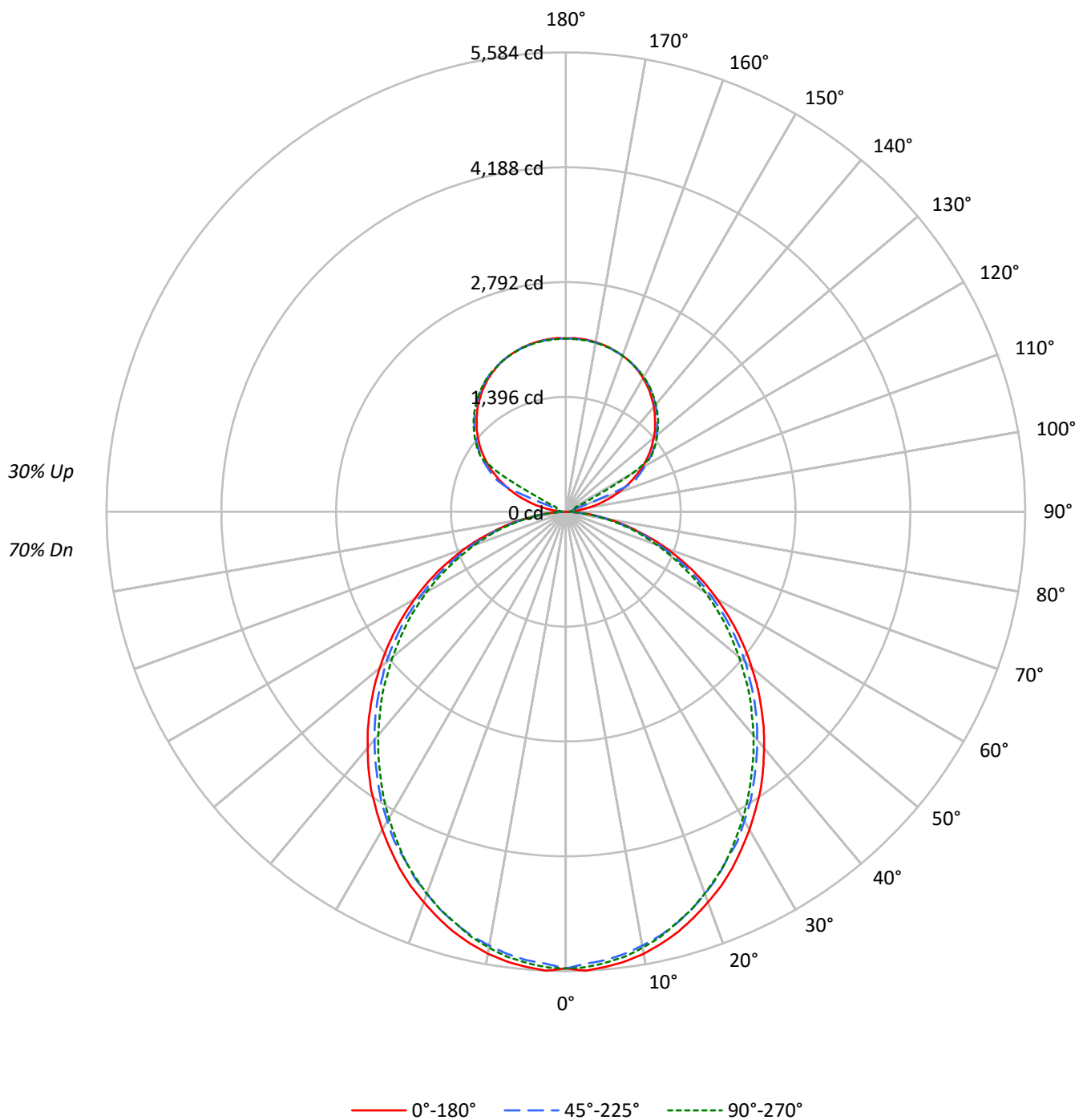
Lumens per Lamp: N/A
Luminaire Lumens: 20304.2 lumens
Efficiency: N/A
Efficacy: 92.8 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 218.9
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9971
Total Harmonic Distortion (THDi): 0.049
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	112	112	112	112	106	106	106	106	94	94	94	84	84	84	74	74	74
1	102	98	94	90	96	93	89	86	83	80	78	74	72	70	66	64	63
2	93	85	79	74	88	81	75	70	73	68	64	65	61	58	58	55	53
3	85	75	68	61	80	71	64	59	64	59	54	57	53	49	51	48	45
4	78	67	58	52	73	63	56	50	57	51	46	51	46	42	46	42	39
5	72	59	51	45	67	57	49	43	51	45	40	46	41	37	41	37	34
6	66	53	45	39	62	51	43	38	46	40	35	42	36	32	37	33	30
7	61	48	40	34	58	46	39	33	42	36	31	38	33	29	34	30	27
8	57	44	36	31	54	42	35	30	38	32	28	35	30	26	31	27	24
9	53	40	33	27	50	39	31	27	35	29	25	32	27	23	29	25	22
10	50	37	30	25	47	36	29	24	33	27	23	30	25	21	27	23	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	3895	3895	3895
5°	3902	3842	3868
10°	3870	3791	3817
15°	3813	3729	3736
20°	3736	3643	3653
25°	3659	3540	3558
30°	3563	3445	3436
35°	3473	3332	3306
40°	3361	3218	3184
45°	3249	3103	3058
50°	3127	2983	2912
55°	2999	2844	2779
60°	2855	2679	2626
65°	2698	2509	2445
70°	2497	2301	2252
75°	2219	2053	2075
80°	1885	1736	1733
85°	1362	1188	1165

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°
Vertical Angle: 45°
Luminance: 3249 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	522.5	2.6
10°-20°	1470.1	7.2
20°-30°	2160.5	10.6
30°-40°	2509.3	12.4
40°-50°	2506.2	12.3
50°-60°	2185.3	10.8
60°-70°	1615.4	8.0
70°-80°	914.0	4.5
80°-90°	244.9	1.2
90°-100°	69.5	0.3
100°-110°	259.0	1.3
110°-120°	686.8	3.4
120°-130°	1139.1	5.6
130°-140°	1209.9	6.0
140°-150°	1124.5	5.5
150°-160°	904.1	4.5
160°-170°	582.6	2.9
170°-180°	200.5	1.0
0°-30°	4153.2	20.5
0°-40°	6662.5	32.8
0°-60°	11354.0	55.9
0°-90°	14128.4	69.6
90°-120°	1015.2	5.0
90°-150°	4488.7	22.1
90°-180°	6176.0	30.4
0°-180°	20304.2	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5552	5552	5552	5552	5552	
5°	5552	5531	5472	5514	5504	527
15°	5285	5253	5183	5205	5178	1488
25°	4783	4740	4650	4660	4650	2201
35°	4127	4073	3988	3955	3929	2577
45°	3358	3321	3240	3182	3160	2592
55°	2541	2509	2445	2381	2354	2272
65°	1714	1682	1628	1580	1554	1694
75°	896	886	859	827	838	957
85°	219	214	208	192	187	244
90°	1	18	30	38	41	19
95°	99	49	59	67	66	117
105°	463	509	93	110	116	495
115°	876	902	940	235	125	863
125°	1239	1259	1288	1299	1303	1105
135°	1534	1558	1572	1587	1584	1185
145°	1779	1777	1803	1814	1806	1113
155°	1959	1945	1963	1972	1960	903
165°	2064	2055	2059	2070	2059	583
175°	2111	2100	2104	2114	2099	201
180°	2107	2107	2107	2107	2107	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5551.5	5551.5	5551.5	5551.5	5551.5
2.5°	5583.8	5557.1	5498.3	5551.5	5541.3
5°	5551.5	5530.6	5471.6	5514.2	5503.9
7.5°	5514.2	5482.4	5423.5	5466.5	5455.8
10°	5455.8	5418.4	5354.5	5396.9	5381.0
12.5°	5375.4	5343.7	5279.6	5306.3	5295.5
15°	5284.7	5253.1	5183.3	5204.9	5178.3
17.5°	5172.6	5140.9	5071.2	5097.8	5071.2
20°	5049.7	5018.0	4943.2	4959.1	4938.1
22.5°	4927.4	4879.3	4809.5	4809.5	4798.8
25°	4783.0	4740.5	4649.8	4660.1	4649.8
27.5°	4622.6	4585.3	4516.2	4500.4	4473.7
30°	4462.9	4419.9	4340.0	4324.2	4302.7
32.5°	4291.9	4260.2	4174.6	4142.4	4120.9
35°	4126.6	4073.3	3987.7	3955.4	3928.9
37.5°	3939.7	3891.5	3806.0	3768.5	3742.0
40°	3747.6	3704.6	3619.1	3571.5	3550.0
42.5°	3560.8	3517.7	3432.7	3379.0	3347.2
45°	3358.0	3320.6	3240.2	3181.8	3160.3
47.5°	3160.3	3122.9	3037.4	2978.5	2946.8
50°	2951.9	2925.3	2850.5	2775.7	2749.1
52.5°	2749.1	2711.8	2642.7	2583.7	2546.4
55°	2541.3	2509.0	2445.0	2381.0	2354.4
57.5°	2332.9	2306.2	2236.6	2172.6	2151.1
60°	2124.4	2103.5	2028.7	1969.8	1953.9
62.5°	1921.6	1884.3	1831.0	1777.8	1756.3
65°	1713.8	1681.5	1628.3	1580.2	1553.5
67.5°	1500.3	1473.1	1425.6	1388.1	1366.6
70°	1302.6	1281.1	1233.0	1195.6	1174.7
72.5°	1099.8	1078.3	1051.8	1014.3	998.5
75°	896.5	886.4	859.2	827.4	838.2
77.5°	715.3	693.8	683.1	667.2	651.3
80°	534.0	528.4	517.6	501.8	491.1
82.5°	363.0	363.0	357.9	336.4	336.4
85°	218.6	213.5	208.4	192.0	186.9
87.5°	96.3	85.5	74.7	58.9	53.2
90°	1.4	18.3	30.4	38.2	41.1
92.5°	38.2	32.0	36.6	39.7	41.1
95°	99.0	48.7	59.4	67.1	65.5
97.5°	178.3	53.4	77.7	82.4	83.8
100°	269.9	61.0	86.9	99.0	102.1
102.5°	370.3	367.5	90.0	106.6	111.3
105°	463.4	509.2	93.0	109.7	115.8
107.5°	571.6	609.7	96.1	112.8	119.0
110°	675.4	707.2	266.8	114.4	120.4

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	772.9	800.2	774.4	117.3	122.0
115°	876.5	902.3	940.5	234.8	125.1
117.5°	966.4	996.8	1022.9	804.8	405.5
120°	1067.0	1089.8	1117.4	1135.7	929.9
122.5°	1152.3	1176.7	1207.4	1216.4	1218.0
125°	1239.2	1259.1	1288.1	1298.8	1303.2
127.5°	1318.5	1339.8	1362.8	1378.0	1379.5
130°	1393.2	1417.6	1434.3	1451.2	1449.7
132.5°	1469.4	1489.3	1506.0	1519.7	1518.3
135°	1533.5	1557.9	1571.6	1586.9	1583.9
137.5°	1600.4	1618.8	1634.1	1649.4	1644.8
140°	1666.0	1678.3	1695.0	1708.7	1701.1
142.5°	1721.0	1731.7	1751.4	1763.5	1756.0
145°	1779.0	1777.4	1803.2	1813.9	1806.3
147.5°	1829.1	1824.6	1850.5	1858.1	1852.1
150°	1877.9	1867.3	1891.8	1900.8	1893.2
152.5°	1919.0	1906.9	1929.8	1938.9	1928.3
155°	1958.7	1945.1	1963.4	1972.5	1960.3
157.5°	1990.7	1978.6	1992.3	2003.0	1990.7
160°	2018.3	2009.0	2018.3	2027.3	2016.6
162.5°	2042.6	2033.5	2041.0	2051.7	2038.0
165°	2063.9	2054.9	2059.3	2070.0	2059.3
167.5°	2080.7	2071.4	2076.2	2086.9	2073.1
170°	2094.4	2085.3	2088.3	2099.0	2085.3
172.5°	2103.5	2094.4	2097.6	2108.2	2094.4
175°	2111.1	2100.4	2103.5	2114.2	2099.0
177.5°	2114.2	2103.5	2105.1	2115.9	2102.0
180°	2106.6	2106.6	2106.6	2106.6	2106.6

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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	13.65	14.72	14.41	15.51	16.47	13.20	14.27	13.97	15.06	16.02
	3H	15.33	16.29	16.11	17.09	18.08	14.84	15.80	15.62	16.60	17.59
	4H	15.93	16.83	16.73	17.64	18.65	15.43	16.34	16.23	17.15	18.15
	6H	16.34	17.18	17.15	18.00	19.01	15.84	16.68	16.65	17.49	18.51
	8H	16.45	17.25	17.27	18.09	19.10	15.95	16.75	16.77	17.59	18.60
	12H	16.51	17.27	17.34	18.10	19.14	16.00	16.76	16.83	17.59	18.63
4H	2H	14.13	15.04	14.94	15.85	16.85	13.78	14.69	14.58	15.49	16.50
	3H	16.02	16.78	16.84	17.62	18.64	15.61	16.37	16.43	17.22	18.23
	4H	16.75	17.44	17.58	18.28	19.33	16.32	17.01	17.15	17.86	18.90
	6H	17.28	17.88	18.12	18.74	19.79	16.85	17.44	17.69	18.31	19.36
	8H	17.44	17.99	18.29	18.86	19.92	17.00	17.56	17.85	18.42	19.48
	12H	17.52	18.02	18.39	18.91	19.97	17.07	17.57	17.94	18.46	19.53
8H	4H	16.96	17.52	17.81	18.38	19.44	16.58	17.14	17.43	18.00	19.07
	6H	17.61	18.07	18.48	18.97	20.04	17.22	17.69	18.10	18.59	19.65
	8H	17.83	18.24	18.72	19.14	20.22	17.44	17.85	18.33	18.75	19.83
	12H	17.98	18.34	18.87	19.23	20.36	17.57	17.93	18.46	18.82	19.95
12H	4H	16.96	17.46	17.83	18.34	19.41	16.59	17.09	17.46	17.97	19.04
	6H	17.64	18.05	18.53	18.95	20.03	17.27	17.68	18.15	18.58	19.66
	8H	17.89	18.26	18.78	19.14	20.28	17.51	17.88	18.40	18.76	19.90