

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: P925828

Luminaire Tested: DFN2DIP-SQ4F0-070D160US950-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P925828
REPORT IS A COMBINATION OF REPORTS P900205 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-070D160US950-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

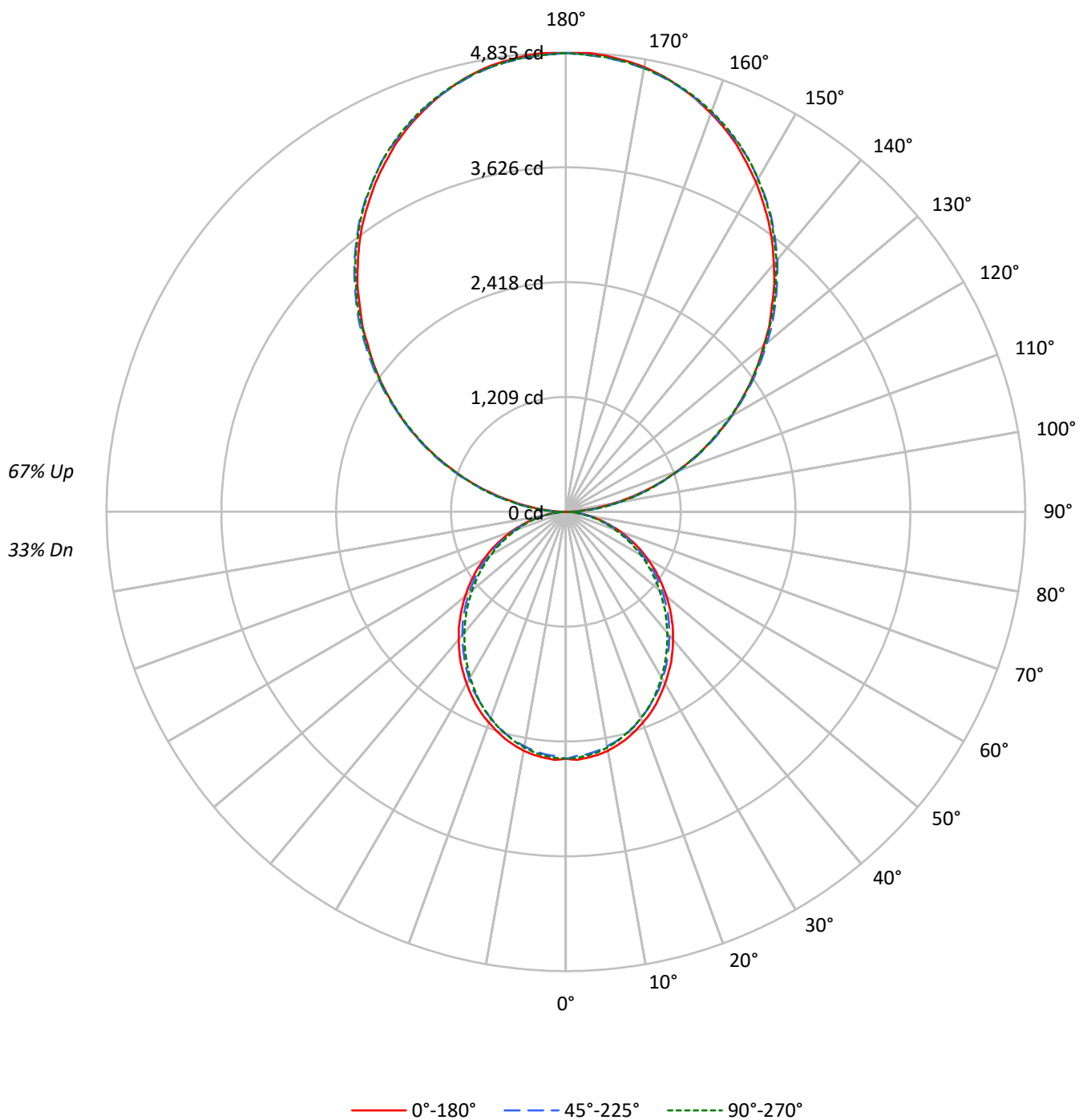
Lumens per Lamp: N/A
Luminaire Lumens: 20120.8 lumens
Efficiency: N/A
Efficacy: 109.7 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Indirect

Input Watts (W): 183.4
Input Voltage (V):
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: 0.9967
Total Harmonic Distortion (THDi): 0.063
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	103	103	103	103	93	93	93	93	74	74	74	56	56	56	40	40	40
1	94	90	86	83	85	81	78	75	65	62	60	50	48	47	36	35	34
2	86	78	72	67	77	71	66	61	57	53	50	43	41	39	31	30	29
3	78	69	62	56	70	62	56	51	50	46	42	38	36	33	28	26	24
4	71	61	53	47	64	55	48	43	44	39	36	34	31	28	25	23	21
5	65	54	46	40	59	49	42	37	39	35	31	31	27	24	22	20	18
6	60	48	40	35	54	44	37	32	36	30	27	28	24	21	20	18	16
7	55	44	36	30	50	40	33	28	32	27	23	25	21	19	18	16	14
8	51	39	32	27	46	36	29	25	29	24	21	23	19	17	17	15	13
9	48	36	29	24	43	33	26	22	27	22	18	21	17	15	16	13	12
10	45	33	26	21	40	30	24	20	25	20	17	19	16	13	14	12	10

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	1823	1823	1823
5°	1826	1798	1811
10°	1811	1774	1787
15°	1785	1746	1749
20°	1749	1705	1710
25°	1713	1657	1665
30°	1668	1612	1608
35°	1625	1559	1548
40°	1573	1506	1490
45°	1521	1453	1431
50°	1464	1396	1363
55°	1404	1331	1301
60°	1336	1254	1229
65°	1263	1175	1145
70°	1169	1077	1054
75°	1039	961	971
80°	882	813	811
85°	638	556	545

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 90°

Vertical Angle: 90°

Luminance: 3798 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	244.6	1.2
10°-20°	688.1	3.4
20°-30°	1011.3	5.0
30°-40°	1174.5	5.8
40°-50°	1173.1	5.8
50°-60°	1022.9	5.1
60°-70°	756.1	3.8
70°-80°	427.8	2.1
80°-90°	126.6	0.6
90°-100°	298.7	1.5
100°-110°	949.2	4.7
110°-120°	1624.4	8.1
120°-130°	2136.3	10.6
130°-140°	2397.9	11.9
140°-150°	2351.4	11.7
150°-160°	1972.5	9.8
160°-170°	1308.1	6.5
170°-180°	457.2	2.3
0°-30°	1943.9	9.7
0°-40°	3118.5	15.5
0°-60°	5314.4	26.4
0°-90°	6625.0	32.9
90°-120°	2872.3	14.3
90°-150°	9757.9	48.5
90°-180°	13496.0	67.1
0°-180°	20120.8	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	2598	2598	2598	2598	2598	
5°	2598	2589	2561	2581	2576	247
15°	2474	2459	2426	2436	2424	697
25°	2239	2219	2176	2181	2176	1030
35°	1932	1907	1866	1851	1839	1206
45°	1572	1554	1517	1489	1479	1213
55°	1189	1174	1144	1114	1102	1063
65°	802	787	762	740	727	793
75°	420	415	402	387	392	448
85°	102	100	98	90	88	114
90°	4	52	143	134	138	20
95°	212	253	260	260	253	236
105°	876	888	897	904	904	925
115°	1630	1653	1646	1642	1630	1612
125°	2371	2407	2396	2383	2378	2119
135°	3067	3112	3120	3116	3104	2370
145°	3723	3752	3776	3780	3764	2326
155°	4257	4269	4282	4302	4289	1960
165°	4631	4627	4627	4656	4636	1306
175°	4819	4807	4799	4828	4803	458
180°	4828	4828	4828	4828	4828	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	2598.4	2598.4	2598.4	2598.4	2598.4
2.5°	2613.6	2601.1	2573.5	2598.4	2593.6
5°	2598.4	2588.7	2561.1	2581.0	2576.2
7.5°	2581.0	2566.1	2538.5	2558.7	2553.7
10°	2553.7	2536.1	2506.2	2526.1	2518.7
12.5°	2516.0	2501.2	2471.2	2483.6	2478.6
15°	2473.6	2458.7	2426.1	2436.2	2423.7
17.5°	2421.1	2406.3	2373.6	2386.1	2373.6
20°	2363.5	2348.7	2313.7	2321.2	2311.4
22.5°	2306.3	2283.8	2251.2	2251.2	2246.1
25°	2238.8	2218.8	2176.5	2181.2	2176.5
27.5°	2163.7	2146.2	2113.9	2106.4	2093.9
30°	2089.0	2068.7	2031.4	2024.0	2013.9
32.5°	2008.8	1994.1	1954.0	1938.9	1928.8
35°	1931.5	1906.6	1866.5	1851.4	1838.9
37.5°	1844.0	1821.5	1781.4	1763.9	1751.4
40°	1754.1	1734.0	1693.9	1671.7	1661.6
42.5°	1666.6	1646.5	1606.7	1581.5	1566.7
45°	1571.7	1554.3	1516.6	1489.3	1479.2
47.5°	1479.2	1461.7	1421.7	1394.1	1379.3
50°	1381.7	1369.2	1334.2	1299.3	1286.8
52.5°	1286.8	1269.3	1237.0	1209.4	1191.8
55°	1189.4	1174.4	1144.4	1114.5	1102.0
57.5°	1091.9	1079.5	1046.8	1016.9	1006.9
60°	994.4	984.5	949.6	922.0	914.6
62.5°	899.4	882.0	857.1	832.2	822.1
65°	802.2	787.0	762.2	739.6	727.1
67.5°	702.2	689.6	667.2	649.8	639.7
70°	609.7	599.7	577.1	559.6	549.8
72.5°	514.8	504.8	492.3	474.8	467.4
75°	419.7	414.9	402.1	387.3	392.4
77.5°	334.9	324.7	319.7	312.2	304.9
80°	249.9	247.4	242.3	234.9	229.8
82.5°	169.9	169.9	167.5	157.5	157.5
85°	102.4	100.0	97.6	89.9	87.5
87.5°	45.0	40.1	35.0	27.6	24.9
90°	4.4	52.4	142.6	133.9	138.2
92.5°	90.2	122.3	126.6	131.0	131.0
95°	212.5	253.3	260.5	260.5	253.3
97.5°	353.6	391.5	407.5	407.5	407.5
100°	516.7	550.2	561.8	561.8	557.4
102.5°	688.4	713.2	729.1	733.5	729.1
105°	876.2	887.8	896.6	903.8	903.8
107.5°	1062.5	1079.9	1079.9	1082.9	1062.5
110°	1243.0	1266.2	1266.2	1266.2	1254.6

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	1438.0	1462.8	1458.4	1446.7	1438.0
115°	1630.1	1653.4	1646.1	1641.7	1630.1
117.5°	1820.8	1852.8	1832.4	1820.8	1809.2
120°	2012.9	2044.9	2012.9	2012.9	1999.8
122.5°	2187.5	2228.4	2207.9	2196.3	2187.5
125°	2371.0	2407.3	2395.7	2382.6	2378.2
127.5°	2549.9	2595.1	2579.0	2561.6	2549.9
130°	2717.4	2769.7	2762.5	2753.7	2737.7
132.5°	2905.1	2945.9	2948.7	2928.4	2916.8
135°	3066.6	3111.8	3120.5	3116.1	3104.5
137.5°	3247.1	3283.5	3290.8	3287.9	3270.4
140°	3405.8	3442.1	3462.5	3462.5	3446.5
142.5°	3568.8	3605.2	3616.8	3621.2	3605.2
145°	3723.1	3752.2	3775.5	3779.8	3763.8
147.5°	3861.3	3897.8	3915.2	3922.5	3906.4
150°	4003.9	4028.7	4044.8	4057.8	4044.8
152.5°	4130.6	4155.3	4175.8	4191.7	4175.8
155°	4257.2	4268.9	4281.9	4302.3	4289.3
157.5°	4366.4	4375.1	4382.4	4411.5	4391.2
160°	4463.9	4472.6	4477.0	4501.7	4484.3
162.5°	4554.1	4554.1	4558.5	4586.2	4565.7
165°	4631.3	4626.9	4626.9	4656.0	4635.7
167.5°	4701.1	4688.1	4688.1	4717.1	4696.7
170°	4753.5	4741.9	4737.6	4766.7	4741.9
172.5°	4789.9	4778.3	4773.9	4803.0	4778.3
175°	4819.0	4807.4	4798.6	4827.8	4803.0
177.5°	4835.1	4823.4	4814.6	4839.5	4814.6
180°	4827.8	4827.8	4827.8	4827.8	4827.8

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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	7.54	8.27	8.63	9.35	10.85	7.09	7.82	8.19	8.91	10.41
	3H	9.19	9.84	10.29	10.94	12.46	8.70	9.35	9.80	10.45	11.96
	4H	9.78	10.40	10.89	11.49	13.01	9.28	9.90	10.39	11.00	12.52
	6H	10.17	10.74	11.29	11.84	13.38	9.67	10.24	10.79	11.34	12.87
	8H	10.28	10.82	11.40	11.94	13.46	9.77	10.32	10.90	11.43	12.96
	12H	10.32	10.84	11.45	11.95	13.49	9.81	10.33	10.94	11.44	12.98
4H	2H	7.98	8.60	9.10	9.70	11.22	7.63	8.25	8.75	9.35	10.87
	3H	9.84	10.36	10.97	11.48	13.01	9.43	9.95	10.56	11.08	12.61
	4H	10.55	11.03	11.68	12.14	13.69	10.13	10.60	11.26	11.72	13.27
	6H	11.07	11.47	12.20	12.61	14.15	10.63	11.04	11.77	12.18	13.72
	8H	11.21	11.59	12.35	12.72	14.28	10.78	11.16	11.91	12.29	13.85
	12H	11.28	11.63	12.43	12.77	14.33	10.83	11.18	11.98	12.32	13.88
8H	4H	10.74	11.12	11.87	12.25	13.81	10.36	10.74	11.50	11.87	13.43
	6H	11.37	11.68	12.53	12.86	14.41	10.99	11.30	12.14	12.47	14.03
	8H	11.59	11.87	12.75	13.02	14.59	11.20	11.47	12.36	12.63	14.20
	12H	11.72	11.96	12.89	13.11	14.72	11.31	11.55	12.47	12.70	14.31
12H	4H	10.72	11.06	11.87	12.21	13.77	10.35	10.70	11.50	11.84	13.40
	6H	11.40	11.67	12.56	12.83	14.40	11.03	11.30	12.19	12.45	14.03
	8H	11.64	11.88	12.80	13.03	14.64	11.26	11.50	12.42	12.65	14.26