

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: P926048

Luminaire Tested: DFN2DIP-SQ4F0-160D060US950-FLLFLL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P926048
REPORT IS A COMBINATION OF REPORTS P900075 AND P896915
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D060US950-FLLFLL
Description: 4 foot, Square Define Geo, with Direct Frosted Lens, Indirect Frosted Lens
Light Source: -
Ballast/Driver: -

Summary

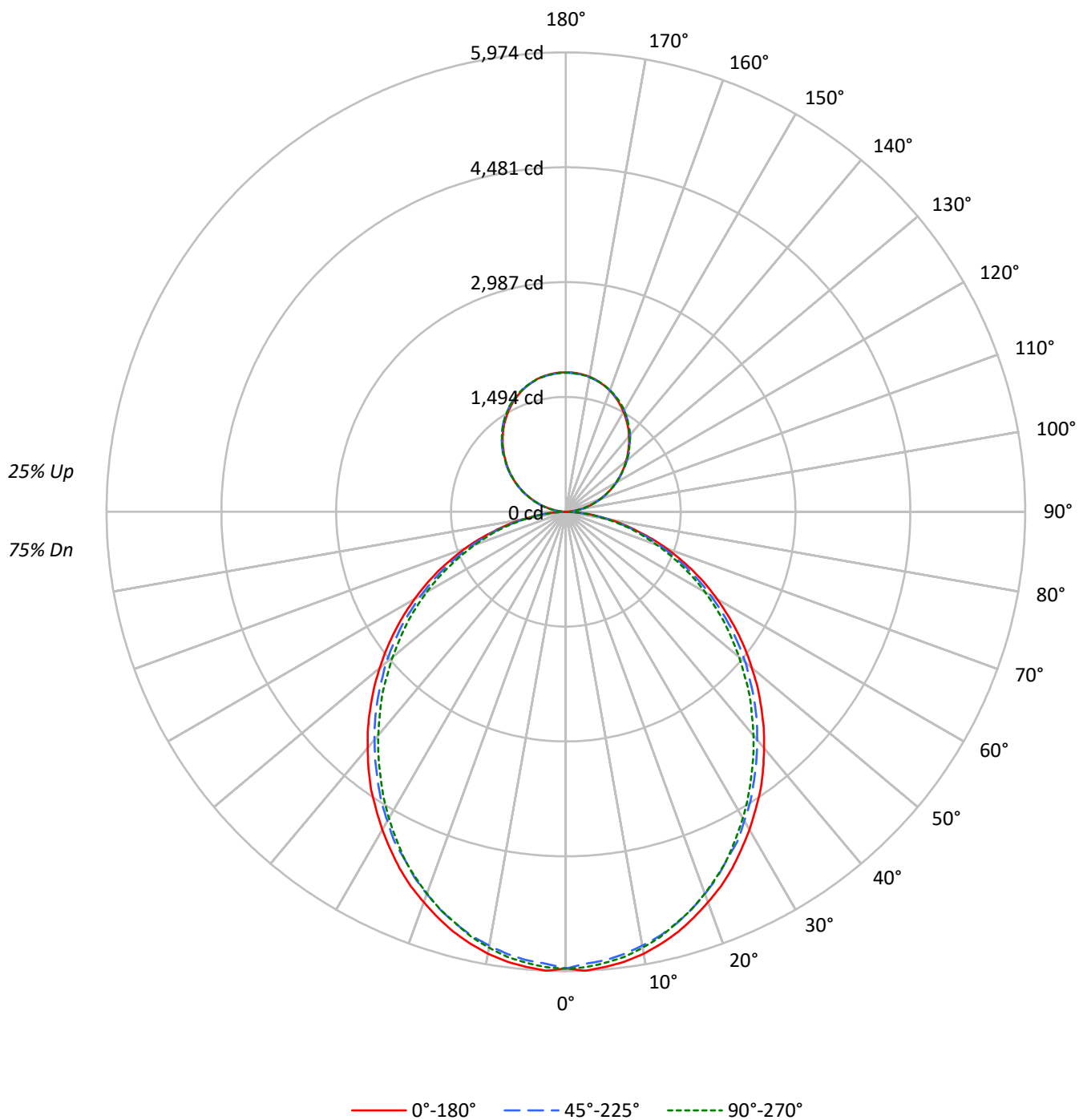
Lumens per Lamp: N/A
Luminaire Lumens: 20177.1 lumens
Efficiency: N/A
Efficacy: 95.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.16 / 1.29
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

Input Watts (W): 211.9
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	113	113	113	113	108	108	108	108	97	97	97	88	88	88	79	79	79
1	103	99	95	91	98	94	91	87	85	83	80	77	75	73	70	68	67
2	94	86	80	75	89	82	77	72	75	70	66	68	64	61	62	59	56
3	86	76	68	62	81	73	66	60	66	61	56	60	56	52	55	51	48
4	79	67	59	53	75	64	57	51	59	53	48	54	49	45	49	45	41
5	72	60	52	45	69	58	50	44	53	46	41	48	43	39	44	40	36
6	67	54	46	40	63	52	44	39	48	41	36	44	38	34	40	35	32
7	62	49	41	35	59	47	39	34	43	37	32	40	34	30	37	32	28
8	58	45	37	31	55	43	36	30	40	33	29	37	31	27	34	29	25
9	54	41	33	28	51	39	32	27	36	30	26	34	28	24	31	26	23
10	50	38	30	25	48	36	29	25	34	28	23	31	26	22	29	24	21

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4167	4167	4167
5°	4174	4110	4138
10°	4140	4056	4083
15°	4079	3990	3997
20°	3997	3898	3909
25°	3915	3788	3806
30°	3812	3685	3675
35°	3715	3564	3537
40°	3595	3442	3406
45°	3476	3320	3272
50°	3346	3192	3116
55°	3209	3043	2973
60°	3054	2867	2809
65°	2886	2684	2616
70°	2672	2462	2409
75°	2374	2196	2220
80°	2017	1857	1855
85°	1458	1270	1246

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3476 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	559.0	2.8
10°-20°	1572.8	7.8
20°-30°	2311.4	11.5
30°-40°	2684.6	13.3
40°-50°	2681.3	13.3
50°-60°	2338.0	11.6
60°-70°	1728.3	8.6
70°-80°	977.8	4.8
80°-90°	263.2	1.3
90°-100°	112.0	0.6
100°-110°	355.9	1.8
110°-120°	609.1	3.0
120°-130°	801.1	4.0
130°-140°	899.2	4.5
140°-150°	881.7	4.4
150°-160°	739.6	3.7
160°-170°	490.5	2.4
170°-180°	171.4	0.8
0°-30°	4443.3	22.0
0°-40°	7127.9	35.3
0°-60°	12147.2	60.2
0°-90°	15116.5	74.9
90°-120°	1077.0	5.3
90°-150°	3659.0	18.1
90°-180°	5061.0	25.1
0°-180°	20177.1	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	5939	5939	5939	5939	5939	
5°	5939	5917	5854	5899	5888	564
15°	5654	5620	5545	5568	5540	1592
25°	5117	5072	4975	4986	4975	2355
35°	4415	4358	4266	4232	4203	2757
45°	3593	3552	3466	3404	3381	2773
55°	2719	2684	2616	2547	2519	2431
65°	1834	1799	1742	1691	1662	1813
75°	959	948	919	885	897	1024
85°	234	228	223	205	200	261
90°	2	20	54	50	52	19
95°	80	95	98	98	95	89
105°	329	333	336	339	339	347
115°	611	620	617	616	611	605
125°	889	903	898	893	892	794
135°	1150	1167	1170	1168	1164	889
145°	1396	1407	1416	1417	1411	872
155°	1596	1601	1606	1613	1608	735
165°	1737	1735	1735	1746	1738	490
175°	1807	1803	1799	1810	1801	172
180°	1810	1810	1810	1810	1810	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	5939.3	5939.3	5939.3	5939.3	5939.3
2.5°	5973.9	5945.3	5882.4	5939.3	5928.3
5°	5939.3	5916.9	5853.8	5899.3	5888.4
7.5°	5899.3	5865.4	5802.3	5848.4	5836.9
10°	5836.9	5796.9	5728.5	5773.9	5756.9
12.5°	5750.9	5716.9	5648.4	5677.0	5665.4
15°	5653.9	5620.0	5545.4	5568.5	5540.0
17.5°	5534.0	5500.0	5425.5	5453.9	5425.5
20°	5402.4	5368.5	5288.5	5305.5	5283.1
22.5°	5271.6	5220.1	5145.5	5145.5	5134.0
25°	5117.1	5071.7	4974.6	4985.6	4974.6
27.5°	4945.5	4905.6	4831.6	4814.7	4786.2
30°	4774.7	4728.7	4643.2	4626.2	4603.2
32.5°	4591.7	4557.8	4466.2	4431.7	4408.7
35°	4414.8	4357.9	4266.3	4231.8	4203.3
37.5°	4214.9	4163.4	4071.9	4031.8	4003.4
40°	4009.4	3963.4	3871.9	3821.0	3798.0
42.5°	3809.5	3763.4	3672.5	3615.0	3581.0
45°	3592.6	3552.5	3466.5	3404.1	3381.1
47.5°	3381.1	3341.1	3249.6	3186.6	3152.7
50°	3158.1	3129.6	3049.7	2969.6	2941.2
52.5°	2941.2	2901.2	2827.3	2764.2	2724.2
55°	2718.8	2684.3	2615.8	2547.3	2518.8
57.5°	2495.9	2467.3	2392.8	2324.3	2301.3
60°	2272.8	2250.4	2170.4	2107.4	2090.4
62.5°	2055.9	2015.9	1958.9	1902.0	1879.0
65°	1833.5	1799.0	1742.0	1690.6	1662.1
67.5°	1605.1	1576.0	1525.2	1485.1	1462.1
70°	1393.6	1370.6	1319.1	1279.1	1256.7
72.5°	1176.7	1153.7	1125.2	1085.2	1068.3
75°	959.2	948.3	919.2	885.2	896.8
77.5°	765.3	742.3	730.8	713.8	696.8
80°	571.4	565.3	553.8	536.8	525.4
82.5°	388.4	388.4	382.9	359.9	359.9
85°	233.9	228.4	222.9	205.4	200.0
87.5°	103.0	91.5	79.9	63.1	57.0
90°	1.6	19.7	53.5	50.2	51.8
92.5°	33.9	45.9	47.5	49.1	49.1
95°	79.7	94.9	97.7	97.7	94.9
97.5°	132.6	146.8	152.8	152.8	152.8
100°	193.8	206.3	210.6	210.6	209.0
102.5°	258.2	267.4	273.4	275.0	273.4
105°	328.6	332.9	336.2	339.0	339.0
107.5°	398.4	405.0	405.0	406.0	398.4
110°	466.1	474.8	474.8	474.8	470.4

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	539.2	548.5	546.8	542.4	539.2
115°	611.2	620.0	617.2	615.6	611.2
117.5°	682.8	694.8	687.1	682.8	678.4
120°	754.8	766.8	754.8	754.8	749.8
122.5°	820.2	835.5	827.9	823.6	820.2
125°	889.0	902.7	898.3	893.4	891.8
127.5°	956.2	973.1	967.1	960.6	956.2
130°	1019.0	1038.6	1035.9	1032.6	1026.6
132.5°	1089.4	1104.6	1105.7	1098.1	1093.7
135°	1150.0	1166.8	1170.1	1168.5	1164.1
137.5°	1217.6	1231.2	1234.0	1232.9	1226.4
140°	1277.1	1290.8	1298.4	1298.4	1292.4
142.5°	1338.2	1351.8	1356.2	1357.8	1351.8
145°	1396.1	1407.0	1415.7	1417.4	1411.3
147.5°	1447.9	1461.5	1468.1	1470.8	1464.8
150°	1501.4	1510.7	1516.7	1521.5	1516.7
152.5°	1548.8	1558.2	1565.8	1571.8	1565.8
155°	1596.3	1600.7	1605.6	1613.3	1608.3
157.5°	1637.3	1640.6	1643.3	1654.2	1646.6
160°	1673.9	1677.1	1678.8	1688.0	1681.5
162.5°	1707.7	1707.7	1709.3	1719.7	1712.0
165°	1736.6	1734.9	1734.9	1745.9	1738.3
167.5°	1762.8	1757.9	1757.9	1768.8	1761.2
170°	1782.5	1778.1	1776.4	1787.3	1778.1
172.5°	1796.1	1791.7	1790.1	1801.0	1791.7
175°	1807.0	1802.7	1799.3	1810.3	1801.0
177.5°	1813.0	1808.7	1805.3	1814.6	1805.3
180°	1810.3	1810.3	1810.3	1810.3	1810.3

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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	14.28	15.42	14.99	16.15	17.02	13.84	14.98	14.55	15.71	16.57
	3H	15.97	16.99	16.69	17.73	18.63	15.48	16.50	16.20	17.24	18.14
	4H	16.57	17.54	17.31	18.29	19.20	16.08	17.04	16.82	17.79	18.70
	6H	16.99	17.88	17.74	18.64	19.56	16.49	17.38	17.24	18.14	19.06
	8H	17.10	17.95	17.87	18.73	19.66	16.60	17.45	17.37	18.23	19.16
	12H	17.16	17.98	17.93	18.75	19.70	16.65	17.47	17.42	18.24	19.19
4H	2H	14.78	15.74	15.52	16.49	17.40	14.42	15.39	15.17	16.14	17.05
	3H	16.67	17.48	17.43	18.27	19.19	16.26	17.07	17.02	17.86	18.78
	4H	17.40	18.14	18.17	18.92	19.88	16.98	17.71	17.75	18.50	19.45
	6H	17.94	18.57	18.73	19.38	20.35	17.50	18.14	18.29	18.95	19.91
	8H	18.10	18.69	18.89	19.50	20.47	17.66	18.25	18.45	19.06	20.03
	12H	18.18	18.72	19.00	19.55	20.53	17.73	18.27	18.55	19.10	20.08
8H	4H	17.62	18.22	18.42	19.02	20.00	17.24	17.84	18.04	18.65	19.62
	6H	18.27	18.76	19.09	19.61	20.59	17.88	18.38	18.71	19.23	20.20
	8H	18.49	18.93	19.33	19.78	20.77	18.10	18.54	18.94	19.39	20.38
	12H	18.64	19.03	19.48	19.87	20.91	18.23	18.62	19.07	19.45	20.50
12H	4H	17.62	18.16	18.43	18.98	19.96	17.25	17.79	18.07	18.62	19.60
	6H	18.30	18.74	19.14	19.59	20.58	17.93	18.37	18.76	19.21	20.21
	8H	18.56	18.95	19.40	19.78	20.83	18.18	18.57	19.02	19.40	20.45