

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: P904227

Luminaire Tested: DFN2DIP-SQ4F0-160D060US830-RLLONL

Issue Date: 11/21/2024

Test Information

Test Method: LM-79-2019
Report Number: P904227
REPORT IS A COMBINATION OF REPORTS P901596 AND P898471
Test Lab: INNOVATION CENTER
Issue Date: 11/21/2024
Manufacturer: COOPER LIGHTING SOLUTIONS
Product Line: NEO-RAY
Catalog Number: DFN2DIP-SQ4F0-160D060US830-RLLONL
Description: 4 foot, Square Define Geo, with Direct 1in Regressed Frosted Lens, Indirect Open No Lens
Light Source: -
Ballast/Driver: -

Summary

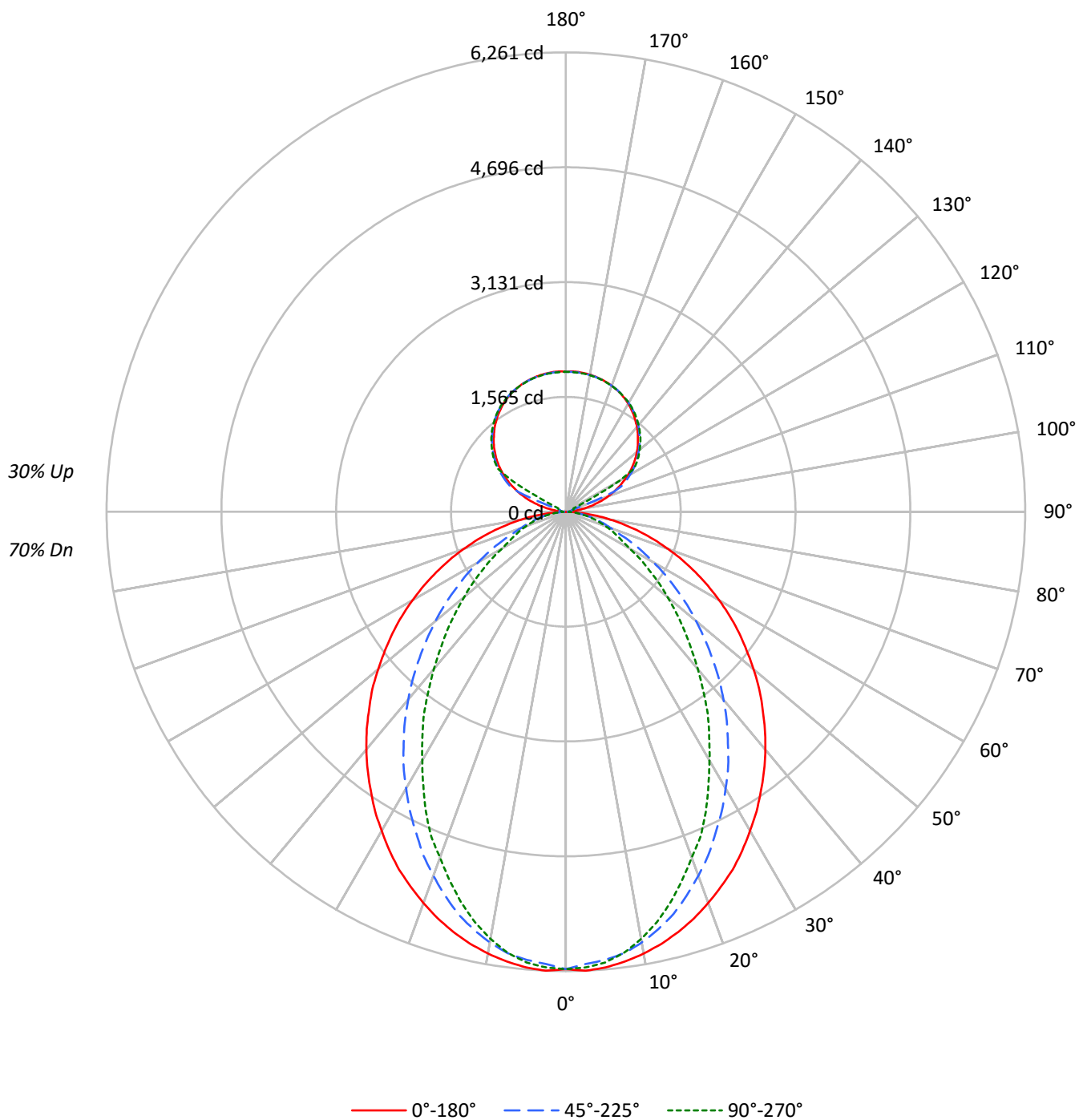
Lumens per Lamp: N/A
Luminaire Lumens: 18417.3 lumens
Efficiency: N/A
Efficacy: 86.9 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 0.99 / 1.16
Luminous Opening: Rectangular w/ Sides (W: 3.92' x L: 3.92' x H: 0.1')
CIE Type: Semi-Direct

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	112	112	112	112	106	106	106	106	94	94	94	84	84	84	74	74	74
1	103	99	95	92	97	93	90	87	84	81	79	75	73	71	67	65	64
2	94	87	81	76	89	83	77	73	74	70	67	67	63	61	59	57	55
3	86	77	70	64	82	73	67	62	66	61	57	59	55	52	53	50	48
4	79	69	61	55	75	65	58	53	59	54	49	53	49	45	48	45	42
5	73	62	54	48	69	59	52	46	53	47	43	48	44	40	44	40	37
6	68	56	48	42	64	53	46	41	49	42	38	44	39	35	40	36	33
7	63	51	43	37	60	49	41	36	44	38	34	40	35	32	37	32	29
8	59	46	39	33	56	44	37	32	41	35	30	37	32	28	34	30	27
9	55	43	35	30	52	41	34	29	37	32	27	34	29	26	31	27	24
10	51	39	32	27	49	38	31	26	35	29	25	32	27	24	29	25	22

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4373	4373	4373
5°	4380	4305	4333
10°	4337	4221	4193
15°	4277	4083	3976
20°	4198	3891	3710
25°	4117	3676	3452
30°	4009	3456	3126
35°	3902	3219	2838
40°	3794	2974	2509
45°	3668	2701	2210
50°	3538	2426	1918
55°	3402	2133	1638
60°	3244	1825	1350
65°	3064	1512	1216
70°	2844	1221	1103
75°	2569	1078	1006
80°	2169	907	877
85°	1510	611	668

MAXIMUM LUMINANCE 45°-90°:

Horizontal Angle: 0°

Vertical Angle: 45°

Luminance: 3668 cd/sqm

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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	584.1	3.2
10°-20°	1603.6	8.7
20°-30°	2251.4	12.2
30°-40°	2454.2	13.3
40°-50°	2255.7	12.2
50°-60°	1771.5	9.6
60°-70°	1153.0	6.3
70°-80°	593.5	3.2
80°-90°	154.9	0.8
90°-100°	62.9	0.3
100°-110°	234.6	1.3
110°-120°	622.2	3.4
120°-130°	1032.0	5.6
130°-140°	1096.2	6.0
140°-150°	1018.8	5.5
150°-160°	819.1	4.4
160°-170°	527.8	2.9
170°-180°	181.7	1.0
0°-30°	4439.2	24.1
0°-40°	6893.3	37.4
0°-60°	10920.4	59.3
0°-90°	12821.9	69.6
90°-120°	919.8	5.0
90°-150°	4066.8	22.1
90°-180°	5595.0	30.4
0°-180°	18417.3	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	6233	6233	6233	6233	6233	
5°	6233	6205	6131	6182	6165	591
15°	5928	5866	5674	5567	5511	1671
25°	5381	5200	4828	4597	4512	2475
35°	4637	4349	3853	3497	3373	2902
45°	3790	3412	2820	2420	2284	2927
55°	2882	2442	1833	1495	1388	2575
65°	1946	1489	982	790	773	1929
75°	1038	643	451	412	406	1098
85°	242	124	107	107	107	278
90°	1	17	28	35	37	17
95°	90	44	54	61	59	106
105°	420	461	84	99	105	449
115°	794	818	852	213	113	782
125°	1123	1141	1167	1177	1181	1001
135°	1389	1412	1424	1438	1435	1073
145°	1612	1610	1634	1643	1636	1008
155°	1775	1762	1779	1787	1776	818
165°	1870	1862	1866	1876	1866	528
175°	1913	1903	1906	1915	1902	182
180°	1909	1909	1909	1909	1909	

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CANDELA DISTRIBUTION (FULL):

	0°	22.5°	45°	67.5°	90°
0°	6232.8	6232.8	6232.8	6232.8	6232.8
2.5°	6260.9	6232.8	6170.5	6227.5	6216.1
5°	6232.8	6204.7	6131.0	6181.9	6165.2
7.5°	6181.9	6148.4	6069.4	6091.6	6063.5
10°	6114.4	6074.9	5962.3	5945.0	5911.4
12.5°	6029.9	5979.1	5826.5	5793.0	5730.8
15°	5928.2	5866.0	5674.5	5567.3	5511.0
17.5°	5809.7	5719.3	5482.4	5358.4	5268.2
20°	5674.5	5561.4	5279.5	5138.8	5014.4
22.5°	5527.8	5397.9	5070.6	4879.2	4794.7
25°	5381.3	5200.5	4828.3	4597.3	4512.3
27.5°	5206.5	5014.4	4602.6	4337.6	4207.7
30°	5020.4	4805.6	4354.3	4067.1	3914.5
32.5°	4839.7	4579.9	4117.9	3779.2	3637.9
35°	4636.7	4348.9	3852.8	3497.3	3372.9
37.5°	4439.3	4128.7	3604.5	3214.8	3074.2
40°	4230.4	3892.3	3344.7	2944.3	2797.7
42.5°	4016.2	3655.3	3085.6	2667.9	2527.2
45°	3790.5	3412.4	2820.5	2419.5	2284.3
47.5°	3576.3	3176.0	2566.7	2165.8	2041.9
50°	3339.3	2938.9	2318.4	1928.8	1810.9
52.5°	3107.8	2684.6	2081.4	1709.2	1602.0
55°	2882.1	2442.2	1833.1	1494.9	1387.8
57.5°	2651.1	2199.9	1613.4	1297.4	1207.0
60°	2414.1	1962.9	1381.8	1094.6	1004.2
62.5°	2183.1	1731.9	1184.3	913.8	868.9
65°	1946.2	1488.9	981.5	789.9	772.6
67.5°	1720.5	1263.3	789.9	693.6	676.8
70°	1483.6	1043.7	654.1	597.9	575.1
72.5°	1257.9	840.2	547.0	502.1	490.7
75°	1037.7	642.7	451.2	411.7	406.3
77.5°	818.0	456.6	355.4	332.7	321.4
80°	614.6	327.3	270.5	248.4	248.4
82.5°	428.5	220.3	186.2	174.7	174.7
85°	242.3	123.9	107.2	107.2	107.2
87.5°	90.4	44.9	44.9	39.5	39.5
90°	1.3	16.6	27.5	34.6	37.2
92.5°	34.6	29.0	33.1	35.9	37.2
95°	89.7	44.1	53.8	60.9	59.4
97.5°	161.6	48.4	70.3	74.6	76.0
100°	244.5	55.2	78.7	89.7	92.5
102.5°	335.5	332.9	81.5	96.6	100.9
105°	419.8	461.3	84.3	99.3	105.0
107.5°	517.9	552.3	87.1	102.2	107.7
110°	611.9	640.7	241.8	103.7	109.1

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CANDELA DISTRIBUTION (continued):

	0°	22.5°	45°	67.5°	90°
112.5°	700.2	725.0	701.5	106.2	110.6
115°	794.1	817.6	852.2	212.7	113.3
117.5°	875.5	903.1	926.7	729.2	367.3
120°	966.8	987.4	1012.4	1028.9	842.4
122.5°	1044.0	1066.1	1093.8	1102.0	1103.5
125°	1122.8	1140.8	1167.0	1176.7	1180.7
127.5°	1194.6	1213.9	1234.7	1248.5	1249.8
130°	1262.3	1284.4	1299.5	1314.8	1313.4
132.5°	1331.3	1349.3	1364.4	1376.9	1375.5
135°	1389.4	1411.6	1423.8	1437.8	1434.9
137.5°	1450.0	1466.6	1480.5	1494.3	1490.3
140°	1509.4	1520.6	1535.7	1548.1	1541.2
142.5°	1559.2	1569.0	1586.9	1597.8	1590.9
145°	1611.7	1610.2	1633.7	1643.4	1636.5
147.5°	1657.2	1653.0	1676.5	1683.4	1678.0
150°	1701.5	1691.8	1713.9	1722.1	1715.2
152.5°	1738.7	1727.7	1748.3	1756.7	1747.0
155°	1774.6	1762.3	1778.9	1787.1	1776.0
157.5°	1803.6	1792.6	1805.1	1814.8	1803.6
160°	1828.5	1820.1	1828.5	1836.7	1827.1
162.5°	1850.5	1842.3	1849.2	1858.9	1846.4
165°	1869.9	1861.7	1865.8	1875.5	1865.8
167.5°	1885.1	1876.8	1881.0	1890.7	1878.2
170°	1897.6	1889.2	1892.1	1901.7	1889.2
172.5°	1905.8	1897.6	1900.4	1910.1	1897.6
175°	1912.7	1903.0	1905.8	1915.4	1901.7
177.5°	1915.4	1905.8	1907.2	1916.9	1904.5
180°	1908.6	1908.6	1908.6	1908.6	1908.6

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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	13.95	14.97	14.72	15.76	16.73	9.91	10.93	10.69	11.72	12.69
	3H	15.65	16.56	16.43	17.36	18.36	11.11	12.03	11.90	12.83	13.82
	4H	16.27	17.13	17.07	17.94	18.94	11.57	12.43	12.38	13.24	14.25
	6H	16.70	17.49	17.52	18.31	19.33	11.90	12.70	12.72	13.52	14.53
	8H	16.83	17.59	17.66	18.43	19.45	12.00	12.75	12.83	13.59	14.61
	12H	16.90	17.62	17.74	18.45	19.50	12.05	12.77	12.88	13.60	14.64
4H	2H	13.99	14.85	14.80	15.66	16.67	10.53	11.39	11.34	12.20	13.21
	3H	15.84	16.56	16.66	17.40	18.42	11.90	12.61	12.72	13.46	14.48
	4H	16.54	17.19	17.38	18.04	19.09	12.46	13.10	13.29	13.95	15.00
	6H	17.07	17.63	17.93	18.50	19.56	12.89	13.45	13.74	14.31	15.37
	8H	17.26	17.78	18.11	18.64	19.71	13.02	13.54	13.87	14.40	15.47
	12H	17.36	17.83	18.24	18.71	19.79	13.09	13.56	13.97	14.45	15.52
8H	4H	16.53	17.05	17.38	17.91	18.98	12.75	13.27	13.61	14.14	15.20
	6H	17.10	17.54	17.99	18.44	19.51	13.28	13.71	14.16	14.62	15.68
	8H	17.32	17.71	18.22	18.61	19.69	13.47	13.85	14.36	14.75	15.84
	12H	17.47	17.81	18.37	18.70	19.84	13.60	13.94	14.49	14.83	15.96
12H	4H	16.49	16.96	17.36	17.84	18.91	12.77	13.24	13.64	14.12	15.19
	6H	17.08	17.46	17.97	18.36	19.45	13.33	13.71	14.22	14.61	15.70
	8H	17.31	17.65	18.21	18.54	19.68	13.55	13.89	14.44	14.78	15.91