

Scaled data based on original data using
LM-79-08 Approved Method: Electrical and Photometric Measurements of Solid-State
Lighting Products

Test Report Prepared for

Cooper Lighting Solutions

(formerly Eaton)

Brand: NEO-RAY

Report Number: P243091

Luminaire Tested: **S121RDR-H490D840-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243091
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-67)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S121RDR-H490D840-X4F0-XX-UDD-A-W
Description: DEFINE 1 REGRESSED DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1573.9 lumens
Efficiency: N/A
Efficacy: 91.5 lumens/watt
Spacing Criteria (0/90/45): 0.89 / 1.21 / 1.07
Luminous Opening: Rectangular (W 3.88' x L: 0.09' x H: 0')
CIE Type: Direct

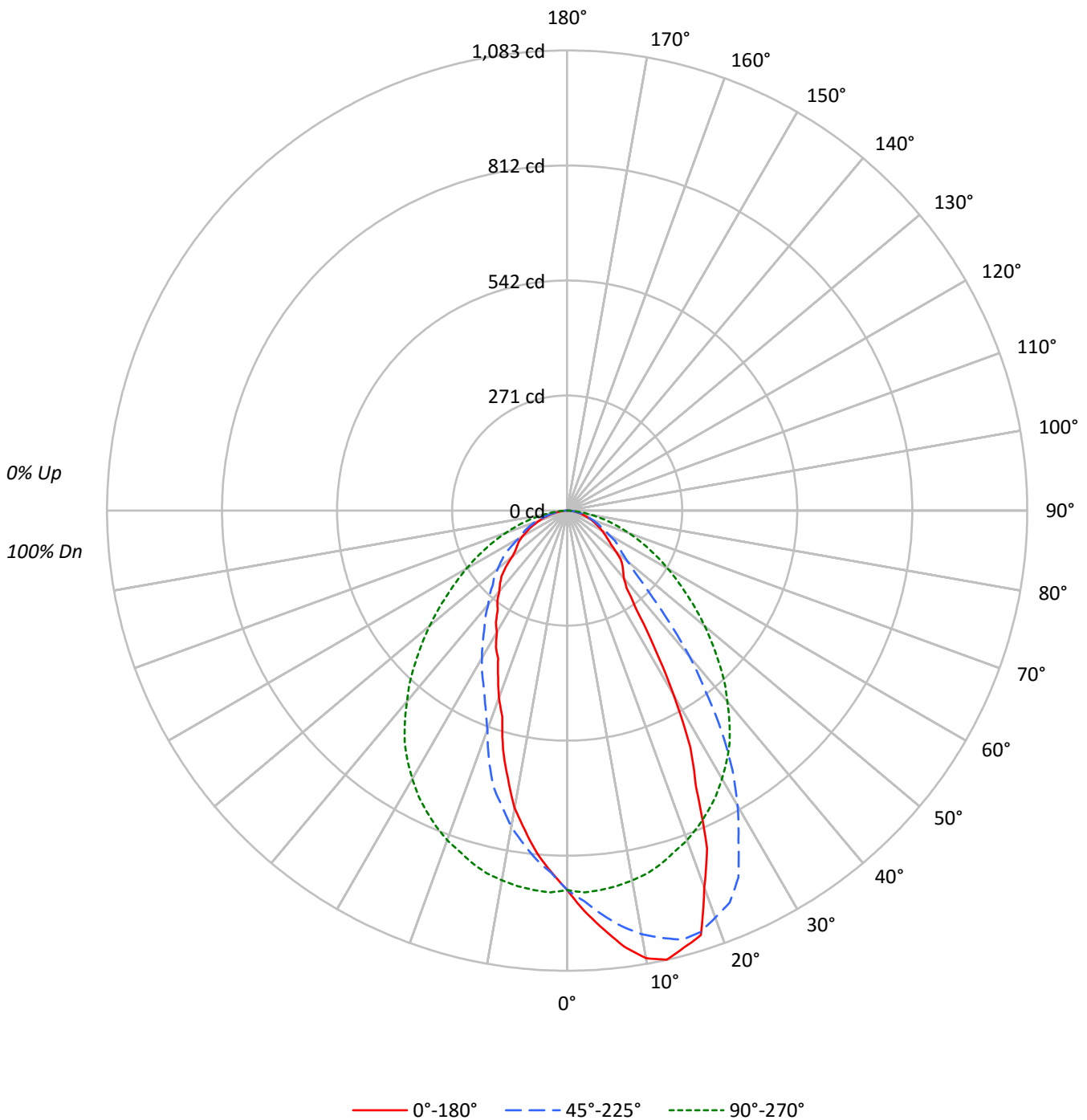
Input Watts (W): 17.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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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	0
RW	70	50	30	10	70	50	30	10	50	30	10	50	30	10	50	30	10	0
RCR																		
0	119	119	119	119	116	116	116	116	111	111	111	106	106	106	102	102	102	100
1	111	107	103	100	108	104	101	98	100	97	95	96	94	92	93	91	89	87
2	102	95	89	84	100	93	88	83	90	85	81	87	83	80	84	81	78	76
3	94	85	78	73	92	84	77	72	81	75	71	78	73	70	76	72	68	66
4	87	77	69	63	85	76	69	63	73	67	62	71	66	61	69	64	61	59
5	81	70	62	56	79	69	61	56	67	60	55	65	59	55	63	58	54	52
6	76	64	56	50	74	63	55	50	61	55	50	60	54	49	58	53	49	47
7	71	59	51	45	69	58	50	45	56	50	45	55	49	44	54	48	44	42
8	66	54	46	41	65	53	46	41	52	46	41	51	45	41	50	44	40	39
9	62	50	43	38	61	50	42	38	49	42	37	48	42	37	47	41	37	35
10	59	47	39	35	58	46	39	35	45	39	34	44	38	34	44	38	34	33

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	26453	26453	26453
5°	29437	26664	24092
10°	32190	26588	21392
15°	32653	26365	17865
20°	29766	26029	14776
25°	23444	25556	12570
30°	17138	24935	11335
35°	10229	24112	10302
40°	8022	22681	9608
45°	7731	21173	9139
50°	6891	19475	7758
55°	6018	17719	7408
60°	5624	16219	7182
65°	5237	14751	6653
70°	4955	13298	6064
75°	4545	11837	5392
80°	4129	9589	4709
85°	3876	7309	3434



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	85.2	5.4
10°-20°	237.8	15.1
20°-30°	316.1	20.1
30°-40°	301.6	19.2
40°-50°	250.3	15.9
50°-60°	186.1	11.8
60°-70°	120.5	7.7
70°-80°	61.3	3.9
80°-90°	15.0	1.0
90°-100°	0.0	0.0
100°-110°	0.0	0.0
110°-120°	0.0	0.0
120°-130°	0.0	0.0
130°-140°	0.0	0.0
140°-150°	0.0	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	639.1	40.6
0°-40°	940.7	59.8
0°-60°	1377.1	87.5
0°-90°	1573.9	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1573.9	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	893	893	893	893	893	
5°	990	955	896	825	810	97
15°	1064	1046	860	672	582	296
25°	717	953	782	463	384	333
35°	283	633	667	340	285	193
45°	184	273	505	248	218	141
55°	116	148	343	179	143	106
65°	75	85	210	108	95	75
75°	40	43	103	54	47	42
85°	11	11	22	11	10	12
90°	0	0	0	0	0	



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8
2.5°	944.0	941.6	944.3	943.3	938.9	939.9	934.5	931.2	923.1	920.1	920.1
5°	989.7	993.1	991.1	991.8	987.4	984.7	979.0	972.6	962.5	955.1	952.4
7.5°	1035.5	1036.5	1037.6	1034.9	1029.8	1025.1	1017.0	1007.6	996.5	987.1	979.6
10°	1069.9	1072.2	1070.9	1066.8	1063.1	1056.1	1047.3	1037.2	1025.1	1012.6	1003.6
12.5°	1082.7	1084.7	1087.7	1085.4	1085.0	1081.7	1072.9	1060.4	1045.6	1030.1	1019.7
15°	1064.5	1063.1	1071.2	1069.2	1068.5	1067.2	1069.5	1066.8	1059.1	1045.6	1032.8
17.5°	1047.7	1047.0	1055.1	1057.1	1054.0	1049.7	1047.0	1043.6	1039.9	1040.2	1038.6
20°	944.0	964.5	968.5	979.3	1002.2	1017.4	1032.5	1031.8	1021.1	1019.4	1018.7
22.5°	860.5	868.2	864.5	882.0	894.5	921.7	948.3	982.0	1004.6	998.8	995.1
25°	717.1	741.3	752.4	774.3	805.9	840.6	855.8	891.4	926.1	953.1	973.6
27.5°	628.2	633.6	640.6	663.2	675.0	706.6	763.2	811.7	844.0	873.3	927.5
30°	500.9	503.3	527.9	540.3	575.0	606.0	655.1	694.2	759.1	802.6	844.3
32.5°	382.4	380.4	407.3	421.8	456.2	497.9	552.8	589.1	652.8	723.8	773.6
35°	282.8	282.4	296.9	307.0	344.7	376.7	446.4	493.9	563.6	633.2	697.5
37.5°	230.3	229.9	233.0	241.7	257.5	293.6	327.2	397.6	465.6	534.3	614.7
40°	207.4	209.1	209.7	213.8	219.2	229.9	250.5	299.6	366.3	448.1	528.9
42.5°	195.3	195.3	195.9	196.9	199.6	202.7	215.1	234.0	287.5	352.8	443.4
45°	184.5	184.8	185.5	186.2	185.5	187.2	192.9	200.6	221.5	273.0	360.6
47.5°	171.7	171.4	173.0	174.0	175.4	177.4	177.8	181.8	190.9	217.8	281.4
50°	149.5	149.8	151.5	155.5	159.9	163.6	166.0	168.7	171.7	184.5	218.1
52.5°	129.3	129.6	130.6	133.6	137.7	142.4	149.8	155.9	158.2	162.3	181.1
55°	116.5	116.5	117.8	119.5	120.5	123.9	128.9	135.7	144.4	147.8	155.9
57.5°	105.7	105.7	106.4	106.4	107.7	109.4	112.8	116.1	123.6	134.3	139.4
60°	94.9	94.9	95.6	95.6	97.3	98.0	100.3	102.3	106.4	113.8	123.9
62.5°	84.8	84.2	84.8	85.2	86.2	87.2	88.9	91.2	93.6	98.0	105.4
65°	74.7	74.4	75.1	75.7	76.4	77.8	78.8	80.5	82.5	84.8	88.5
67.5°	66.0	65.6	66.0	67.0	66.7	67.3	69.0	69.7	71.7	74.1	77.1
70°	57.2	56.6	57.2	57.2	57.6	58.6	58.6	60.3	61.9	63.3	66.0
72.5°	47.8	48.1	47.8	48.1	48.8	49.2	49.8	50.8	51.8	53.2	54.9
75°	39.7	39.7	40.1	40.4	41.1	41.1	41.4	42.1	42.8	43.4	45.4
77.5°	31.6	32.0	32.3	32.7	32.7	33.0	33.3	33.7	34.7	35.0	36.0
80°	24.2	24.6	24.6	24.6	25.2	24.6	25.2	25.9	25.9	26.3	26.9
82.5°	17.5	17.8	17.5	17.8	18.2	18.2	17.8	18.2	18.2	18.9	18.9
85°	11.4	10.8	10.8	10.8	10.8	10.8	11.1	11.4	11.1	11.1	11.4
87.5°	4.7	4.7	4.7	4.7	5.0	4.7	5.0	5.0	5.0	4.7	5.0
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8
2.5°	921.7	919.1	916.7	912.7	907.6	900.2	899.2	899.5	890.4	881.7	880.3
5°	946.7	942.3	934.9	926.1	918.0	905.6	900.2	896.5	882.7	870.9	866.2
7.5°	973.3	962.8	952.7	938.9	925.4	909.3	899.2	891.4	873.3	857.8	849.7
10°	994.1	981.3	966.9	949.3	930.8	911.0	895.8	883.7	861.8	842.6	832.5
12.5°	1008.9	994.5	977.3	956.4	935.2	909.0	890.4	874.3	847.7	824.8	812.7
15°	1016.7	1001.2	980.0	957.1	935.2	907.6	883.0	859.5	833.2	804.6	789.4
17.5°	1023.7	1003.6	979.6	953.4	931.2	902.2	871.9	841.3	811.7	784.7	760.2
20°	1018.7	1001.5	974.9	947.7	922.8	889.1	857.1	825.5	788.4	757.1	732.5
22.5°	995.1	992.1	963.5	934.2	905.6	873.3	836.2	804.9	765.2	728.2	698.5
25°	967.5	963.8	948.3	917.0	884.7	851.0	817.7	781.7	735.9	697.5	663.5
27.5°	944.3	935.9	924.8	895.5	860.8	827.1	792.8	757.8	709.0	666.2	627.5
30°	897.2	905.2	892.8	872.6	832.5	799.9	766.9	728.8	680.4	631.2	591.5
32.5°	822.4	871.2	858.8	842.6	803.2	767.6	736.3	698.9	645.4	596.9	555.8
35°	756.5	798.5	826.8	807.3	772.6	731.2	699.2	666.6	610.7	561.2	521.8
37.5°	692.5	737.3	784.4	766.5	737.9	693.5	659.8	627.5	575.7	525.8	486.5
40°	608.7	674.0	719.4	726.5	697.2	652.4	619.8	586.4	540.7	491.2	449.1
42.5°	528.2	612.0	648.7	685.1	655.1	613.0	576.7	548.4	504.3	460.9	415.1
45°	444.0	539.3	593.5	621.5	610.7	572.3	532.6	505.3	468.3	427.9	384.5
47.5°	371.0	461.5	539.0	554.8	565.2	527.5	490.5	462.9	430.9	397.6	356.2
50°	294.2	388.2	471.0	499.6	519.4	485.1	446.4	422.5	395.6	365.6	328.9
52.5°	228.9	316.8	403.6	452.5	459.2	441.3	405.7	382.1	360.6	333.6	300.3
55°	181.8	249.8	336.6	393.5	399.9	395.6	363.6	343.0	327.2	304.7	276.7
57.5°	150.8	194.2	272.7	338.3	347.8	351.8	325.5	307.0	292.9	275.0	249.8
60°	130.3	153.2	213.1	277.4	303.3	310.4	287.2	273.7	261.9	245.8	222.2
62.5°	115.1	125.6	162.9	224.9	258.2	264.3	252.5	242.4	232.6	217.1	196.3
65°	95.9	107.1	125.6	173.7	214.8	217.8	220.2	210.4	202.7	189.9	171.4
67.5°	80.5	89.2	101.3	133.3	172.4	181.1	187.2	182.8	175.4	162.6	146.8
70°	68.3	73.4	82.1	100.0	131.6	150.5	156.9	153.5	149.8	136.0	122.5
72.5°	56.9	60.9	66.0	76.8	99.3	119.5	128.9	127.3	123.2	112.8	101.7
75°	47.1	48.8	52.9	58.9	72.0	90.9	102.0	103.4	98.6	88.9	80.1
77.5°	37.0	38.7	41.1	44.8	53.2	66.0	75.1	78.4	75.4	68.3	59.6
80°	28.3	29.3	31.0	32.7	36.0	44.8	54.2	56.2	54.5	48.8	43.4
82.5°	18.9	19.5	20.9	22.2	23.9	27.9	36.0	37.4	37.0	32.0	28.3
85°	11.4	11.4	11.8	12.8	13.5	15.1	19.5	21.5	20.5	17.2	15.5
87.5°	4.7	5.0	4.7	4.7	4.7	5.0	6.4	8.8	6.7	5.0	4.7
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8	892.8
2.5°	876.6	875.3	870.2	865.5	860.1	853.7	854.1	855.1	852.7	852.1	854.4
5°	859.5	854.8	847.0	839.3	833.2	825.1	820.4	822.8	821.1	818.1	816.0
7.5°	841.3	834.6	823.4	813.7	805.6	790.5	787.1	783.0	779.7	772.9	771.6
10°	819.7	810.0	795.8	782.0	767.2	755.4	744.3	739.6	730.5	724.5	722.8
12.5°	797.5	781.4	765.5	745.3	728.5	711.3	701.6	694.8	685.8	670.9	663.9
15°	774.6	750.1	728.8	706.6	695.2	672.0	653.4	632.6	621.5	596.5	582.1
17.5°	744.0	715.7	687.1	668.9	645.0	612.7	581.7	571.0	554.1	538.0	521.8
20°	702.6	676.7	649.4	622.1	585.8	548.4	536.6	518.1	499.6	489.8	481.4
22.5°	664.5	636.6	604.3	568.3	530.9	501.6	486.1	472.7	461.2	452.5	442.7
25°	628.5	599.6	553.5	516.8	484.1	462.6	454.8	437.3	425.2	418.8	410.4
27.5°	588.8	549.1	512.0	474.0	445.0	432.9	415.1	401.3	388.5	376.0	373.0
30°	551.1	507.0	470.3	439.3	418.1	401.3	383.1	366.9	358.5	353.8	346.1
32.5°	513.7	469.0	434.6	410.4	387.5	369.6	352.5	344.1	331.3	320.8	314.1
35°	473.7	434.6	407.3	379.1	357.2	339.7	330.9	311.7	304.7	301.6	294.6
37.5°	438.3	403.6	376.0	354.5	330.6	316.4	299.3	294.9	285.5	277.4	275.0
40°	409.0	376.4	350.5	322.5	307.7	289.2	280.8	269.0	265.6	262.6	257.2
42.5°	377.0	349.1	319.5	300.6	278.7	270.3	257.2	253.8	245.8	242.7	240.7
45°	349.8	323.9	295.6	272.7	260.2	247.8	242.7	234.3	230.6	226.9	223.2
47.5°	323.2	296.3	273.7	252.2	238.3	232.6	223.5	217.5	213.4	209.7	206.0
50°	298.6	271.3	246.1	230.6	220.8	212.8	207.0	202.0	196.3	188.2	179.8
52.5°	272.0	247.4	226.9	211.8	203.0	195.3	190.2	181.5	170.3	161.6	157.6
55°	245.4	222.2	204.3	192.2	186.2	178.8	167.3	154.5	147.5	146.1	145.1
57.5°	222.9	201.0	184.5	175.1	168.0	154.9	142.7	138.0	136.0	135.3	134.7
60°	197.6	178.1	166.3	156.2	144.4	132.0	128.3	127.6	125.6	124.6	123.9
62.5°	174.4	157.6	146.8	134.7	122.2	119.8	117.2	115.5	114.5	112.1	111.1
65°	151.8	138.4	126.6	113.8	109.4	107.7	105.4	103.0	100.3	98.6	97.3
67.5°	130.3	117.2	104.7	100.0	97.6	94.9	91.9	88.5	87.2	84.8	84.5
70°	109.1	97.0	90.2	87.2	82.8	80.5	77.1	75.7	73.4	72.4	71.4
72.5°	88.9	80.1	77.4	73.1	70.0	66.3	64.6	63.3	61.9	60.3	60.3
75°	69.3	67.0	61.9	58.6	55.5	53.5	52.9	50.5	50.2	49.2	48.5
77.5°	55.2	50.5	48.8	45.1	43.1	42.1	41.4	40.1	38.7	38.4	38.0
80°	39.1	36.7	34.7	33.0	31.3	30.6	30.0	29.6	29.0	28.3	27.9
82.5°	25.6	24.2	22.9	21.9	21.5	20.5	19.9	19.5	18.9	18.9	18.9
85°	13.8	13.5	12.8	12.1	11.4	11.4	11.1	10.8	10.8	9.8	9.8
87.5°	4.4	4.4	4.0	4.0	3.4	3.7	3.4	3.4	3.0	3.4	3.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



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CATALOG NUMBER: S121RDR-H490D840-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	892.8	892.8	892.8	892.8
2.5°	851.7	851.7	850.4	851.7
5°	814.7	811.7	810.7	810.0
7.5°	767.6	764.9	762.2	759.5
10°	719.4	715.4	713.0	711.0
12.5°	656.8	651.8	642.3	645.0
15°	579.7	580.0	558.2	582.4
17.5°	516.8	518.4	509.7	508.3
20°	476.7	476.0	472.7	468.6
22.5°	435.6	432.6	431.2	424.9
25°	397.2	391.9	393.5	384.5
27.5°	369.3	364.9	363.6	362.9
30°	341.4	332.3	329.2	331.3
32.5°	313.1	312.4	311.4	311.7
35°	289.2	287.8	284.8	284.8
37.5°	272.7	273.0	271.3	270.0
40°	252.5	250.8	250.5	248.4
42.5°	238.0	234.6	233.3	233.6
45°	221.2	219.2	217.5	218.1
47.5°	201.3	199.3	195.6	194.6
50°	174.4	171.7	170.0	168.3
52.5°	154.2	153.8	153.2	152.8
55°	144.4	143.4	143.4	143.4
57.5°	134.3	133.6	133.3	134.0
60°	123.2	122.5	121.2	121.2
62.5°	109.4	108.7	108.4	107.1
65°	95.6	95.3	94.6	94.9
67.5°	82.8	82.5	82.5	81.5
70°	70.4	70.4	69.3	70.0
72.5°	58.9	58.6	58.6	58.6
75°	47.8	47.5	47.1	47.1
77.5°	37.7	37.7	37.0	37.0
80°	27.3	27.3	26.9	27.6
82.5°	18.2	18.9	18.2	18.2
85°	9.8	10.1	10.1	10.1
87.5°	3.0	2.7	2.7	2.7
90°	0.0	0.0	0.0	0.0

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