

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: P231637

Luminaire Tested: **S124-DR-2-35-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231637
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33916)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S124-DR-2-35-X-0048-1-U-DD-4-W
Description: DEFINE 4 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.
Light Source: 3500K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

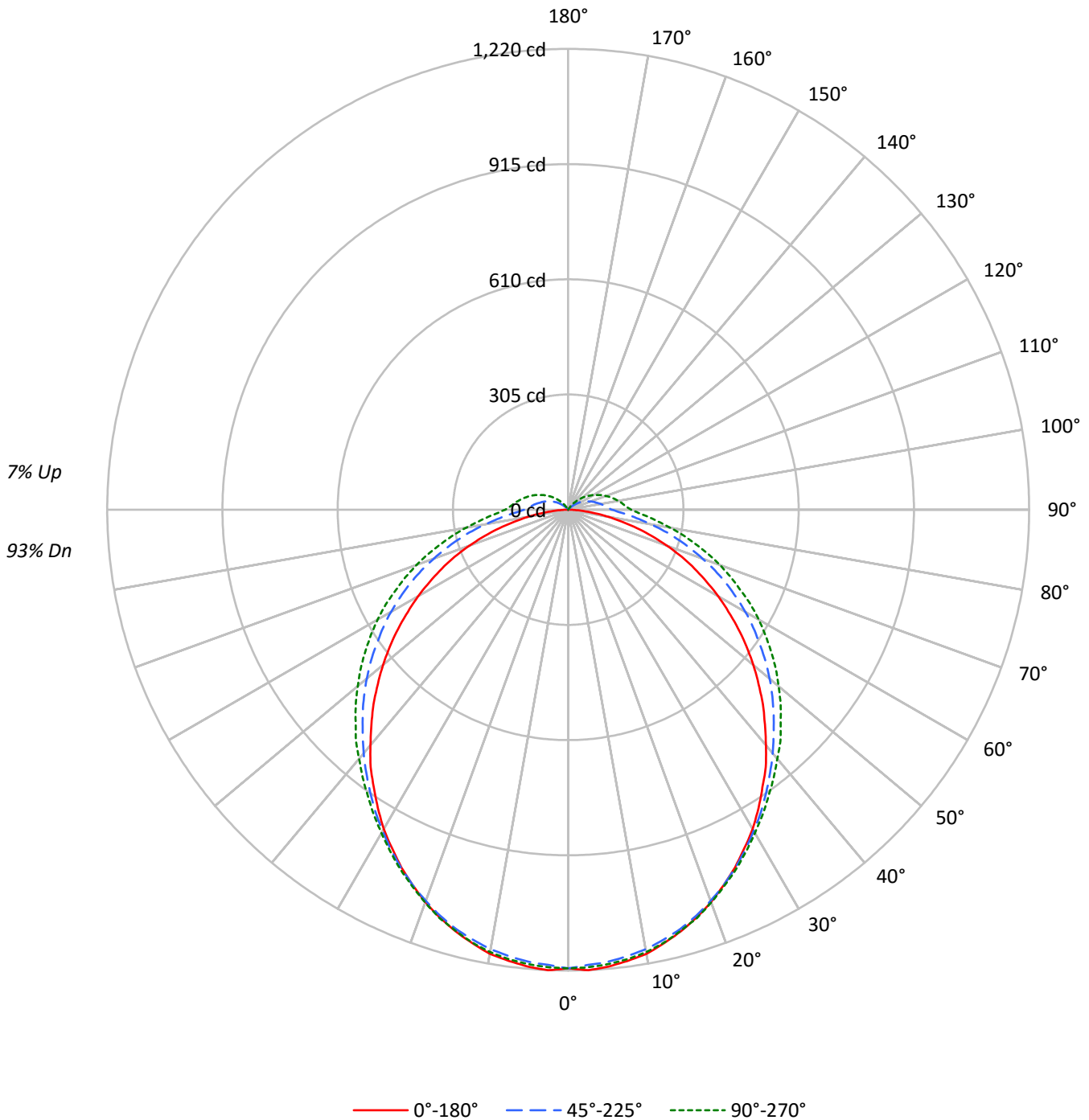
Lumens per Lamp: N/A
Luminaire Lumens: 3800.5 lumens
Efficiency: N/A
Efficacy: 89.2 lumens/watt
Spacing Criteria (0/90/45): 1.2 / 1.21 / 1.34
Luminous Opening: Rectangular w/ Sides (W: 0.31' x L: 3.92' x H: 0.08')
CIE Type: Direct

Input Watts (W): 42.6
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	50	30	10	0	
RCR																						
0	117	117	117	117	114	114	114	114	107	107	107	101	101	101	96	96	96	93				
1	106	101	96	92	103	98	93	90	92	89	86	87	84	82	82	80	78	76				
2	96	87	80	74	93	85	78	72	80	75	70	76	71	67	72	68	65	62				
3	87	76	68	61	84	74	66	60	70	64	58	67	61	56	63	58	54	52				
4	80	67	58	51	77	66	57	51	62	55	49	59	53	48	56	51	47	44				
5	73	60	51	44	71	59	50	44	56	48	43	53	47	41	51	45	40	38				
6	68	54	45	38	65	53	44	38	50	43	37	48	41	36	46	40	35	33				
7	63	49	40	34	61	48	40	34	46	38	33	44	37	32	42	36	31	29				
8	58	45	36	30	56	44	36	30	42	35	29	40	34	29	38	33	28	26				
9	55	41	33	27	53	40	32	27	39	31	26	37	31	26	35	30	25	24				
10	51	38	30	25	50	37	30	24	36	29	24	34	28	24	33	27	23	21				

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	10880	10880	10880
5°	10901	10617	10613
10°	10822	10372	10327
15°	10654	10097	9975
20°	10458	9773	9605
25°	10225	9431	9220
30°	9976	9077	8841
35°	9664	8729	8498
40°	9356	8392	8200
45°	9039	8073	7927
50°	8698	7780	7655
55°	8331	7451	7376
60°	7937	7145	7096
65°	7480	6766	6737
70°	6859	6317	6399
75°	6043	5837	5968
80°	4876	5245	5566
85°	3350	4849	5303



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	114.7	3.0
10°-20°	325.1	8.6
20°-30°	483.2	12.7
30°-40°	572.0	15.1
40°-50°	592.0	15.6
50°-60°	548.0	14.4
60°-70°	445.9	11.7
70°-80°	302.7	8.0
80°-90°	162.7	4.3
90°-100°	96.8	2.5
100°-110°	71.2	1.9
110°-120°	47.2	1.2
120°-130°	26.4	0.7
130°-140°	10.8	0.3
140°-150°	1.7	0.0
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	923.0	24.3
0°-40°	1495.1	39.3
0°-60°	2635.0	69.3
0°-90°	3546.3	93.3
90°-120°	215.3	5.7
90°-150°	254.2	6.7
90°-180°	254.0	6.7
0°-180°	3800.5	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	1214	1214	1214	1214	1214	
5°	1214	1211	1202	1210	1208	115
15°	1155	1154	1149	1157	1154	326
25°	1044	1048	1046	1054	1051	481
35°	897	907	914	923	925	562
45°	728	747	769	789	795	561
55°	550	582	618	647	655	491
65°	369	412	461	493	503	365
75°	188	240	299	335	347	199
85°	40	99	159	198	212	47
90°	0	55	115	153	167	2
95°	0	44	100	136	148	0
105°	0	26	75	108	120	0
115°	0	11	51	82	92	0
125°	0	1	30	54	64	0
135°	0	0	9	28	36	0
145°	0	0	0	4	9	0
155°	0	0	0	0	0	0
165°	0	0	0	0	0	0
175°	0	0	0	0	0	0
180°	0	0	0	0	0	0



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CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	1214.2	1214.2	1214.2	1214.2	1214.2	1214.2	1214.2	1214.2	1214.2	1214.2	1214.2
2.5°	1220.4	1217.3	1214.2	1212.6	1214.2	1215.7	1214.2	1212.6	1209.5	1206.4	1206.4
5°	1214.2	1211.1	1207.9	1207.9	1211.1	1211.1	1209.5	1207.9	1204.8	1201.7	1201.7
7.5°	1204.8	1201.7	1200.2	1200.2	1201.7	1201.7	1201.7	1200.2	1197.0	1192.4	1195.5
10°	1193.9	1190.8	1187.7	1187.7	1189.3	1189.3	1189.3	1187.7	1184.6	1181.5	1183.0
12.5°	1175.2	1172.1	1170.6	1170.6	1172.1	1173.7	1172.1	1172.1	1169.0	1165.9	1167.5
15°	1155.0	1153.5	1150.3	1151.9	1153.5	1155.0	1155.0	1153.5	1150.3	1148.8	1150.3
17.5°	1131.7	1130.1	1128.5	1128.5	1130.1	1131.7	1131.7	1131.7	1128.5	1127.0	1128.5
20°	1105.2	1102.1	1102.1	1103.6	1105.2	1106.8	1106.8	1105.2	1103.6	1102.1	1105.2
22.5°	1075.6	1074.1	1072.5	1074.1	1078.7	1078.7	1080.3	1077.2	1075.6	1075.6	1077.2
25°	1044.5	1042.9	1041.4	1044.5	1047.6	1049.2	1049.2	1049.2	1047.6	1046.0	1049.2
27.5°	1010.2	1010.2	1007.1	1010.2	1014.9	1016.5	1016.5	1016.5	1014.9	1014.9	1016.5
30°	976.0	974.4	971.3	976.0	979.1	983.8	983.8	983.8	982.2	982.2	985.3
32.5°	937.1	937.1	935.5	940.2	944.9	948.0	948.0	948.0	946.4	949.5	952.7
35°	896.6	895.1	896.6	899.7	904.4	909.1	910.6	910.6	910.6	913.7	916.8
37.5°	859.3	854.6	856.1	860.8	865.5	870.2	873.3	871.7	873.3	877.9	881.0
40°	814.1	812.6	815.7	821.9	826.6	831.2	832.8	834.3	837.5	842.1	846.8
42.5°	770.5	772.1	773.6	781.4	786.1	792.3	793.9	797.0	800.1	804.8	811.0
45°	728.5	726.9	731.6	736.3	744.1	750.3	755.0	756.5	762.7	769.0	773.6
47.5°	683.4	686.5	686.5	695.8	705.1	711.4	714.5	719.2	725.4	733.2	737.8
50°	639.8	639.8	646.0	653.8	661.6	669.3	674.0	680.2	688.0	695.8	702.0
52.5°	594.6	596.2	600.9	610.2	619.5	627.3	635.1	642.9	649.1	658.5	664.7
55°	549.5	551.0	558.8	568.2	577.5	586.8	594.6	602.4	611.8	618.0	625.8
57.5°	502.8	505.9	515.2	524.6	535.5	543.3	554.2	563.5	572.8	580.6	590.0
60°	459.2	460.8	468.5	481.0	488.8	501.2	512.1	521.5	530.8	541.7	549.5
62.5°	412.5	415.6	425.0	435.9	446.7	459.2	470.1	481.0	490.3	501.2	509.0
65°	368.9	372.0	379.8	390.7	404.7	418.7	429.6	439.0	449.9	460.8	468.5
67.5°	325.3	328.4	336.2	347.1	361.1	373.6	387.6	398.5	409.4	420.3	429.6
70°	277.1	281.7	291.1	305.1	317.6	331.6	344.0	356.5	367.4	378.3	387.6
72.5°	231.9	236.6	249.1	261.5	275.5	289.5	303.5	314.4	328.4	337.8	347.1
75°	188.4	194.6	205.5	217.9	231.9	247.5	260.0	275.5	288.0	298.9	306.7
77.5°	144.8	152.5	163.4	177.5	191.5	207.0	221.0	233.5	247.5	260.0	269.3
80°	105.9	112.1	124.5	138.5	155.7	169.7	183.7	197.7	210.1	221.0	233.5
82.5°	71.6	77.8	90.3	104.3	119.9	135.4	151.0	163.4	175.9	188.4	199.2
85°	40.5	48.3	60.7	74.7	91.8	105.9	119.9	133.9	146.3	158.8	169.7
87.5°	17.1	24.9	37.4	51.4	65.4	80.9	95.0	109.0	121.4	133.9	143.2
90°	0.0	7.8	18.7	32.7	48.3	62.3	76.3	90.3	102.7	115.2	124.5
92.5°	0.0	4.7	14.0	28.0	42.0	56.0	68.5	82.5	93.4	105.9	115.2
95°	0.0	3.1	10.9	23.3	37.4	49.8	63.8	76.3	88.7	99.6	109.0
97.5°	0.0	1.6	9.3	20.2	32.7	45.1	59.2	71.6	82.5	93.4	102.7
100°	0.0	0.0	6.2	17.1	28.0	40.5	52.9	65.4	76.3	87.2	96.5
102.5°	0.0	1.6	3.1	14.0	24.9	37.4	48.3	60.7	71.6	80.9	90.3
105°	0.0	0.0	1.6	9.3	20.2	32.7	43.6	54.5	65.4	74.7	84.1
107.5°	0.0	0.0	0.0	6.2	17.1	28.0	38.9	49.8	59.2	70.0	77.8
110°	0.0	0.0	0.0	3.1	12.5	23.3	34.2	43.6	54.5	63.8	71.6



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CANDELA DISTRIBUTION (continued):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
112.5°	0.0	0.0	0.0	1.6	9.3	18.7	29.6	38.9	48.3	57.6	65.4
115°	0.0	1.6	1.6	0.0	6.2	15.6	24.9	34.2	43.6	51.4	59.2
117.5°	0.0	0.0	0.0	0.0	3.1	10.9	20.2	29.6	37.4	46.7	52.9
120°	0.0	0.0	0.0	0.0	1.6	7.8	15.6	24.9	32.7	40.5	48.3
122.5°	0.0	0.0	0.0	0.0	0.0	4.7	10.9	18.7	28.0	35.8	42.0
125°	0.0	0.0	0.0	0.0	0.0	1.6	7.8	14.0	21.8	29.6	35.8
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	3.1	10.9	17.1	23.3	29.6
130°	0.0	0.0	0.0	0.0	0.0	0.0	1.6	6.2	12.5	18.7	24.9
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.1	7.8	14.0	18.7
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	3.1	9.3	14.0
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	4.7	9.3
140°	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	4.7
142.5°	1.6	1.6	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6
145°	0.0	1.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	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°
0°	1214.2	1214.2	1214.2	1214.2	1214.2	1214.2	1214.2	1214.2
2.5°	1209.5	1214.2	1214.2	1214.2	1214.2	1214.2	1214.2	1212.6
5°	1206.4	1209.5	1209.5	1209.5	1209.5	1209.5	1209.5	1207.9
7.5°	1198.6	1201.7	1203.3	1203.3	1203.3	1203.3	1201.7	1200.2
10°	1187.7	1189.3	1190.8	1190.8	1190.8	1190.8	1189.3	1189.3
12.5°	1172.1	1173.7	1175.2	1175.2	1175.2	1175.2	1173.7	1173.7
15°	1153.5	1155.0	1156.6	1156.6	1156.6	1156.6	1155.0	1153.5
17.5°	1133.2	1134.8	1134.8	1134.8	1134.8	1133.2	1131.7	1133.2
20°	1106.8	1108.3	1109.9	1109.9	1109.9	1109.9	1106.8	1106.8
22.5°	1081.9	1083.4	1083.4	1081.9	1083.4	1081.9	1080.3	1078.7
25°	1050.7	1052.3	1053.8	1053.8	1055.4	1053.8	1050.7	1050.7
27.5°	1019.6	1022.7	1021.1	1021.1	1022.7	1021.1	1019.6	1019.6
30°	988.5	990.0	990.0	990.0	991.6	991.6	988.5	988.5
32.5°	954.2	955.8	957.3	958.9	958.9	958.9	957.3	957.3
35°	920.0	921.5	923.1	923.1	926.2	927.7	926.2	924.6
37.5°	884.2	887.3	890.4	891.9	891.9	893.5	893.5	893.5
40°	851.5	853.0	856.1	859.3	859.3	862.4	860.8	860.8
42.5°	814.1	820.3	821.9	828.1	828.1	828.1	828.1	831.2
45°	779.9	783.0	787.6	790.8	793.9	793.9	793.9	795.4
47.5°	745.6	750.3	751.8	756.5	759.6	761.2	761.2	762.7
50°	708.3	712.9	719.2	722.3	723.8	725.4	726.9	726.9
52.5°	670.9	677.1	681.8	686.5	688.0	689.6	689.6	692.7
55°	633.5	639.8	644.4	649.1	653.8	655.3	655.3	655.3
57.5°	597.7	602.4	607.1	613.3	614.9	616.4	619.5	619.5
60°	557.3	563.5	571.3	574.4	579.1	580.6	580.6	582.2
62.5°	518.4	526.1	530.8	535.5	540.1	543.3	543.3	544.8
65°	476.3	484.1	491.9	495.0	499.7	502.8	504.3	502.8
67.5°	437.4	446.7	451.4	457.6	460.8	462.3	465.4	465.4
70°	398.5	404.7	412.5	415.6	420.3	421.8	425.0	426.5
72.5°	358.0	364.2	370.5	376.7	381.4	382.9	387.6	387.6
75°	317.6	326.9	331.6	337.8	342.5	345.6	347.1	347.1
77.5°	278.6	288.0	294.2	300.4	305.1	308.2	309.8	311.3
80°	241.3	250.6	258.4	264.6	267.7	270.9	272.4	274.0
82.5°	210.1	216.4	224.2	231.9	235.0	238.2	239.7	239.7
85°	179.0	188.4	196.1	200.8	205.5	208.6	210.1	211.7
87.5°	152.5	161.9	168.1	174.3	179.0	183.7	185.2	185.2
90°	133.9	143.2	149.4	155.7	160.3	163.4	165.0	166.6
92.5°	124.5	132.3	140.1	146.3	149.4	152.5	155.7	155.7
95°	118.3	126.1	133.9	138.5	143.2	146.3	147.9	147.9
97.5°	112.1	119.9	126.1	132.3	137.0	138.5	140.1	141.7
100°	105.9	112.1	119.9	124.5	129.2	132.3	133.9	133.9
102.5°	99.6	105.9	113.6	118.3	121.4	124.5	126.1	127.6
105°	91.8	99.6	105.9	110.5	115.2	118.3	119.9	119.9
107.5°	85.6	93.4	99.6	104.3	109.0	110.5	112.1	113.6
110°	79.4	85.6	93.4	98.1	101.2	104.3	105.9	105.9



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CATALOG NUMBER: S124-DR-2-35-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	73.2	79.4	85.6	90.3	93.4	96.5	98.1	99.6
115°	66.9	73.2	79.4	84.1	87.2	90.3	91.8	91.8
117.5°	60.7	66.9	73.2	76.3	79.4	82.5	84.1	84.1
120°	54.5	60.7	65.4	70.0	73.2	76.3	76.3	77.8
122.5°	48.3	54.5	59.2	63.8	66.9	68.5	70.0	70.0
125°	42.0	48.3	52.9	56.0	59.2	62.3	62.3	63.8
127.5°	35.8	40.5	45.1	49.8	52.9	54.5	56.0	56.0
130°	29.6	34.2	38.9	43.6	45.1	46.7	48.3	49.8
132.5°	23.3	28.0	32.7	35.8	38.9	40.5	42.0	42.0
135°	18.7	23.3	26.5	29.6	32.7	34.2	34.2	35.8
137.5°	14.0	17.1	20.2	23.3	24.9	26.5	28.0	28.0
140°	7.8	10.9	14.0	17.1	18.7	20.2	21.8	21.8
142.5°	3.1	6.2	7.8	10.9	12.5	14.0	15.6	15.6
145°	0.0	1.6	3.1	4.7	6.2	7.8	9.3	9.3
147.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
150°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
152.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
155°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
157.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
160°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
162.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
165°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
167.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
170°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
172.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
175°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
177.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
180°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

(END OF REPORT)