

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: P231618

Luminaire Tested: **S123-DR-LO-40-X-0048-1-U-DD-4-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P231618
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (P33913)
Test Lab: INNOVATION CENTER-P3
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S123-DR-LO-40-X-0048-1-U-DD-4-W
Description: DEFINE 3 LED LINEAR DIRECT RECESSED LED LUMINAIRE WITH DROP LENS.
Light Source: 4000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1332.7 lumens
Efficiency: N/A
Efficacy: 98.0 lumens/watt
Spacing Criteria (0/90/45): 1.19 / 1.25 / 1.37
Luminous Opening: Rectangular w/ Sides (W: 0.22' x L: 3.92' x H: 0.08')
CIE Type: Direct

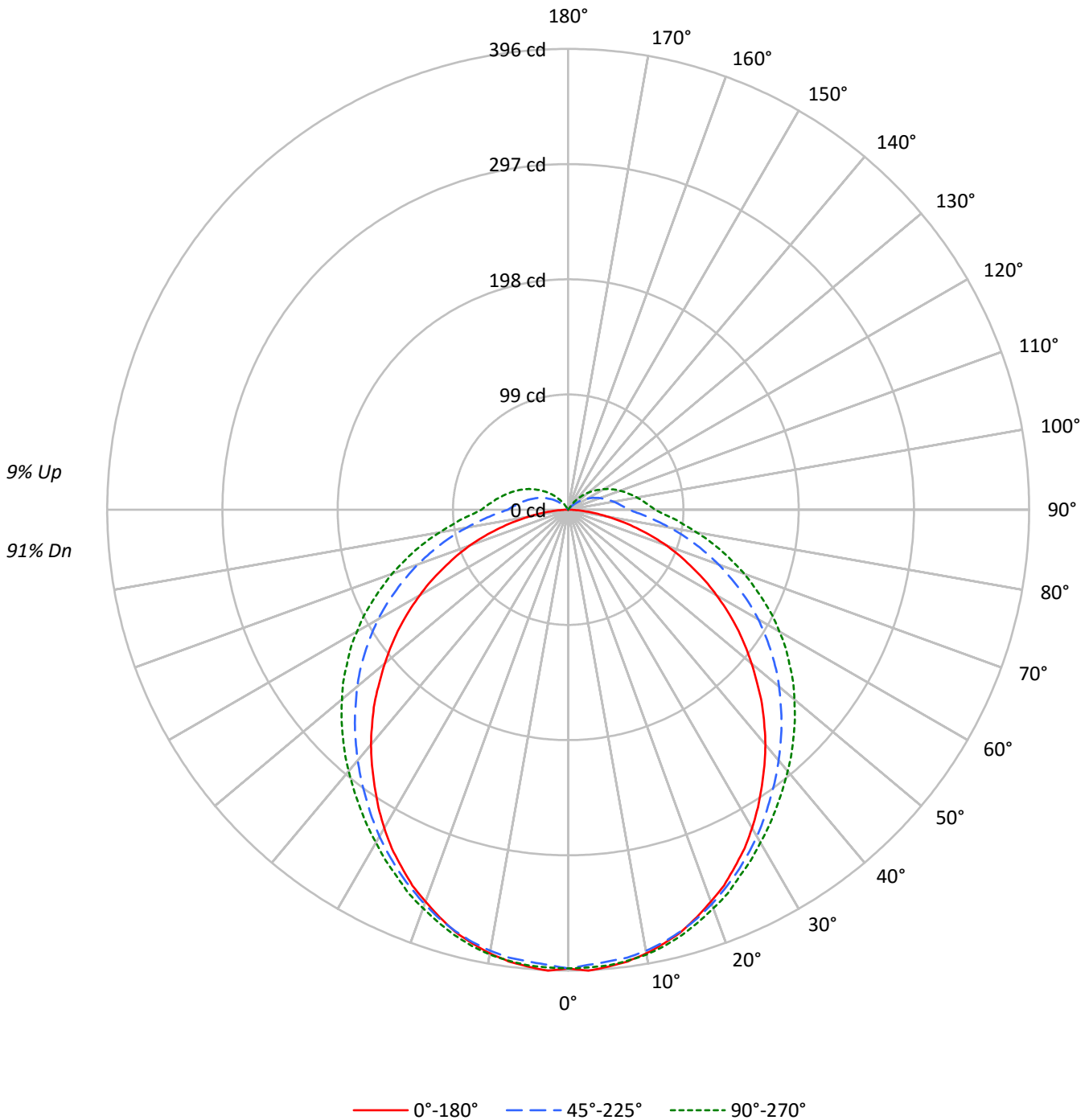
Input Watts (W): 13.6
Input Voltage (V): 120
Input Current (A_{in}): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



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CATALOG NUMBER: S123-DR-LO-40-X-0048-1-U-DD-4-W

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	117	117	117	117	113	113	113	113	106	106	106	100	100	100	94	94	94	91
1	105	100	95	90	101	96	92	88	90	87	84	85	82	79	80	78	76	73
2	95	86	79	72	91	83	76	71	78	73	68	74	69	65	69	66	62	59
3	86	75	66	59	83	73	65	58	68	62	56	64	59	54	61	56	52	49
4	79	66	57	50	76	64	56	49	61	53	48	57	51	46	54	49	44	42
5	72	59	50	43	70	57	49	42	54	47	41	51	45	40	49	43	38	36
6	67	53	44	37	64	52	43	37	49	41	36	46	40	35	44	38	34	31
7	62	48	39	33	59	47	38	32	44	37	31	42	36	31	40	34	30	28
8	57	44	35	29	55	43	34	29	41	33	28	39	32	27	37	31	27	25
9	54	40	32	26	52	39	31	26	37	30	25	36	29	25	34	28	24	22
10	50	37	29	24	49	36	28	23	35	28	23	33	27	22	32	26	22	20

AVERAGE LUMINANCE (cd/sqm):

	0°	45°	90°
0°	4852	4852	4852
5°	4861	4701	4703
10°	4820	4585	4552
15°	4757	4445	4382
20°	4658	4288	4203
25°	4553	4128	4024
30°	4435	3968	3862
35°	4293	3805	3718
40°	4161	3661	3589
45°	4012	3528	3473
50°	3841	3399	3361
55°	3686	3266	3249
60°	3495	3130	3133
65°	3286	2965	2998
70°	3056	2798	2861
75°	2674	2622	2707
80°	2163	2422	2546
85°	1499	2287	2455



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ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	37.3	2.8
10°-20°	106.2	8.0
20°-30°	158.7	11.9
30°-40°	189.6	14.2
40°-50°	198.8	14.9
50°-60°	187.5	14.1
60°-70°	157.0	11.8
70°-80°	112.9	8.5
80°-90°	68.1	5.1
90°-100°	43.9	3.3
100°-110°	32.3	2.4
110°-120°	21.7	1.6
120°-130°	12.4	0.9
130°-140°	5.4	0.4
140°-150°	1.0	0.1
150°-160°	0.0	0.0
160°-170°	0.0	0.0
170°-180°	0.0	0.0
0°-30°	302.2	22.7
0°-40°	491.8	36.9
0°-60°	878.1	65.9
0°-90°	1216.1	91.2
90°-120°	97.9	7.3
90°-150°	116.6	8.8
90°-180°	117.0	8.8
0°-180°	1332.7	100.0

CANDELA DISTRIBUTION:

	0°	22.5°	45°	67.5°	90°	Flux
0°	394	394	394	394	394	
5°	394	393	390	393	393	37
15°	376	376	375	379	378	106
25°	339	342	344	348	348	156
35°	290	297	303	311	312	182
45°	235	246	259	271	274	181
55°	177	193	213	228	232	158
65°	118	139	163	180	185	117
75°	61	85	112	130	136	64
85°	13	40	68	85	92	15
90°	0	25	52	69	74	1
95°	0	20	45	62	67	0
105°	0	12	34	49	54	0
115°	0	6	24	37	41	0
125°	0	1	14	25	29	0
135°	0	0	6	14	17	0
145°	1	0	0	3	6	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



TEST NUMBER: P231618

CATALOG NUMBER: S123-DR-LO-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	394.2	394.2	394.2	394.2	394.2	394.2	394.2	394.2	394.2	394.2	394.2
2.5°	396.5	395.4	394.2	394.2	394.8	394.8	394.8	393.7	393.1	391.5	391.5
5°	394.2	393.1	392.0	392.6	392.6	393.1	393.1	392.6	391.5	389.8	390.9
7.5°	391.5	390.4	389.3	389.3	389.8	390.4	390.4	389.8	389.3	388.2	388.7
10°	387.1	386.0	384.9	384.9	385.4	386.5	387.1	386.5	386.0	384.9	385.4
12.5°	381.6	380.5	379.4	380.5	381.0	382.1	382.1	382.1	381.6	380.5	381.6
15°	375.5	373.8	373.3	373.8	374.9	376.1	376.6	376.1	376.1	374.9	376.1
17.5°	367.2	366.1	365.6	366.7	367.8	368.9	370.0	369.4	369.4	368.3	369.4
20°	358.4	357.3	357.3	358.4	359.5	361.2	361.7	361.7	361.7	360.6	362.3
22.5°	349.6	347.9	347.9	349.0	351.2	352.3	352.9	352.9	352.9	352.3	354.5
25°	338.6	337.5	338.0	339.1	340.8	342.4	343.5	343.5	343.5	343.5	345.2
27.5°	328.1	326.4	327.0	328.6	330.8	331.9	333.6	333.6	333.6	334.1	335.8
30°	315.9	314.8	315.9	317.6	319.8	321.5	322.6	323.7	323.7	324.2	326.4
32.5°	303.3	302.7	303.8	306.0	307.1	309.9	311.0	311.5	312.6	313.7	315.4
35°	290.0	289.5	291.1	293.3	295.5	297.8	299.4	300.0	301.6	302.7	305.5
37.5°	276.8	276.8	278.5	280.1	282.9	285.6	287.3	288.4	289.5	292.2	295.0
40°	263.6	263.0	264.7	266.9	269.6	272.9	274.6	276.2	277.9	281.2	284.0
42.5°	249.2	249.2	251.4	254.2	257.5	260.8	262.5	263.6	266.9	270.2	272.9
45°	235.4	235.4	237.7	241.0	244.3	247.6	250.3	252.5	255.8	259.2	261.9
47.5°	220.0	221.1	223.3	226.6	230.5	234.3	237.1	240.4	244.3	247.6	250.9
50°	205.7	206.2	210.1	213.4	217.2	221.7	225.0	228.3	232.7	236.5	240.4
52.5°	191.3	192.4	195.7	199.6	204.0	207.9	212.8	216.7	220.6	225.0	228.8
55°	177.0	177.5	182.0	186.4	190.2	195.2	199.6	204.6	209.0	212.8	216.7
57.5°	162.1	163.8	167.1	171.5	176.4	182.0	186.9	191.3	195.7	200.7	205.1
60°	147.2	149.4	153.3	157.7	162.7	168.7	174.2	179.2	183.6	188.6	193.0
62.5°	132.9	134.5	139.0	143.4	148.9	154.9	161.0	166.0	170.9	175.9	180.9
65°	118.0	121.3	124.6	129.6	135.6	141.7	147.8	153.3	158.3	162.7	167.6
67.5°	103.7	105.9	110.8	115.8	121.9	128.5	134.0	140.1	145.6	150.0	154.4
70°	89.9	92.1	96.5	102.0	108.6	115.2	121.3	126.3	132.3	137.3	142.3
72.5°	75.0	77.7	82.7	88.2	94.8	101.5	108.1	114.1	119.7	124.6	129.6
75°	60.7	64.0	68.9	75.0	82.2	88.2	94.8	100.9	107.0	112.5	116.9
77.5°	46.9	50.2	55.7	62.3	68.9	76.1	82.2	88.8	94.3	100.4	105.3
80°	34.2	38.0	43.6	50.2	56.8	64.0	70.6	76.6	82.7	88.2	93.7
82.5°	23.7	27.0	32.5	39.1	46.3	52.9	59.6	66.2	71.7	77.7	82.7
85°	13.2	17.1	23.2	29.2	36.4	43.0	49.6	56.2	61.8	67.8	72.8
87.5°	5.5	9.9	15.4	21.5	28.1	34.7	41.4	47.4	53.5	59.0	64.0
90°	0.0	3.9	8.8	14.9	21.5	28.1	34.2	40.3	46.3	51.8	56.2
92.5°	0.0	2.2	6.6	12.7	18.7	25.4	32.0	37.5	43.0	48.5	52.9
95°	0.0	1.1	5.5	11.0	17.1	23.2	29.2	34.7	40.3	45.2	49.6
97.5°	0.0	0.6	4.4	9.4	14.9	21.0	27.0	32.5	37.5	42.5	46.9
100°	0.0	0.0	3.3	7.7	13.2	18.7	24.3	29.8	34.7	39.7	44.1
102.5°	0.0	0.0	1.7	6.1	11.6	16.5	22.1	27.6	32.5	36.9	41.4
105°	0.0	0.0	1.1	5.0	9.4	14.9	19.9	24.8	29.8	34.2	38.6
107.5°	0.0	0.0	0.0	3.3	8.3	12.7	17.6	22.6	27.6	31.4	35.8
110°	0.0	0.0	0.0	2.2	6.6	11.0	16.0	20.4	24.8	29.2	33.1



TEST NUMBER: P231618

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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	1.1	5.0	9.4	13.8	18.2	22.6	26.5	30.3
115°	0.0	0.0	0.0	0.0	3.3	7.7	11.6	16.0	20.4	24.3	27.6
117.5°	0.0	0.0	0.0	0.0	2.2	6.1	9.9	13.8	17.6	21.5	24.8
120°	0.0	0.0	0.0	0.0	0.6	4.4	7.7	11.6	15.4	18.7	22.6
122.5°	0.0	0.0	0.0	0.0	0.0	2.8	6.1	9.9	13.2	16.5	19.9
125°	0.0	0.0	0.0	0.0	0.0	1.1	4.4	7.7	11.0	14.3	17.1
127.5°	0.0	0.0	0.0	0.0	0.0	0.0	2.8	5.5	8.8	11.6	14.9
130°	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.9	6.6	9.4	12.1
132.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2	5.0	7.2	9.9
135°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.6	2.8	5.5	7.7
137.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.3	5.5
140°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1	3.3
142.5°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.1
145°	0.6	0.0	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



TEST NUMBER: P231618

CATALOG NUMBER: S123-DR-LO-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
0°	394.2	394.2	394.2	394.2	394.2	394.2	394.2	394.2
2.5°	393.1	393.7	394.2	394.2	394.2	394.2	393.7	393.7
5°	392.0	393.1	393.1	393.7	393.7	393.7	393.1	393.1
7.5°	390.4	390.9	391.5	391.5	392.0	392.0	391.5	390.9
10°	387.1	388.2	388.7	388.7	388.7	388.7	388.7	388.2
12.5°	383.2	383.8	384.3	384.3	384.3	384.9	384.3	383.8
15°	377.7	378.8	378.8	379.4	379.4	379.4	378.8	378.3
17.5°	371.1	372.2	372.7	372.7	372.7	372.7	372.2	371.6
20°	363.9	364.5	365.6	365.0	365.6	365.6	365.0	364.5
22.5°	355.7	356.2	357.3	356.8	357.9	357.9	357.3	357.3
25°	346.8	347.9	348.5	348.5	348.5	348.5	348.5	347.9
27.5°	337.5	338.0	339.1	339.7	339.7	339.7	339.7	339.7
30°	327.5	328.6	329.7	329.7	330.8	331.4	330.8	330.3
32.5°	317.1	318.7	319.8	320.4	321.5	322.0	321.5	321.5
35°	306.6	308.8	310.4	311.0	312.1	312.1	312.6	312.1
37.5°	296.7	298.9	300.0	301.6	302.7	303.8	303.3	302.7
40°	286.7	288.9	290.6	291.7	292.8	293.3	293.3	293.3
42.5°	275.7	278.5	280.1	281.8	283.4	284.0	284.0	284.0
45°	264.7	267.4	269.6	271.8	273.5	274.0	274.0	274.0
47.5°	254.2	257.0	259.2	261.4	263.0	263.6	264.1	264.1
50°	243.7	246.5	249.2	250.9	252.5	253.6	253.6	253.6
52.5°	232.1	234.9	237.7	239.9	242.1	242.6	243.7	243.7
55°	220.6	223.9	227.2	229.4	230.5	231.6	232.1	232.1
57.5°	209.0	211.7	214.5	217.8	219.5	220.6	221.1	221.7
60°	196.8	200.2	203.5	206.2	207.3	209.0	209.5	209.5
62.5°	184.2	187.5	191.3	193.5	195.7	196.8	197.4	198.0
65°	172.0	175.3	178.7	182.0	183.1	184.2	185.3	185.3
67.5°	159.4	162.7	166.0	168.7	170.4	172.0	173.1	172.6
70°	146.7	150.5	153.3	156.6	158.3	159.4	160.5	161.0
72.5°	134.0	137.8	141.2	143.9	145.6	146.7	147.8	148.3
75°	121.9	125.2	128.5	130.7	132.9	134.5	135.1	136.2
77.5°	109.2	113.6	116.3	119.7	120.8	122.4	123.0	124.1
80°	98.1	101.5	104.8	107.5	109.7	111.4	111.4	111.9
82.5°	87.1	90.4	93.7	97.0	98.7	100.4	100.9	100.9
85°	76.6	80.5	83.8	86.6	88.8	89.9	91.0	91.5
87.5°	68.4	71.7	75.0	77.2	79.4	80.5	81.6	81.6
90°	60.7	64.0	67.3	70.0	71.7	72.8	73.9	74.4
92.5°	57.3	60.7	64.0	66.2	68.4	69.5	70.0	70.6
95°	54.0	57.3	60.7	62.9	64.5	66.2	66.7	66.7
97.5°	50.7	54.0	57.3	59.6	61.2	62.3	63.4	63.4
100°	48.0	51.3	54.0	56.2	57.9	59.0	60.1	60.1
102.5°	44.7	48.0	50.7	52.9	54.6	55.7	56.8	56.8
105°	41.9	45.2	48.0	50.2	51.8	52.9	53.5	53.5
107.5°	39.1	42.5	45.2	46.9	48.5	49.6	50.7	50.7
110°	36.4	39.1	41.9	44.1	45.8	46.9	47.4	47.4



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CATALOG NUMBER: S123-DR-LO-40-X-0048-1-U-DD-4-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°
112.5°	33.6	36.4	39.1	40.8	42.5	43.6	44.1	44.7
115°	30.9	33.6	35.8	38.0	39.7	40.3	41.4	41.4
117.5°	28.1	30.9	33.1	34.7	36.4	37.5	38.0	38.6
120°	25.4	27.6	30.3	32.0	33.6	34.2	35.3	35.3
122.5°	22.6	24.8	27.6	28.7	30.3	31.4	32.0	32.0
125°	19.9	22.6	24.3	25.9	27.6	28.1	28.7	29.2
127.5°	17.1	19.3	21.5	23.2	24.3	25.4	25.9	25.9
130°	14.3	16.5	18.7	20.4	21.5	22.1	22.6	23.2
132.5°	12.1	14.3	16.0	17.1	18.7	19.3	19.9	19.9
135°	9.4	11.6	13.2	14.3	15.4	16.5	16.5	17.1
137.5°	7.2	8.8	10.5	11.6	12.7	13.2	13.8	13.8
140°	5.0	6.6	7.7	8.8	9.9	10.5	11.0	11.0
142.5°	2.8	3.9	5.5	6.1	7.2	7.7	8.3	8.3
145°	0.6	1.7	2.8	3.9	4.4	5.0	5.5	5.5
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)