

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: P243493

Luminaire Tested: **S124DR-H350D830-X4F0-XX-UDD-A-W**

Issue Date: 3/3/2020

Test Information

Test Method: LM-79-08
Report Number: P243493
TEST IS SCALED FROM IESNA LM-79-08 TEST DATA (G3-1802-639-60)
Test Lab: INNOVATION CENTER
Issue Date: 3/3/2020
Manufacturer: COOPER LIGHTING SOLUTIONS (FORMERLY EATON)
Product Line: NEO-RAY
Catalog Number: S124DR-H350D830-X4F0-XX-UDD-A-W
Description: DEFINE 4 DIRECT RECESSED WITH ASYMMETRIC FLUSH DIFFUSER.
HIGH PERFORMANCE LIGHT ENGINE
Light Source: (184) 3000K CCT, 80 CRI LEDS
Ballast/Driver: ELECTRONIC DRIVER

Summary

Lumens per Lamp: N/A
Luminaire Lumens: 1386.0 lumens
Efficiency: N/A
Efficacy: 123.7 lumens/watt
Spacing Criteria (0/90/45): 1.35 / 1.22 / 1.45
Luminous Opening: Rectangular (W 3.88' x L: 0.31' x H: 0')
CIE Type: Direct

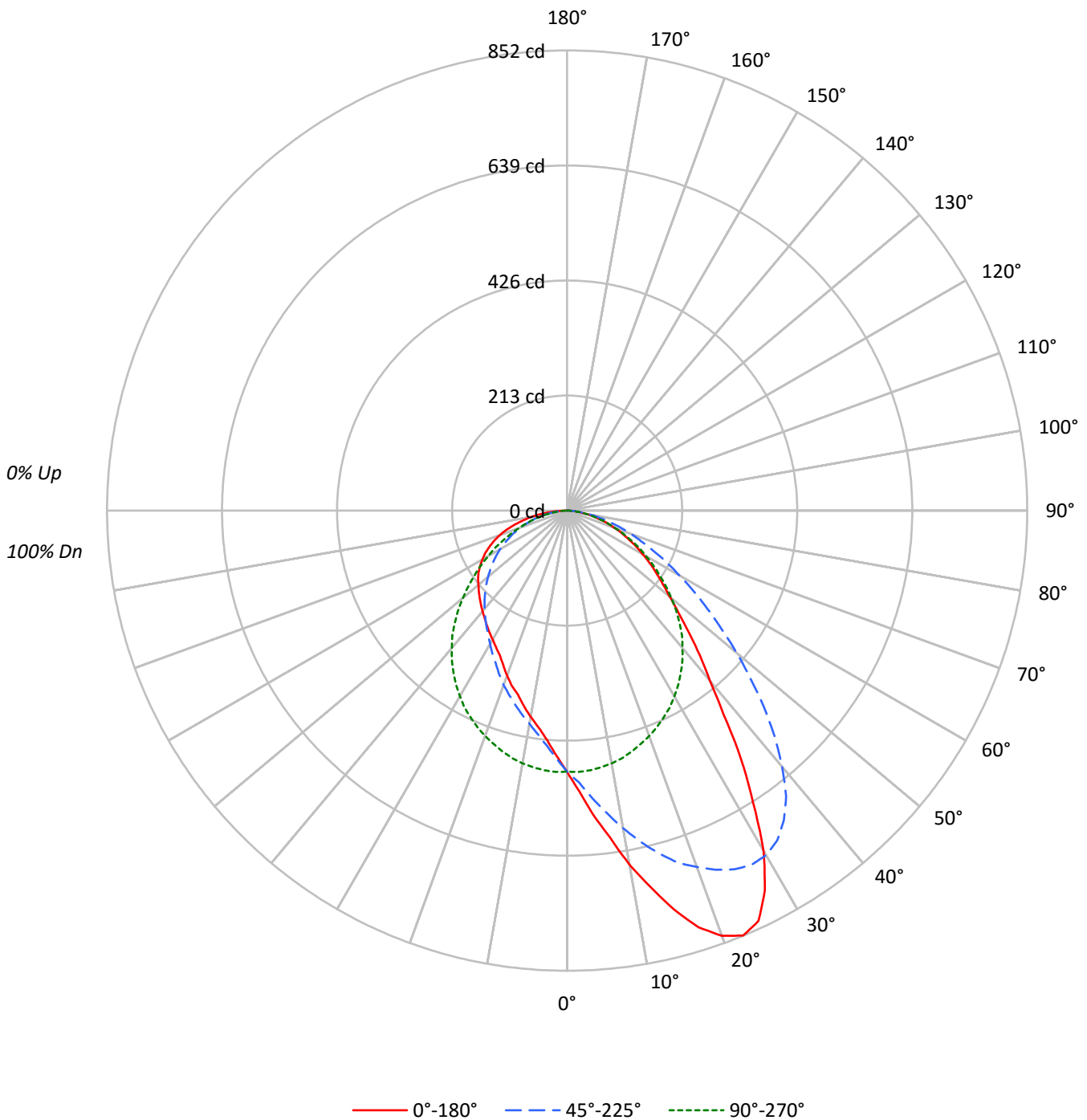
Input Watts (W): 11.2
Input Voltage (V): 120
Input Current (Ain): NR
Voltage Rise (V): NR
Power Factor: NR
Total Harmonic Distortion (THDi): NR
Frequency (hertz): 60
Stabilization Time: NR
Operation Time: NR
Ambient Temperature (°C): NR
Test Distance: 25 FT



TEST NUMBER: P243493

CATALOG NUMBER: S124DR-H350D830-X4F0-XX-UDD-A-W

Luminous Intensity Polar Plot





TEST NUMBER: P243493

CATALOG NUMBER: S124DR-H350D830-X4F0-XX-UDD-A-W

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	109	105	101	97	107	103	99	96	98	95	93	94	92	90	91	89	87	85
2	100	92	86	80	97	90	84	79	87	82	77	83	79	76	80	77	74	72
3	92	81	74	67	89	80	73	67	77	71	66	74	69	64	72	67	63	61
4	84	73	64	58	82	71	63	57	69	62	56	66	60	56	64	59	55	53
5	78	65	56	50	75	64	56	50	62	55	49	60	54	49	58	53	48	46
6	72	59	50	44	70	58	50	44	56	49	43	54	48	43	53	47	43	41
7	67	53	45	39	65	53	45	39	51	44	38	50	43	38	48	42	38	36
8	62	49	41	35	61	48	40	35	47	40	35	46	39	34	44	39	34	32
9	58	45	37	31	57	44	37	31	43	36	31	42	36	31	41	35	31	29
10	54	41	34	29	53	41	34	28	40	33	28	39	33	28	38	32	28	26

AVERAGE LUMINANCE (cd/sqm):

	0°	90°	180°
0°	4297	4297	4297
5°	5056	4308	3802
10°	6009	4288	3501
15°	7037	4251	3243
20°	7924	4201	3075
25°	8224	4145	2894
30°	7468	4074	2831
35°	6093	3978	2813
40°	4771	3852	2825
45°	3992	3698	2877
50°	3427	3481	2963
55°	3130	3247	3106
60°	2869	3006	3220
65°	2631	2751	3344
70°	2420	2482	3446
75°	2153	2181	3441
80°	1797	1787	3435
85°	1367	1346	3223



TEST NUMBER: P243493

CATALOG NUMBER: S124DR-H350D830-X4F0-XX-UDD-A-W

ZONAL LUMENS:

Zone	Lumens	% Fixture
0°-10°	47.1	3.4
10°-20°	145.7	10.5
20°-30°	234.1	16.9
30°-40°	267.6	19.3
40°-50°	246.3	17.8
50°-60°	201.5	14.5
60°-70°	143.6	10.4
70°-80°	78.9	5.7
80°-90°	21.2	1.5
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°	426.9	30.8
0°-40°	694.5	50.1
0°-60°	1142.3	82.4
0°-90°	1386.0	100.0
90°-120°	0.0	0.0
90°-150°	0.0	0.0
90°-180°	0.0	0.0
0°-180°	1386.0	100.0

CANDELA DISTRIBUTION:

	0°	45°	90°	135°	180°	Flux
0°	483	483	483	483	483	
5°	567	534	483	436	426	57
15°	765	657	462	372	352	218
25°	838	733	423	312	295	376
35°	562	700	367	261	259	349
45°	318	516	294	215	229	248
55°	202	317	210	168	200	181
65°	125	176	131	117	159	125
75°	63	81	64	65	100	67
85°	13	17	13	18	32	16
90°	0	0	0	0	0	



TEST NUMBER: P243493

CATALOG NUMBER: S124DR-H350D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (FULL):

	0°	5°	10°	15°	20°	25°	30°	35°	40°	45°	50°
0°	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4
2.5°	520.4	518.9	518.1	517.1	516.9	515.9	513.9	511.2	507.6	503.9	503.9
5°	566.6	566.2	563.3	563.5	559.7	555.6	552.4	548.5	540.8	534.3	529.7
7.5°	610.8	615.0	614.0	610.8	605.3	599.4	593.1	587.5	573.3	565.4	558.9
10°	665.7	667.2	664.5	659.9	655.0	643.6	635.3	626.0	610.6	597.2	585.4
12.5°	713.8	717.5	712.6	708.3	696.6	688.1	679.9	661.3	645.1	628.2	611.0
15°	764.7	760.7	763.3	752.7	744.4	736.3	715.2	696.2	677.9	657.0	639.0
17.5°	808.9	808.9	804.2	797.2	788.6	773.4	752.3	731.4	711.0	683.6	658.2
20°	837.7	839.9	834.3	827.0	816.6	800.8	784.0	761.3	734.3	702.3	673.5
22.5°	851.5	851.9	849.9	843.8	835.3	821.9	804.7	782.6	754.0	719.7	689.5
25°	838.5	840.6	840.1	839.7	835.3	827.6	813.8	793.3	767.3	732.9	700.4
27.5°	792.7	798.0	802.6	804.5	809.3	809.7	805.5	793.1	771.8	739.4	703.1
30°	727.6	724.8	737.1	743.2	759.4	769.0	775.9	775.1	762.9	736.7	702.2
32.5°	640.8	648.3	657.0	671.4	690.5	713.0	730.0	742.6	741.4	724.2	695.4
35°	561.5	561.5	572.5	590.3	610.6	637.6	666.0	689.5	703.9	699.6	679.3
37.5°	475.5	480.8	493.4	507.2	532.1	558.1	595.6	626.8	657.0	666.0	655.6
40°	411.2	413.5	426.9	438.6	464.0	491.1	522.4	562.3	597.0	619.3	620.7
42.5°	363.4	363.2	368.7	379.2	399.7	423.8	457.7	496.8	537.4	569.0	583.8
45°	317.6	317.2	323.0	333.6	348.2	369.5	398.9	438.0	479.6	515.5	538.8
47.5°	279.0	282.5	285.1	293.4	305.4	323.6	348.8	380.0	420.0	460.3	491.6
50°	247.8	249.4	254.9	258.8	272.3	284.9	305.2	333.2	367.5	409.8	443.7
52.5°	222.9	223.9	227.3	232.4	240.1	251.1	267.3	293.2	324.1	360.8	396.0
55°	202.0	201.4	203.6	207.0	213.7	222.9	234.8	254.5	281.5	316.8	349.2
57.5°	181.5	181.5	183.5	185.8	189.6	197.3	208.9	224.5	246.2	277.6	306.2
60°	161.4	162.8	163.6	165.9	169.1	174.8	183.5	195.7	214.1	239.7	268.1
62.5°	143.6	143.6	145.0	145.8	149.9	154.1	160.4	170.9	185.3	208.1	230.2
65°	125.1	126.3	126.3	127.8	131.4	134.6	139.5	147.4	159.2	175.6	196.3
67.5°	109.3	109.3	110.3	111.1	113.0	115.2	119.6	125.7	135.7	148.8	167.5
70°	93.1	93.7	93.3	94.3	95.5	97.7	100.8	105.9	113.2	124.5	138.3
72.5°	78.5	77.7	78.1	79.1	79.7	81.1	83.1	87.0	92.9	102.0	112.1
75°	62.7	62.3	63.7	63.3	64.3	65.5	67.3	70.2	74.8	81.1	88.8
77.5°	48.9	48.3	48.9	49.3	49.7	50.7	52.1	53.9	57.0	61.2	68.1
80°	35.1	34.9	35.3	35.7	35.9	37.5	37.9	39.7	41.0	44.2	47.5
82.5°	23.3	23.7	23.9	24.3	24.1	24.9	25.3	26.4	27.6	29.2	31.8
85°	13.4	12.8	13.4	13.4	13.4	14.4	14.2	15.0	15.8	16.6	18.3
87.5°	4.7	4.7	4.9	5.1	5.1	5.7	5.5	5.9	6.7	6.7	7.3
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P243493

CATALOG NUMBER: S124DR-H350D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	55°	60°	65°	70°	75°	80°	85°	90°	95°	100°	105°
0°	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4
2.5°	502.7	500.5	498.9	494.4	491.6	489.1	486.7	484.1	481.4	477.8	475.7
5°	525.0	520.3	513.3	507.0	499.9	493.6	488.5	482.8	476.5	469.9	464.2
7.5°	549.6	540.8	530.1	518.5	507.4	498.2	488.5	479.4	470.5	461.9	453.8
10°	574.3	558.9	544.9	528.9	514.3	500.3	487.7	475.1	464.0	452.6	442.3
12.5°	597.2	578.6	558.1	538.2	518.7	500.5	484.9	469.5	455.3	441.7	429.7
15°	614.8	591.5	567.2	543.5	521.0	502.1	481.8	461.9	447.1	430.5	417.3
17.5°	634.9	607.3	583.2	554.8	526.8	496.2	474.7	453.0	435.2	419.2	406.0
20°	648.3	617.9	583.2	551.0	522.2	494.8	469.0	444.1	425.4	406.8	390.8
22.5°	658.9	627.6	589.3	555.8	519.7	486.5	458.5	434.0	411.9	394.4	379.2
25°	664.5	626.2	589.7	549.1	513.0	481.2	449.6	422.6	400.3	380.8	367.7
27.5°	664.7	625.4	582.2	542.0	503.3	469.0	437.8	411.2	386.1	367.4	351.8
30°	663.7	620.3	574.7	530.7	492.2	457.1	424.6	396.9	374.1	354.1	339.3
32.5°	657.4	613.2	563.5	517.3	475.5	440.2	410.2	382.7	358.3	340.1	324.5
35°	643.2	597.6	547.7	500.1	460.5	423.8	394.2	366.6	344.7	324.9	309.0
37.5°	625.0	582.4	531.7	482.0	439.2	404.4	376.6	350.6	327.7	309.5	293.6
40°	602.1	562.1	512.2	460.5	417.7	382.5	356.3	332.0	312.5	294.0	278.4
42.5°	570.8	540.0	488.7	438.4	393.6	360.4	335.0	314.9	294.7	278.0	262.4
45°	537.2	509.2	463.6	413.7	370.7	336.6	312.7	294.2	277.0	260.0	247.4
47.5°	500.1	477.2	435.0	386.3	343.9	313.7	290.2	273.6	257.9	244.8	232.2
50°	455.9	443.9	404.4	360.2	319.0	288.0	268.7	251.7	240.1	227.5	215.6
52.5°	414.9	405.2	373.1	329.7	292.2	265.0	244.2	230.8	219.4	210.1	200.6
55°	370.3	365.4	338.2	300.7	266.7	239.5	221.8	209.5	200.4	191.8	184.9
57.5°	329.3	328.9	304.8	272.7	239.5	216.4	199.5	189.4	181.5	175.4	169.5
60°	287.3	290.6	270.9	241.5	215.2	193.5	178.2	169.1	163.7	158.0	153.1
62.5°	249.2	254.3	236.4	213.3	187.4	169.7	157.8	150.9	145.0	140.9	137.1
65°	212.7	219.2	204.6	183.9	164.1	147.4	137.3	130.8	126.3	123.9	121.3
67.5°	180.5	184.1	174.2	158.0	141.7	127.1	118.8	113.0	109.1	108.1	105.2
70°	148.4	152.5	145.6	130.8	118.2	107.5	100.0	95.5	93.1	91.7	89.8
72.5°	122.5	124.3	117.4	107.1	97.1	88.2	82.7	79.3	76.5	76.0	75.0
75°	95.9	98.4	92.9	85.0	76.7	70.4	66.3	63.5	62.1	61.2	61.2
77.5°	72.4	74.6	71.4	64.5	59.6	54.1	51.3	48.7	48.1	47.2	47.5
80°	51.5	52.5	50.7	46.0	41.6	38.7	36.3	34.9	34.7	33.9	34.7
82.5°	34.1	34.3	32.4	30.2	26.8	25.3	23.7	23.1	22.9	22.9	22.5
85°	18.9	19.3	18.0	16.6	15.4	14.0	13.6	13.2	12.8	13.4	13.8
87.5°	7.3	7.5	7.3	6.7	6.3	5.9	5.7	6.1	5.5	5.9	6.1
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P243493

CATALOG NUMBER: S124DR-H350D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	110°	115°	120°	125°	130°	135°	140°	145°	150°	155°	160°
0°	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4	483.4
2.5°	472.3	470.7	468.4	464.4	461.7	458.7	457.5	457.9	456.7	455.1	455.5
5°	459.9	455.3	451.4	445.9	440.7	436.4	435.0	433.2	431.7	430.7	429.7
7.5°	446.7	440.3	434.4	428.9	423.0	417.5	415.3	413.7	412.9	410.2	409.0
10°	434.0	426.7	419.6	413.1	407.0	400.9	398.7	396.7	394.0	392.8	391.4
12.5°	420.6	413.3	405.6	397.7	391.6	386.7	382.9	381.6	378.8	377.6	376.8
15°	407.6	398.7	392.6	386.5	377.2	371.7	370.1	365.2	363.6	361.2	359.7
17.5°	394.6	386.3	377.2	370.1	364.4	357.5	353.7	351.6	348.6	346.4	343.5
20°	381.8	372.1	365.0	356.1	349.8	343.5	338.7	336.8	334.2	331.2	327.1
22.5°	369.3	358.7	351.8	343.5	335.6	328.3	324.3	321.6	316.5	315.9	312.1
25°	354.7	345.3	336.2	327.5	319.8	312.5	309.9	305.6	303.8	300.3	299.7
27.5°	340.9	330.9	321.0	311.5	304.8	299.7	295.1	292.4	290.6	287.8	288.0
30°	326.5	315.5	306.2	297.5	290.2	285.3	282.3	280.9	278.4	278.0	276.6
32.5°	311.1	301.1	291.4	283.7	276.2	271.9	270.5	269.1	267.5	267.7	267.3
35°	295.7	286.9	276.6	269.5	263.4	260.8	258.6	258.3	257.7	258.1	258.1
37.5°	280.7	271.1	262.6	256.1	252.5	249.0	248.0	247.8	248.0	248.4	249.4
40°	266.1	257.3	249.0	243.7	239.7	238.1	236.7	237.3	238.1	239.5	240.7
42.5°	251.5	243.1	236.2	230.8	227.1	226.3	226.5	227.7	227.9	229.8	232.0
45°	236.2	228.9	222.3	218.2	215.8	214.8	215.2	216.4	217.8	220.6	223.3
47.5°	222.0	215.4	209.7	205.6	203.8	203.4	204.2	205.8	208.9	211.7	214.8
50°	207.5	201.6	196.3	192.6	192.4	191.0	192.8	194.7	198.5	202.2	207.0
52.5°	193.3	187.6	183.1	180.1	179.3	179.3	181.5	185.1	188.4	193.3	197.7
55°	178.5	173.4	169.1	168.1	166.9	167.5	169.9	173.4	178.2	183.7	188.4
57.5°	163.4	159.0	155.9	154.5	153.9	155.9	158.6	162.4	168.5	174.0	179.1
60°	149.0	145.2	141.9	141.5	141.1	143.6	147.0	150.9	157.0	162.6	168.9
62.5°	133.6	130.6	128.4	127.8	127.8	130.4	134.2	139.3	145.0	150.9	157.6
65°	118.0	115.4	114.8	114.0	115.8	117.4	121.1	126.1	132.2	138.7	145.8
67.5°	103.6	102.0	100.8	100.8	102.2	105.2	108.5	113.4	119.8	126.7	133.0
70°	89.2	87.6	86.6	87.6	88.4	91.9	95.5	100.2	106.1	112.8	119.6
72.5°	74.2	74.4	74.6	74.4	75.2	78.5	82.1	86.6	92.3	98.8	105.0
75°	61.0	60.0	60.2	60.6	63.1	64.9	68.5	72.8	78.9	84.8	90.0
77.5°	47.3	47.0	47.9	47.9	50.3	52.5	55.4	59.8	65.1	70.4	74.6
80°	34.7	34.9	35.7	35.9	37.9	40.2	43.4	46.4	51.1	54.8	58.8
82.5°	23.5	23.9	24.9	26.2	27.0	28.4	31.2	34.3	37.7	41.6	44.0
85°	13.6	14.2	15.0	16.0	16.8	18.2	20.1	22.7	25.1	27.2	29.2
87.5°	6.7	6.7	7.3	7.7	8.3	9.1	10.5	11.4	13.0	14.6	15.4
90°	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0



TEST NUMBER: P243493

CATALOG NUMBER: S124DR-H350D830-X4F0-XX-UDD-A-W

CANDELA DISTRIBUTION (continued):

	165°	170°	175°	180°
0°	483.4	483.4	483.4	483.4
2.5°	454.8	454.6	453.8	454.2
5°	429.1	427.1	426.9	426.1
7.5°	407.0	406.4	406.4	404.8
10°	390.0	388.3	388.7	387.9
12.5°	373.9	372.9	371.7	370.5
15°	355.7	355.7	355.7	352.4
17.5°	341.5	341.3	340.3	340.1
20°	326.7	325.9	323.4	325.1
22.5°	311.7	311.1	309.0	309.3
25°	297.7	297.1	296.7	295.1
27.5°	285.7	285.9	286.3	285.3
30°	276.6	276.0	276.8	275.8
32.5°	268.1	268.1	267.3	267.5
35°	258.4	259.2	259.4	259.2
37.5°	250.0	251.0	251.7	251.0
40°	242.1	242.9	243.7	243.5
42.5°	233.8	235.2	235.8	236.4
45°	225.9	227.7	228.7	228.9
47.5°	217.8	220.0	222.0	221.8
50°	209.9	212.7	214.5	214.3
52.5°	202.0	204.8	207.0	207.9
55°	193.1	196.7	198.7	200.4
57.5°	184.3	188.2	190.2	191.0
60°	174.4	178.0	180.5	181.1
62.5°	163.4	167.1	170.5	171.2
65°	151.9	156.1	158.6	159.0
67.5°	138.7	142.6	145.2	146.4
70°	125.1	128.0	130.8	132.6
72.5°	109.9	113.4	116.0	117.2
75°	94.1	98.1	99.4	100.2
77.5°	77.7	80.1	82.3	82.5
80°	61.4	64.3	65.1	67.1
82.5°	45.2	47.9	47.3	48.1
85°	29.8	30.8	31.4	31.6
87.5°	15.8	16.4	16.8	17.0
90°	0.0	0.0	0.0	0.0

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